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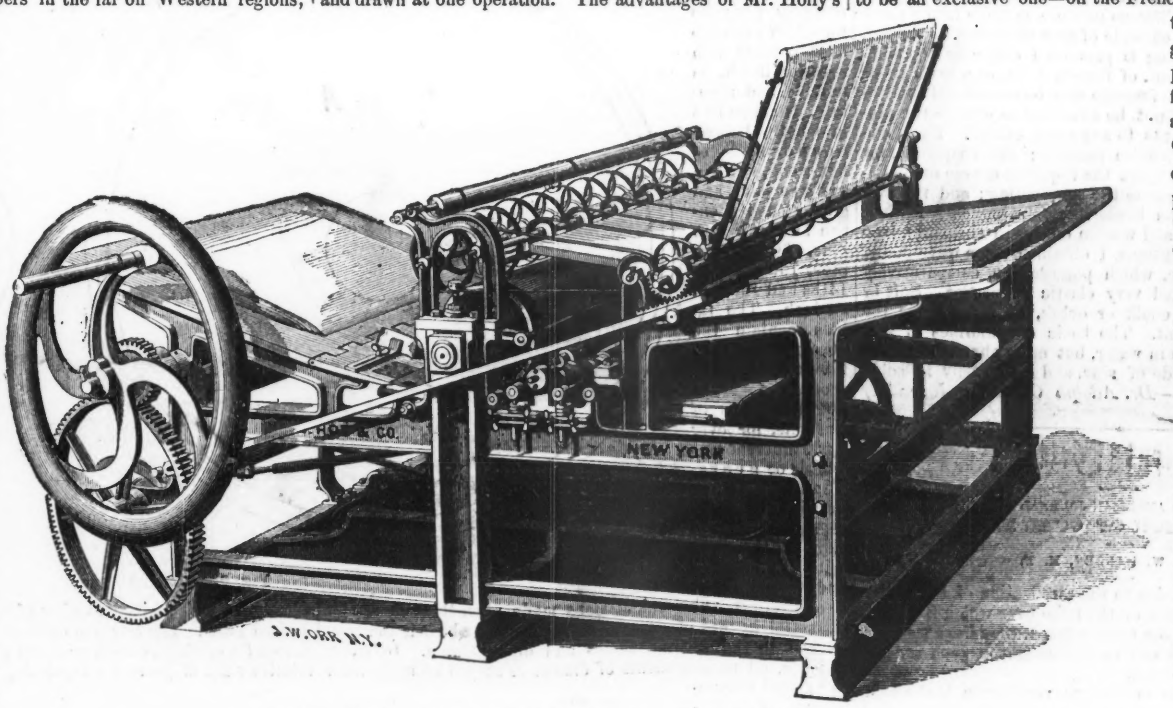
## HOE'S PRINTING PRESSES.

In a recent number of the JOURNAL OF MINING we gave an illustration of the works of R. HOE & Co., manufacturers of saws and presses. We spoke at the same time somewhat at length of the methods employed by them in the making of saws. We purpose at this time to speak more particularly in regard to the printing presses manufactured by this firm. The rapid development of our western regions of country seems, indeed, to have created a need that can be at once supplied by Hoe's Railway Newspaper Printing Machine. This press is intended to supply the wants of those publishing country newspapers, the circulation of which will not justify the employment of the more costly steam presses. It is cheap, plain, durable, and not likely to get out of repair. This latter quality certainly cannot be too highly appreciated by those intending to run newspapers in the far off Western regions, where opportunities for repair do not very often present themselves. Beside newspaper printing, the machine is also capable of doing the usual job work of a country office. This press should have an extensive sale, not only in the country regions of the United States, but it seems to us that its character is such as to render it highly popular among the publishers of newspapers in the smaller towns of Mexico and South America. The press works with an easy motion, giving rise to no noise or jar. It is run by hand, and will turn off some 700 or 800 impressions per hour. The following description, together with the accompanying illustration, will give our readers a very good idea of the construction of this truly serviceable machine.




R. HOE & CO.'S RAILWAY NEWSPAPER PRINTING MACHINE.

The bed is carried by a truck having large friction rollers running on a railway (whence the name of the press), and is driven backward and forward by a crank motion which stops and starts it so gently that the bed-springs, usually employed, are not needed. The paper is fed through adjustable guides to the under side of the impression cylinder, and the feed-board lifts the sheet up over the guides and against the cylinder as the fingers of the latter clasp it. After an impression is given, the impression cylinder remains stationary while the bed returns; a fresh sheet is in the meantime laid on the feed-board, and the fingers close on it before the cylinder starts again. As the cylinder wheel gears directly into a rack on the side of the bed, excellent register is obtained without a pointing apparatus, which, however, is furnished without charge. The bed is provided with iron bearers to equalize the impression on the form. The impression cylinder is never shifted to suit forms of different sizes, but the forward edge of the type is always placed to the same line on the bed, and the fingers and fly tapes are as easily adjusted as on our ordinary job presses.

The ink fountain has the adjustable knife so necessary to job work. The bed is 13×46 inches; a form 27½×42 inches is inked by one roller, and a form 23×42 inches by two rollers. The press has our self-acting sheet-flyer, and can be run easily and safely by one man or strong boy at the speed mentioned above. It occupies a space 5½×10 feet, and can be worked in a room 7 feet high. Weight, boxed, 5,600 lbs.

The size of the bed is 31×46 inches. The price of this press, including roller moulds, blankets, boxing and shipping, etc., is $1,350. Address R. HOE & Co., at their manufactory in this city. The company have published a complete catalogue for gratitnous distribution illustrating and describing the various kinds of presses manufactured by them. It also contains a full price list of all kinds of printing materials, etc.

## Bottom-Cast Steel Ingots.

Mr. A. L. Holly, of the Pennsylvania Steel-Works has introduced a new process in casting Bessemer steel ingots, which consists in making a nest of ingots in one piece by pouring the metal at the bottom and in the center of the mold. In this manner 5,000 ingots have been cast mostly in groups of seven. Arrangements are now being made to cast the whole charge of five tuns in a group of thirteen. The improved flasks consist of large cast-iron bottoms, with a central cavity, in which the prolongation of the central or sprue mold is formed, and radical channels in which the runners from this sprue mold to the surrounding molds are formed. The cavity and runners are lined with molding material (old ground fire-brick and loam) from one-half to one inch in thickness. The patterns are all formed on the follow-board, and drawn at one operation. The advantages of Mr. Holly's process over the ordinary one of pouring into the top of the mold are:

1. The improved quality of the ingots. In the ordinary method the steel falls the whole length of the mold and spatters on the sides, consequently the ingot is more or less porous. By the new plan the steel rises gradually in the mold, and is pressed against the top by a ferro-static column one foot or more in height. The ingot thus made is less porous, and has a smooth exterior.

2. A saving of scrap: for under the old system the ingots cannot be made of uniform length.

3. Convenience of working; the best proof of it being that the workmen prefer the new process.

4. The saving of the ingot molds. Many of the molds of the new model in the Pennsylvania Steel-Works have been used 400 times, which is about four times the service obtained from a mold of the old form.

## Another Warning.

In Belgium nitro-glycerine has recently caused a fearful accident. An agent of a Dutch chemical manufactory had persuaded two Belgian quarrymasters that nitro-glycerine was a much more efficient, and a much safer blasting agent than gunpowder. To demonstrate the latter assertion for true, they undertook to assume the responsibility of all accidents which might occur by it. The quarrymasters upon these terms gave an order for 4,000 lbs. of nitro-glycerine. The Belgian Government requires it shall be transported with the same precautions taken when gunpowder is moved. A van containing it, drawn by two horses, and guarded by four artillerymen carried it to the quarry. Seven people stood around the van when it was unladen; near by two wood-sawyers were at work, and a little further a young girl was busy picking up chips. About half the load had been stored in the magazine when an explosion took place. The shock was felt nine miles off. The immense magazine was entirely demolished; no trace was left of it except a few bricks. The windows of every house, all the trees and crops within 50 yards were devastated and no traces of the ten persons near the van was found except a portion of one man's skull, the girl's foot, and one button of an artillery-man's uniform.

## A New Atlantic Cable.

As the *Moniteur* has now confirmed in an official manner the statement of a concession of the right of laying down a submarine telegraph cable between Brest and the United States, it may be worth while to mention a few of the particulars of this enterprise. A corresponding concession has been granted by the State of New York, and the cable will be laid direct from Brest to New York city. This concession is understood to be an exclusive one—on the French side at any rate—for twenty years. The grounds upon which the projectors have found favour with the French and New York State Governments have been chiefly, that the proposed cable will obviate the circuity and delay incident to the present line, and will also lessen the existing liability to casualties. By the only route we now have not less than four submarine cables have to be employed, while the electric fluid has to perform four land journeys also before a message can be sent from the Continent of Europe to New York. There intervene—1, the North Sea, or the English Channel; 2, the Irish Sea; 3, the Atlantic; 4, the sea between Newfoundland and the American continent; while the wires have coals to be carried across England, Ireland Newfoundland, and, lastly, from the coast of British America southwards to New York. It is thought also that the directness and simplicity of the new route will very much diminish the chances of communication with America being from time to time put out of gear. Ocean telegraphy has now been carried to such perfection that there is more mishap by land than by sea; and in point of fact, during the last two winters, when we have several times been alarmed by a stoppage of messages, the explanation has in each case been that storms had blown down the land telegraphs, sometimes in Newfoundland sometimes on the American mainland. From this danger, whatever it may amount to, the new line will be exempt. As the capital it will represent will, it is stated, be only £1,000,000, and as the working expenses, with only two stations (at Brest and at New York), ought to be very small, it is probable that this project will bring the luxury of telegraphing across the Atlantic within the reach of persons of very moderate means. A cable laid across the English Channel, from Falmouth to Brest, would also give us the benefit of it. It is understood that the new Atlantic cable will be ready for laying next June.—*Pall Mall Gazette.*

## The Wilson Furnace.

The novelty in the furnace patented by Edward B. Wilson of England relates to the fuel chamber, which is constructed in such a manner that when fresh fuel is supplied, as usual, on the top of the fuel already ignited, the gases generated therefrom are made to pass downward through the hot fuel, in lieu, as heretofore, of ascending through the fresh fuel, and air is also supplied at such points and in such quantity as will be suitable for combustion. The introduction of this furnace involved a series of battles with the puddlers, who opposed the innovation. It has, however, been in successful operation for some time at the Thornby Iron Works. The Dunham coal

used at these works having the quality of coking and being more bituminous than coal of other districts, the conditions of ignition were wholly dissimilar. The furnace was specially adapted to these conditions. By the action of a damper only air enough was admitted to burn the gases properly, while a large generator provided a constant supply of gas. No other furnace would work with the damper in the same position owing to the difference in the size of the fire-grate and damper. The returns of Thornby Iron Works show that 15 tuns of puddled bars were manufactured per week of 59 heats at 17½ cwt. of rough small coals per tun. Mr. Thomas Whitman, in a paper on this furnace read before the Cleveland Institution of Engineers, claimed for it these advantages: 1. It would make more puddled bars out of a given quantity of metal than any other furnace. 2. It would make a better quality than other furnaces, as it never burned the iron, and never worked "rash." 3. It would, under proper treatment, consume all its own smoke, 4. That it would not use more fettling than other furnaces; the cost of repairs could not be great, for in the Wilson furnace, a less quantity of fuel being burned, there was less cutting action on the brickwork.

### Cements for Chemists.

In addition to the recipe which has lately been furnished to the public by Dr. Toller, I would beg leave to add the three following ones, which are, like the former, based on the action of the chloride of zinc on the basic oxide of the same metal. The same results are well known in the formation of oxychloride of zinc or basic hydrochlorate of zinc-oxide, and first brought into practical use by M. Sorel of Paris.

1st. Take of soapstone, 10 parts; sand, 30 parts; asbestos, 5 parts; oxide of iron, 5 parts; oxide of zinc 50 parts; mix.

2d. Soapstone, 10 parts; sand, 30 parts; hydraulic cement, 5 parts; oxide of manganese, 5 parts; oxide of zinc, 50 parts; mix.

3d. Soapstone, 5 parts; sand, 35 parts; calcined magnesia, 10 parts; asbestos, 5 parts; oxide of iron, 5 parts; oxide of zinc, 40 parts; mix.

The materials for the above compositions should be intimately mixed together, after having first been finely ground. When applied, the metaliferous mixture is made into a pasty mass with a solution of chloride of zinc of 25 deg. to 35 deg. Baume. Too quick setting is prevented either by the addition of one or two per cent. of linseed meal, or a little ale or beer. Though the above formulæ may be considered as mere examples, still it would not be advisable to change the proportions of the ingredients to any great extent. Each one is intended to serve a definite purpose; the soapstone, for instance, is designed to impart the requisite degree of plasticity; the asbestos to promote the aggregating; and the iron to render the composition harder. By introducing leather, reduced to a fine pulp, and woolen or cotton shearings, into the above-named compositions, I obtained some materials of the consistency of stone, which possessed a comparatively small specific gravity, and very elastic properties. Soft or friable substances, like chalk or ochre, do not answer the purpose as an ingredient. The basic oxychlorides of zinc are but sparingly soluble in water, but more abundantly soluble in the aqueous chloride of zinc, and very easily in acids and the caustic alkalies.—*Dr. Adolph Ott, in the Journal of Applied Chemistry.*

## Practical Letters.

[WRITTEN FOR THE AMERICAN JOURNAL OF MINING.]

### ON THE VENTILATION OF COAL MINES.—NO. II.

BY J. W. HARDEN, M. E.

Natural ventilation is due to the rarefication of the air by its contact with the surface of the mine over which it passes, it follows, then, that up to a certain point, the larger the area of pit surface the greater will be the amount of such ventilation, other things being equal.

The principle of action in furnace ventilation is the heat acting on the air passing over it, whereby such air is rendered specially lighter, and an upward current is produced in the shaft, when the more dense air rushes in to fill the vacuum which would otherwise be created by the upward tendency of the heated air, and a current is produced through the workings; in other words, the motion of the current through the mine is produced by the difference of weight of the two columns of air, the downcast and the upcast, and the lighter we make one compared with the other, so much the more power do we obtain in producing ventilation.

The quantity of heat generated by the furnace will be directly as the quantity of fuel condensed in a given time. The amount of rarefication, which we have seen is the power of the upcast, will be directly as the temperature of the air passing up it in a given time, and the temperature will vary according to the quantity of air passing over the furnace, the amount of heat being a constant quantity. At high temperatures there will be a diminished effect from increased resistance in accordance with a well-known law, of which more will be said as we proceed.

Now it will be readily understood that in the continuous action of the furnace, a large amount of heat is absorbed by the walling and strata of the shaft, and all, who have had experience in furnace ventilation, know that it will require some days to cool down a dry shaft to the temperature of the air passing up it after the furnace fire is extinguished. The experimenter knew this, for we find him saying that: "The difficulty and danger of working a colliery with the furnace fire extinguished long enough to totally neutralize its effects, prevented the true value of natural ventilation being arrived at." It cannot be otherwise, since on measuring the temperature of the column from the furnace upward, the heat is found to decrease, the amount generated at the furnace does not go out at the top of the shaft. Where, then, has it gone if not into the walling of the shaft? On the temperature of the shaft being reduced, if it has no readier means of escape it will be again given off, and be a source of power in the ventilation until it is exhausted, but this residual heat, or power, must not be called natural ventilation. Yet, in Mr. WOOD'S account of his own experiments it is so called, and as such, it is given to his readers by your contributor. In the "examples" of the enormous quantities of air by natural ventilation alluded to, there are differences given of from 12° to 20° between the temperature of the return air and that of the upcast, and of from 30° to 50° between the down, and the upcast.

[TO BE CONTINUED.]

[WRITTEN FOR THE AMERICAN JOURNAL OF MINING.]

### LESSONS IN MECHANICAL DRAWING—No. VIII.

BY T. P. PEMBERTON.

#### DRAWING TOOLS AND INSTRUMENTS.

The most useful scales for "working drawings" are three inches, equal to one foot, or one-fourth size, and one and a-half inches equal one foot or one-eighth size. These are always found on every two feet rule that has the fractional parts of an inch in fourths, eighths, and sixteenths. They are the scales that are most easily understood by workmen, and conform to their methods. A working drawing should always have the dimensions made so plain that the mechanic can read it without recourse to measuring. Among other instruments, that are among the recent improvements in drafting tools, is the gear or cog-wheel calculating rule. It is one which is exceedingly useful to millwrights, inventors, engineers, draughtsmen, and machinists. We purpose to speak of this rule as convenient for drawing out spur and bevel gears which are familiar to all mechanics; but the subject of gearing will be fully explained and illustrated in future lessons. This rule, for the ordinary purposes for which rules are used, is made with superior finish, is durable and accurate. It is two feet in length, brass bound, made of box-wood, with a single joint, and graduated its entire length into 5ths, 6ths, 7ths, 8ths, 10ths, 12ths, 14ths and 16ths of an inch. The tables contain the necessary calculations distinctly and accurately marked upon the face of the rule, for over 2,000 different cog-wheels or gears. The accompanying drawing, Fig. 1, represents a portion of the rule, with the tables and graduations on one face of it. The calculations made upon this rule are for diametral instead of circumference pitches, which is the plan adopted by the best mechanics and draughtsmen. In using the rule, all measurements of diameters should be made from the actual circumference of cog-wheels, or of blanks. The results, however, as indicated by the tables, relate to the pitch line on which line all calculations in gear work are based; this representing the theoretical line on which the power is transferred from one wheel to the other. In Fig. 2, is a blank wheel, the outer circle of which represents the extreme diameter of the wheel when ready to be cut. A cog of 1-14 of an inch pitch is thought to be wanted, and the number of cogs to be cut thereon is to be ascertained. By placing the rule across the diameter of the wheel, it is found to measure 3½ inches, and opposite to this mark, on the 1-14 column of the tables, will be found the number 47, which indicates the number of cogs that can be cut thereon of 1-14 of an inch pitch. It will be observed that said number 47-14 is just equal to the diameter of the wheel, if measured from the pitch line, x. The practical operation of the tables in the above example can be seen by glancing at the cut, Fig. 1, on the previous page, and tracing up the column marked 1-14 at bottom, to the 3½ inch mark, opposite which will appear the number 47. With a diameter of 4 inches for the blank wheel, the number of cogs, at 1-14 inch pitch, will be seen to be 54; while, at the same point on the tables, the number of cogs on a 4 inch blank are given, thus: at 1-7 inch pitch, 26; 1-6 inch pitch, 22; 1-12 inch pitch, 46. The other columns on the rule extend the tables to cover all the diametral pitches in ordinary use. To further illustrate, let it be desired that a small gear should be cut to mesh into the larger gear, A, and with such a number of cogs that it shall be turned twice and 15-16ths of a revolution while the larger wheel makes one revolution. The number of cogs in the large wheel being known 47, the number of cogs in the small wheel is found, by any easy calculation, to be 16; but the precise diameter to which the blank wheel, B, must be turned is not so easily ascertained. With the aid of this rule, any person, however unskilled in mathematics, can ascertain such diameter by looking at the rule and noting, on the 1-14 column, the number of inches and parts thereof opposite the number 16, which is found to be 1 4-14th inches, which is the extreme diameter of the blank of the small wheel, B. In Fig. 3, the two wheels are represented with the cogs cut thereon and in gear, in conformity with the above rules, showing the proportion and perfect gear of said wheels. Thus, by the use of the rule, any mechanic of ordinary skill can quickly ascertain the number of cogs of any desired pitch which can be cut on a blank wheel on which a given number of cogs are to be cut, of any desired pitch. The hitherto difficult process of making calculations for cutting gears is rendered perfectly simple, while the relative sizes of gears, for regulating the speed of machinery, may be easily ascertained. To ascertain the number of cogs, of a desired pitch, which can be cut on a blank wheel of a given size: EXAMPLE.—Required, the number of cogs, at 1-12 inch pitch, which can be cut on a blank wheel, say, 6½ inches in diameter. Look at column marked 1-12 at bottom, and opposite the 6½ inch mark, on the edge of the rule, will be found the number of cogs—76. In the same column will be found the number of cogs, at 1-12 inch pitch, which can be cut on any blank wheel with a diameter from 1 to 24 inches. The figures on the column marked 1-6 at bottom, indicate the number of cogs, at 1-6 inch pitch, which can be cut on any similar blank wheel, and the numbers will be found opposite each 6th of an inch mark, in the scale of 12 parts to the inch,

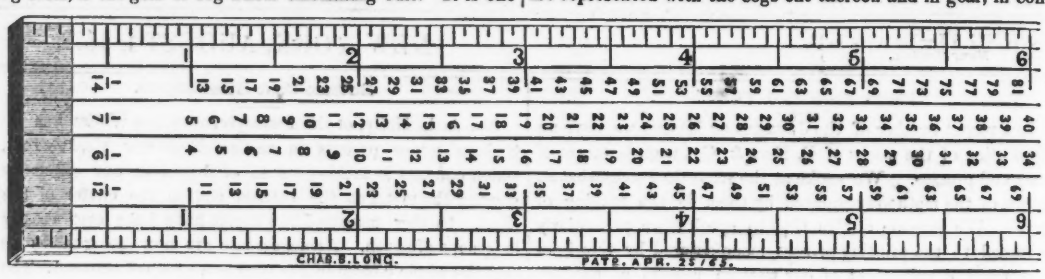



Fig. 1.

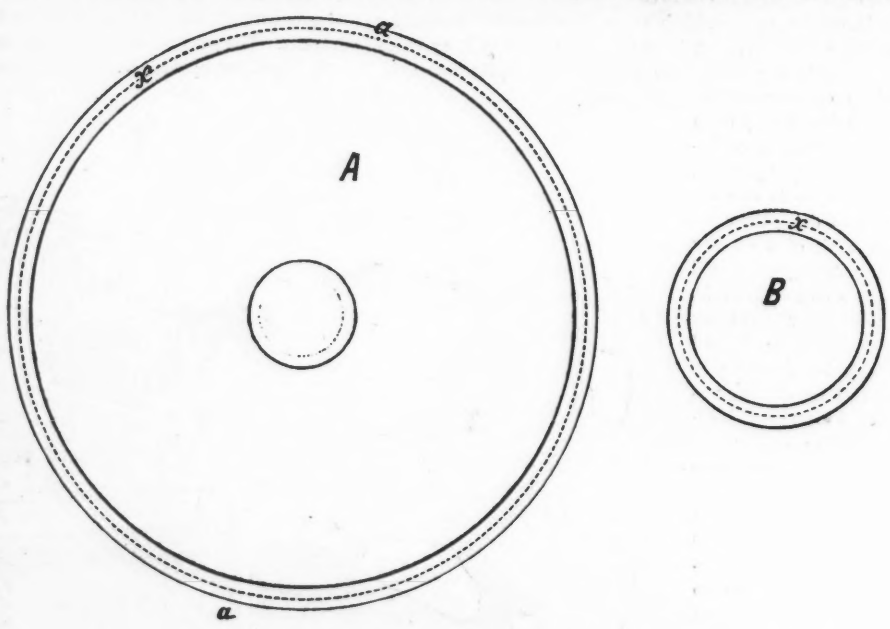



Fig. 2.

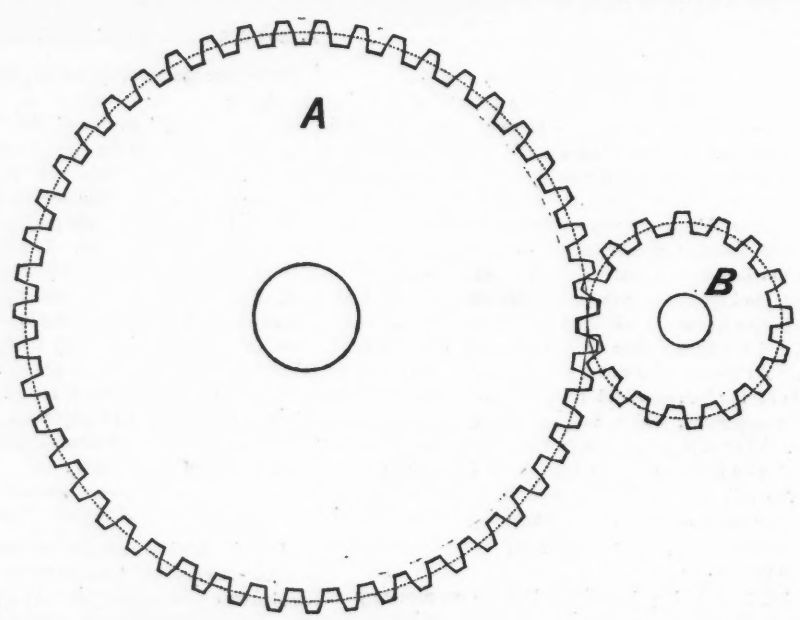



Fig. 3.

on the edge of the rule. (See opposite side 6 3-6 mark, 37—the number of cogs of 1-6 inch pitch, for the above blank of 6½ inches diameter.) The other columns are used in the same manner; alternate figures being omitted in all of the ontside columns, for the more convenient use of the inner columns belonging to the same scales.

To ascertain the necessary size of a blank wheel on which a certain number of cogs are wanted, of a given pitch:

EXAMPLE.—Required, the size of a blank wheel on which, say, 72 cogs can be cut, at 1-14 inch pitch. Look in the column marked 1-14 at bottom, and opposite the number 72 will be fonnd, in the scale of 14 parts to the inch, the mark indicating 5 4-14 inches. The size of a blank wheel to cut 72 cogs, at 1-7 inch pitch, will as readily be seen, by noting the inches and 7th parts thereof indicated in the scale of 14 parts to the inch, on the edge of the rule, opposite 72 in the colnmn marked 1-7 at bottom—viz: 10 4-7 inches. The other columns on the rule are nsed in the same manner.

# Mining Summary.

## Pacific Coast Mining Review.

[From the San Francisco Commercial Herald, July 6, 1868.]

In consequence of the immense qnantities of rain that fell during the past winter, much damage was done to mining claims and properties throughout all parts of the mineral regions. Ditches and reservoirs were carried away, flumes blown down, shafts and chambers of nnderground mines were filled with water, and surface works with sand and gravel. In all the more elevated districts the snow was so deep and the cold so great as to seriously interfere with mining operations. In many places the quartz mills were obliged to remain idle for weeks at a time, the roads being too bad to admit of hanling ore or fuel. Owing to these causes, the bullion prodnct for the first three months of the present year was somewhat curtailed, their influence having also tended to restrict the turn-ont of the precious metals for

THE QUARTER JUST CLOSED.

The latter, however, notwithstanding these drawbacks, has proved one of the most prosperous seasons experienced by the mining commnnity for many years past; the yield of the placers during this period having been large beyond recent example. With the opening of spring the owners of this class of claims found themselves supplied with snch an abundance of water as materially reduced the price of that article, enabling them, in some instances, to dispense with its purchase altogether, and to successfully work numerous rich localities with which nothing could be done in ordinary seasons, owing to an insufficiency of water.

These cheap and bountiful snpplies of this all-important element have also led to its very extensive employment in washing away the heavy bodies of poorer earth, often found overlying rich auriferous strata, which, nncovered by this cheap method, never fail to pay well. Millions of tons of top earth have, in this manner, been sluiced off, during the past few months, at a cost wholly insignificant compared with that required for its displacement by any other plan. This earth sometimes contains enough gold to cover the cost of washing, though generally this is not the case; the object of its removal being the denudation of the richer and often highly remnnerative deposits below. As these labors have thus far been mostly preliminary, their results will tell more sensibly on the bullion prodnct of the incoming quarter than they have done on that of the quarter just closed. That they will augment, in a marked manner, the yield of gold dust for several months to come may be justly anticipated.

In the immense body of snow that fell last winter upon the Sierra and other mountains adjacent to the principal gold fields, and which still lies to a considerable depth in many places, the miners have a guarantee of ample water supplies until late in the season, giving further assurance of a good snmmer's work in every department of the placers. Hardly ever before have these aqueous repositories been so well stored, the prospect being that they will hold out for at least a month later than usual. At this time the rivers having their sources in these mountain ranges are still high, the ditches all being full and the reservoirs overflowing. A number of new ditches have also been built of late or are in process of construction, whereby water will be carried into diggings heretofore destitute, or be furnished in greater abundance to such as were before bnt partially supplied. With the multiplication of these works, the prices of this indispensable commodity are also being greatly reduced, which, besides the direct gain thus inuring to the mines, will enable him to extend his operations to a vast area of poorer grounds which previously could not be washed with profit. The great number of these

NEW DITCHES,

r cently nndertaken, are located in the more northwesterly counties of the State, being designed for conducting water npon the many yet virgin or but partially exhansted bars along the Scott, Trinity and Klamath rivers. Along all these streams, more especially the latter, as well as along many of their tributaries, are numerous high bars, some of them rich and of great extent, upon which bnt little work has ever been done. They have, however, been sufficiently prospected to determine their great value should water enongh for extended operations be brought upon them. In this work a nnmber of companies are now engaged, a few having already completed their ditches, while others are in a good state of forwardness; several enterprises of still greater magnitude than any yet entered upon having, also, been projected. These bars, which indicate the site of the ancient river channels, lie, in most cases, high above the beds of the present streams, rendering it somewhat difficult to bring water npon them; a circnmstance that, coupled with a scarcity of local capital, and, for a long time, with an absence of any urgent necessity for working them, deterred the miners of that region from nndertaking any enterprises directed to that end. With the gradual impoverishment, however, of the surrounding diggings, and the greater readiness on the part of capitalists to embark in the prosecution of works of this kind, a new and productive gold field is likely soon to be rendered practicably available along these northern rivers. Some of these unwrought bars along the lower Klamath covers thousands of acres, being, in fact, broad flats having snch a depth and area of pay-dirt, that they could not be washed away in half a century with such working force as could be advantageonsly employed with all the water that can be ever brought upon them.

In the more central and popnlous mining districts, many new water ditches of limited dimensions have meantime been bnilt, while several of the older and larger have been increased in capacity or carried into new localities, thereby adding very considerably to the facilities that before existed for placer operations and signalizing the quarter under review by an unwonted extension of these important works. In the construction of these ditches large quantities of heavy iron pipe are now being nsed for conducting the water across broad ravines and other long depressed surfaces, instead of carrying it as formerly through long and lofty flumes liable to be blown down by every tempest, and calling for frequent repairs—this pipe, though more costly at first, being found cheaper in the end.

Prospecting for new placers and other auriferous deposits, has been very active the past winter and spring, leading to the discovery of many

GOLD BEARING LOCALITIES,

some of which have already proven quite extensive, while others promise to be of more or less importance. Among these the broad benches and high bars on the Klamath and other Northern rivers stand foremost, a considerable scope of good diggings having more recently been fonnd on New river, in Humboldt connty. The placers abont Volcano, Amador connty, near Upper Rancharia, and at Cat Camp, Calaveras county, as well as at several other localities in Kern connty, and in other parts of the State, thongh worked in most cases for several and in some for many years, have, through the introduction of more copions supplies of water, become so much more prolific of late than ever before as to almost deserve the name of new discoveries. Many small rich spots formerly overlooked, are being constantly struck, while others that had been buried beneath tailings and debris, are being uncovered and worked with profit. A few months since a placer was found at the eastern base of the Sierra, in Inyo county, which, so far as water can be obtained for washing, has since paid at the rate of $10 per day to the hand, the gold being very pure, thongh the diggings are spotted, and the supply of water limited. Some seventy miles farther east, in the same county, a still broader scope of surface mines was found over a year ago, bnt they have since been worked only on a limited scale, owing to the extreme barrenness and aridity of the surronnding country. About thirty-five miles north of Los Angeles, are two districts, the San Feliciana and the Casteca, abounding in placer mines, in which more than a hundred native Californians realized during the earlier part of the period we are considering, from $3 to $5 per day to the hand; these diggings being capable of giving constant and remunerative employment to a thousand men, were they supplied with the water running through the San Francisco cañon, which could with a compara tively small outlay be conducted npon them.

Beds of auriferous sand have recently been discovered at a nnmber of spots lying inland a short distance from the sea shore, and adjacent to the gold-bearing beaches that have for several years been successfnlly worked along the northern coast line of the State. They mark the site of the ancient shore, and it is thought may yet develop a new and valuable feature in this class of mines.

The celebrated Blue Gravel lead having lately been struck at several points further south than any at which it had heretofore made its appearance, is regarded by the mining commnnity as a fact of its still further extension in that direction. Shafts sunk near Auburn and Dutch Flat have reached gravel deposits bearing nnmistakable evidence of being a prolongation of the original lead. The business of

TAIL SLUICING,

though not of recent origin, has been greatly extended within the past few months, constituting at present a very important branch of placer mining. Lately these works have been constructed on a scale not before attempted, some of them consisting of several strings of sluices set side by side, reaching a distance of five or six miles. The tailings to be washed often fill up entire cañons to a depth varying from ten to a hundred feet; and, although it costs heavy sums to secure and fit up these claims, they can be run at little expense, and generally yield munificent returns, the tailings sometimes continuing to pay after repeated washings. By reason of the copions supplies of water the past three months have been extremely favorable for operations in ground sluicing, immense quantities of earth having been disposed of by this process.

HYDRAULIC WASHING

has also been more extensively and successfully carried on than ever before, old claims having been worked with unwonted energy, and new grounds opened in every direction. While a superabundance of water was to be had, operations upon these claims were in many instances confined to washing off the poorer top dirt, resulting in a low average yield for the time being, though preparing the way for more ample returns when the lower and richer stratum of earth came to be reached. For the past month or two the aggregate yield of this class of mines has been large, as it will no doubt continue to be for the balance of the season,

TUNNEL MINING,

whether prosecnted with a view to reaching the ancient river channels and other deep-seated deposits, or for the purpose of securing drainage to flats and basins, has been carried on the present season with a system and success never attained before. Through greater practical experience and more careful and skilful engineering, the mistakes one time common in locating these works, and which led to most serious losses, have latterly been avoided. Formerly it was no uncommon thing for companies to find, after they had completed their tunnels with years of labor and the expenditure of many thousand dollars, that they had been located too high or too low to snbserve the end for which they were designed, whereby they were rendered wholly useless. These blunders are now of rare occurrence, while by a system of co-operation among companies owning adjacent claims, great economy promises to be hereafter effected in the prosecution of these works. By this plan, already in some sections successfully inaugurated, and which from its manifest advantages will probably meet with general and early adoption, parties owning claims in the same locality, whether in hydraulic banks, on flats or basins, or along the same gravel beds, requiring to be opened by drain tunnels, nndertake the work jointly, sharing its benefits in common. By this method a great deal of time and money is saved, while a more certain and effective system of drainage is secured to all. This co-operative method has also been adopted in a few instances in the exploration of vein mines, and will, no donbt, come in a short time into much more general use, wherever practicable. In some of the more elevated mining districts, the weather being too cold to admit of washing the dirt taken from the tunnel claims during the winter, it necessarily accumulated in considerable qnantities. Having since been washed, the product of this dirt has materially increased the receipts of gold for the past quarter. Owing to the high stage of water,

RIVER BED MINING,

whether conducted by wing-dams, the method now most in vogue, or by wholly diverting the streams from their beds, will be late in getting under way the present summer; very little having yet been done towards its inauguration except on the Klamath and other northern rivers. Many parties, however, intend engaging in the business this summer, and should the streams remain low nntil late in the fall, a great deal of gold may yet be taken from the river beds before winter, and the present prove a very prosperous season for this class of operations. This branch of mining, which, owing to the disasters that attended it, a few years since was almost wholly abandoned, has lately been growing in favor, and it is not improbable that it will yet prove a very popnlar and lucrative pursuit.

PLACER MINING

taken as a whole, not only in California but throughout all parts of the Pacific coast, is at the present time in a highly prosperous condition; more gold dust having been washed out in the past three months than during any like period for ten or twelve years past, with a good prospect that corresponding results will be secnred for several months to come. Nor has the business of

VEIN MINING

during this period proven less satisfactory as a general thing han the working of the placers. Most of the quartz mills throughout the conntry have been rnnning steadily and with fair results, many new mills having meantime been put np, and preparations made for the erection of still more. The majority of the lodes in process of development, on being opened to greater depths, show a steady improvement in both the quantity and quality of the ores they carry; removing all donbt as to the general permaneney and richness of this class of mines. With increased experience, more system as well as efficiency and safety are being secured in the work of exploration; while, with the introduction of improved machinery and processes, a great saving of metal and economy in the cost of redncing the ores have been achieved. Through the gains thns effected many mines are now being worked with large profit to the owners, which could not be made to meet enrrent expenses a few years ago, the increase of product amounting to more than a hundred per cent. With these results, confidence in this class of mines is rapidly increasing, both with business men and capitalists—the reluctance so general a short time since among the latter to invest in mining properties having given place to a common desire on their part to secure large interests of this kind.

It is notorions that many quartz lodes contain a mnch greater qnantity of gold associated with other metals and minerals than in a free state. From the fact that sulphur forms the base or prominent ingredient in these associated substances, they are denominated snlphurets, being a species of ore, and requiring chemical treatment like other ores, it being impossible to separate the gold from its baser associates by mere mechanical means. This being the case, all the gold contained in these sulphurets was formerly lost, being suffered to pass away with the tailings. It was well known that this loss was great, bnt for a long time no practicable method could be devised for obviating it. After many trials, however, and the expenditure of much money, this difficnlty has at length been overcome. Through the introduction of improved concentrators and the employment of chlorination and other processes, the gold in these sulphurets is now being saved within eight or ten per cent. of the entire amount contained in them, effecting immense gains in the working of this description of quartz, and imparting to a large class of mines great additional value.

While the foregoing remarks are made with special reference to the condition of mining affairs in California, they apply with equal force to those existing in

THE ADJACENT STATES AND TERRITORIES,

more particularly Oregon, Idaho and Nevada, in all of which mining operations have been prosecuted the past spring with unusnal vigor and snccess. In the latter two this branch of business has lately received a decided impulse through the rapid extension of the Central Pacific railroad east of the Sierra, promising for it a speedy promotion in all its departments. The importance of this improvement to these countries can scarcely be over-estimated; many parts of both being chiefly dependent npon its construction for whatever value as metalliferous districts they may hereafter be found to possess. Wholly without timber snitable for lumber, and but scantily supplied with fuel and water, the entire Humboldt country, though abounding in mineral wealth, would prove nearly worthless in the absence of means for the cheap transportation of its ores to the points where there existed greater facilities for their economical reduction; the same being true of other large districts adjacent to the line of this road. To estimate the net annual gain likely to accrue to the region lying east of the Sierra at $5,000,000 for the first year the railroad shall cross it, with a large yearly increment thereafter, would be a very moderate computation. Indeed, without the aid of this or some similar enterprise, a large portion of the great Utah basin mnst remain, as at present, almost wholly unavailable, both for mining and agricultural purposes; whereas, with railroad commnnication, it would soon be turning out millions of dollars of the precious metals annually, and be affording comfortable sustenance to a large population.

The work of mining development has, since the opening of spring, been steadily progressing throughout all parts of the Washoe country, new additions being constantly made to the list of productive and profit-paying mines. While no new paying claims have been opened, or deposits of importance lately made on the main Comstock lode, most of the claims situate on that range are yielding their accustomed complement of millable ore, while a number of ledges in the vicinity, but situate a considerable distance from the mother lode, have been worked with results that, having already proved remnnerative, promise to be permanent. That the usual qnantity of ore of a working grade is being raised from the Comstock group, is evident from the fact that all the mills dependent on this source for their ore supplies have been kept steadily employed and at the same rates as formerly. From the more interior mining centres of the State, such as Reese River, Humboldt, Silver Peak, Pine Grove, Cortez, Silver Bend, and the districts lying further east, the reports are favorable for a good summer's work, and there is no doubt bnt the yearly bullion prodnct of Nevada will be larger this than it was last year. The State abounds with mines rich in both gold and silver, but owing to its remoteness and other disadvantages, much time and money are required to thoronghly open them and erect works for the redncion of their ores.

In Idaho a season of considerable activity is looked for, work having been resumed and pushed ahead during the past few months with nnusual energy, both in the quartz and placer mines. Several new ditches are to be built this season, some of the smaller being already nearly finished, for conducting water to the various diggings in the Boise Basin, while a number of quartz mills will be put up in the Flint, Rocky Bar, Alturas and other leading districts, all of which are known to contain many valuable metalliferous lodes, and in some of which very important discoveries have recently been made.

From Arizona recent accounts are more encourgaing than they have been for several years past. A number of quartz mills are now at work turning ont considerable quantities of bullion, while qnite a large population have been making good wages this spring in the old placers discovered five or six years ago; the prospect being that more bullion will be received this year from that region than during any two since the opening of the mines.

It is matter for congratnlation, that for the first time in ten years California has the present spring been wholly exempt from anything like a mining stampede; and as the season is now well advanced, there is reason to hope that we shall this year escape those annual excitements which have caused our people to rush precipitately to distant points in the hope of speedily bettering their fortunes, but generally with no other result than an entire loss of the time and money so foolishly expended.

# GOLD AND SILVER.

## Montana.

THE PLACER MINES.—A GREAT CLAIM.—STEAM MINING.—GOOD NEWS FROM ALL QUARTERS.

We recently published in the JOURNAL OF MINING an account of the application of steam machinery in Montana for working placer mines on a grand scale. In the Helena *Post* of the 10th instant we find a fuller account of the operations in the claim of Messrs. Tayton, Thompson & Co., adjacent to that city in "Last Chance Gulch." To this claim belongs the credit of being the only one in the mines of the Rocky mountains in which steam is employed. It is celebrated as well for the indefinite depth and uniform richness of its "pay dirt"—being, in short, among the

placer diggings of Montana what the "Whitlatch Union" is among her quartz veins. For these reasons an account of it, although rather lengthy, will undoubtedly be gladly received by our readers. The writer in the *Post* has it thus: "The first shaft was sunk in April, 1865. The vegetable mould, or that portion which miners call 'the stripping,' has an average depth of about seven feet, when the auriferous gravel is reached. As the gold is of the same general character throughout, and the prospects vary but little at any depth, so the gravel is very similar from top to bottom. Granite, slate, and quartz are found in nearly equal proportions. Stones of unwieldy bulk are seldom met with, and nearly every one, by its smoothly rounded surface, attests the agency of water in bringing it down to and lodging it in its last resting-place. 'All wash!' would be the miner's first exclamation upon viewing these deposits, supposing the ground to be the same in its general characteristics as that above and below. It was worked during the summer of '65 in the usual way—that is, by shovelling into sluice-boxes. The first gravel stratum resting upon a compact body of argillaceous cement, from one and a half to two feet thick, which was long mistaken for bed-rock, it is not surprising that months rolled by before even a conjecture was indulged in of the grand fortune that reposed below. But the important fact was at last accidently revealed. The circumstance of having to cut deep below the supposed pay level, in order to properly grade the sluices, was the key that unlocked the Pactolian secret—this still unmeasured vault of gold. The intervening cement layer was removed, disclosing an indefinite depth of gravel the same as that which had been so profitably mined above. This fortunate and unexpected discovery calling for a more effective mode of raising the gravel, all the available mechanic principles—wheel and axle, inclined plane and pulley, with horses for the motive power—were called into requisition. Weeks and months are thus passed, working night and day, and no more indications of bed-rock than at the beginning—the gravel is the same, the gold the same, and the prospects have not perceptibly varied. Pay undiminished and still no bed-rock, point after point of the claim is abandoned, owing to the vast accumulations of 'tailings,' when the 'horsewhim' plan must give way to a yet more effective system. A steam engine of ten-horse power was imported, and by means of it this apparently bottomless placer claim is now yielding regularly from fifty to sixty ounces of gold dust every twenty hours' working. The engine is planted near the middle of the claim. About thirty-five feet above the furnace a platform has been constructed, from which the dirt is 'dumped' into the sluice-boxes. Eighty cubic inches of water is used, it being brought to the platform from Helena ditch, or 'the big ditch' through a Z-shaped flume; following the angles of its elbows, it must be between five and six hundred yards in length. Two parallel railroad tracks extend down an inclined plane to the base of the bank from which the dirt is now being washed. They are, at present, about two hundred feet in length, but additional rails are being laid as necessity requires. Four cars are employed, two on either track, and carrying, it is estimated, three-quarters of a ton. A car-load of dirt is washed every minute and a half, or two hundred loads each run of five hours. The claim is worked night and day. Thus we see that our little steam giant, consuming less than six cords of wood a week, transports over an up-hill grade six hundred tons a day—the cars traveling in the performance of the task a total distance of sixty-two miles. The 'pay streak' now presents a square front from thirty to thirty-five feet deep, and no underlying bed-rock yet, nor the slightest indications of any. One of Woodward's steam pumps—brought into the country for hydraulicing by the 'Nelson Mining company'—has been procured, which keeps the excavations free of water. Mr. Barnum, one of the proprietors, informed me that it has not been necessary to use it over three hours a day. It is capable of continuously raising twenty cubic inches. The weekly expenses average twenty-two hundred dollars in currency, and the net proceeds six thousand in gold—the proprietors' profits being twenty thousand dollars a month. Forty-five men are constantly employed. About one hundred thousand dollars was taken out of the claim last year; that amount will, of course, under the improved facilities we have essayed to describe, be greatly increased the present. Now, how long will this precious current continue to flow? No underlying bed-rock, we said, had yet been reached; a perpendicular one, however, has. At the upper end of the level where the workmen are engaged, it is found to descend as abruptly as the side of a house—inclining neither in nor out, its course is directly downward. This is all that is at present known; theory alone can further go. The secondary mountain formations of the vicinity, or foot-hills, have their furthest termination right here—their outlines being those of the letter V, at the point of which is this remarkable claim. I can draw no self-satisfying conclusion from the fact; but a friend insists that a great quartz lode once veined a mountain there, which, through the vicissitudes of fire, flood and glacier, was leveled to the present long-extended ridge; and that a deep gorge at its base, known to moderns as 'claim No. 5 below,' was enriched by its wreck. This singular notion is so fixed in his mind—and his reputation as a quartz miner is not mean—that he actually avowed his intention of exploring for what is left of the vein. A more probable theory is, I think, (because its premises are more evident,) that 'Last Chance Gulch' is the bed of an ancient river, and the sudden 'pitching of the bed-rock' under consideration the only remaining monument of a once majestic water-fall. Perhaps a primitive Niagara thundered the skies of this vicinity, which, through succeeding convulsions of nature, was finally buried in a golden sepulchre."..... We condense the following items of news from the same paper: Mining operations in the Silver Bow county are very active. One of the most important enterprises now claiming attention in that quarter, is the large ditch being constructed by Messrs. Geo. Searle, W. E. Harris, and E. T. Owen. This ditch will convey eight hundred inches of water from Basin Gulch, a distance of sixteen miles, to the very extensive mining grounds in the vicinity of Silver Bow. Pioneer, I. X. L., Herrings, Morgans, and fourteen other gulches, besides numerous bars, upon most of which the diggings are shallow and which may be worked by hydraulics as well as sluices, will thus be supplied with an abundance of water, and be put in condition to furnish remunerative employment, more than wages at least, for a large number of men for years to come. Some of the ground which will be rendered workable by this ditch is extremely rich, the valuable mines at McMinneville, which the Silver Bow and Rocker Ditch cañon covers, being among the rest. The survey for this ditch is already completed and the nature of the ground over which it passes is such that the work can be easily and quickly done. Its estimated cost is between $8,000 and $10,000, and it is proposed to have it ready by the 10th of September next, when it will furnish other evidence of the almost inexhaustible nature of the mines of Montana when properly provided with means by which to work them. At Diamond City everything is reported highly prosperous. King & Gillett's bed-rock flume, being provided with an abundance of water, is progressing finely. At the present time it is pushing its way up the gulch through a bank of earth thirty feet high at the rate of fifty feet per day. Boulder bar and gulch are yielding good, although not extraordinary results. It is expected that work will be resumed in the main Confederate gulch in a month or six weeks, as the water will, probably, by that time, be sufficiently low to permit of the renewal of operations. From Capt. Hillis' claims on the Last Chance bar immense quantities of dirt are being washed away by means of hydraulics. It is expected to scrape up a rich harvest of gold from the bed-rock at the proper season. On Gold Hill some $3,000 were cleaned up some ten days ago, after a short run. When it is considered that this run was made upon the rim-rock, we cannot wonder that the result named proved highly satisfactory to the owners of the claim. In Montana gulch the great flume has reached bed-rock, and the powerful hydraulics are washing down the golden sands at a rapid rate. No clean-ups have yet been made. Just below the mouth of Cement, in the upper portion of Confederate gulch, the ground has recently been proved to be exceedingly rich, and, although a superabundance of water prevents active mining operations there for the present, claims are held at a very high figure. One hundred feet of ground situated in that vicinity lately sold for $2,800, and John Kline, a few days since, refused an offer of $10,000 for his claim of 300 feet. A claim just below that last named, was sold about a month ago for $1,800. The purchasers ran a drift nine feet in length, and in that short distance took out gold enough to pay for half of their purchase. This simple statement shows conclusive proof that the ground in the upper portion of Confederate will yet yield as largely as that which has almost caused the realization of fairy tales in the lower gulch. The road from Diamond City to Thompson's gulch, 15 miles in length, by way of Cement gulch, is nearly completed. Altogether everything is prosperous at Diamond. Although the great abundance of water prevents the working of a great portion of the ground at present, still it is an established fact that the gold is there, and a favorable season is only awaited before opening the doors of this storehouse of wealth..... Dr. Tiernan from the Gold creek mines, reports that everything is flourishing in the diggings, notwithstanding the croakings that have been heard concerning their worked out condition. There are now at the mines mentioned, in the neighborhood of five hundred persons, some fifteen families being reckoned among the number. There are nearly one hundred buildings, among them four stores, five saloons, one restaurant, and one boarding house, besides the usual other appurtenances of a mining camp. On Bratton's bar, in Pioneer gulch, some ten claims are being worked by means of hydraulics, and are paying from $1,500 to $2,000 per week, with six men working. As many more claims are being opened and are thought to be equally as rich. One of these latter, comprising 400 feet of ground, is the property of Messrs. Byron & Tiernan..... Mr. Sackett, from Georgetown, says that that locality is showing good results during the present season. One day last week, Vandine, Peck & Co., cleaned up from a single day's run, with two men shovelling in, $200 50. On several other occasions they have cleaned up in the neighborhood of $180, with the same number of men, and in the same length of time. Nearly all the other claims, save that above mentioned, are being worked by means of ground sluices, and are paying on an average, ten dollars a day to the hand. Marley's ditch, which is to bring water a distance of four and a half miles from Canyon creek into Howe's gulch, directly opposite Georgetown, will be completed this week, and by means of it some of the richest ground in that vicinity will be worked. The ditch has several large flumes, one of which, 700 feet long and 70 feet high, is a beauty in its way.... Rich pay has recently been struck at the upper end of New York gulch, in ground which it has heretofore been impossible to work for the want of proper drainage. Tunnels have now been run to it, and prospects of forty cents to the pan have been obtained on the claims of Apple, Wilkes & Co. It is thought that ground that has not been previously worked in upper New York gulch will pay for a distance of four miles. The bed rock is from forty to sixty feet below the surface, and for this reason the claims referred to have not been sooner opened. Parties just in from New York gulch predict a lively summer there..... Mr. J. E. Stager furnishes the following items concerning Cave gulch: About fifty men are now employed in the mines referred to, there being plenty of water for the use of all the claims. Labor is, indeed, somewhat scarce, and a few more men could find employment at six dollars per day in gold. The average pay which is being obtained by the miners is from fifteen to twenty-five dollars per day to the hand. About eighteen companies are at work upon the bar, which is not yielding less than $5,000 per week. Some trouble with water has recently been experienced..... At French bar, on the 1st July, the Canard company cleaned up, after a forty-eight hours run, with four or five men at work, $1,900—a result highly satisfactory to the claim owners, and a practical demonstration of the wealth of French bar. Both the ditches have been repaired, the smaller one being full, and the large one running four hundred inches of water. All the miners in that vicinity are doing well. A number of flumes have been blown down by the recent heavy gales, but will soon be up again.

## Colorado.

Mr. Hollister writes in the Denver *News*, of July 8: "Mr. Geo. T. Clark, agent of Wells, Fargo & Co., at Central City, informs us that the gold and silver shipments through his office last week amounted in value to over $62,000. Three months ago, in writing to the AMERICAN JOURNAL OF MINING, we predicted that the production of Gilpin county would amount to $200,000 or thereabouts, per month, by the middle of the season. It is doing better than that before the season's operations are fully under way."..... The *News* also tells of the prosperity of Colorado in the rejuvenescence of the town of Black Hawk. It says: "About two years ago times became so pinching in the Gregory mines that poor people found it hard to live in Black Hawk. The Black Hawk *Journal* moved to Central City, the prospectors and miners who had always made Black Hawk their headquarters scattered out to Jim Creek, Gold Hill, Georgetown, etc., and subsequently to Cheyenne, until, at the opening of the present season, there were fifty untenanted houses in the town, although there was $3,000, in the treasury, and city orders were at par. From some of our old Black Hawk friends, down in attendance on the Fair, we learn that the town is recovering its old prosperity. The mills are all at work, have had and will have before long an addition of six or eight to their number; the water power of North Clear creek is being improved, the streets are crowded constantly with wood and quartz teams, labor is in strong demand at advancing wages, and although there is no building, except of mills, there is a good deal of repairing and re-occupation of old houses. When the Consolidated Gregory, Black Hawk, and three or four large companies get to mining again, there will soon be no empty houses in Black Hawk, peculiarly *the* mining town of the Territory as yet."..... The same paper, July 15, has the following notes on mining in the South Park: "On all the fan-like affluents of the Platte the old companies are at work, making from six to ten dollars (gold) per day to the hand, and new and very extensive mines have been and are being opened. The Rockafellow mine, on Tarryall creek, just below Hamilton, is the best looking placer mine we ever saw. It is on the south bank, which is enough higher than the creek to easily clean the bed-rock and carry off the tailings. The entire water, now some 2,500 inches, is brought out above, carried aloft in a flume, and delivered about forty feet from the surface of the bank, through three hydraulic hose. Each of these supplies a flume and works a strip of ground thirty to forty feet in width. Two men, with one hose, wash out a plat about forty feet square in a week, realizing from three to six and nine ounces. The dirt is six to twelve feet thick, most of the gold being found within two feet of the bed-rock. Messrs. Foster & Pease lease the mine of the company, a Philadelphia organization, which furnishes everything, and has 40 per cent. of the gross proceeds. Ten miles below Hamilton Dr. Harlan, in company with some Eastern gentlemen, is opening a mine which seemed to us comprised ten thousand acres. It is bounded on the north by Tarryall creek, on the South by Park gulch, which issue from the mountains near each other, spread apart about four miles, and then come together again ten miles down, making the mine oval in shape. The whole of Tarryall creek is carried in a large ditch some two miles across the divide between the two, and delivered in Park gulch. We rode the length of this mine in a buggy, on an easy trot, in about an hour and a half, and saw dirt from prairie dog-holes prospected on different parts of it. We never knew before that that animal could be of service to man. But after seeing a shovel full of gravel brought to the surface by him, prospect from thirty to fifty cents in coarse gold, we are more convinced than ever that nothing is without its use. At the mouth of Park gulch a pit has been opened and a sluice put in. When first started, leaking some of course, three men shoveled into it one afternoon, exhausting a pit perhaps seven by nine feet in size and two feet thick. The clean up was one ounce, seven and a half pennyweights—worth more than thirty dollars. Holes have been sunk to the bed rock on various parts of this mine, widely separated, on various parts of which, prospected in our presence, yielded astonishingly—from thirty to fifty cents to the pan. Whether it would pay to wash the entire upper part of the Park, for a distance of ten or fifteen miles from the mountains, is perhaps questionable, but we are inclined to think it would. Going from Tarryall to Fairplay, which is on the main Platte, and on a bar of gold-bearing gravel from seventy to a hundred feet in thickness, the extent of the deposit is equally wonderful. Beaver, Buckskin, Sacramento, and Four-mile creeks are tributaries of this Platte, and on all of them companies are at work, and doing well. Beaver is two or three miles north of Fairplay, and Four-mile is four miles south. The former is being worked by Messrs. Pease, Freeman, and Stearns. The bed-rock flume is now a mile long. They are ground sluicing through this, and also mining with most satisfactory results on the divide between Beaver and the Platte toward Fairplay. On Buckskin creek, Messrs. Tabor, Gross, Ware, and others are ground sluicing through a long flume, making it pay well. At the mouth of Sacramento creek, Messrs. Hall and McLaughlin are running a sluice, and above, Messrs. Wiley, Tabor, McKane, Lechner, Albus, Miller, & Co., are getting in a sluice and preparing for big work as fast as so large a company well can do it. At Fairplay, Messrs. Coleman and Anderson are running sluices, taking out from twelve to twenty ounces per week with three or four hands each. Mr. Lowe's old mine, above town, north bank, has been sold, through Mr. H. S. Hitchcock, to a Chicago company, who have enlarged the old five-mile ditch to a capacity of 2,000 inches, with which they are tearing down the bank at a tremendous rate. They intend to put in three or four hydraulics as soon as possible. Judge Castillo's mine, on the opposite bank, we believe, is not working now, but it will be soon. On Four-mile Mr. Lowe has just completed a ditch six miles in length, carrying twenty-five hundred inches of water, opened a pit, and begun sluicing, cleaning up six and a half ounces the first week, working three or four hands. The gold is very pure, coining eighteen or nineteen dollars an ounce. It is Mr. Lowe's intention to put in three flumes as soon as he can get the lumber, and he expects that each will return him a pound of gold per week. Mr. Lowe is a fair illustration of what steady industry will do. He went to Fairplay a few years ago with nothing, but worked faithfully and saved his money. He has accumulated $20,000 to $25,000, and has a better chance to make money now than ever before. Throughout all this region wages are high and help scarce. Mr. Hitchcock says he would like to employ thirty hands instead of half a dozen, and everybody else carrying on business tells the same story. Perhaps this evil cannot be remedied except by the building of a railroad into Colorado, for we know of no idle men anywhere. One thing is certain, there is profitable employment placer mining in the South Park for a hundred men where there is one at work, for the next twenty generations. It is hard work, that is all there is against it. Were just such diggings to be reported from Alaska, or some other inaccessible, inhospitable region on the other side of the world, what a rush there would be for it! We should expect to lose lots of speculators, even from Colorado"..... From files of the Central City *Herald*, to July 15, we take the following items of mining news: "Wells, Fargo & Co.'s express, this morning, amounted to $28,000, of which Warren Mussey & Co. shipped 836 ounces 17 grains—currency value, $17,550. The Rocky Mountain National Bank shipped 484 ounces. This does not include the shipment of Geo. T. Clark & Co., which we did not ascertain..... The Consolidated Gregory company have torn down the smelting furnaces formerly used by Lyon & Co., and have moved the building which covered the same, around some eighteen feet. It is expected that everything will be in readiness upon the arrival of their stamps and other machinery, so that there will be no delay in placing them in position..... Mr. E. D. Fritts has commenced work again on the Ethan Allen lode, Russell district. In an early day this lode paid handsomely for working. It is his intention to prosecute and develope it most thoroughly. May success crown his efforts..... The full capacity of the New York company's mill—35 stamps—is this week being run on ores from the Pewabic, Bates, Gunnell, Caste and No Name lodes. The latter is a new discovery, and prospects very rich..... Prof. Hill has the buildings, which were burned down a few weeks ago, replaced by others which are much more substantial, and arranged with a view to convenience. His reduction works are running night and day..... Mr. Walker's new 18 stamp mill is ready for the reception of stamps. He has been delayed on account of castings. He expects to have his mill running by the first of the coming month..... The La Crosse mill, Nevada, has started up. This mill has been idle—until this spring—for some time..... Tierney & Arighi, after having prosecuted work on the Mack lode, Gregory district, for the past three months, without pay, at a depth of 148 feet, uncovered a body of iron sulphurets and galena mixed, which averages ten inches in width. From a cord taken out soon after striking the ore vein, which was run in the Arighi mill, they received five and a half ounces gold. They now have out about five cords, which they expect will yield at the rate of nine ounces gold per cord..... From Mr. Stoltz, of Trail Creek, we learn that the parties who are working the Freeland lode, have run a level in upon the line of the lode from No. 1 up to No. 4, at which distance they have struck the vein at a depth of a hundred feet. They now have out ten cords of quartz, and have made a run, through arastras, which yielded $100, gold. In running this distance, three shafts have been drifted through. The crevice now shows a 20-inch ore vein. Also that Frank Cramer has a force of hands at work on the Coyote lode, and has commenced putting in three large-sized arastras. Mr. Stoltz feels confident that the few now operating along this creek will eventually bring these mines out..... Hope, Laighton & Co. have started the 12-stamp mill formerly owned by Wm. Sbirer. Chase gulch, on ore from the Mountain Queen lode, which they are working. This lode was discovered in '64, since which time it has not been worked until quite recently. We understand that they are taking out good pay."..... The Georgetown *Miner* (July 9) says Superintendent Herrick, of the Smelting Works, has commenced the erection of a new cupel furnace. He proposes to make some much-needed improvements that are invaluable to the successful operation of the works..... Work has been resumed on the Parr lode, situated on Sherman mountain, a short distance below the Hise.... The Golden City *Transcript* (July 15) says: "We are more than

glad to announce that works for the reduction of our copper and other ores found in this immediate vicinity, are to be erected here in Golden City at once. Mr. Snyder and Mr. Driggs, two gentlemen lately from New York, in connection with parties here, are to inaugurate the enterprise. An eligible site for their works has been selected just above the pottery, which is peculiarly adapted to the purpose, being in close proximity to the coal bank now opened, and where unlimited water-power is available. The works to be erected now will cost $10,000, and will be enlarged as occasion requires."....The Central City *Register* (July 16) says that Messrs. Samuel Cushman and L. H. Walcott have rented the Lexington mill, and have commenced running it. Also, that several new and promising silver lodes have recently been discovered on Left Hand Creek, near Gold Hill. Messrs. Gillespie and Stewart have some fine-looking surface ore from the Gray Eagle lode, which they recently discovered there.

## Idaho.

Active preparations are in progress for extensive mining operations on War Eagle and Oro Fino mountains this summer. The Owyhee *Avalanche*, July 4, says: The splendid hoisting shaft on the Poorman will soon be completed, and it will not be long till the shrill steam whistle will be heard on the works. Then a large number of men will be employed and a large amount of ore taken out—probably more than enough to keep the Owyhee mill in constant operation the year round. An experienced mining superintendent, named Buckminster, recently from Virginia City, Nevada, has taken charge of the Golden Chariot mine. The new hoisting works are on the ground, and will be ready to steam up in eight or ten days. Mr. Hyde continues foreman in the mine. Large quantities of fabulously rich ore continue to be taken from the Ida Elmore, although the mine cannot be worked any deeper till the arrival of the new engine, which will be in about two weeks. The small engine now in use will then be discarded and set to work on the Surplus Oro Fino. We are informed that the Oro Fino hoisting works will be in order to-day. Owing to the anxiety of the company to get to work, the engine has been put up in the open air, but will be enclosed in a suitable building immediately. A commodious blacksmith and carpenter shop will be among the useful appurtenances at the works. Mr. Patrick McMahon, an energetic and experienced miner, is now foreman of the mine".....The same paper says that Messrs. Clark & Basford have commenced work on the Glenbrook mine. A shaft is down on the ledge forty feet, seventy-five or a hundred yards a little west of north of the new shaft now being sunk on the Poorman. The vein shows a width of from eight to ten inches, and somewhat resembles Poorman ore.....Mr. H. Johnson, of Chicago, has bonded for ninety days a thousand feet of the Mississippi ledge, and has commenced work prospecting it with a view of purchasing.....In Flint district the Rising Star company are busily engaged in erecting their new steam hoisting works, recently arrived. The ore that is now being taken from the mine shows large quantities of black sulphurets and beautiful ruby silver. Mr. Sandhorn has sent ten tons of average ore to Virginia City, Nevada, where, we understand, it will be worked and tested by the chloridizing process. Eves' saw mill is turning out lumber for the 30-stamp mill to be erected this summer. Mr. Black is repairing his mill and will soon have it in running order.

## Canada.

Our worthy friends in Madoc are again in a muddle. The operations of the Richardson and Bay State mine and mill proprietors have completely mystified them, and they scarcely know what to believe or think. They were led to expect big results from the running of the Bay State mill on Richardson and Bay State ore, but after a month of painful anxiety they have been disappointed. It appears from the following account taken from the *Mercury*, of the 25th ult., that the mill has shut down, and that the results of its running, whatever they may have been, are not to be made public. Says the *Mercury*: "Instead of being able to announce the results of the 'cleaning up' of the ore of the Bay State mine at its mill, and the returns obtained from the Richardson mine ore sent there to be operated upon, we have to record the unwelcome fact that the works were suddenly closed in the early part of this week. Under the circumstances, those who have looked forward with interest to an official report of the yield of gold per ton of rock may, we think, wait not 'a little,' but a good while 'longer;' for unless the rumors flying round are more than usually void of truth, the actual amount of gold produced by the system of reduction adopted was precisely *nil*. Whether the ore or the amalgamating process was to blame, are matters we leave for those most directly interested to settle for themselves. The disappointment of those who had pinned their faith on the success of the Bay State mine process must be great, as some have declared their belief that if it did not bring out the gold nothing could or would. The learned and scientific 'Doctor,' who was going to put the 'played-out' geologists to shame, has, it is reported, resumed his travels, from which he so disinterestedly diverged to investigate and develop this region. It is also stated that before he left the scene of his labors for months past, he acknowledged that, to his own astonishment, he had found himself, for the first time, entirely mistaken in his estimate of the character of the rock! May this prove entirely satisfactory to those who, in unbounded reliance on his knowledge and scientific attainments, have invested in the speculation. This disappointment, following so closely upon others which have attended the progress of gold mining in this region, it is felt will give another serious check to public confidence, which it will take some considerable time to overcome. The full force of it is recognized even by those who have satisfied themselves of the presence of gold hereabouts in what they believe to be paying quantities; but with still unshaken faith they look forward to the time when further exploration, and greater practical experience in manipulating the ore, will demonstrate the correctness of their anticipations."

# IRON.

[FROM OUR MISSOURI CORRESPONDENT.]

## Missouri.

### Synopsis of the Iron Smelting Business.

AMOUNT OF CAPITAL STOCK, NAME OF COMPANY, NUMBER OF FURNACES, BY WHOM OWNED, KIND OF ORES, FURNACES IN BLAST, MAKE OF PIG IRON, PRESENT AND PROSPECTIVE IRON BUSINESS OF MISSOURI.

The American Iron Mountain Company has a capital stock of $1,000,000; 40,000 acres of land, and two charcoal furnaces. There is a town of five hundred inhabitants near by. Charcoal to the amount of 700 tons per month is hauled a distance of eight or ten miles. The mountain is composed of blue specular ore. It is in fact a low, conical hill, three miles in circumference at the base, and one hundred and fifty feet in height above the surrounding valleys. Three-fourths of it is owned by Messrs. Harrison, Chateau, and Vallee. It is situated eighty-six miles from the city of St. Louis. The I. M. R. R. track runs to the top of the mountain through an open cutting. Ore can be loaded upon the cars at the rate of fifty cents per ton. It is shipped largely. After this season only one furnace will be run. The estimated value of the company's property amounts to $3,000,000 This is, *par excellence*, the most valuable iron property in the country. The Pilot Knob Iron Company has a capital stock of $1,000,000 and 40,000 acres of land. The Iron Mountain, known by the name of Pilot Knob, is near the centre of the land property. There are here two charcoal furnaces and a small town. Their coal is hauled a distance of eight or ten miles. This property is six miles south of that of the American Iron Mountain Company's, and is the present terminus of the Iron Mountain R. R. Pig iron is produced at the rate of 800 tons monthly. Ore is shipped in large quantities. The Knob has a circumference at the base of about two miles, and an altitude of 500 feet above the valleys. At its apex are found masses of ore loosely piled together. Some of them are as large as a house. Shepherd mountain, an oblong porphyritic mass, containing magnetic iron ore, belongs to this company. Messrs. Lucas and Mekum, of St. Louis, and E. D. Morgan, of New York, are the owners of this property. It has an estimated par value of $1,000,000. The Irondale Furnace is situated at Irondale. It is fifteen miles north of Iron Mountain. It is a charcoal furnace with a capacity of twenty tons. There are 10,000 acres of timber property connected with the Furnace property. Ore from Iron Mountain and from some veins of hematite in the vicinity supply the furnace. The property is owned by the Messrs. Harrisons, and has an estimated value of $2,500,000. They haul their coal a distance of three miles. The Merrimac Iron Works are six miles from the S. W. P. R. R., and one hundred and twenty from St. Louis. A water-power blast is in use. The furnace has a capacity of ten tons, and is supplied from a iron of specular ore in limestone of the Silurian age. The company own some 10,000 acres of timber. They haul their charcoal a distance of five miles. Some blooms and hollow-ware are made. The ore yields 65 per cent. This property is owned by Messrs. James & Co. It has a value of $300,000.

The Moselle Iron Works were started in 1867, and are 50 miles from St. Louis, on the S. W. P. Railroad. To this property belongs 10,000 acres of timber land. The furnace, of a capacity of 16 tons, is run on specular ore, obtained along the line of the railroad in Phelps county, and on hematite, mined near the place of smelting. The property is owned by Messrs. Powell & Co. of Ohio. It has an estimated value of $300,000.

The furnace at Carondelet started a short time ago to experiment in smelting Missouri ore with bituminous coal. The coal used is brought from near Springfield, Ill. The ore is obtained from Iron mountain and Pilot Knob. The result is a complete success. The furnace is owned by Messrs. McClernan & Co. of Pennsylvania.

These furnaces furnish to the market 2,700 tons of pig iron monthly. In addition, the Iron Mountain and Pilot Knob company ship a large quantity of ore to Pittsburg by way of the Ohio river.

There are very large, rich, undeveloped specular and hematite iron ore fields 60 miles west of Iron mountain, where the ores are on a scale of almost as great magnitude as at the mountains. This ore, when reached by railroads, will be shipped to the west of the city, and smelted. The coal fields about the city have only been tapped along the edges. The large railroad business now being inaugurated in this State will create a demand for a large amount of iron during the next two or three years. Iron men will undoubtedly find this a favorable time to secure property and enter into the iron smelting business near this city.

The following table, which is in part a recapitulation of what has been said, may be found good for reference:

TABLE OF IRON FURNACES IN MISSOURI.

| | Dis. fr. city. | Made per mo. | Ores used. | Fuel. |
|---|---|---|---|---|
| Iron Mt. Co. | 86 miles. | 700 ton. | Specular, 60 pr. c. | Charcoal. |
| Pilot Knob Co. | 92 " | 600 " | do 45 " | do |
| Irondale | 70 " | 500 " | do & hem. 50 " | do |
| Merrimac | 120 " | 250 " | Specular 65 " | do |
| Moselle | 50 " | 500 " | do & hem. 50 " | do |
| Carondelet | 6 " | 250 " | Specular 50 " | do |

## California and Oregon.

The San Francisco *Mining and Scientific Press*, commenting upon Oregon iron and the arrival in that city of 1,000 tons of it, remarks: "The company evidently mean business, and will make regular shipments to the full capacity of their works. The manufacture of pig iron on this coast is a want which has long been felt, and although this establishment will be able to supply only a small portion of the demand, its successful inauguration will eventually lead others into the same manufacture, until we shall be placed quite independent of the East for this heavy and important item of consumption. The rolling mills of this city are nearly ready to go into operation. These two enterprises will form important additions to our rapidly increasing industrial productions. Their successful establishment will make still more apparent our need for converting furnaces, so that we may make our own wrought iron and steel. Each will be dependent upon the other, and will unite in a demand for a thorough examination and development of our immense resources for the production of raw iron. The time is not far distant when we shall manufacture the chief portion of our steel, and all our iron—bar, railroad, and pig—from our own mines."

# OIL.

## Pennsylvania.

A correspondent of the New York *Tribune* writes from Oil City. The possibility of another speculative movement in oil lands does not seem remote. The commencement made this season is a fair indication. For the last three years general stagnation has reigned supreme throughout the entire region in all branches of business, caused by the collapse of the hundreds of oil companies, whose working capital consisted of a President, Board of Directors, an office-room, and a nice young man of "fast" proclivities as Superintendent. So long as credulous people could be found to buy the stock, watered to an extent that would certainly excite the admiration of homopathists, these worthies lived in clover. The bubble burst at last. The oil region has recuperated, and is now being operated upon sound business principles. Lands heretofore deemed worthless for oil-boring purposes are in good demand, and the extent of territory now in course of development is fully quadruple in extent of that of all the previous years. This development is being made by the old operators to a great extent, and in all portions of the oil fields, oil is being obtained in paying quantities from a larger per centage of wells than in any previous year. Lands that were freely offered one year ago at prices ranging from $10 to $100 per acre, are now held at $1,000 to $1,200, and $3,000 per acre is being freely paid at Pleasantville oil field. The excitement is intense, but has taken a decidedly practical shape. Lands are bought now for development and not for speculation. Five dollars per barrel for oil at the wells pays the producer very handsomely for producing and development. Improvement in machinery and practical knowledge has materially improved the chances of obtaining paying wells in the last few years. At present the demand is fully equal to the supply, and every effort is being made to keep up this last to an average. Those versed in the statistical history of this business tell us that to keep up this present daily production it is necessary to have not less than 300 new wells going down, or rather in process in drilling. Oil Creek Valley is effectually drowned out by water, and the bluffs now supply the greater portion of its production. The close proximity of the wells in many of the choice producing localities of the past season has suffered from a similar cause. Wells interfere and flood each other, and then the territory is held practically worthless. No one feels inclined to incur the trouble and expense of plugging up or casing the wells, and pumping off the water, so long as an abundance of new territory is close at hand, where no annoyances of the kind exist, at the commencement at least. Water-courses and gas-veins have generally the same connections below the earth's surface that streams do above the same. At least such has been the writer's experience in the oil regions. The general bearing of oil courses is now definitely ascertained to be northeast and southwest, and can be traced the entire distance of producing localities by this general direction, with occasional spurs like the Pithole Oil Region. As all these facts are being ascertained, the oil-miner can operate with more certainty than in former years. This state of affairs will be still further simplified by practical skill, until oil-mining can be prosecuted with the same degree of certainty as that of any other kind of mining. The principal new oil fields are Pleasantville and locality, Shamburg, and the territory lying adjacent to, and parallel with, Oil Creek, extending from Reno to Petroleum Centre. Good wells have been struck at various points in this range, and the work of development is being vigorously prosecuted. Never to my recollection has general business been in a more prosperous state, or has the future of the oil region looked so bright. It would be well for the holders of oil stock to be looking up the same, as those kind of lands are being constantly brought into market, and will command fair prices. Oil on the creek and at the wells in different localities is being sold at $5a $6 75 per barrel, and commands at Oil City $6 per barrel. The demand is good, and the tendency still upward.

## Sweden.

Shafts are sinking on the Osmond mountain, in Sweden, for the working of certain petroleum springs which have been discovered. According to the report of Captain Lundborg, who is at the head of the undertaking, a depth has been reached of two hundred and thirty-three feet. The materials dug out are impregnated with that species of petroleum known in America as surface oil, and which is of a deeper color than that generally used in Europe. A determination has been come to that the boring shall be carried to six hundred feet, where the real petroleum is presumed to lie in great abundance.

# COAL.

## Pennsylvania.

A correspondent writes as follows of the Tioga county coal mines: For the picturesque beauty of its scenery, and the fertility of its bottom lands, the valley of the Tioga river is not excelled by any in the State. At Blossburg you are in the coal region; here the road proper terminates, and three short coal roads come together, one leading to the Morris Run, one to the Fall Brook, and one to the Arnot mines. These coal beds or drifts are located on different ranges of the same general range of mountains, and contain the best quality of coal for blacksmithing that is found in the State. At each works there are regular coal villages, stretching away for miles from the centre of the operations where the coal is loaded into the cars for transportation. Our citizens in the counties below the Northern Tier are so absorbed in the thought that the *great* coal fields of Pennsylvania contain all the coal of the State, that they are hardly aware of the amount sent from these counties to the Northern and Western markets. It certainly is small compared with the immense quantities mined and shipped from the collieries in the more southern counties, and yet it is no inconsiderable item in making up the grand aggregate. From these three mines in the neighborhood of Blossburg are shipped daily three thousand one hundred and six tons, all of which is transported over the Tioga road to Corning, whence it is sent to the Eastern manufacturing cities of New York, Northern Canada, and West as far as Chicago and Kansas. The Morris Run mines are owned by the Syracuse Salt Company. This company sends off more tons per day than both the others. The coal is used exclusively for evaporating the saline waters of those extensive salt manufacturers, and is said to be the best coal for that purpose that has yet been found in the State. Fall Brook mines belong to the vast estate of the late Hon. John Magee, of Watkins. The works here are conveniently arranged, and the proceeds very remunerative. The Arnot mines are owned and operated by John Arnot, of Elmira. The country around the coal fields is a perfect rocky barren; when the coal is exhausted the whole property will be valueless. There are other deposits of coal in Tioga county which have not yet been developed to any great extent, as there are also iron mines along the Tioga valley.

**The Coal Miners' Strike.**—From all accounts the strike movement in Pennsylvania is very nearly come to an end. In many localities work has been resumed at the *old* rate of remuneration, regardless of the eight-hour law, and in other localities it would appear that compromises have been effected. It is probable that the action of the miners of Scranton and Luzerne counties will have the effect of completely squelching all further efforts at striking in other counties, and we may expect soon to hear that work has been resumed all over the State on the old terms, as in those localities. We gather the following facts from our exchanges in the various coal districts in relation to the existing state of affairs: In the Schuylkill region it is said that the collieries are, with two or three exceptions, standing idle, and no movements, either on the part of the operators or men, looking to a resumption of work, are heard of. Pott's colliery, and Oliver's also, have resumed operations. The men, it is stated, get their own terms at these collieries at present, it being absolutely necessary to employ them in order to supply the furnaces with coal. The resumption of work at these collieries gave rise to the report that the miners generally of Schuylkill county were resuming work. The operators generally are determined not to accede to the demands of the workmen, and the latter cannot hold out much longer. There does not appear to be much ill feeling between the operators and the operatives, and there is no excitement whatever. All is quiet at Mahanoy City, the men lying listlessly about the town, awaiting developments. At Tamaqua, Whetstone's mine, and the Summit Hill mine they have resumed work on the eight-hour system. The iron works have all gone into operation again on the ten-hour arrangement. In the Lehigh region the stoppage is not so general, although many of the collieries are idle and shipments are light. In the neighborhood of Hazleton the strike is on the wane. The mechanics have returned to work on the old system all along the L.V. R. R., while most of the miners have either commenced again, or are about doing so. A few of them hesitate for fear of violence; but the great majority seem to go on with their work at all hazards, and if outside interference is attempted, to meet force with force. In Luzerne county a similar state of affairs prevail. All the works have resumed operations but the Wilkesbarre Coal and Iron company, at the old time and old rates. It is probable that the latter will be again at work soon, unless interference from abroad shall influence the men to hold out. At Shamokin some of the operators have agreed to the eight-hour system, and seven collieries are now working, but there seems to be no prospect of its general adoption in this region, the majority of the operators alleging that it would cost them more to put their coal in market than can be realized at present prices, and unless the men will work at a corresponding reduction in wages, they prefer to suspend operation until prices advance. The strikers have made no more lawless demonstrations, and all is quiet.

# MARKET REVIEW.

FRIDAY EVENING, July 31, 1868.

**Gold and Silver Stocks.**—Business is dull and prices are barely sustained. Colorado stocks are the most dealt in and rule a shade lower. Nevada stocks hold their own, with a better feeling growing. Prices are quoted:

| | Bid. | Asked. | | Bid. | Asked. |
|---|---|---|---|---|---|
| Alameda Silver | — 60 | — 90 | Kipp & Buell Gold | — — | — — |
| American Flag | — 30 | — 50 | Keystone Silver | — 1 | — 2 |
| Atlantic and Pacific | — — | — 75 | La Crosse Gold | — 33 | 38 |
| Benton Gold | — 25 | — 35 | Liberty Gold | — 3 | — 4 |
| Bates & Baxter Gold | — — | — 75 | Liebig | — — | — — |
| Black Hawk G | 6 25 | 7 00 | Manhattan Silver | — — | 140 00 |
| Bobtail Gold | 1 00 | 1 25 | Midas Silver | — 40 | — 80 |
| Bullion Consolidated | — 60 | — — | Montana Gold | — 41 | — 45 |
| Burroughs G | — — | — — | New York | 1 00 | 1 10 |
| Columbian G. & S. | — 4 | — 10 | New York & Eld'o | — — | 1 00 |
| Combination Silver | 9 00 | 15 00 | Nye Gold | — 2 | — 3 |
| Consolidated Gregory | 4 70 | 4 80 | Owyhee Mining | 15 00 | 30 00 |
| Corydon Gold | — 25 | — 35 | Con. Colorado | — — | — — |
| Edgehill Mining | 3 65 | 3 75 | People's G. & S. of Cal | — 5 | — 15 |
| Empire G | — — | — — | Quartz Hill | 1 10 | 1 15 |
| Gold Hill | — — | 1 00 | Reynolds Gold | — — | — 4 |
| Grass Valley | — 20 | — 35 | Rocky Mountain Gold | — 10 | — 12 |
| Gunnell Gold | — 80 | 1 20 | Smith& Parmelee Gold | 3 75 | 3 85 |
| Gunnell Union | — — | — 35 | Sensendefer | 3 00 | 10 00 |
| H'n G & S. bs | — — | — 85 | Symonds Fork Gold | — — | 1 00 |
| Harmon G. & S. bs | — — | 3 00 | Texas Gold | — — | — 10 |
| Holman | — 4 | — 10 | Twin Riv Sil | — — | 30 00 |
| Hope Gold | — — | — 20 | Vanderburg G | — — | — 70 |

**Copper Stocks.**—Davidson has again receded, otherwise there is no important change to note this week. Prices are quoted:

| | | | | | |
|---|---|---|---|---|---|
| Caledonia C | — — | 5 00 | Gardiner Hill | — 6 | — 50 |
| Canada | — — | — 50 | Hancock C | — — | — — |
| Charter Oak | — — | 1 00 | Hilton | — 50 | 1 00 |
| Copper Falls | 22 00 | — — | Knowlton | — — | 2 00 |
| Davidson | — 40 | — 50 | Minnesota | — — | 4 00 |
| Evergreen B | — — | 10 00 | Mendota | 1 75 | 3 00 |
| Franklin C | — — | — — | Ogima | — — | — — |
| French Creek | — — | — — | Rockland | — — | — — |

**Petroleum Stocks.**—Prices are not so strong this week as last, as our quotations show when compared with those of last week:

| | Bid. | Ask'd. | | Bid. | Ask'd. |
|---|---|---|---|---|---|
| Beuehoff Run | 50 | 1 00 | N. Y. and Alleghany | .... | 2 25 |
| Brevoort | 61 | 1 00 | Pit Hole Creek | 50 | 1 00 |
| Buchanan Farm | 55 | 65 | Rynd Farm | 17 | 20 |
| Central | 35 | 70 | Second National | .... | 15 |
| Cannon Oil | 1 10 | 2 00 | Sherman & B | 50 | .... |
| Empire & Pithole | .... | .... | Tarr Farm | .... | .... |
| House | .... | .... | United Pet. Farms | 5 | 15 |
| Manhattan | .... | 10 | Union | 5 50 | .... |
| National | 2 00 | 3 50 | United States | 2 00 | 2 20 |

**Lead Stocks.**—18 cents is asked for Wallkill, but buyers are only offering 12c.; Brunswick City is held at $10, but itsselling price is not given.

**Miscellaneous Stocks.**—Mer. U. Ex., 24¼; W., F. & Co. Ex., 27¾; Amer. Ex., 45¾; Pacific M., h10, 101¼; Wes. U. T., 35½; N. Y. Cen., 136½; Erie, 69¼; Reading, 95; Chi. & N. W. Pf., 83½; Mil. & St. Paul, 76¼; Ohio & Miss., 30¼; Mich. S. & N. I., 92¾; Clev. & Pitts., 90; Chi., R. I. & P., 110;

**Government Stocks.**—Prices are thus quoted to-day:

| | |
|---|---|
| U. S. 6s, 1881, coupon | 115 @115¼ |
| U. S. 5-20s, 1862, coupon | 114¼@114¾ |
| U. S. 5-20s, 1864, coupon | 110¾@110⅞ |
| U. S. 5-20s, 1865, coupon | 112¼@112⅜ |
| U. S. 5-20s, 1867, coupon | 108⅜@109 |
| U. S. 5-20s, July, 1868, coupon | 109 @107¼ |
| U. S. 10-40s, coupon | 108 @108¼ |
| U. S. 7-30s, July, large | 108½@109⅜ |

**Foreign Exchange** is very dull. There is a somewhat better supply of bills, and remitters are postponing purchases in consequence of the advancing quotations for gold. We quote:

| | |
|---|---|
| London, (prime bankers')60 days' | 110½@110¾ |
| London, (prime bankers') sight | 110½@110⅝ |
| London, prime commercial | — @ — |
| Paris, (bankers') long | 5.13½@5.12½ |
| Paris, (bankers') short | 5.10½@ — |
| Antwerp | 5.16¼@5.15 |
| Swiss | 5.16¼@5.15 |
| Hamburg (bankers') | 36⅛@36¼ |
| Amsterdam (bankers') | 41¼@41⅜ |
| t (bankers') | 41 @41¼ |
| Bremen (bankers) | 79¾@80 |
| Berlin (bankers) | 71⅞@72 |

**Gold** ranged to-day between 145¾145¼.

Money continues in ample supply at 3@4 per cent. on call, and 6@7 per cent. on discounts of prime paper.

The exports of specie from this port during the week ending last Saturday were:

| | |
|---|---|
| Total for the week | $1,393,049 |
| Previously reported | 57,392,854 |
| Total since January 1, 1868 | $58,785,903 |
| Same time 1867 | 36,578,393 |

San Francisco advices state that the shipments of treasure from July 1 to date (exclusive of Government account) have been as follows:

| | | |
|---|---|---|
| July 3—Per New York— | | |
| To China | $298,004 50 | |
| To Japan | 41,100 00 | |
| | | $339,104 50 |
| July 3—Per Oregonian to New York | | 213,319 00 |
| July 6—Per Montana— | | |
| To New York | $460,530 39 | |
| To Panama | 15,000 00 | |
| | | 475,530 39 |
| Total since June 1st, 1868 | | $1,027,953 89 |
| Previously this year | | 19,937,491 65 |
| Total since January 1, 1868 | | $20,965,445 54 |
| Corresponding period, 1867 | | 23,281,424 09 |
| Decrease this year | | $2,315,978 55 |

**Copper.**—Very little business has been done during the week. The sales do not amount to more than two or three hundred thousand lbs., in lots at 24½@24¼c. for Detroit, 23¾@23¾c. for Portage Lake, and 23½c. for Baltimore. In view of the rise in gold holders are very firm.

The London market declined to £68@69 for Chili bars. Our market is below the European prices, and small shipments take place every week.

**Tin.**—No wholesale business. Dealers sell Straits at 23⅞@24c. gold.; Banca, 26¼c.; English, 27c. nominal.

The London market has advanced to 93s. for Straits.

**Lead** is steady at 6¼@6 30-100c. gold for ordinary foreign. Sales for the week 300 tons.

**Spelter** is quiet at 6½c. gold for Silesian.

**Quicksilver**.—76@77.

**Bismuth**—$5 50@6, currency.

**Nickel**—$1 80@2 25.

**Petroleum.**—The market for crude in bulk is quiet, there being but little demand; holders demand 17½c.@17¾c. for spot, and 18c. for the last half August. The market for bonded is depressed, closing quite steady, however, at 34c. for standard white. Free is in fair demand at 35c.@36c. for standard white.

| | | | |
|---|---|---|---|
| Receipts for the week ending July 21 | pkgs. | | 14,273 |
| Exports for the week | galls. | | 1,137,218 |
| Do. from January 1 | do. | | 27,405,599 |
| Do. same time last year | do. | | 17,275,535 |
| The following is the quantity exported from other ports, Jan. 1 to July 25: | | 1868. | 1867. |
| From Boston | galls. | 1,342,582 | 1,201,514 |
| Philadelphia | | 19,455,100 | 14,198,078 |
| Baltimore | | 1,380,993 | 1,074,663 |
| Portland | | 214,508 | .... |
| Total | | 22,393,183 | 16,474,255 |
| Total exports from the United States | | 50,033,532 | 33,598,008 |
| Same time in 1866 | | | 30,026,602 |
| Same time in 1865 | | | 7,662,886 |

## THE IRON TRADE.

NEW YORK, Friday Evening, July 31, 1868.

There is no material change since our last report.

American pig iron is very firm for No. 1 and scarce. No sales of any amount have occurred. 100 1 ex, Allentown at $41; 100 tons 1 ex. Roberts, at $41 for August delivery.

Scoke iron is firm, and with a moderate supply; the demand is light.

Old rails are quiet. No sale to report. Scrap iron is also quiet with no sales to report. American rail mills are very firm at advanced prices and anticipate higher prices and better market.

The market for Pig Iron is firm, with a fair demand and a small stock. The sales have been at $42 00a44 00 per ton for Scotch Garsharrie and other brands No. 1, and $40 00a45 00 per ton for American. In Bar Iron there is no change, with moderate sales. Russia Sheet Iron is firm at 13a14c. per lb. gold.

Imports of pig iron from Jan. 1 to July 25:

| | 1868 | 1867. |
|---|---|---|
| From Great Britain, tons | 6,384 | 18,774 |
| Coastwise ports | 5,881 | 4,580 |

PHILADELPHIA, July 92, 1868.

In Pig Iron there is very little doing, but prices are rather firmer. Sales of Anthricite at $37 00a38 00 for No. 1, and $34 00a35 00 for No. 2. Manufactured Iron unchanged.

## Lehigh Valley Iron Trade.

The following table shows the amount of Pig Iron transported over the Lehigh Valley Railroad for the week ending July 25, 1868, and for the season to that date.

| From | July 4, 1868. Tons. | Total. |
|---|---|---|
| Carbon Iron Co | 50 | 4,995 |
| Lehigh Valley Iron Co | 250 | 6,720 |
| Thomas Iron Co | 240 | 16,050 |
| Lehigh Crane Iron Co | 310 | 14,815 |
| Allentown Iron Co | 430 | 11,040 |
| Robert Iron Co | 110 | 5,530 |
| Glendon Iron Co | 460 | 14,640 |
| Other shippers | 920 | 12,577 |
| Total | 2,770 | 86,367 |

## Market Prices.

NEW YORK, July 24, 1868.

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

| | | | |
|---|---|---|---|
| Am. pig, fy. No. 1, best | $39 00 | @4 300 | |
| " " 2x, fdry | 36 00 | 38 00 | |
| " Grey Forge | 32 00 | 34 00 | |
| White and Mottled | 31 00 | — — | |
| Pure white, for Cal. mar. | — — | — — | |
| Scotch Pig, No. 1, best bd | 43 00 | 45 00 | |
| " " " outside | 42 50 | — — | |
| Scrap Iron, ex. ship | 47 50 | — — | |
| Old rails | 46 50 | 50 00 | |
| R.R. Iron, For., fm Stock gold | 51 50 | 52 50 | |
| R.R. Iron, For., to imp. | 50 00 | — — | |
| " " Amer, at wks. currency | 77 00 | — — | |
| R.R. Iron, Am., deliv'd. | 80 50 | — — | |
| Solid Steel rls. For, gd | 103 50 | 105 00 | |
| Stl rails of any pattern at works, currency | 80 09 | — — | |
| Stl rls of any pat. d. here. | — — | — — | |

| | | | |
|---|---|---|---|
| Light rls for mines &c., at works | — — | — — | |
| Do. delivered here | — — | — — | |
| STORE PRICES. | | | |
| Bar, Swedes, ord'y sizes | — — | 150 00 | |
| Bar, Eng. and Am., rl'd | — — | 95 00 | |
| Bar, Eng. & Am., com. | — — | 85 00 | |
| Scroll | 125 00 | 170 00 | |
| Ovals and half round | 120 00@ | 150 00 | |
| Band | 125 00 | — — | |
| Horse Shoe | 125 00 | — — | |
| Rods, ⅛@3-16 inch | 100 00 | 160 00 | |
| Hoop | 133 00 | 185 00 | |
| Nail Rod, per lb | 9 | 10 | |
| Sheet, Rus., as'd. Nos. | 18¼ | 19½ | |
| Sheet, s'gle, D. & T. com | 5 | 7 | |
| Rails, Eng., gold, ton | 51 50 | 52 00 | |
| Rails, American | 79 00 | 80 00 | |

STEEL.

| | |
|---|---|
| English, cast (2d and 1st quality) per lb | 18 @23 |
| English Spring (2d and 1st quality) | 10 @12¼ |
| English Blister (2d and 1st quality) | 11½ 20 |
| English Machinery | 13½ 16 |
| English German (2d and 1st quality) | 14½ 16 |
| American Blister, "Black Diamond," | 10½ 16 |
| American, Cast, Tool " " | 19½ — |
| American, Spring " " | 10½ 13 |
| American, Macbinery " " | — 13 |
| American German " " | 10 13 |

CINCINNATI, July 25, 1868.

The *Journal of Commerce* says:

IRON.—The market for pig iron remains light, though holders are not inclined to press sales or to submit to any material decline, and we have no alteration to note in prices. The market for malleable iron is also quiet, and horse and mule shoes are in fair request. We quote:

HOT-BLAST CHARCOAL PIG IRON.

| | |
|---|---|
| No 1 Foundry, per ton | $38 00@40 00 |
| No. 2 foundry, per ton | 37 00@38 00 |
| Mill iron | 36 00@38 00 |
| COLD BLAST. | |
| Tennessee | $45 00@ |
| Missouri | 45 00@47 00 |
| Maissouri "Maramec" | 47 00@ |
| Car wheel | 60 00@63 00 |
| Car wheel "Hecla" | 63 00@ |
| BLOOMS. | |
| Missouri | $100 00@105 00 |
| Missouri "Maramec | 105 00@ |
| BAR IRON. | |
| Common per pound | 3¼@4c. |
| Charcoal, per pound | 5@5¼c. |
| SCRAP IRON. | |
| Cast, per 100 pounds | $1 20@1 25 |
| Wrought, per 100 pounds | 1 50@2 00 |

PITTSBURGH, July 25, 1868.

The Pittsburgh *Commercial* says: Under diminishing receipts and very reduced stocks the tone of feeling in all descriptions of medium grade forge and foundry irons is very firm. Sales reported as show but a meagre business, but we are advised of negotiations on foot that will probably clear the market of all medium forge irons within the next few days.

We are reported the following sales:

BANGING ROCK CHARCOAL.

| | |
|---|---|
| 50 tons No. 1 foundry | $43 00—Time. |
| 50 tons No. 1 " | 43 00—Time. |
| 25 tons No. 2 " | 41 00—4 mos |
| 40 tons No. 2 | 40 00—4 mos |
| BITUMINOUS COAL SMELTED FROM LAKE SUPERIOR ORES. | |
| 200 tons Medium close gray | $35 00—Time. |
| ANTHRACITE. | |
| 150 tons red short | $36 00—4 mos |
| 30 tons No. 1, foundry | 40 00—4 mos |
| 30 tons No. 1 foundry | 35 50—4 mos |
| 40 tons No. 1 mottled | 33 50—4 mos |
| 10 tons No. 1, white | P. T. |
| 50 tons No. 3, gray forge | 36 50—4 mos |
| 50 tons No. 2, foundry | 37 50—6 mos |
| 50 tons red short | 35 50—6 mos |

MILWAUKEE, July 24, 1868.

PIG IRON.

Arrivals thus for this season have been very light. But little more than to keep manufacturers employed. While these demands have been much less than last year this time. Prices as below:

| | |
|---|---|
| Buffalo Union, A. 1 | $49 00 |
| " " B. 1 | 46 00 |
| Lake Superior No. 1, charcoal | 43 00 |
| " " " 2, " | 42 00 |
| " " " 3, " | 43 00 |
| Iron Ridge, No. 1, (Sweeds) | 43 00 |
| Scotch | $48 00@51 00 |

CINCINNATI, Ohio, July 27, 1868.

PIG.

The demand is confined to immediate wants as a rule, though some manufacturers are buying more freely. The supply, however, exceeds the demand.

| | | | |
|---|---|---|---|
| Hanging Rock H. B. Mill | $36@38 per ton | —90 days. | |
| " " H. B. Foundry | 38@40 | " | " |
| " " Cold Blast | 53 | " | " |
| " " Car Wheel | 55@60 | " | " |
| Tennessee, Cold Blast | 40@42 | " | " |
| Missouri | 45@47 | " | " |
| Jackson (stonecoal) Foundry | 38@39 | " | " |
| Blooms | 95@100 | " | 60 days. |

## THE COAL TRADE.

NEW YORK, Friday evening, July 31, 1868.

The strike in the coal regions keeps the market bare of coal. None is to be had except in small lots, and at an advance of from 50 to 65 cents per ton above our quotations. We understood that in the Hazleton district of the Lehigh Region, the strikers have begun to work again upon consideration that ten hours instead of eleven, as heretofore, be taken as a day's work.

At the Scranton sale, which took place here on Wednesday last, the coal offered, sold, as we predicted in our last issue, at an average advance of 44c. per ton. We fear that this advance in the price of coal here will influence the strikers of the Schuylkill Region so that they will again march, perhaps in greater numbers, to the other regions, and insist upon it, that the Lehigh Lackawanna, and Pittston miners join them in their strike. We sincerely hope, however, that such will not be the case.

During the past six months we have constantly warned dealers that we were short in supply of coal, and that they would pay a much higher price than then asked, for their winter supply. We even warned them that some such occurrence as that at present transpiring, might interfere with the regular production. We based our calculations upon these facts. In consequence of the unusual severity of the winter of 1867, we calculated from the small stock generally found in the yards and an almost total absence of coal at the various storing depots, that we had consumed at least 300,000 tons more of coal than during the preceding season of 1866, that we consequently had at the opening of navigation, 300,000 tons less in 1868 than we had in 1867. About the first of April, the shipments of this year compared with that of 1867, showed an increase of about 300,000 tons, so that up to this period we had merely made up the extra amount of consumption during the past severe winter. By the 10th of the present month, as our tables will show, we had reached an increase of 626,000 tons; or, after deducting the estimate for last winter's consumption, 326,000 tons actual increase. We have lost during the past three weeks of the strike, 150,000 tons per week, making in all 450,000 tons, so that we now stand, should the strike discontinue this week, and all the men and transportation companies go immediately to work, in deficit 150,000 tons. What, then, are the prospects as regards the probability of the continuation of the strike, and the chances of making up any further losses which may accrue, before the close of navigation. The picture to us looks most gloomy.

As facts present themselves at the present writing, we should not be surprised to see the price of coal in the month of December considerably advanced. We are no alarmists, but "facts are stubborn things." Our advice to dealers all through the spring was, "lay in your stock of coal," A few followed it, and they will reap the benefit of the advance which is slowly and steadily taking place, while those who paid no heed to our counsels, will have to "lay on their oars" all winter, and have the pleasure of seeing their neighbors supply their customers. There is no supply to be had now.

Many have thought they could be supplied by the auction sales. The auctioneer will sell his coal, as will the wholesale dealer, with the proviso, that, as the conditions of sale read "they will not be responsible for the delivery of the same, if prevented by strikes or combination of miners, laborers, or boatme, accidents on the canal or railroad, etc., etc."

Now then, Mr. Jones, how many tons of coal would you like to purchase, deliverable some time between this date and the first of May, 1869?

Below will be found a complete report of the 64th Scranton sale, showing advance as before referred to.

### AUCTION SALE OF COAL.

The Lackawanna and Western Railroad company yesterday, sold thirty thousand tons of coal at anction, at a large advance on last month's prices. The following is a comparison of rates:

| | July 29. | | June 24. | |
|---|---|---|---|---|
| 5,000 tons lump | $4 10 | @4 22½ | $3 67½ | @3 72½ |
| 7,000 " steamboat | 4 25 | 4 40 | 3 77½ | 3 82½ |
| 5,000 " grate | 4 65 | 4 90 | 4 02½ | 4 17½ |
| 3,000 " egg | 4 50 | 4 95 | 4 15 | 4 40 |
| 5,000 " stove | 5 00 | 5 10 | 4 62½ | 4 72½ |
| 5,000 " chestnut | 4 05 | 4 20 | 4 90 | 4 02½ |

The amount of coal exported from the port of New York for the week ending July 7, was:

| | |
|---|---|
| Exports for the week, tons | 2,212 |
| do. from January 1st, do | 38,893 |
| do. same time last year, do | 41,283 |

BOSTON, July 29, 1868.

English Cannel is quiet, and prices are nominally $18a20 per ton. Sydney and Pictou have been selling at $8a8 25 per ton; and cargo sales of Cumberland at $8 00 here, $4 50 in Baltimore, and $4 25 at Georgetown. Pennsylvania and Westmoreland Gas has been selling at $7 20 per ton, delivered in Baltimore. In Anthracite there have been steady retail sales at $7 00a7 50 per ton, and cargo sales at $6 00a6 50 per ton.

PHILADELPHIA, July 29, 1868.

The market continues dull, and we continue previous quotations.

Freights remain unchanged in consequence of the scarcity of coal.

The prices of the leading Coal companies for the month of August will be found quoted in our columns this week.

The following table exhibits the quantity of Coal passed over the following routes of transportation for the week ending July 25, 1868:

| | 1867. | | 1868. | | INC. OR DEC. | |
|---|---|---|---|---|---|---|
| | WEEK. | TOTAL. | WEEK. | TOTAL. | WEEK. | YEAR. |
| Phil. & Reading R. R. | 89,133 | 1,847,806 | 7,040 | 1,681,480 | d 73,093 | d155,776 |
| Schuylkill Canal | 29,269 | 512,993 | 1,879 | 479,557 | d 27,390 | d 33,436 |
| Lehigh Valley R. R. | 48,342 | 1,149,609 | 16,244 | 1,315,291 | d 32,098 | i 165,682 |
| Lehigh Canal | 36,545 | 434,861 | 5,184 | 391,870 | a 31,361 | d 42 902 |
| Scranton North | 9,268 | 229,916 | 15,508 | 284,665 | i 6,240 | i 54,749 |
| " South | 28,431 | 727,515 | 18,460 | 603,340 | d 19,971 | d124,175 |
| Penn'a Coal Co., Rail. | 20,298 | 434,662 | 20,453 | 487,957 | i 155 | i 53,295 |
| Penn'a Coal Canal | 955 | 10,374 | 709 | 13,451 | i 246 | i 3,077 |
| Del. & Hudson Canal | 40,300 | 655,362 | 51,227 | 721,011 | i 10,927 | i 65,649 |
| Shamokin | 11,965 | 271,136 | 9,596 | 211,099 | d 2,369 | d 10,036 |
| Trevorton | 1,912 | 27,485 | 783 | 12,747 | d 1,130 | d 14,738 |
| Short Mountain | ..... | 37,250 | ..... | 53,079 | ..... | ..... |
| Lykens Valley C. Co. | 2,135 | 34,963 | 1,933 | 45,870 | d 202 | i 9,907 |
| Huntingd'n & B'd Tp | 5,021 | 133,794 | 5,150 | 135,330 | i 139 | i 1,536 |
| W'mstown Col'y, E. | ..... | 54,345 | ..... | 91,011 | ..... | ..... |
| Wyoming South | 18,497 | 129,055 | 5,526 | 108,062 | d 12,971 | d 11,893 |
| Wyoming North | ..... | ..... | 64 | 12,509 | ..... | i 12,506 |
| Lehigh &. Susq. R.R. | ..... | ..... | 3,629 | 210,044 | ..... | ..... |
| Total | 333,071 | 6,683,126 | 163,385 | 6,008,373 | 218,313 | 759,470 |
| | 163,385 | ..... | ..... | 6,683,126 | ..... | ..... |
| Decrease | 169,686 | ..... | ..... | 225,247 | ..... | ..... |

### Lehigh and Susquehanna Railroad, Week ending July 25.

| WHERE FROM | WEEK. Tons. | Cwt. | TOTAL. Tons. | Cwt. |
|---|---|---|---|---|
| WYOMING REGION. | | | | |
| New England Coal Co | ..... | | 50 | 15 |
| Gaylord Mines | 110 | 01 | 110 | 01 |
| Newport Coal Co | ..... | | ..... | |
| Warrior Run Mining Co | ..... | | ..... | |
| Parrish & Thomas | 285 | 16 | 6,755 | 01 |
| New Jersey Coal Co | 267 | 19 | 8,863 | 09 |
| Harvey & Brothers | ..... | | 184 | 11 |
| Albrighton, Roberts & Co | 351 | 19 | 3,594 | 05 |
| Lehigh & Susquehanna | ..... | | 15 | 10 |
| Germania Coal Co | 371 | 07 | 10,910 | 16 |
| Franklin " | ..... | | 25 | 04 |
| Wilkesbarre Coal & Iron Co | 1,538 | 11 | 120 363 | 00 |
| Union Coal Co | ..... | | 2,040 | 07 |
| Mineral Spring | ..... | | 6,029 | 06 |
| H. B. Hillman & Son | ..... | | 1,303 | 17 |
| Bowkley, Price & Co | 75 | 07 | 304 | 01 |
| Wyoming | 83 | 10 | 3,089 | 19 |
| Henry | 164 | 09 | 3,519 | 08 |
| J. H. Swoyer | 90 | 00 | 2,839 | 06 |
| Everhart Coal Co | ..... | | ..... | |
| Morris & Essex Mutual | ..... | | 78 | 19 |
| Shawnee | 1,100 | 08 | 8,460 | 19 |
| Delaware & Hudson Co | 65 | 05 | 5,312 | 02 |
| Pine Ridge Colliery | 288 | 17 | 2,515 | 18 |
| Lances' Colliery | 396 | 13 | 663 | 12 |
| Consumers Coal Co | 304 | 13 | 1,915 | 02 |
| Other Shippers | 129 | 15 | 5,404 | 05 |
| Total Wyoming Region | 5,614 | 10 | 194,379 | 13 |
| UPPER LEHIGH REGION. | | | | |
| Upper Lehigh | ..... | | 60,773 | 11 |
| Total Upper Lehigh | ..... | | 60,773 | 11 |
| HAZLETON REGION. | | | | |
| A Pardee & Co | 1,488 | 17 | 33,001 | 06 |
| Linderman & Skeer | .... | | 756 | 06 |
| Sharpe, Weiss & Co | 92 | 15 | 20,661 | 00 |
| W. S. Halsey & Co | .... | | 1,701 | 09 |
| Harleigh Coal Co | 141 | 06 | 15 353 | 06 |
| G. B. Markle & Co | 72 | 09 | 23,481 | 06 |
| Ebervale Coal Co | 99 | 10 | 14,905 | 02 |
| Stout Coal Co | ..... | | 7,551 | 11 |
| Buck Mountain Coal Co | 26 | 02 | 8,877 | 08 |
| Coxe Brothers & Co | 16 | 05 | 4,653 | 18 |
| Ashburton Coal Co | ..... | | 64 | 06 |
| Highland Coal Co | 93 | 00 | 8,720 | 19 |
| Pardee Bro. & Co | 100 | 07 | 5,004 | 11 |
| Jeddo Coal Co | 295 | 10 | 5,033 | 13 |
| Mount Hall | ..... | | ..... | |
| Other Shippers | ..... | | 927 | 02 |
| Total Hazleton | 2,425 | 15 | 150,693 | 03 |

| FROM MAUCH CHUNK. | | |
|---|---|---|
| Summit Mines | ..... | ..... |
| Room Run Mines | 169 14 | 874 04 |
| Other Shippers | 17 00 | 17 60 |
| Total Mauch Chunk | 186 14 | 891 04 |
| " Hazleton Region | 2,425 15 | 150,693 03 |
| " Upper Lehigh | ..... | 60,773 11 |
| " Wyoming | 5,614 10 | 194,379 13 |
| Grand Total | 8,226 16 | 406,737 11 |
| Corresponding week last year | 11,683 00 | 295,652 15 |
| Increase | ..... | 111,084 16 |
| Decrease | 3,457 19 | ..... |
| Forwarded South from Mauch Chunk by rail | 2,831 14 | 173,477 18 |
| Delivered on line L. & S. R.R. above Mauch Chunk | 797 17 | 36,566 00 |
| Delivered at Coal Port for shipment by Canal | 4,597 08 | 196,693 13 |
| Total | 8,226 19 | 406,737 11 |

## Schuylkill Coal Trade.

BY RAILROAD AND CANAL, FOR THE WEEK ENDING JULY 24, 1868.

| | RAILROAD. | CANAL. |
|---|---|---|
| St. Clair | ..... | ..... |
| Port Carbon | 2,257 | ..... |
| Pottsville | 939 | ..... |
| Schuylkill Haven | ..... | ..... |
| Auburn | 184 | ..... |
| Port Clinton | 2,238 | ..... |
| Company's use | 504 | ..... |
| Total for Week | 6,122 | ..... |
| Previously this year | 1,671,480 | 454,594 |
| Total | 1,687,602 | ..... |

## Schuylkill Navigation Coal Trade.

For the week ending Thursday, July 23, 1868.

| | Tons. Cwt. |
|---|---|
| From Port Carbon | 1,429 10 |
| " Pottsville | 46 |
| " Schuylkill Haven | 232 |
| " Port Clinton | 172 |
| Total for week | 1,879 10 |
| Previously this year | 477,677 09 |
| Total | 479,556 19 |
| To same time last year | 512,992 12 |

## Report of Coal transported over the Lehigh Valley Railroad, Week

ending July 25, 1868, and previously this season, compared with same time last year:

| Where shipped from. | Week. Tons. Cwt. | Previously. Tons. Cwt. | Total. Tons. Cwt. |
|---|---|---|---|
| Total Mahony | 84 08 | 269,524 02 | 269,608 06 |
| Total Hazleton | 9,668 18 | 609 240 09 | 618,909 07 |
| Total U. Lehigh | 80 12 | 31,458 15 | 31,539 07 |
| Total B. Meadow | 803 12 | 238.125 06 | 238,928 18 |
| Total Wyoming | 5,606 07 | 150,699 03 | 156,305 10 |
| Grand Total | 16,243 13 | 1,299 047 15 | 1,315,291 08 |
| Same time last year | 48,341 14 | 1,101,267 13 | 1,149,609 07 |
| Increase | ..... | 197,780 02 | 165,682 01 |
| Decrease | 32,098 01 | ..... | ..... |
| Forwarded east of M. Chunk, by rail | 16,243 13 | 1,299,047 15 | 1,315,291 08 |
| Delivered at M. Chunk and on line of road ab. that point | 315 15 | 19,497 00 | 19,812 15 |
| At Penn Haven for shipment by canal | 3,495 18 | 46,586 18 | 50,082 16 |
| At Manch Chunk for shipment by canal | ..... | 30,583 19 | 30,583 19 |
| Total by rail and canal | 20,055 06 | 1,395,712 12 | 1,415,770 18 |
| Same time last year | 52,043 05 | 1,147,481 14 | 1,199,524 19 |
| Increase | ..... | 248,233 18 | 226,245 19 |
| Decrease | 31,987 19 | ..... | ..... |

## Report of Coal Shipped by Lehigh Canal,

Week ending July 25, 1868, compared with same time last year:

| WHERE FROM. | Week. Tons. Cwt. | Total. Tons. Cwt. |
|---|---|---|
| Manch Chunk Region | 92 10 | 159,206 12 |
| Beaver Meadow Region | 161 00 | 30,510 12 |
| Mahanoy Region | ..... | 1,354 00 |
| Hazleton Region | 2,217 01 | 118,393 13 |
| Upper Lehigh Region | 241 14 | 7,876 14 |
| Wyoming Region | 2,471 12 | 74,528 03 |
| Total | 5,183 17 | 391,869 14 |
| Corresponding week last year | 36,545 07 | 434,861 12 |
| Increase | ..... | ..... |
| Decrease | 31,361 10 | 42,991 18 |

## Prices of Coal by the Cargo.

[CORRECTED WEEKLY.]

### At New York, August 1, 1868.

| | | | | | |
|---|---|---|---|---|---|
| Schuylkill R. A., choice | $5 50 | @$... | Schuylkil Chestnut | 4 00 | .... |
| " Ordioary | 5 25 | .... | Lehigh W.A Lump Old Co | 5 00 | .... |
| " W. A., Lump | 5 00 | .... | Lehigh Broken | 4 87½ | .... |
| " Steamboat | 5 00 | .... | " Egg | 4 87½ | .... |
| " Broken | 5 00 | .... | " Stove | 5 12½ | .... |
| " Egg | 5 25 | .... | " Chestnut | 4 37½ | .... |
| " Stove | 5 25 | .... | Shamokin | 5 50 | .... |

SPECIAL COALS.—DEALERS' QUOTATIONS.

| | | | | | |
|---|---|---|---|---|---|
| Diam'd Vein R. A., Sch'kill | 5 50 | .... | Old Co.'s W. A. Lehigh | 5 50 | .... |
| Locust Dale W. A., " | 5 50 | .... | Mt Pleasant | 5 00 | .... |
| Honey Brook " Lehigh | 5 50 | .... | Broad Mountain | ..... | .... |
| Harleigh " " | 5 50 | .... | Buck Ridge W. A., Sh'kin | 5 50 | .... |
| Spring M'n " " | 5 50 | .... | H. Helis, E. S'klin, Lorb | 5 50 | .... |
| Sugar Creek " " | 5 50 | .... | New England Red Ash | 5 25 | .... |
| Ashburton " " | 5 50 | .... | Wyoming | 5 50 | .... |

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

### At Philadelphia, August 1, 1868.

| | | | | | |
|---|---|---|---|---|---|
| Lehigh Lump and S'mh't | 5 00 | @.... | Henry Clay, Egg & Stove | | @4 40 |
| " Broken and Egg | 5 00 | .... | Locust Mount Lump and Steamboat | 3 25 | 3 40 |
| " Stove | 5 50 | .... | " Broken | 3 35 | 3 60 |
| " Chestnut | 4 25 | .... | " Egg | 3 60 | 4 00 |
| Schnylkill R. A. | 4 25 | 4 50 | " Stove | 4 00 | 4 15 |
| " Chestnut | 2 60 | .... | Lorberry Coal | 4 50 | .... |
| " W. A. Lump | 3 25 | .... | Shamokin | ..... | .... |
| " Broken | 3 25 | 3 50 | Franklin, (Lykens Valley) | 5 00 | .... |
| " Egg and Stove | 3 75 | 4 00 | Broad Top | 4 60 | .... |
| Schuylkill Chestnut | 2 75 | @.... | | | |
| Hill & Harris, Egg & Stove | 4 30 | .... | | | |

### Scranton Coal at Elizabethport, August 1, 1868.

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

| | | | | | |
|---|---|---|---|---|---|
| Lump | $4 50 | @.... | Egg | 5 00 | .... |
| Steamer | 4 75 | .... | Stove | 5 50 | .... |
| Grate | 5 00 | .... | Chestnut | 4 50 | .... |

### Prices for Pittston Coal at Newburgh, August 1, 1868.

(Corrected weekly by Penna. Coal Co.)

| | | | | | |
|---|---|---|---|---|---|
| Lump, per ton of 2240 lbs. | $4 45 | @.... | Egg " " " | 4 55 | .... |
| Steamer, " " " | 4 45 | .... | Stove " " " | 4 80 | .... |
| Grate " " " | 4 55 | .... | Chestnut " " " | 4 35 | .... |
| Pea " " " | 3 25 | .... | | | |

70 cents additional to New York.

### Lackawanna at Rondout, August 1, 1868.

| | | | | | |
|---|---|---|---|---|---|
| Lump | $4 60 | @.... | Egg | $4 10 | @.... |
| Steamer | 4 65 | @.... | Stove | 4 90 | .... |
| Grate | 4 60 | @.... | Chestnut | 4 35 | .... |

65 cents additional to New York.

### Lehigh Coal at Elizabethport, August 1, 1868.

| | | | | | |
|---|---|---|---|---|---|
| Lump | 5 00 | @.... | Chestnut | 4 25 | .... |
| Steamboat and Broken | 4 65 | .... | Stove | 5 00 | .... |
| Egg | 4 75 | .... | | | |

### Wilkesbarre Coal at Hoboken, August 1, 1868.

(Corrected by Wilkesbarre Coal & Iron Co.)

| | | | | | |
|---|---|---|---|---|---|
| Lump | $4 25 | @.... | Egg | 4 45 | @.... |
| Steamer | 4 45 | .... | Stove | 4 85 | .... |
| Broken | 4 45 | .... | Chestnut | 4 25 | .... |

### At Baltimore, August 1, 1868.

| | | | |
|---|---|---|---|
| Wilkesbarre & Pittston W. A. by car | $5 25 | @5 50 | From wharf or yard, 50c. to 75c per ton additional |
| Lykens Valley R. A. by car | .... | @ 5 55 | Retail, del'd, per 2,240 lbs 7 00 |
| Sunbury & Shamokin R. or W. A. by car | 5 00 | 5 50 | George's C'k and Cumberland f. o. b. at Locust P't for shipping | | @4 75 |

### At Havre de Grace, Md.

| | | | | | |
|---|---|---|---|---|---|
| Wilkesbarre or Pittston, W. A., on board | $.... | @4 85 | Sunbury or Shamokin, R. or W. A., on board | .... | @4 85 |
| Trevorton R. A., on board | .... | 5 25 | Lykens V'y, R. A. on b'd. | .... | @5 50 |

Havre de Grace is the terminus of Susquehanna and Tide Water Canal.

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

George's Creek and Cumberland f. o. b. ..... $....@ 4 35

## Prices of Gas Coals.

August 1, 1868.

| PROVINCIAL. Duty, $1 25 | Coarse. Gold. | Slack. Gold. | AMERICAN: | Coarse. Currency. | Slack. Currency. |
|---|---|---|---|---|---|
| Block House | $1 75 | $ 75 | Westmoreland Co. | $8 50 | $8 00 |
| Gowrie | 1 75 | 75 | Despard Coal Co. | 8 25 | 8 00 |
| Lingan | 1 75 | 75 | Penn | 8 50 | 8 00 |
| Sydney | 2 13¾ | 71¼ | Newburgh Orrel Gas | 8 50 | 8 00 |
| Pictou | 2 13¾ | 1 18¾ | Delivered in New York. | | |
| Little Glace Bay | 1 75 | 1 00 | | | |

## Prices of Foreign Coals.

Duty $1.25 per ton.

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

| | | | |
|---|---|---|---|
| Liverpool Gas Caking | $ 9 50 | Liverpool House Cannel | 18 00@19 00 |
| " " Cannel | 14 00 | " " Orrel | 16 00@18 00 |

Per ton 2240 lbs., Ex. ship.

PRICES FROM YARD:

| | | | |
|---|---|---|---|
| Liverpool House Orrel, scr'd | $18@20 | Livp'l House Can'l, scr'd | 22 00@— — |

per ton 2000 lbs. delivered.

## Coal Freights.

(Corrected Weekly.)

### Rates of Freight from Newburgh

| RIVER. | | EASTERN. | |
|---|---|---|---|
| On "Pittston" Coal, by boats and barges of the Pennsylvania Coal Company, per ton of 2,240 lbs. | | Stamford | $1 25 |
| Troy and West Troy | $ 55 | Norwalk | 1 25 |
| Albany and Greenbush | 50 | Bridgeport | 1 25 |
| Coeymaos | 45 | New Haven | 1 25 |
| Coxsackie and Stuyvesant | 40 | New London | 1 40 |
| Hudson & Catskill | 35 | Norwich | 1 50 |
| Sangerties and Barrytown | 35 | Mystic | 1 45 |
| Rhioebeck and Rondout | 30 | Stonington | 1 45 |
| Po'keepsie and New Paltz Land. | 25 | Sag Harbor | 1 45 |
| Fishkill Landing | 20 | Bristol | 1 55 |
| Cold Spring and West Point | 20 | Newport | 1 55 |
| Peekskill | 40 | Fall River | 1 55 |
| Haverstraw | 45 | Providence | 1 60 |
| Sing Sing and Nyack | 50 | Dighton | 1 60 |
| Tarrytown and Piermont | 50 | Warren | 1 60 |
| Yonkers | 55 | Pawtucket | 1 75 |
| The Coal must be discharged with all reasonable dispatch, at the expense of the consignee, who shall also pay wharfage on the boat. Boatmen will tend gay while unloading. | | New Bedford | 1 90 |
| | | Boston | 2 10 |
| | | East Cambridge | 2 20 |
| | | Salem | 2 10 |
| | | Newburyport | 2 20 |
| | | Portsmouth | 2 15 |
| | | Portland | 2 00 |

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

July 22, 1868.—From Philadelphia & Reading Railroad Wharves, Phila., to

| | | | | | |
|---|---|---|---|---|---|
| Boston | 2 25 | 2 60 | New York | — — | 1 30 |
| Salem | — — | 2 50 | Cambridge | — — | 2 60 |
| Providence | 1 75 | 1 95 | Cambridgeport | — — | 2 60 |
| Gloncester | 2 60 | 2 70 | Dorchestor | — — | 2 50 |
| Portsmouth | — — | 2 50 | Lynn and discharge | 2 55 | 2 75 |
| Charlestown and towing | — — | 2 65 | Marblehead | — — | 2 50 |
| Bangor | — — | 2 25 | Milton | — — | 2 50 |
| Saugas | — — | 2 65 | Provincetown | — — | 2 90 |
| Bristol | — — | 2 00 | East Greenwich | — — | 2 10 |
| Richmond | 1 50 | 1 55 | Greenpoint | 2 00 | 2 10 |
| Braintree | — — | 2 70 | Washington | 1 15 | 1 20 |

### From Elizabethport and Port Johnston.

| | | | | | |
|---|---|---|---|---|---|
| Albany | $ 85 | @— — | New London | $1 15 | — — |
| Boston | 2 00 | — — | Newport | 1 40 | — — |
| Bridgeport | 1 00 | — — | New York | 60 | — — |
| Fall River | 1 45 | — — | Norwalk | 1 00 | — — |
| Hartford | 1 50 | — — | Norwich | 1 35 | — — |
| Hudson | 1 00 | — — | Pawtucket and towing | 1 60 | — — |
| Lynn | — — | — — | Portland | 1 90 | — — |
| Middletown | 1 25 | — — | Portsmontb | 2 10 | — — |
| New Bedford | 1 50 | — — | Providence | 1 10 | — — |
| Newburyport | 2 15 | — — | Salem | 1 75 | — — |
| New Haven | 1 00 | — — | Augusta | 2 25 | — — |

## Rates of Transportation to Tide Water.

[BY RAILROAD.]

### To Port Richmond.—(Philadelphia.)

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

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

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

From Port Carbon, 8 cents per ton more.

### To Elizabethport.

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

### To Port Johnson.

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

### To Hoboken.

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

[BY CANAL.]

### To Port Richmond.

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

### To New York.

| | |
|---|---|
| From Mauch Chunk to New Brunswick, by Lehigh, Del. Div. and Del. & Raritan Canal | $ 90 |
| Freights through | 1 25 |
| Towage | 20 |
| | 2 35 |

### To New York via Morris Canal.

| | |
|---|---|
| Lehigh Canal | $ 34 |
| Morris " | 40 |
| Towage | 10 |
| Freight | 1 55 |
| Total | 2 39 |

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

| | |
|---|---|
| Lehigh tolls (net) | $ 34 |
| Morris " | 34 |
| Freight | 1 50 |
| Re shipping | 30 |
| Total | 2 48 |

### Provincial Freights.

| TO NEW YORK. | | TO BOSTON. | |
|---|---|---|---|
| Sydney | 3 50 | Sydney | $2 75 |
| Lingan | .... | Lingan | 2 65 |
| Cow Bay | 8 00 | Cow Bay | .... |
| Port Caldonia | $4 75 | Port Caldonia | 3 00 |
| Little Glace Bay | 3 50 | Little Glace Bay | 2 75 |

### Foreign Freights.

| | |
|---|---|
| New Castle and Ports on Tyne | £13@15 keel |
| Liverpool | 12s. 6d. @15s. ton. |

## SAN FRANCISCO STOCK MARKET.

A telegram from San Francisco, dated July 30, to Messrs. LESS & WALLER, Bankers, 33 Pine street, this city, qnotes stocks as follows:

| STOCKS. | Bid per ℔t. | | STOCKS. | Bid per ℔t. | |
|---|---|---|---|---|---|
| Gould & Curry | 105 | @ — | Belcher | .. | @ .. |
| Savage (per share) | 131¾ | @ — | Uncle Sam | .. | @ .. |
| Chollar Potosi | 136 | @ — | Amador | 265 | @ .. |
| Ophir | 20 | @ — | Imperial (per share) | 108 | @ 107 |
| Hale & Norcross | 76¾ | @ — | Alpha | 43 | @ .. |
| Crown Point | 88 | @ — | Kentuck (per share) | 380 | @ .. |
| Yellow Jacket | 1,205 | @1,195 | Cal. Steam Nav'n Co. | .. | @ .. |

An assessment of $10, gold, per share is announced by the Hale & Norcross Company, delinquent Aug. 36, and delinqnent sale Sept 14th next.

## San Francisco Iron Trade.

SAN FRANCISCO, July 6, 1868.

The sales of Pig Iron are limited in amount; stocks are liberal, and prices more or less nominal. We quote:

| | | | | | |
|---|---|---|---|---|---|
| Scth. & Eng. pig, ton | 45 | —@47 50 | Plate, 5 to 0 | — | 3¼— — |
| Am. white Pig | — | — 47 50 | Sheet, 10 to 13 | — | 3¾— — |
| Ref'd bar, had assm't, ℔ | — | 2¼— — | Sheet, 14 to 20 | — | 4 — — |
| " gd. assm't, ℔ | — | 3 — — | Sheet, 24 to 27 | — | 4 — — |
| Boiler, 1 to 4 | — | 3½— — | | | |

## BOSTON STOCK MARKET.

(By Telegraph.)

BOSTON, July 24, 1868.

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

| | | | |
|---|---|---|---|
| Calumet | 32 | Quincy | 21 |
| Copper Falls | 21 | Cary Improvement | 10¼ |
| Franklin | 18 | Isle Royal | — |
| Hecla | 50 | Water Power | 16¾ |
| Hancock | 3 | Bos., Hart & Erie RR | 18¾ |
| Minnesota | — | Rockland | — |

## New York Imports of Metals, &c.

The following will show the imports of Metals, &c., at the port of New York from foreign ports, for the week ondiog July 24, 1868. The quantity is given in packages, unless otherwise specified.

| Metals, &c. | Quantity. | Value. | | Quantity. | Value. |
|---|---|---|---|---|---|
| Anvils | 6 | 900 | Lead, Pigs | 6,735 | 33,624 |
| Bronzes | 19 | 2,040 | Metal Goods | 69 | 11,370 |
| Brass Goods | 14 | 3,034 | Needles | 14 | 7,593 |
| Chains & Anchors | 58 | 2,782 | Nickel | 3 | 1,797 |
| Copper | .. | 910 | Old Metal | .. | 2,660 |
| Cutlery | 57 | 23,005 | Plated ware | 1 | 246 |
| Guns | 14 | 2,437 | Percussion Caps | 21 | 4,393 |
| Hardware | 66 | 11,838 | Saddlery | 9 | 1,307 |
| Iron, hoop, tons | 95 | 8,917 | Steel | 12,339 | 149,479 |
| Iron, Pig, tons | 490 | 7,982 | Spelter ℔ | 385,242 | 17,186 |
| Iron, Railroad bars | 37,689 | 206,428 | Silverware, cs | 2 | 103 |
| Iron, sheet, tons | 173 | 9,604 | Tin, boxes | 33,190 | 193,920 |
| Iron, tubes | 617 | 1,452 | Tin .... slabs | 2,427 | 47,228 |
| Iron, other, tons | 2,745 | 71,507 | Wire | 537 | 5,290 |
| | | | Zinc ℔ | 265,542 | 3,380 |

## London Copper Trade Circular.

Messrs. Vivian, Yonoger & Bond (July 10) write: Values during the week for most descriptions have fallen. The telegraphic advices from Chili of heavy charters during the last half of the month of May, has quite paralysed the market for the time, and it is most difficult to make quotations. The quantity advised is 1,990 tons in bars and ingots, and 800 tons fine copper in ores and regulus. Transactions in Chili produce have been limited to 200 tons of bars, at from £70 10s. to £71 per ton. In other descriptions of copper nothing has been done worth mentioning.

## Endless Wire Ropes for Collieries.

The introduction of endless wire ropes for doing away with horse power in drawing coal along inclines is just now exciting a good deal of interest in South Yorkshire, England, where the experiment has been tried on an extensive scale at one of the largest collieries in the district, and with the most successful results. For the purpose of making the system more generally known, Mr. Platts, the manager of the Wharncliffe Silkstone Colliery—where the ropes have been put down—recently invited a number of the leading colliery owners and mining engineers to see the mode of working the rope. After making the usual preparation, the party descended to the thin or Parkgate seam, which is only distant from the top abont eighty-seven yards. Here was laid down an eighteen-inch cylinder engine, worked by steam, with Fowler's patent clip pulley, winding the corves along a level 700 yards in length, having three branches. On the second branch there was a train of twelve corves, each containing seven and a half cwt. of coal, and on the third a train of thirty-two corves, travelling along at the rate of fully four miles per hour. There was also a return train of forty-eight corves, worked by means of a double-acting steel rope, three-quarters of an inch in thickness, and which went over the entire distance of 700 yards in seven minutes.

This was the first attempt made in introducing the endless ropes, and so highly satifactory was it deemed by the proprietors and manager that it was determined to introduce them into the higher seam. For that purpose, as was pointed out by Mr. Platts, a sixteen inch diameter air-cylinder was attached to the steam engine, driving the air a distance of about four hundred yards to a point where there are a pair of small engines worked by compressd air, which winds, by the clip-pulley, an endless rope along 400 yards of road. To the last-named engines is attached a drum worked by friction gear, winding from two stations, the first being 200 yards on the dip and the second 350 yards on the dip. A plunger pnmp, four inches in diameter, is worked by the compressed air, for raising the water. The machinery at this point was minutely examined by the gentlemen present, and all appeared impressed with the value of the system, which, even in an economical point of view alone, was admitted to be highly advantageous. Proceeding to the principal pit, the No. 2 Silkstone, there was found an engine of forty horse-power, with two cylinders, for drawing the corves along an irregular road 1,050 yards in length, with what may be termed three gradients, one-third of the distance rising 1 in 30, another third about 1 in 7, the reminder being level. At 600 yards from the engine there is some other machinery, made by Messrs. Fowler, of Leeds, the patentees of the clip-pulley so arranged that the corves can be pulled from any and every possible direction. The machinery alluded to is worked in a rather peculiar manner by means of a drum, friction gear, and mitred wheels, and acts admirably. In addition to the machinery named, Mr. Platts has invented a moveable pulley, which being fixed near to the clip, always keeps the ropes tight. The various ropes and machinery, and the mode of working, were all minutely examined by the party, all of whom were practical men, and who were unanimous in the opinion that the endless ropes drew the corves quicker and more economically than could be done by horse power. Indeed, so satisfactory have been the trials made, that already at several collieries the steel ropes are about to be put down, whilst their general adoption throughout South Yorkshire, as well as in other colliery districts, appears likely to be accomplished at no distant period, as the more closely the system is examined the more strongly will it commend itself to the notice of those interested. Indeed, there appears to be no reason why the entire use of horses in the collieries should not altogether cease in favor of a system combining greater power, and which at the same time is more economical.—*Colliery Guardian.*

AMERICAN
# Journal of Mining.

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☞ Mr. T. P. PEMBERTON is Editor of the Mechanical Department and Agent for the JOURNAL OF MINING.

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

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

NEW YORK, SATURDAY, AUGUST 1.

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### NOTICE TO CORRESPONDENTS.

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

### THE UNIT OF HEAT.

It is self-evident that a degree of the thermometer is not always a direct measure of the amount of heat present; for instance, when the temperature of a pound of water is raised ten degrees, or one degree, it is clear that, in the first case, the amount of heat is ten times greater than in the second; but when the temperature of ten pounds of water, or of one pound of water, is raised only one degree, it is also clear that, in the first case, ten times as much heat was applied as in the second, notwithstanding the fact that the thermometer indicated, in both cases, only one degree. It is, therefore, clear that the amount of the substance heated, as well as the temperature, must be taken in account, and hence it has been agreed to adopt as a unit of heat the amount of caloric required to raise the temperature of one pound of water one degree, Fahr.; which is the same as raising the temperature of two pounds half a degree, or one ounce sixteen degrees.

This is a standard unit perfectly similar to other standards, likewise arbitrarily adopted, but of the most eminent service in making our researches and experiments positive. The unit of power is, in like manner, one pound raised one foot high in one minute; and one horse power is equal to 33,000 such units. The French have adopted as a unit of power the lifting of one kilogram one metre high in one second, and this unit, which is much larger than the English, gives for a horse power 75 such units. (See p. 377, Vol. V.)

For the unit of heat the French have adopted the amount of caloric required to raise the temperature of one kilogram of water one degree of the centigrade scale; a unit nearly double the one mentioned above.

The adoption of a unit of heat has given occasion to the correct investigation of three different classes of phenomena, formerly not well understood; namely:

1st, Specific heat.

2nd, Latent heat.

3d, Amount of heat produced by the combustion of different substances, under different circumstances.

FIRST—SPECIFIC HEAT.

Equal amounts of different substances, either by weight or by volume, heated to an equal degree as measured by the thermometer, have been found to contain different amounts of heat, when tested by the standard unit. It was found in this way that the amount of heat sufficient to raise the temperature of one pound of water a certain number of degrees, was equal to the amount required to raise not less than thirty pounds of mercury to the same temperature, an amount of mercury more than two times the volume of a pound of water. Furthermore, it was discovered that five pounds of sulphur, nine pounds of iron, eleven pounds of copper, seventeen pounds of silver, and twenty-nine pounds of gold, respectively, contained as much heat as one pound of water. Water contains, then, at the same degree of temperature, five times as much heat as sulphur, nine times as much as the same weight of iron, eleven times as much as copper, seventeen times as much as silver, twenty-nine times as much as gold, and thirty times as much as the same weight of mercury.

From these facts we can easily infer that when water contains 1,000 units of heat, sulphur will contain 203, iron 114, copper 95, silver 57, gold 32, and mercury 33 units. These numbers are called the specific heats of the respective substances.

There are two methods of determining specific heat; one is the method of melting a certain amount of ice by the heated substance of which the specific heat is to be ascertained, and comparing this with the amount of ice an equal weight of water will melt, when previously heated to the same temperature as the substance in question; the other method adopted is that of mixture. It consists in raising the substance to a given temperature and then throwing it into a vessel containing a known weight of cold water. The amount of heat communicated to this water will be proportional to the specific heat of the substance. Suppose, for instance, we mix one pound of water at a temperature of 156° with another pound of water at a temperature of 32°, we shall find that the temperature of the mixture will be the mean, or 94°. But when we mix one pound of mercury at 156° of temperature with one pound of water at 32°, the temperature of the mixture will be only 36°. The water, therefore, will have gained only four units of heat, in compensation for the 120° lost by the mercury. It is evident from this that the amount of heat required to raise the temperature of one pound of mercury one degree, is equal to one-thirtieth of that required to effect the same result in case of water, or, in other words, one-thirtieth of the adopted unit of heat.

### COLORADO COPPER.

We have recently had the pleasure of examining a beautiful medal, struck at the Philadelphia mint, to commemorate the production of the first copper in Colorado. The medal is two and a-half inches in diameter, and is made of a part of the first installment of copper ever shipped from the Territory. On one side, it bears a design of a rather complicated character, consisting of what appear to be three tanks, so arranged that a stream of water runs from one to another, through spigots, without the means of cutting it off. In the last tank is a hand pump, and from this a stream is running without assistance to the hearth of a reverberatory furnace, over which a flame is playing. From the end of the furnace rises a tall chimney. The apparatus is surrounded by a landscape that we will not attempt to describe. Under this scene are crossed, a pick and sledge; and the whole is surrounded by the inscription "Monnier metallurgic treatment of sulphurets." On the opposite side are the words "Struck from the first copper produced in Colorado, 1866." surrounded by "The Monnier metallurgical company of Colorado." Apart from the design on the obverse, which is meaningless, and in very bad perspective, the medal is a remarkably handsome one, and does credit to the parties who caused it to be struck, and to the establishment from which it was issued.

The metal is an incidental product from the reduction of the gold and silver ores of Colorado Territory, which usually contain a small per centage of copper; and it was saved by means of the process discovered by Mr. Monnier, of Philadelphia. The parties interested claim that this process is the only one known by which sulphuret ores can be completely reduced, and all the useful metals saved. They state that this copper was obtained from ores which gave up all their gold and silver, to within less than ten per cent. of the assay value, and that the copper, which exists in the low proportion of from two to five per cent. only, was saved at an additional cost of only three cents per pound; upwards of 1,400 pounds having been delivered in Philadelphia, at a total cost of eleven cents per pound, including freight; thereby giving them the precious metals more thoroughly extracted than by any other means, and a clean profit of over one hundred per cent. on the copper, which would otherwise have been wasted in "tailings."

We hail with pleasure, every discovery that promises to economise the mineral resources of the country, and sincerely hope that the Monnier process will be able to accomplish, on a large scale, what its inventor claims for it. A small furnace of this kind, has been in active operation in Camden, New Jersey, for three years, for the manufacture of sulphuric acid from the sulphurets of copper and iron, and is giving excellent results; and a large one is just being completed in the vicinity of Boston for the reduction of the low grade copper ores of Vermont. We will watch the progress of this experiment with great interest. Should it prove half as successful, as is claimed by its partizans, a great step forward will have been made by metallurgical industry in this country.

### NEW EXPLANATION OF THE EARTH'S CENTRAL HEAT.

It is often amusing to note the conclusions arrived at by purely literary men when they risk themselves in the field of scientific speculation. Their information in regard to matters of science is often very limited, and the result is, their attempts, in most cases, only resolve themselves into so many ridiculous blunders. One of this class of writers in a recent article in one of our magazines, speaking of the condition of the central parts of the earth, makes the usual statement about the hot liquid nucleus, the solid crust, the escaping semi-fluid masses from volcanoes, and then adds: "Whether the interior below the solid crust is full of liquid or not, is a mooted question. If not full the mass must surge and heave like the swelling waves of a restless ocean. This explains the earthquakes. The perpetual fire which liquifies the rocks, and mixes up the metals without consuming them, must be due to the friction of the earth on its axis during its revolutions, and its immense velocity in its orbit round the centre of the solar system."

It is hardly necessary for us to remark that such notions as these, in the estimation of truly scientific men, are good for nothing, other than to show the presumption with which some persons will undertake to handle subjects to which neither natural tact, nor special training, has made them equal. We hope in the future we may see less of these attempts of literary men to win laurels in the field of scientific investigation. They had far better seek to win "golden opinions" by confining themselves strictly to their own department of learning, rather than to put themselves in the way of becoming hardly more than a laughing-stock to others. Now that our Government, since its late purchase of Aliaska, is in possession of such a large extent of volcanic territory, it might be well for it to form a company whose duty it should be to keep the "axis" of this little planet of ours well bathed in some unctious substance—California petroleum might perhaps answer the purpose well enough—in order to save its people from many a discomfiture arising from earthquake shocks and lava rivers. There would be a chance for the venturesome writer alluded to, to superintend the job.

### "ALL IS NOT GOLD THAT GLITTERS."

Through the kindness of Mr. H. M. Raynor, dealer in, and manufacturer of platinum apparatus, 78 Broadway, New York City, a very cute method of swindling has been brought to our notice. He exhibited to us some specimens of counterfeit gold dust made of an alloy of platinum, copper, and a little silver, coated with gold. The grains are a capital imitation of the genuine article, small and flat, and appear to have been made by subjecting scraps of the alloyed metals to a heavy crushing, stamping or grinding force. By boiling one hour or so in *aqua regia*, the coating, of gold, is entirely removed. We understand that Mr. H. G. Torrey, of the U. S. Mint Office, Wall street, N. Y. has given into the hands of Mr. Raynor some five hundred ounces within the last four months. It seems, indeed, that this gold manufacturing business has been going on some time, as, now and then, parcels of it have been turned over for coinage. Its false character was, of course, at once detected at the office. Dr. Jno. Torrey has analyzed this bogus dust, and found that it contains from 60 to 65 per cent. platinum.

A Kansas banker, we understand, lately paid $6,000 in gold for three hundred ounces of this spurious article, from which, as platinum, he could not realize more than one-sixth of that amount. The proper use of a little *aqua regia* would have saved him from being victimized, and if they will take heed it may save many another from being caught in the same manner. It is an easy matter for dealers in gold dust, for those indeed who are not experts, to keep on hand a little *aqua regia*, by means of which, such impositions can be prevented. It is conjectured that this bogus dust comes to this country from France by way of Mexico. It is clear that too great care cannot be exercised in regard to such matters.

### AMERICAN MINING ENTERPRISE IN SOUTH AMERICA.

To-day's number of the JOURNAL OF MINING will be found to contain another interesting article from the pen of our South American correspondent, R. P. STEVENS, Geologist. Mr. STEVENS is now upon the Island of Trinidad. After visiting the mines and also Pitch Lake, situated upon the island, he will return to South America, In the month of October next, it is his expectation that they will have a thirty-stamp mill in full operation. He informs us that they have a brick-yard, saw-mill, and a number of houses, all in a state bordering very nearly on completion. The party have reason, thus far, to feel that their efforts have been crowned with success. They will soon know what yield per ton, in gold, the quartz rock will give them.

We are glad to see that the spirit of American industry and enterprise, not content with North, is already beginning to make itself felt in South America. We hope that the labors of this company in exploring, and erecting their works will, in the future, prove quite as effective as in the past. We trust it will be our fortune to chronicle the fact that a full reward has been given in compensation for the skill, energy, and means given to the work.

### Layfayette College.

At the late commencement of this deservedly popular institution of learning, among others, the following Honorary Degrees were conferred, viz.:

A.M.—Rev. J. P. CONKEY, Pennsylvania.

Ph.D.—R. W. RAYMOND, Editor of the AMERICAN JOURNAL OF MINING.

J. H. SCHOEMAKER, New York City.

Rev. M. MEIGS, Ex-President of Delaware College.

LL.D.—JAS. CURTIS HEPBURN, M.D., Missionary to China.

# Scientific Meetings.

## N. Y. SOCIETY OF PRACTICAL ENGINEERING.

An Association under the above designation has just been formed, for the purpose of promoting the advancement of civil and mechanical engineering. Such an organization cannot fail in its objects if wisely conducted. It is an organization much wanted in this city, where engineering and mechanical work of all descriptions interest the minds of so many scientific men, and employ so many practical mechanics. There are now some two or three deservedly popular Institutions and Societies that contribute greatly to the promotion of general science, agriculture and art. With these the SOCIETY OF PRACTICAL ENGINEERING will co-operate, but not conflict. It will make the subject of engineering a special field of labor. We shall regard with interest the proceedings of this Society, and shall report in our journal all that is worthy of insertion *pro bono publico*. The meetings will be held every fortnight, at room No. 24 Cooper Institute, being the same room in which the meetings of the Farmers' Club and Polytechnic are now held, and will be open free to the public.

## ANSWERS TO CORRESPONDENTS.

N. H., of Philadelphia, asks how to purify the paraffin obtained from the heavy kerosene which comes at the end of the distillation of petroleum, when this distillation is carried on till the tar remaining in the still is changed into coke. It is done simply by melting the paraffin and filtering it while hot through freshly burned, animal charcoal.

S. M., of N. Y., wants to know the best way of taking away the spots made by flies on gold frames. *French Vinegar carefully applied* does the work the best. After a few minutes wash with pure water, and dry with a gentle heat.

K., of Chicago, inquires for the most easily fusible alloy. It is called Wood's metal, and consists of cadmium, 2 parts; tin, 2 do.; lead, 4 do.; and bismuth, 8 do.; it melts at 158° Fahr.

To B. A., of Williamsburg. The best Bohemian porcelain has, by analysis, been found to consist of silica, 75 per cent; alumina, 21; potash, 2.4; soda, 0.6; and magnesia, 0.7 per cent., with traces of sulphide and of sulphates. More common grades of porcelain differ in containing more alumina, as high, sometimes, as 36 per cent., less silica, say 60 per cent., besides iron and other impurities.

## NEW PUBLICATIONS.

THE AMERICAN JOURNAL OF SCIENCE AND ART.—The July number is at hand. It contains several articles that will be read with a good deal of interest by the general student. Other papers of a strictly scientific character will be sought for only by the few who are working in the same direction. Of the former class may be mentioned the "Sketch of a Journey from Canton to Hankow, through China; by ALBERT S. BICKMORE." The journey took the writer of the paper a distance of about twelve hundred miles, through the heart of the country, the method of traveling, the greater part of the way, having been by boat. The following extract gives the principal reason, and the result of the arduous undertaking:

"This journey was undertaken with the hope of ascertaining the kinds of the rocks in the region traversed and the order of their superposition. The time chosen was the dry season, and admitted by all to be a *very* dry season. In such a country, where no artificial sections can be seen, perhaps the river channels and the gorges in the mountains offer as good facilities as can be found, to ascertain the geological structure of a country. I therefore made my journey mostly in boats, which over a large portion of the area were the only means of traveling from place to place. It was only necessary to keep the boat near the bank, and the strata could be seen and followed continuously mile after mile, and when that series disappeared, those above it or below it could be studied in the same manner. In this way, from actual observation, the series was found to be: First and lowest, granite; on which rests the second formation, composed of grits and slates. I am not aware that any fossils have ever been discovered in these rocks. These grits and slates are covered by the third formation of old limestones, which the fossils obtained at Sinchau lead us to regard as probably belonging to the Devonian age. On these rest, fourthly, another series of limestone strata of the same geological age as the coal beds. A rare collection of fossil plants of these rocks in the neighborhood of Peking was given me by l'Abbé David. They probably belong to the same geological age as the fossil plants sent by Mr. Pumpelly to Dr. Newberry, who regards them as later than the Carboniferous period and probably Triassic. My journey through the great coal fields of Hunan also gave me an opportunity of more narrowly defining its limits. The route herein described was the one chosen for a railroad between Canton and the Southern parts of the empire, and Hankow and the central parts of the country. But no one had been through the mountainous regions and ascertained whether great tunneling would be necessary. Having passed over the whole area, I am prepared to say that there is no physical feature that would render the construction of such a road a work of any greater difficulty there, than in a very hilly land. The great obstacles to such work in every part of China are, first, their bitter hostility to foreigners, and secondly, their superstitious fears that any such work "will affect the winds and rain, and deluge their crops with floods, or parch them with heat." The prevalence of this belief, and the extent to which it influences all their actions, are most surprising."

The article "On FARRADAY as a Discoverer," by JOHN TYNDALL, F. R. S., will be read with great interest by all who are familiar with the experiments and life of that great thinker. From the extracts of various letters published, one can get a very good idea of the recent dreadful earthquakes and grand volcanic eruptions in the Sandwich Islands.

ASHCROFT'S OFFICIAL RAILWAY DIRECTORY FOR 1869. John Ashcroft, No. 50 and 52 John street, New York City.

This, as a means of direct communication with railroad offices, Government officials, etc., will prove very useful to engineers, manufacturers, and mechanics generally. It is found at the numerous hotels in the United States, as well as on board our larger steamboats. The official list of the names of presidents, superintendents, master mechanics and purchasing agents, together with their addresses, makes the book truly valuable as a railway directory. There are also sketches and statements of the financial condition and amount of rolling-stock on hand of railways, with much useful statistical information, numerous mechanical illustrations, and advertisements.

THE OLD ROMAN WORLD—*The Grandeur and Failure of its Civilization*. By JOHN LORD, LL. D. New York: Charles Scribner & Company.

This valuable contribution to our modern literature, from the pen of one of our ablest and most recondite historians, will be in the highest degree acceptable to the Christian scholar, and interesting to all classes of readers.

The student of Roman history will here find, in a condensed and intelligible form, all he need know of the people that thronged the Eternal City, their history, their rulers, their laws, their manners and customs, and the progress they made in civilization. With a master hand he will find delineated, in clear, bold lines, their greatness and their misery—the sources of their power, the secret of the downfall of the Great Empire.

The general reader will be delighted with the descriptions of the architectural wonders of this ancient city, its columns, arches, tombs; its gardens, streets, and private houses; its famous statues and pictures, and the innumerable population that ever thronged its crowded thoroughfares.

The chapters on the Roman constitution and jurisprudence are valuable to the legal profession. The chapters on literature, philosophy, and scientific knowledge among the Romans will especially delight the scholar by their clear statement, their comprehensive grasp of the subjects treated, and the profound and exhaustive knowledge displayed in these most interesting departments of Roman history.

The Christian philosopher will, however, be more strongly drawn to the careful study of the last five chapters of this most valuable work, than to any of the preceding; for here he may read, as in letters graven in the everlasting rock, that "not upon *mind* but upon *morals*, upon *virtue* is human welfare founded." And so true is this that not even Christianity could save from utter destruction an empire so long based upon upon false foundations.

The concluding chapters, showing the "reasons why Christianity did not save the Roman world," and "the legacy of the early Church to future generations," are full of the most valuable and vital truths for the Christian thinker and statesman.

The style in which this work is written is vigorous, clear and elegant; the subjects are handled with consummate ease and ability, and an insight rare and deep rewards the reader on every page for its careful perusal. The most interesting avenues of thought open up at every step, full of promise to the historical inquirer; and suggestive of new fields of research in this inexhaustible mine. Perhaps since De Quincy's book on the Cæsars, no contribution so valuable as this has been made to our literature touching Roman history.

## EDITORIAL CORRESPONDENCE NO. IX.

### GIANT POWDER IN ACTUAL USE—WORKING RESULTS.

JUNE 30, 1868.

A ride of eight miles over somewhat steep and stony bridle-paths, from Bear Valley up Mount Oso, over its crest and along the other side, brought us, one day, to a very interesting mine, known as the Oaks and Reese, or Hunter's Valley Mine. A vein, bearing the local name of "Blue Lead," strikes North-west through Hunter's Valley, parallel with the Mariposas veins. It is generally found to yield a low grade of mill-rock; but at various points it is joined by small quartz cross-feeders; and these are often rich, and sometimes appear to "enrich" the main lode. At the junction of one of these, known as "Little Lead," with the "Blue Lead, the Oaks and Reese Mine is situated. The average thickness of the Little Lead in this mine is fourteen inches; that of the Blue Lead, about two feet. Both are very hard quartz, with "greenstone" (probably altered conglomerate) walls. There is no selvage or "gouge" on either wall, of which advantage can be taken in drifting or stoping, and the faces and natural headings of the quartz incline in such a way as to increase the difficulty of back-stoping. Indeed, the stopes in this mine are all underhand. The workings comprise a shaft 233 feet deep on the junction of the veins, levels of 228 and 85 feet, at the depth of 150 and 200 feet respectively, from this shaft, West, on the Little Lead, and a level at 130 feet, South-east, on the Blue. As the veins (especially the Little Lead, which has furnished about three-fifths of the quartz sent to the mill) are so narrow, a good deal of hard country rock is blasted in stoping, and besides this it is necessary to keep driving levels and preparing new ground. It is easy to understand that these circumstances make the cost of mining very great. In fact, while the crushing and amalgamation of this quartz are effected in the beautiful ten-stamp mill belonging to the mine, at an expense of about $3 per ton, the extraction costs some $20 per ton. The average yield of the quartz in mill is said to be thirty dollars, and the quantity crushed daily is about fifteen tons. The mine is owned by a company of San Francisco capitalists, and superintended by Mr. CASSELL, an intelligent, enterprising and experienced miner, whose name will be remembered by every Washoe or Reese River pioneer.

The particulars we have enumerated have each and all a bearing upon questions of great interest to miners. Mr. CASSELL has been using the new Giant Powder exclusively, for more than a month, and very cautiously places at our disposal the results of his experience with it. To make these results useful to others, they should be accompanied with a description of the conditions under which the work is performed; and hence we have given the above details, which we consider essential to the full statement of the case.

It is evident that this mine is one which would profit largely by a reduction of mining costs, since so large a proportion of its expense lies in that item. At some of the mines on the great "Mother Lode," where hundreds of tons are not unfrequently thrown down at a blast, and where a wide, soft "gouge" along one wall enables the miner to keep two or three sides of the rock free, and give the powder the greatest opportunity to "lift" without waste of power, the cost of drilling and blasting per ton is so low that a reduction of one-third, even if it could be made, would not greatly affect the general count; but mines like the one we are describing have comparatively little timbering; and the various expenses of hoisting, transportation, &c., are overshadowed by the great item of labor, which forms (we think), in this case, more than one-third of the cost of extraction.

In the second place, it is in just such hard rock, disadvantageous for common powder, and especially in running levels or sinking shafts, that instantaneous and powerful explosions like nitro-glycerine and Giant Powder show their superiority. They never go out of a hole as if it were a gun-bore, or leave a large portion of it standing, so much labor wasted. They tear to the bottom, and act in all directions without waiting, as it were, to find the line of least resistance.

The richness of the ore is another reason for using the new powder, as we shall explain hereafter. The ventilation of the mine is good, and the smoke of the powder soon disappears from the stope. This is a most important consideration, if, as some say, the smoke from nitro-glycerine is injurious to the health. The experiments in which we participated did indeed give us a tremendous headache; but the blaster who fired the shot, and entered the stope immediately to observe its effect, said that, now he was accustomed to it, he suffered no more inconvenience from it than from common powder. We fancy that the talk to the contrary is inspired by the prejudices of the miners, who are generally hostile to anything new, and have special reason to oppose this material, as we shall see.

Before proceeding now to present the comparative statement of cost and work performed by the two systems, we will mention one interesting fact, for which Mr. CASSELL vouches. The proprietors of the Giant Powder, as is well known, claim that it can only be exploded by means of the fulminating cap. But Mr. CASSELL having on one occasion charged a hole with it, and tamped lightly with clay, the charge fired itself in about fifteen minutes. On another occasion, a hole was charged, and water poured in, as usual. (No tamping is required; the water softens the mass of powder in the hole, and the fuse, with cap attached, is then run down into it, just before firing.) Leaving the place for a few minutes, Mr. CASSELL, on his return, found the water boiling. Thinking it best to fire the hole as soon as possible, he inserted and lit the fuse, and retired precipitately. The explosion took place before the fire could have reached the cap in the ordinary way. These facts seem to show that when the powder is confined, it generates a gas which causes sufficient pressure and heat to explode the whole. The powder under water, Mr. C. thinks, would not have exploded without the fuse, as gas was apparently escaping through the water. We confess that we do not quite understand the case, as related to us. It is well, however, that persons using Giant Powder should take care not to leave loaded holes standing, but, in all cases, load and fire immediately. The true way (adopted at this mine) is to employ for every shift two powder-men, whose business it is to fire the holes and clean out the stope. Meanwhile, the gang of drillers can be putting in new holes in another stope. Where the rock is very rich, there is a great incidental saving in this plan, since no one but the powder-man has any chance to pocket valuable specimens; and these men can be selected for honesty. It is much easier to find two trustworthy men in this respect, than twenty or thirty. We saw quartz from this mine, so plastered and filled with gold that a single shift of miners, doing their own blasting, on the usual system, could have carried off hundreds of dollars in their pockets, and no one the wiser. It is not surprising that they oppose a change which would cut off their little perquisites of honest labor!

Mr. CASSELL has found it most economical to reduce the quantity of the new powder, and the size of the drills, keeping the amount of rock moved per foot of drilling, as it was before. Increasing the quantity of powder does not increase the effect in the same proportion. This system renders it easier to institute a comparison. We should remark that the most economical point, as to the size of charges, has not yet been reached. There is still powder wasted in the blasts, and it is anticipated that the figures given below will be still further reduced hereafter.

We have no time to add more than a brief summary of results, which we have arranged so that we hope it will be comprehensible to all:

WITH COMMON POWDER, DAILY.

| | |
|---|---|
| Two Shifts, 15 Drillers at $3—15 Strikers, at $2 50 | $82 50 |
| Two foremen, at $125 and $100 per month | 7 50 |
| Powder, one keg at $3 | 3 00 |
| Candles | 3 60 |
| Total | $96 60 |
| Total work, 105 feet drilling, with the large 1½ inch steel—cost per foot | $0 92 |

WITH GIANT POWDER, DAILY.

(The same number of miners.)

| | |
|---|---|
| Two Shifts, 30 Drillers at $3 | $90 00 |
| Two foremen, as above | 7 50 |
| Four powder-men | 12 00 |
| Powder 10 lbs., $1 50, less 5 per cent for cash | 14 25 |
| Candles | 3 80 |
| Total | $127 55 |
| Total work, 266 feet of small 1 inch drilling—cost per foot | 0 51 |

Now since the small holes, with Giant Powder, do as much execution as the larger ones, with common powder, the comparative cost of using the two materials is as 51 to 92 in favor of the former. This gain arises from the fact that in boring small holes, each man works by himself, and two men drill in this way 200 inches of small holes in a day, against 84 inches of large holes on the other system, where one holds and the other strikes. It must be borne in mind, also, that in this case the drillers have no time wasted in charging or firing. All that, as well as cleaning out the stope, is done by the powder-men, while the rest are at work drilling elsewhere.

The miners foresee that this change reduces the necessity for skill on their part, and will lead to the introduction of unskilled labor. With only a small drill, a foreman to set the holes and a powder-man to fire them, a Chinaman is as good as anybody, say they, and the skilled drillers and strikers will

be superseded. Not while there is so much else for Chinamen to do, and so little desire on their part for the underground part of the work. Still our miners would do well to consider that if they persist in demanding of a struggling industry wages which are (in may parts of the Pacific States) out of proportion to the cost of living, that industry will be revenged upon them by betaking itself to cheaper labor.

R. W. R.

[From our South American Correspondent.]

### Gold Veins of Macupio Valley.

NEW PROVIDENCE, Dept. Yuruari, State of Guayana, S. A.

In my last I promised you a more particular description of auriferous veins than had before been given. Before proceeding to this portion of my correspondence, I wish to add a few more remarks on the general geology of a portion of the Orinoco Valley. Humboldt, whose writings have been translated into the English language, was its earliest explorer. At the time of his observations, little or no attention was paid to the age, or consecutive order in time, of rock strata. The respective order in geological time is now one of the most prominent studies of geologists. In this light the observations and comparisons of Von Humboldt are worthless. Besides, his observations by land extended only one day's ride south of the Orinoco. The explorations of our party have reached many days' ride, in various directions, farther than any other equally competent observers.

As far south as any observations have been made, crystalline rocks obtain, and cover much the largest portion of the entire country. Sometimes interstratified with crystalline, are semi-crystaline rocks and also large domes of quartz, rising often into ranges of hills; rarely appearing in well-defined veins. Wherever streams break through quartz and wash it into valleys, gold is occasionally found in the gravel of all such streams. The trend of these crystalline rocks is nearly east and west, while the mountain ranges vary a little south and north of east and west. In a late ride of over 150 miles south-east from Ciudad Bolivar, I made some discoveries in these rocks worthy of stating. Near the crossing of Caroni river, the largest affluent of the Orinoco, I found very pure magnetic oxide of iron in thin veins. At the divide between the Caroni and Yuruari, I found low domes and ridges of black hornblende and schists tending north and south, and forming low ranges of elevations as far as the eye could reach. Upon the flanks of these schists repose the common gneissoid schists and other crystalline rocks of the country. This range, then, is the oldest yet known; for the crystalline rocks abut upon them in trending east and west. Near Pastora, in the Valley of the Yuruari, limestone interstratified with crystalline was found. One bed was of a dirty yellowish-brown color, the other a very pure yellowish-white without crystalline structure. Proceeding four hours further eastwards itacolumnite with dykes of granite were seen crossing the Caroni. All these rocks are older than the bluestone, porphyry, schists, brecciated schists and talcose slates of the gold-bearing series of rocks. In order of time they stand thus:

1st. Black hornblende schists.

2d. Gneissoid rocks, with hornblende, clay and arenacious slates, and domes of quartz.

3d. Limestone and itacolumnite series containing:—*a*, dykes of granite; *b*, dykes of syenite.

4th. Gold-bearing series.

Other than these, or later in time, none have been seen, either in the basin of the Orinoco or Essequibo.

Veins of quartz are found in gneiss, granite, syenite, hornblende, arenacious, and clay slates, porphyry, bluestone, and talc slate. In the two latter only have they proved remunerative in yield of gold.

In Marcupio Valley only two veins are in blue stone. All others are in talcose slates, decomposed to hard clays at the surface. They are found in two grand systems; one running N. E. and S. W., the other more nearly E. and W., or varying to S. E. and N. W.

There are some peculiar features worth mentioning of a few of them. Some, as Esperanza and Carina, after proceeding a few hundred feet on their course, divide into two large veins deviating more and more from each other.

Carina and Laguna are folded, completely arched, showing distinct anti-clinals. The Peru pursues an undeviating course, mounting up the hill from the valley and going on like a well-built wall of masonry. Potosi, on the contrary, throws off branches, which at the point of divergence seem equal to the mother vein. The Chili has many enormous "*horses*" in it. Inglesia shows signs of having had enormous pressure applied longitudinally, thrusting huge masses out of the vein. Flat lying offshoots are often found, which, after pursuing a short course, are lost in slate. In-osculating bands frequently are seen, of great importance in profitable mining.

Looking at the valley as a whole, the veins are remarkably regular, sound and intact, offering little trouble in their exploitations. Economically they vary much in product. Some are very rich; others are comparatively poor. Very few have been abandoned for want of not producing enough to pay for all show gold. They have, if at all, been left for richer. All veins are unequal. One portion may not pay expenses; another near by may give its pounds per day. Such is the fortune of miners. On the Puniata, 21 feet produced to four men, in five months, 1,800 ounces of bullion. Thus much upon the features of the valley and its veins.

R. P. S.

## Original Papers.

[PREPARED FOR THE AMERICAN JOURNAL OF MINING.]

### THE PARIS AND FREIBERG MINING SCHOOLS.

#### In Four Parts—Part II.

BY BENJAMIN SMITH LYMAN.

#### The Frieberg Mining School.—*Continued.*

II.—THE PROFESSORS.

There are thirteen academical instructors, and they give in all thirty-three courses. They receive themselves the money that is paid for their courses by the students. Most of the instructors hold also other positions under the Government connected with the mining or metallurgical interests of the State.

BREITHAUPT gives the courses on mineralogy, on crystallography, and on the paragenesis of minerals.

WEISBACH gives two courses in elementary mechanics (one general, the other with reference to mining); a theoretical course and a practical one on the construction of machines; and a course on general surveying.

GAETZSCHMANN gives two courses on mining.

VON COTTA gives a course on geology; one on paleontology; and one on ore deposits.

SCHEERER gives a course on theoretical chemistry; one on practical chemistry (qualitative analysis and preparations); one on alalytical chemistry; and one on the metallurgy of iron. The two last chemical courses are accompanied by practical exercises in the laboratory.

JUNGE gives two courses on mathematics (one on cubic and undetermined equations with alligation, progressions with interest, plane and spherical trigonometry, analytical geometry; the other on the elements of the differential and integral calculuses with their applications, and the principles of higher mechanics); one on descriptive geometry; and one on practical surveying. The last is accompanied by practical exercises in the mines and above ground, and in the plotting room.

FRITZSCHE gives a course on metallurgy; one on assaying by the dry way; and one on assaying by the wet way. The courses on assaying are accompanied by practical exercises in the metallurgital laboratory.

HEUCHLER gives o course on civil architecture; and the instruction in drawing.

KRESSNER gives a course on mining law, and one on mining business style of writing.

RICHTER gives a course on the blow-pipe, accompanied by practical exercises.

PROELSS gives instruction in French.

ALBIN WEISBACH (the son) gives a course on physics; and one of practical exercises in mineralogy.

GOTTSCHALK gives instructions in bookkeeping.

III.—THE BUILDINGS AND COLLECTIONS.

There are three buildings occupied by the academy; the principal one, the metallurgical laboratory, close by, and the chemical laboratory at a distance from the other two. The principal building contains three lecture rooms, a large mineralogical collection, a geological collection, a collection of machine models and a shop for making them, a large library, a shop for the sale of minerals, the dwelling of the Superintendent of the Academy, that of the Janitor, and a few other rooms, including the academical prison. The metallurgical laboratory building contains laboratories for dry and wet assays and for the blow-pipe practical exercises, a large room for the office work of the surveying exercises, and a lecture room. The chemical laboratory building contains, besides the laboratory, a lecture room, and the dwelling of the professor.

The mineralogical collection is open to the students two or three days in the week; and, as the minerals are mostly in drawers, these drawers are opened for the students by one of the mineralogical professors. A separate small collection of say a thousand specimens of minerals is used for the course of practical mineralogical exercises, and the students are allowed to handle them freely.

Admission to the geological collection can be obtained at almost any time; and also to that of machine models.

The library is open twice a week, and books can either be consulted there or taken out and kept several weeks.

IV.—THE DISCIPLINE.

The academy, under the Finance Department of the State, has now its own police and its own criminal court, and punishes violations of its own laws; and its discipline extends over all the students without exception.

*Laws.*—Its laws forbid to the students: immoral behavior in general; noise in the academical buildings during the lectures; gaming and drinking bouts; disturbance of the public quiet; large meetings, for pleasure or fencing or anything else, without special leave; extravagant living and accumulating debts; fighting; challenging; duelling; defamation; negligence of studies; encouraging others to negligence; neglect of the regulations about visiting the mines or furnaces; neglect of the special directions of mining or furnace officials; walking alone in the mines; firing off the holes drilled for blasting; selling minerals; injuring anything in the library, collections or laboratories.

*Punishments.*—The punishments are reprimanding, either by an instructor in the name of the rest, or in presence of the teachers' meeting, or in presence of the academical court; reporting to parents or guardian; setting tasks for whole or part of the vacations; imprisonment from one day to a week, or from one week to four, either during the day time only or day and night; withdrawal of State aid in whole or in part, temporarily or permanently, threatening of advice to leave the academy; advising to leave the academy, either for a time or forever; expulsion from the academy and town, either simple expulsion or expulsion together with a public announcement of it. Moreover, a combination of several of these punishments may be inflicted. Behavior at the academy may also affect the future position of a student who enters the service of the State.

*Societies.*—The students are allowed to have societies among themselves, provided they are not for political purposes; and the chief officer of each society must report to the academical authorities a list of its officers and members, and state its place and time of meeting. There are three such societies, and, in spite of the laws, they are notoriously kept up, in the main, for the express object of duelling and excessive beer drinking.

There is also among the students, encouraged by the professors, a society for the discussion of scientific matters.

*Dwellings.*—There are no dormitories nor commons in the academical buildings, and the students are free to choose their own lodgings and board, except that they must not lodge outside of the city without special leave. They are bound to observe no hours but those of their academical courses.

*Dress.*—The State students are required to wear a certain prescribed uniform dress. There is a similar dress prescribed for the other students, but they are not required to wear it.

TO BE CONTINUED.

[WRITTEN FOR THE AMERICAN JOURNAL OF MINING.]

### MONOGRAPH ON IRON.—No. III.

BY DR. L. FEUCHTWANGER.

Among the most interesting compounds of iron found in nature, but which on account of their scarcity have not been turned to any practical use, may be mentioned the following:

Columbite, for instance, crystalizes in rectangular prisms, in the trimetric system. Its cleavage is parallel to the lateral faces of the prism. The mineral has an iron black color, often with a characteristic irridescence on the surface of fracture. It has a spec. grav. of 6.4. The composition is made up of 80 per cent. of columbic acid, 16 per cent. iron, and 4 per cent. protoxide of manganese. The mineral is found in Haddam, Conn., and is highly prized on account of its rarity.

Lievrite is another interesting mineral. It is found on the island of Elba. In composition, it is made up of 55 per cent. oxide of iron, 14 per cent. lime, and 29 per cent. silica. Vivianite is another mineral that is quite noteworthy. It has a spec. grav. of 2.66, is found in the green sand of New Jersey, is of a deep blue color, and its forms of crystalization gives it place in the monoclinic system. This mineral consists of 42 per cent. oxide of iron, 28 per cent. phosphoric acid, and about 28 per cent. of water. It is often found associated with bog ore. Arseniate of iron, from Cornwall, England, is dark green, crystalizes in cubes, has a spec. grav. of 3, and is a hydrated arseniate of the peroxide of iron, containing 38 per cent. of arsenic acid.

Ilmenit is a titaniferous ore of iron, of a black color. Iserin is another titaniferous ore. They have as yet received no application in the arts. Among the foreign substances, other than carbon, present, in cast, as well as in malleable iron, the more important are sulphur, phosphorus, and silica. They exist, probably, in combination with equivalent proportions of the metal. The several kinds of iron ore give different varieties of cast-iron products. These differences depend upon the foreign substances present, the method of smelting employed, and the fluxes used. Iron ores are reduced in the most simple manner by being heated in a blast furnace with charcoal, coke, or mineral coal, together with a proper amount of pure flux, as, for instance, limestone. The lime forms a slag, in combination with the siliceous impurities of the ore, while the carbon, first converted into carbonic oxide, takes the oxygen from the ore. A small per centage of carbon enters into the structure of the metal after reduction. This carbon gives to cast-iron its degree of fusibility. The first step in the process of reduction is the roasting of the ore. This drives off volatile ingredients and looses the texture of the usually very hard mineral. This is effected by constructing heaps, composed of alternate layers of ore and fuel. The heap is usually closely covered with earth and then set on fire. Carbonic acid if any is present, sulphur, and moisture are expelled, and at the same time the ore is rendered more porous, and hence more easy of reduction. The furnace is filled with coal and heated up gradually for some ten or twelve days. This is done in order to prevent an injurious effect from too sudden a heat. After the furnace has arrived at the proper degree of heat a charge is introduced, composed of the proper proportions of ore, fuel, and flux. These charges are thereafter introduced at intervals of one-half an hour or so, as the coal sinks, so that the furnace is kept full.

The charge at the top of the furnace is two days or more in descending to where it comes within the direct action of the blast. The fusion of the ore finally takes place a short distance above the tuyeres, and its reduction is completed at the same time by the burning coal and flux. In a few hours the hearth fills with metal and slag, and as it accumulates the fused iron displaces the slag, which is continually running out and is conveyed off by the workmen. The metal, being let out below by removing a luting of clay, is run into pigs. The slag serves to protect the metal from combustion as it is reduced. Its color and condition indicate the process of the reduction. If dark and heavy, it shows that the ore is not reduced and much metal lost, probably through a lack of coal or too rapid working. If light colored the reduction is perfect.

There are two different, and distinct kinds of cast iron—the gray and white. It is also said to be cold short, if it is brittle when cold; a fact attributable to the presence of silicium. It is termed red short when it becomes brittle when heated. Cast iron is converted into malleable iron by covering castings with powdered hematite or other oxide of iron, and exposing them to heat below fusion. The carbon is removed by the oxygen of the oxide of iron. Malleable iron is also obtained directly from the ore by the Catalan forge, which has been improved lately by SIEMEN'S patent process by passing currents of hydrocarbons on the heated surface, whereby the ore is re

duced and carbonized, and the melting surface of the mass being enveloped in an atmosphere of reducing gas or flame the reoxidation of the reduced metal is prevented.

The operations of puddling and of producing blooms as well as the conversion of cast iron into steel, is of the highest importance, and is well explained by the various patents lately issued, and will be made a separate subject at a future occasion. I will here allude to the latest improvement in making steel from pig iron, independent of the BESSEMER process, which is BERNARD & MARTIN'S plan. The first exposes the pig iron to a protracted series of alternative decarbonizations and recarbonizations, while MARTIN works the pig iron in a SIEMEN'S furnace, and effects his object by high temperature.

The quantity of pig iron manufactured in the United States last year, was over one million of tons.

| | |
|---|---|
| Of rails new and re-rolled | 400,000 tons. |
| Of band, hoop and sheet | 150,000 " |
| Cut nails and spikes | 120,000 " |
| Castings of every description | 450,000 " |
| Pennsylvania produced of pig iron | 600,000 tons. |
| Ohio | 120,000 " |
| New York | 100,000 " |
| New Jersey | 30,000 " |
| Maryland | 30,000 " |
| Michigan | 20,000 " |
| Missouri | 18,000 " |

The quantity of iron ore received at Cleveland, Ohio, was over 300,000 tons brought from Lake Superior in 1867, and nearly 70,000 tons of iron were produced last year in that neighborhood.

### More About Dynamite.

The London *Engineering* says: Some fifteen months ago, M. Nobel, the well-known manufacturer of nitro-glycerine, introduced to the public a modified form of that powerful explosive to which he gave the name of dynamite. This substance, which in appearance greatly resembles coarse brown sugar, consists of nitro-glycerine absorbed by fine particles of silicic acid or silicious earth, and it differs from nitro-glycerine in its ordinary liquid state in several very important particulars. In the first place, if ignited by an ordinary flame, it does not explode but merely burns away, rapidly but quietly; and in the second place it cannot be exploded in bulk by percussion applied in any ordinary manner. We say that it is not exploded by percussion when in bulk; because small isolated particles can be exploded by severe percussion, as, for instance, by placing them on an anvil and striking them with a hammer; but even in this case the particles, when ignited, would not communicate their ignition to a bulk of dynamite close at hand. In ordinary working M. Nobel employs to ignite the dynamite a fuse terminating in a copper cap, which contains a powerful charge of fulmate of mercury, and which is imbedded in the charge. When this cap is ignited by the fuse, not only is a great heat generated, but also an extremely local pressure, and it appears that it is only by this combination of heat and pressure that the explosion of the dynamite can be effected. When a charge has to be fired by electricity, the copper cap has still to be used, the cap being ignited by the electric agency, and it, in its turn, explodes the dynamite. Another important difference between dynamite and nitro-glycerine consists in the former not being affected by temperature or moisture; whereas the latter is, under certain circumstances, apt to become crystalline—a form in which it is especially dangerous. Already dynamite has been brought into use for quarrying purposes to a considerable extent in Sweden and in other parts of the Continent, and we have now by us a pair of photographs showing the effect of two charges of dynamite, weighing 5 lbs. and 6 lbs. respectively, which were fired successively at some granite quarries near Stockholm. In this case the hole in which the charges were placed was 10 feet deep, and was situated 15 feet, 6 inches from the main face of the rock, whilst its distances from the faces on each side were 14 feet and 16 feet respectively. The rock itself was 20 feet high above the ground level. By the second charge the rock was brought down most completely, the whole mass being thoroughly broken up and separated. Notwithstanding the success attending its use on the Continent, dynamite was comparatively little known in this country until quite recently, when M. Nobel performed a series of very interesting experiments with it in the neighborhood of Glasgow which experiments were described at the time in *Engineering* by our Glascow correspondent. On Tuesday last M. Nobel carried out a somewhat similar series of experiments at the greystone lime quarries of Messrs. Peters' Brothers, near Mertsham, and it is to these experiments, and their results, that we particularly desire to direct attention in the present notice. The first experiments carried out by M. Nobel were intended to show the powerful character of the explosive, and at the same time prove that it could not be caused to explode by ordinary flame. For these purposes a paper cartridge, containing rather less than ½ oz. of dynamite was placed upon a 2 inch oak plank, and fired by means of a fuse and fulminating cap, as already mentioned, the effect being that the plank was splintered, and was, in fact, completely pierced at the point on which the cartridge had rested. A second experiment was made, with similar results, and M. Nobel then placed a larger cartridge on the ground, and ignited it by ordinary flame, when the dynamite was found to burn quietly without any explosion whatever. To prove that material of the same quality was used in the different experiments, a cartridge was, at the suggestion of one of the gentlemen on the ground, cut in halves, one half being exploded by a fuse and cap, whilst the other was ignited by ordinary flame, and was, as before, found to burn without explosion. The next experiment was made to show that the dynamite could not be exploded even by violent concussion. For this purpose a small deal box, containing rather more than 8 lbs. of the material, was twice thrown from the top of a cliff about 60 feet high on to the stones below; but even by this severe treatment no effect was produced. At the same time a similar box, containing 8 lb. of dynamite was placed on a fire and allowed to remain until, the box being burnt through, the dynamite was ignited, and burned away without any explosive action whatever. The next experiment was a very interesting one. It consisted in exploding on a top of a block of granite—measuring two feet nine inches, by two feet six inches, by two feet—a quarter of a pound of dynamite, the explosive material being merely covered down with a thin layer of clay and some sand placed over it. Notwithstanding the very slight confinement to which the dynamite was thus subjected the effect of the explosion was to completely shatter the granite block, the latter being found to be cracked in every direction. The action of dynamite under the above circumstances is strikingly dissimilar to that of gunpowder, and it is altogether very remarkable. The experiment on the granite block was followed by one which showed in a still more striking manner the enormous explosive of dynamite. A cylindrical block of wrought iron 10½ inches in diameter, and 12½ inches long was taken, and a hole one inch in diameter, which had been bored through its centre, was charged with dynamite. As the block was placed in a vertical position, the lower end of the hole was closed by the ground on which the block stood, whilst at the upper end the charge, which completely filled the hole, was merely covered down, after the fuse had been inserted, with a little sand. On the explosion taking place, it was found that not only had the block been completely split in two, but that one of the halves, weighing about 150 lbs., had been projected with considerable force against a bank some 70 feet distant. The section of the iron torn asunder by this explosion was about 119 inches; and an inspection of the fragments showed the material to have been of very fair quality, and to have been free from flaw. It was attempted to show simultaneously with the rupture of the wrought-iron block, the effect produced on a piece of boiler plate by exploding some dynamite in a tin can placed near it; but the dynamite in the wrought-iron block exploding first, the boiler plate was blown away from its position near the can, and the experiment had to be repeated. The result obtained was very satisfactory. The boiler plate, which was about seven-eighths of an inch thick, was bent round into a semi-circle of about 3 feet 6 inches in diameter, and the tin can containing 4½ lbs. of dynamite was placed so that it was partially enclosed by it. The effect of the explosion was to completely shatter the plate, the fragments, which were thrown in all directions, bearing marks made by portions of the tin can having been forced into them. The next two experiments were of a different character to those above described, and were made to show the action of the dynamite in actual work. For this purpose a hole 15 feet deep and 2 inches in diameter, had been bored in one part of the quarry at a distance of about 20 feet from the working face, and this hole had been charged with 12 lbs. of dynamite, and tamped with 5 feet of sand. The explosion of this charge did not bring down the mass between the hole and face; but the ground was thoroughly broken up by cracks extending from the hole in every direction throughout a circle of about 20 feet in diameter. A second charge, of about 4 lbs, of dynamite, was then fired in another hole 15 feet in depth, and situated about eight feet from the working face, and in this case also the results were very similar to those above mentioned; but the cracks, of course, did not extend so far. Taking the comparatively soft and yielding nature of the chalk into consideration, the burden put upon each of the charges was obviously too great; and, in fact, it was not anticipated by M. Nobel that the mass between the holes and the working face would in either case be brought down. The position of the holes was also much against any complete disruption of the mass being effected by the charges, as the working face near them formed a deep bay, which, to some extent, acted as an arch and resisted the explosion. Even under these disadvantages, the effects produced were very satisfactory, the chalk being thoroughly loosened for some distance round each hole.

To show that the dynamite was equally effective below water, M. Nobel next placed a cartridge containing a charge in a bucket of water, and fired it by the aid of the usual fuse and fulminating cap, the result of the explosion being the entire disappearance of the bucket, water and all. Two 1½ ounce catridges of dynamite were next fired in holes bored in the face of the quarry, and in each case the quantity of the chalk brought down was for such small charges very considerable. Next a cartridge suspended from a line extending across the quarry was fired to show, by the loudness of the explosion, the value of dynamite for detonating signals, and, finally, the experiments were brought to a conclusion by firing some gunpowder in contact with dynamite, the result being that the latter was merely ignited and burnt, but not exploded.

The experiments of which we have above given an account tend to show that dynamite is destined to hold a very prominent place amongst the explosives used for all purposes where a violent disruptive force is required. Dynamite contains 76 per cent. by weight of nitro-glycerine, and its power is estimated by M. Noble as ten times that of gunpowder, whilst its cost is at present about four times that of the latter material, and is likely to be shortly reduced. For quarrying work it is likely to prove especially valuable, as it can be used with but very little tamping, or, indeed, without any tamping whatever, its explosive force being in the latter case but very slightly impaired. Not the least point in its favour also is the safety, as compared with gunpowder, with which it can be stored or transported from place to place, a matter of great importance to railway companies and other carriers by whom such materials have to be conveyed.

### A Lake of Soda Water—Manufacture of its Products.

One of the great natural curiosities of the valley of Mexico is the Lake of Tescoco, which lies adjacent to the City of Mexico and is connected with it by several of the canals intended to drain that city. Rising from this lake is the Isle of Penon, a hill of volcanic rock, almost entirely destitute of vegetation. To this island *via* one of the canals a writer in the N. Y. *Tribune* made a visit. The following is his account:—Our chief curiosity is to visit the sole industry of the Penon, the manufacture of crude soda, or tequesquite—a manufacture not more remarkable for its primitive method than its vast resources. It is well-known that the earth of the valley adjoining the lake is impregnated with a species of soda, and that Tescoco itself is little more than a sort of wholesale soda water. It contains an immense deposit of the salts of sodium, chiefly the chloride of sodium and the carbonate of soda. It has great surface and small depth, and what with the rainy season of four months and the dry season of eight, its range of expansion and contraction is from 220 to 80 square miles. A calculation of the contents of the lake may be made by finding the percentage of salts in its solution, and this, in 1851, when the lake was considerably contracted, was not less than 18 per cent. The Penon soda-stills are not numerous, but illustrate the rude principle at work all around the lake. They are simply mounds of accumulated dark, blueish mould, on which large round holes are made here and there. In these holes bags are placed, and in the bag the impregnated, frosty-looking earth found every morning along the lake. Over this earth, water is poured, and the liquor which sinks through the dirt, and is drained from the bag, passes into a vessel below. The solution thus caught is evaporated over a fire, and tequesquite in the result. This is the whole process, remote as the days of Montezuma from all notions of steam. The soda-makers, in color and kind, appear to be of one lump with the earth, minus the salt, and live in mud-bricked houses. For this country adobe, or dried clay, is a better material than logs. Wood is scarce and hard mud is plenty, standing well up against sun and rain. For want of a better, adobe forms the filling of most of the hacienda house-walls, and even in the shape of a mud-hut is recommended for coolness; so that, upon the whole, I fear that travellers have sneered a little ignorantly at the clay houses of the poorer sort of Mexicans. As to the dirt of the inmates themselves, that is another question; although the dust of the country is a proverb. As contrasted with the rude process described, the statistics of Tescoco salts are highly interesting. I have the authority of a professor of the Mineria for saying that the Valley produced annually 15,000 quintals of crystalized or pure soda, and 33,000 quintals of *tequesquite* or impure soda. What might not be done with this saline treasure if more general and scientific appliances were put to work? Dr. Seager, an intelligent foreign resident of the capital, reaches the value of the lake salts by assuming the cubic meter at ten per cent. solution to contain 217 pounds of salts, which. at $12 per carga, is worth $4 33, for or altogether $5 "When the water of the lake," says Dr. Seager, "contains ten per cent in solution, I take its superficies at 54 square miles, or one fourth of its maximum contents. This is 150,000,000 of square varas, or 125,000,000 of square meters, and should be then one-half a meter in depth, and in round numbers 67½ millions of cubic meters, which, at $6, would be worth $312,500,000. These figures seem to have been approved by Mr. Bowring, a competent scientific gentleman, cousin of Sir John Bowring. He declares salt is to Mexico, what guano is to Pern. Writing in May, 1866, he says: "Up to the present time, its value is a nullity; but when the railroad shall carry it cheaply to the coast, the lake of Tescoco has alone sufficient to produce a value that will surpass the product of the silver mines of Real del Monte, Guanajuato, and Zacatecas united." Peru pays its debts with guano, and Mexico may do the same with salts. Bowring says that he dug seven or eight feet below the lake and found the mud to contain four per cent of these salts, and there is every probability, he thinks, that they exist at several hundred feet below the surface. Penon Blanco, in the state of San Luis, yielded $400,000 net profit in salines in 1861. Here the salt is four per cent on the surface, and 18 per cent some hundreds of feet down. The necessity for salt in reducing the sulphuret of silver to chlorides makes it plain that Mexico has an immense home market in its mines.

### Coal Query.

It is desired that the total amount of Anthracite coal consumed in the City and County of New York be ascertained. Can any of our statistical subscribers give us figures that will approximate the true amount?

## Patent Claims.

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

80,004.—POWDER FOR BLASTING AND OTHER PURPOSES.—Paul A Oliver, New York, N. Y.

I claim the use of peat in the manufacture of gun and blasting powder, substantially as set forth.

Also, as an improved article of manufacture, the powder made substantially as herein described.

80,020.—FURNACE FOR ROASTING AND SMELTING GOLD AND OTHER ORES.—John W. Shaeffer, Red Wing, Minn.

I claim a furnace for smelting and reducing gold, silver, copper and other ores, constructed substantially as herein shown and described.

80,065.—FURNACE FOR ROASTING AND TREATING ORE.—Robert George, Mineral Point, Wis.

I claim, 1. An oxydizing, desulphurizing, chlorifying, and disintergating-furnace, as shown in the drawings, and detailed in the specification.

2. A stirring-machine, with all its parts, as illustrated and specified.

3. A water and heating-apparatus, as illustrated, and for the purpose described.

4. The substitution of fire-clay or porcelain tubes, or their equivalents, for the purpose of converting water into steam, and superheating the same.

5. The cooling of the stirring-machine by air, steam, or water, used separately or combined, in the manner and for the purpose as described and set forth.

80,148.—MANUFACTURE OF STEEL, AND IN CONVERTING IRON ARTICLES INTO STEEL.—Frederick C. Curie, Lancaster, Pa.

I claim converting cast malleable or malleableized iron into steel by the process substantially as described.

80,168.—MANUFACTURE OF WHITE-LEAD.—Henry Hannen, Philadelphia, Pa.

I claim, 1. Subjecting metallic lead, after it has been treated in a chamber with acetic acid, to the action of carbonic acid gas, introduced near the bottom of the chamber, and at such a temperature that the proper degree of heat is maintained within the chamber without the use of heating-apparatus.

2. Subjecting metallic lead, during the process of its conversion into carbonate of lead, to the action of solutions of chloride of soda and carbonate of soda, substantially as and for the purpose described.

80,232.—ROCK-DRILLING MACHINE.—John C. Smith, Troy, N. Y.

I claim, 1. The jaws J J', and K, constructed as described, and joined to the head-piece L, in combination with the crank-shaft c and stationary-rod M for the purpose of giving an up and down motion to the drill-shaft N, substantially as and for the purposes herein set forth.

2. The wheel R, constructed as described, with lugs *m m*, working in the screw-threads on the shaft C, and connected by means of rods *k k* with the flanged collar O, in combination with the lever *h* and lug *o*, on said collar, and the groove *p*, on the drill-shaft N, for the purpose of giving said drill-shaft a rotary motion, substantially as and for the purposes herein set forth.

3. The arrangement of the driving-wheel G, pinion H, crank-shaft c, and fly-wheels I I, when constructed as described, and used, in combination with the jaws J J', and K, for the purpose of giving motion to a drill-shaft, in drilling rock, substantially as herein set forth.

#### RE-ISSUE.

73,519, dated January 21, 1868; re-issue 3,043.—MACHINE FOR COLLECTING AND CONDENSING METALLIC VAPORS.—Ferdinand Formhals, San Francisco, Cal.

1 claim, 1. In combination with the furnace A, the screw or submerger F, formed by a covered spiral flange or blade H H, around a central shaft or axis, substantially as and for the purpose described.

2. Drawing the volatile substances from the furnace into the submerging-tank E by the screw F, from thence along the spiral opening to the chamber I, and out through the pipe J to the condensing-tank or tanks, substantially as described.

## All Sorts.

☞ A curious affair has just taken place at Mersailles in connection with the spiritual *seances* of the brothers Bonvallet, rivals of the Davenports. It seems that the brothers are in the habit of drawing profiles of celebrated persons on a black-board at the request of their audiences, and it is

claimed that in every instance these portraits are faithful. The other evening one of the persons present asked for the likeness of the Pope, and also for that of the King of Prussia. When they were produced they were received with a storm of hisses by the spectators. Then came the portraits of Jules Favre, Garibaldi, and Victor Hugo. They elicited salvos of applause, as cordial as the other demonstrations were violently hostile. A circumstance so significant could not escape the attention of the authorities. The same evening a *Commissaire* of police called upon the brothers and ordered them to desist from giving portraits of a political character, those of the Emperor and Empress being specifically included.

☞ A short time ago a prominent gentleman residing in one of the lower counties of Virginia, went on board an oyster boat lying at one of the landings on York river, and bought a few of the "bivalves" in the shell, which he proceeded to open for himself. Attached to and imbedded in the shell of one of them he encountered a metallic substance. This oyster he carried home, and these proceeded to break it to pieces with a hammer. Picture his astonishment when he found that it contained a French gold coin, known as a *Louis d'or*, of the value of about fourteen dollars, bearing date 1573. It is probable that it was lost overboard from the French fleet during the siege of Yorktown.

☞ Some enterprising correspondent, who holds "interviews" has made the discovery that the editor's drawer of *Harper's Monthly* is made up by a woman. The Colorado *Herald* remarks that if the correspondent aforesaid will prosecute his "interviews" still further he would find that a great many other editor's drawers are also made up by women.

☞ A VAIN man's motto is, "Win gold and wear it;" a generous man's, "Win gold and share it;" a miser's, "Win gold and spare it;" a profligate's, "Win gold and spend it;" a broker's, "Win gold and lend it;" a fool's, "Win gold and cud it;" a gambler's, "Win gold and lose it; a wise man's, "Win gold and use it."

☞ The use of steam on canals has been checked by the damage done to the banks through the great disturbance of the water. They are trying a plan in France for avoiding this by enclosed paddles that project below the keel.

☞ An exchange says: "There is something sweet about little girls." The Louisville *Journal* adds, "and it grows on them as they grow bigger."

☞ The coaches are now running between Salt Lake and Helena, Montana, nearly 600 miles, in four days.

☞ Four war chiefs of the Nez Perces nation are expected to arrive in this city *en route* for Washington in a few days.

### IRON INTEREST FOR SALE.

Our readers will find in another column an advertisement handed us by Dr. L. FEUCHTWANGER. The Dr. controls the property of the Asbury Iron Mining Company, and now offers for sale one-fourth interest in the same, or indeed the whole property. The mine is situated about fifty miles from New York City, and has been already partially developed, some two thousand tons of very rich magnetic ore having been removed. We understand the deposit is some twelve or thirteen feet wide. It is our opinion that iron men desiring to purchase such kind of property, would do well to communicate with Dr. F. in regard to the property placed at his disposal. His address is 55 Cedar street, N. Y. City.

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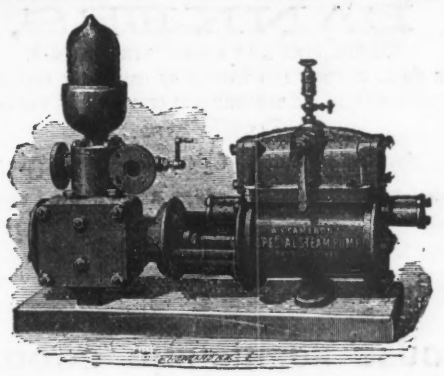

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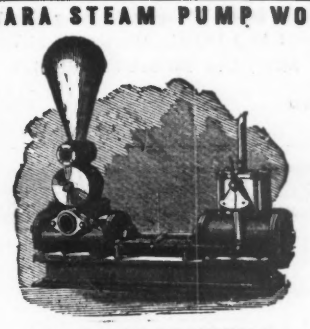

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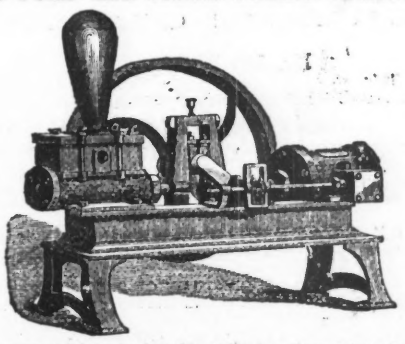

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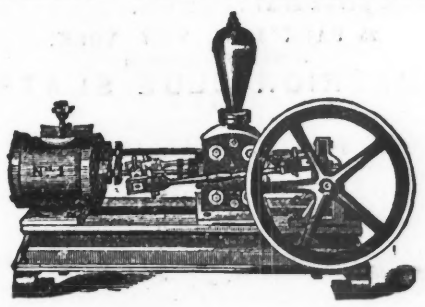

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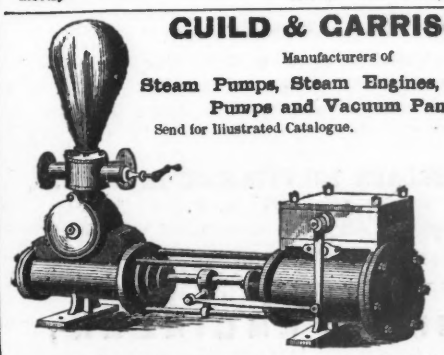

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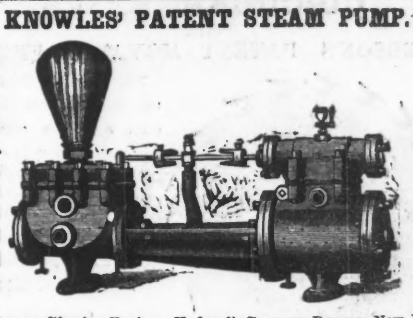

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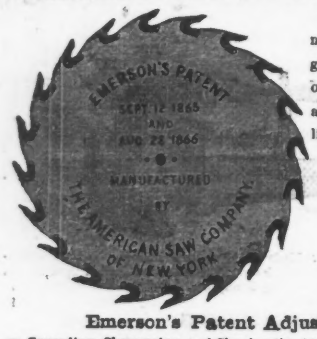


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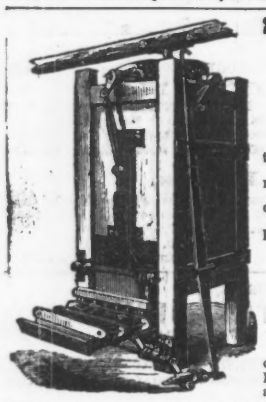

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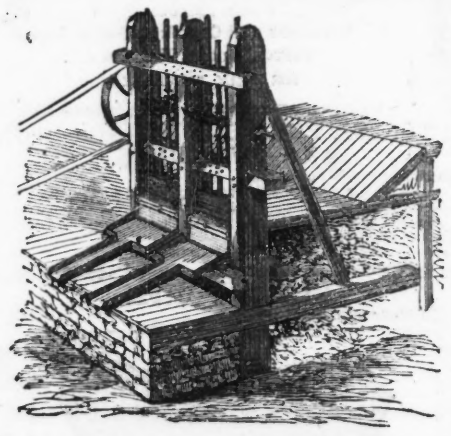

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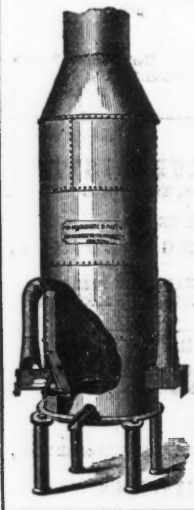

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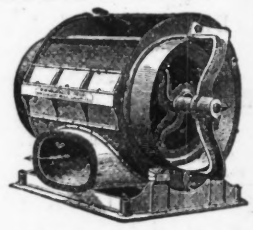

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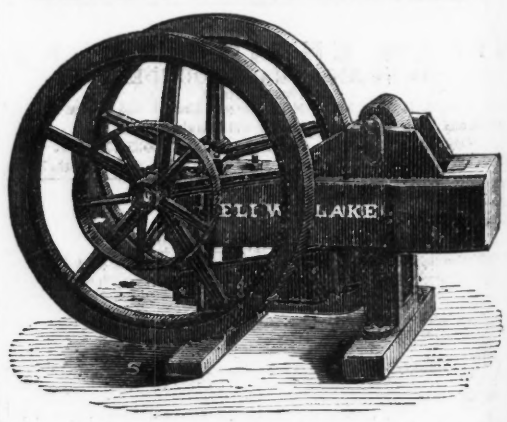


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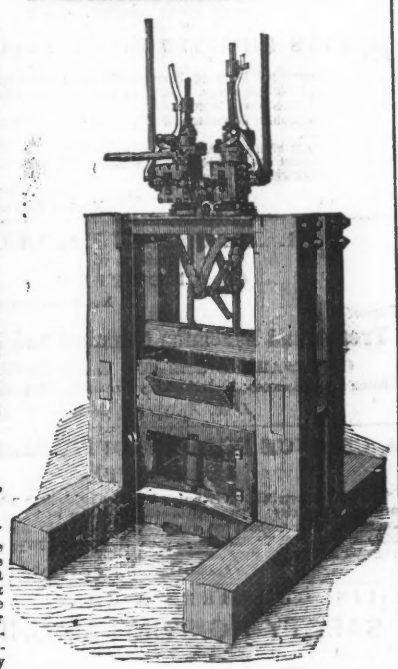

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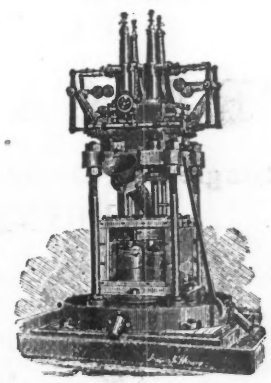

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