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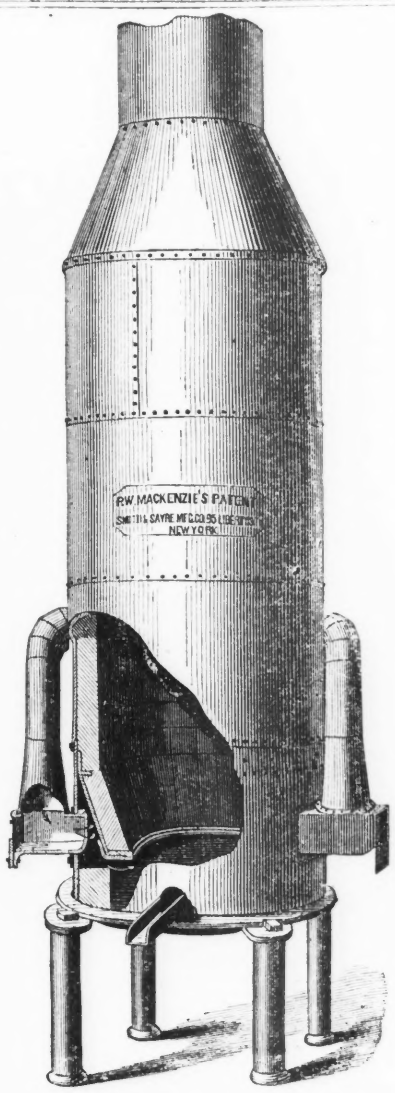
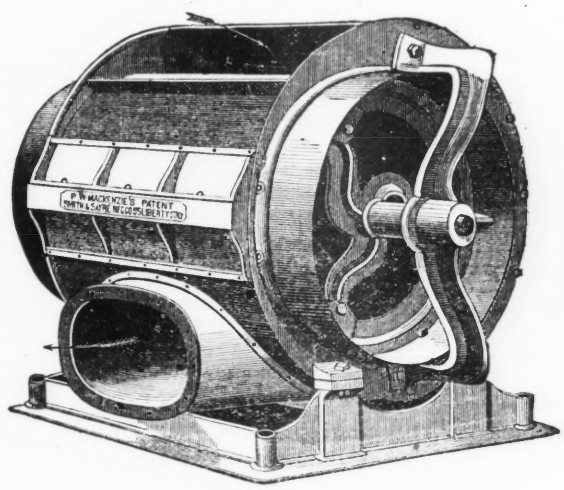
IMPROVED CUPOLA AND BLOWER

The regulation of the blast in cupola furnaces is ever of great importance, as it is necessary for it to penetrate the entire mass of fuel and metal without being so strong as to decarbonize the metal too much. In the furnace which we illustrate this difficulty, the manufacturers state, has been successfully overcome, and the furnace rendered capable of melting with greater rapidity and with less fuel, and producing the liquid metal at a higher temperature than furnaces otherwise constructed. The improvement intended to accomplish this is represented in the accompanying engraving, and the principal feature of it consists in surrounding the lower portion of a cupola by a continuous air-chamber, so constructed and arranged with the cupola that the blast enters below the bosh, all around the contained mass of material, in a thin sheet. The blast-chamber has a horizontal flange, or projecting plate, extending all around its inner portion, and on this projection rests the brick-work composing the bosh and cupola of the furnace; below this flange is a continuous opening or channel, extending from the blast-chamber to the interior of the furnace, through which the blast enters. The hearth of the furnace is made to correspond in contour to the bosh, but is made so that the bottom of the bosh overhangs or projects inward. The hearth is provided with the usual tap-hole and dumping-door, and is supported on a stand in the usual manner. It will be seen that the blast supplied to the surrounding air-chamber will escape from the chamber into the fuel and other material at all points, in the contour of the bosh, through the open and continuous space. Another important feature of this cupola is the form of bosh in connection with the discharge blast all along its sides, whereby the mass of fuel to be penetrated by the blast is presented in a comparatively thin vertical strata, and the blast introduced against the sides of the strata in continuous sheets, so that the mass is easily penetrated to its core by the blast, without having the latter injuriously strong. The difficulty which formerly existed, by the liability of the molten metal and other material clogging up and coating over the mouths of the tuyeres through which the blast escaped, is avoided by making the bosh of the furnace to project inwardly over the hearth where the blast enters, and the liquid metal will flow from the bosh into the hearth and will thus pass entirely clear of the mouth or the openings through which the blast enters the furnace, in lieu of having a tendency to trickle into and choke up the openings. In connection with this improved cupola, we present to our readers a view of an improved blowing apparatus, intended by its construction to secure a very strong and positive blast, at a very low speed—90 to 100 revolutions per minute, and at a very moderate expense of power. The manner of admitting the air into the cupola also helps to reduce the amount of power needed to drive the blowers. The apparatus as represented is supported and contained in an iron frame-work, and the fans, which produce the blast, are supported by the shaft, and caused to revolve by the revolutions of a cylinder contained within the shell or case of the machine. There are three of these fans, loosely attached to a fan shaft, and so arranged that they may adapt themselves to the continuous change of angle at which they pass through the cylinder. The cylinder contained within the shell of the machine is hollow, and enclosed within it is the axle of the fans. When the cylinder is in motion, the fans are caused to gradually project beyond the circumference of the same, and then gradually to recede, so as to conform accurately to the air-chamber formed between the cylinder and the outer shell. The air is drawn into the machine at the upper extremity, being received in the direction of the arrows as there shown, and is then conducted within the air-chamber to the discharge opening, and from thence may be conducted to the furnace or wherever the blast may be required. The axle of the cylinder revolves on bearings which are secured to the frame of the machine, and a pulley is attached to the cylinder, by means of which motion is communicated to it. By the application of power to the pulley, motion is communicated to the cylinder, which, by its revolution, carries around with it the fans on their axle. We are informed that these blowers are principally used throughout the United States and Canada, in connection with cupola furnaces; also for blowing charcoal blast furnaces, and give ample satisfaction. The reader's attention is directed to them for ventilating mines, for which purpose they are said to be well adapted. The Smith & Sayre Manufacturing Co. are the sole manufacturers, to whom, at 95 Liberty street, New York, all communications relating to the blower and cupola may be addressed.





Great Quartz Mine.

According to the Alpine *Miner*, the Sierra Butts or Reis mine, near Downieville, California, still continues its wonderful yield. It has paid, without interruption, for sixteen years, and not less than ninety thousand tons have been taken from it, and it now has forty-five thousand tons of pay ore in sight—enough to keep the two mills running for two years—and the owners are now making another tunnel, in which it is expected to open up the mine so as to have a supply of rock in sight sufficient for fifteen years. The total production last year was $224,000; the dividends, $144,000; the expenses, $70,000, and the reserve in the treasury at the end of the year $10,000 greater than at the beginning. The net yield was therefore $154,000. The mine is five thousand one hundred feet high, on the steep side of the Downieville Butte, fifteen hundred feet above Sierra City, and above the nearest wagon road. All the supplies are brought by pack-mules, except such timbers and castings as are too heavy, and those are let down the steep mountain side, from above, with ropes. The steepness of the Butte enables the company to reach the vein by short tunnels, to a depth of one thousand feet below the present workings, and also enables them to get an almost unlimited power with a small quantity of water.

Converting Pig Iron into Steel.

The attention of iron-masters in South Staffordshire has been recently directed to the process invented by Mr. Heaton, of the Langley Mills, Nottingham, for purifying pig iron, and converting it into a kind of steel. The following is a brief description of the process: "The mode of procedure is to place from 7 to 9 lbs. of nitrate of soda in a movable bottom, which, with a perforated iron plate over the salt, is clamped to a cylindrical converter, lined with fire bricks, and having an upright funnel to carry off the products of combustion. A charge of about 14 cwts. is run into this converter from a cupola. Rapid combustion takes place for about two minutes and a half. At first, ruddy flames, arising from the decomposed nitrate, are given off. The flame then becomes bluish, and finally dark colored; after which a series of sharp explosions follow in rapid succession, and brilliant sparks are given off, something similar to the scintillations observable in the Bessemer process. When the action has subsided the metal is run into ingots." The metal thus produced has a porous character, and looks more like chilled cast iron than anything else. It is said that a substance closely resembling steel has been made by this process, but the experiments do not seem to have been yet conducted with that systematic accuracy which is desirable before the results can be relied on. Already several Staffordshire firms have taken up the matter, and are said to be satisfied of the value of the process. They intend to apply it especially to the purification of the cinder iron produced extensively here.

The Philadelphia Mint Works.

A Philadelphia paper says: The one and two cent coins now made at our Mint are of bronze, and do not contain nickel, as many persons suppose. The three and five cent coins are of an alloy composed of one-fourth nickel and three-fourths copper, and these latter coins are government promises to pay. The nickel works at Camden, N. J., have supplied to the Mint nearly all the nickel hitherto used for those coins; though owing to the inequitably low import duty on nickel, (fifteen per cent.,) it was found necessary to stop refining at Camden, and to send to England the partially worked ore of Gap mine to be refined there, and brought back to the Mint as finished nickel. Having recommenced a year ago to refine nickel at the Camden works with the aid of the best European skill, they have since then supplied the Mint with a choice quality of nickel, American made throughout, at the current rates, considerably lower than the average price heretofore paid by the Mint. About a month ago, however, the officers of the Philadelphia Mint, by inviting proposals from England, entered into contract with an English firm for a supply of nickel a few cents under the American market price, so that considerable of our coin will hereafter be really made out of English metal. The total value of the Gap mine and Smelting Works and Camden Nickel Works, is but about $300,000, though those establishments employ two hundred hands and a capital of $300,000. That product is, however, capable of yielding German silver wares worth $10,000,000, or coins to the amount of $3,000,000. Nickel is a white metal, requiring a high temperature for fusion; it is magnetic, and has a specific gravity of 8·5. It is not an abundant metal, there being but three or four localities of it in the United States, and the only locality

where it is profitably worked is in Lancaster county, Pa., about four miles southwest of the Gap station, on the Pennsylvania railroad. A remarkable fact in regard to this metal is that it forms an important ingredient in most aerolites and in the masses of native iron found in various parts of the world, and which are supposed to have had an aerial origin. The furnace for reducing the nickel ore is about one half mile north of the mines. The ore is brought here and roasted in large ovens to expel the sulphur with which it is charged. It is then smelted in a small furnace, somewhat similar to an iron furnace, with a flux of limestone and quartz, the fuel being coke. It runs into "pigs," which are generally porous and friable, and contains a number of impurities—iron, copper, cobalt, &c. These mines were opened with a view of obtaining copper, but the ore was soon discovered to be richer in nickel, a more valuable mineral, and since then they have been worked for that metal exclusively. The introduction of nickel cents by the Government, and the war, which rendered small change so scarce, gave great impetus to these works. The coinage of pennies at the Mint during the month of July was as follows:

	No. of pieces.	Value
One-cent pieces	1,252,500	$12,525
Two-cent pieces	285,000	5,700
Three-cent pieces	382,000	11,460
Five-cent pieces	3,188,000	159,400
Total	5,107,500	$189,085

Original Papers.

COTTA'S LAW OF THE EARTH'S DEVELOPMENT.

A Paper read at the Burlington Meeting of the American Association for the Advancement of Science, by R. W. RAYMOND.

Baron Bernhard von Cotta, Professor of Geology at the Academy of Mines, Freiberg, Saxony, a *savant*, whose wide reputation needs no additional praise from me, has distinguished himself of late as an enthusiastic advocate of Darwin's celebrated theory of the origin of species; and, in a recent *brochure*, "Concerning the Law of the Earth's Development," (*"Ueber das Entwickelungsgesetz der Erde."*) has sought to apply a similar theory to the inorganic realm. The treatise to which I allude has been translated into English by a member of this Association, Dr. Justus Adelberg, of New York, and published in the columns of the American JOURNAL OF MINING, Nos. 1, 2, 3 and 4 of the current volume. It is the object of the present paper to call attention to that treatise, and to offer one or two suggestions concerning the theory it contains.

Prof. Cotta formulates his law of development thus: "*The multiplicity of apparent forms is a necessary consequence of the summation of the results of all successive events*"; or, "*multiplicity of forms of development is the consequence of severally occurring foregoing events.*" In other words, the condition of things at any one point of time is a summation of all preceding events and processes; and, in the nature of the case, such a summation must present, as time passes, an ever-increasing multiplicity. In Cotta's words, "when a second is joined to a first, then a third to both, and so on, there must unquestionably result an increase in the number, either of things or of the members, parts, or forms of one thing; and the complexity of this one thing grows by constantly accumulating transformations. This one thing is, in the present instance, the earth, which has constantly transformed itself essentially without the addition of new material."

I fear that any attempt to sketch the argument of the treatise, which is itself but a sketch, will do injustice to the Professor's theory; yet I venture to outline the succession of his thoughts, referring to the essay itself those who would become fully acquainted with them.

His main proposition is this: If we may assume (what many lines of observation and reasoning render, to say the least, extremely probable), an immense original temperature of the aggregated material constituting our globe, and under the influence of gravitation, chemical affinity, &c., and secondly, a constant decrease of that temperature by radiation of heat, the successive changes of the earth may be easily explained as the necessary effects of this initial state, and its present condition will appear as the necessary result of the summation of all individual processes of change. The inequality of temperature between the globe and surrounding space is ascribed to the condensation of the gaseous sphere from the diffused or dissolute condition. This condition is not recognized as the absolute, but only, for the purpose of study, as a convenient beginning of the processes of cosmic change. Choosing, then, as a starting point of subsequent development, the earliest individualization of the earth as a celestial body in gaseous form, our author distinguishes the following stadia of progress, without meaning to assert that the lines between them are sharply drawn.

FIRST STADIUM.

Principal Acting Force.—Gravitation.

Effects.—Spherical aggregation of matter, and consequent immense temperature of the gaseous sphere.

SECOND STADIUM.

Agents.—In addition to the foregoing, heat, (light, electricity, &c.,) radiation.

Effects.—By radiation of heat into colder space, a part of the gaseous substance becomes liquefied. A liquid nucleus is surrounded by an aeriform envelope. This is the first differentiation. We have already two conditions, and at least two kinds of substance, instead of the previous homogeneity.

THIRD STADIUM.

Agents.—In addition to the foregoing, chemical affinity (crystallization).

Effects.—By continued refrigeration, a part of the liquid nucleus is solidified; a solid mineral crust is formed about the liquid nucleus, and surrounded by an aeriform envelope.

FOURTH STADIUM.

Agents.—In addition to the foregoing, water.

Effects.—The progress of refrigeration having rendered possible the formation of water on the surface of the solid crust, the process of aqueous formation begins. Between the solid crust and the aeriform envelope appears an interrupted stratum of water.

FIFTH STADIUM.

Agents.—In addition to the foregoing, organization.

Effects.—After a certain decrease of temperature, organic combinations of the elements are formed, and, out of these, organisms, the multiplicity of which continually increases, like that of inorganic forms. The manner of this increase, by change of external condition and by natural selection, is explained in Darwin's Theory of the Origin of Species, which takes its place, therefore, as a subordinate proposition under the general law of development.

SIXTH STADIUM.

Agents.—In addition to the foregoing, ice.

Effects.—The decrease of temperature attains a point where the differences caused by unequal action of the sun's rays become perceptible. Climatic zones, and finally, ice-regions, are formed; and glacial action is, from this point on, one of the effects and causes of change.

SEVENTH STADIUM.

Agents.—In addition to the foregoing, the activity of mind.

Effects.—Mental life develops itself more and more in the animal kingdom, and attains in man its present maximum. Man inaugurates a peculiar organic kingdom, rising above the animal, as that, in turn, above the vegetable kingdom. The faculties of the body are complemented and partly replaced, in man, by those of the spirit, as a clearly defined function; and species based on differences of form become unnecessary. The development of mental life depends again, as we have said, on a summation of results. One thought, one discovery produces another, and so forth and forth. The sum of the mental acquisitions of our ancestors enables us to make new progress in this sphere. We cannot yet foresee a limit to the development of art and science, or to that of thought; it seems unnecessary, therefore, as yet, that a new phase of life-form should appear, after the present highest one; and it is impossible to predict in what such a still higher development could consist.

"Thus," says our author, "we have attempted to sketch, in general outline, the development of the earth as, certain things being assumed, it must necessarily have taken place, fully confessing, at the same time, that the enigma of its origin, its cause, its inmost nature, and its ultimate destiny, remains unsolved by such an inquiry."

There is nothing startling, and perhaps nothing new, in the above enumeration of changes. The catalogue itself is a tolerably familiar one to geologists; and though Cotta himself is an adherent of that school which has received at the hands of Bischoff such tremendous blows, yet possibly all schools, whether Plutonist, Neptunist, Neo-plutonist, or Neo-neptunist, would unite in affirming the general correctness of the succession he lays down. But the hypothesis that each stage is developed from the preceding one, or rather, that each stage is but a summation of all preceding ones, is perhaps less acceptable. The doctrine of successive creations or interferences of any external power, is completely excluded; and it is this feature which first challenges attention. It does not fall within the object of this brief paper either to defend or dispute the Darwinian theory, as held by Darwin himself; but this expansion of it to cover the inorganic world, and especially to unite the history of matter and life and mind as one unbroken chain, is open to some objections, not urged against the mere law of natural selection. It must be admitted that there are two chasms in this series, only to be bridged by daring and unwarrantable assumptions. The first is between the crystal and the cell. The second is between the cell and the soul. *A priori*, neither decrease of temperature, nor differentiation of conditions, nor summation of results, can be presumed to evolve a soul from a cell, or a cell from a crystal. And experience seems to incline to the side of this philosophy; since the present tendency of scientific investigation is towards the conclusion that organisms cannot be produced from inorganic forms, except by the intervention of the vital force. In other words, life only produces life. Under this head, Prof. Cotta says: "Certainly we do not yet know the conditions or laws of this force, as we do, for instance, those of gravitation; vital force, is therefore, at present, but a name for something known only by its effects. But the laws of gravitation, light, sound, chemical affinity, &c., were also for a long time unknown; they have been discovered by man only in modern times, and very gradually; their phenomena were formerly as mysterious as are those of organic life at the present day." And again: "If it is already possible to produce from inorganic elements those compounds which are found in organic life—an achievement of the most recent times—we may hope yet to discover the conditions under which cells, and, from these, organisms, originate." But, according to the theory under examination, the first organic cell is but a feature of that multiplicity which results from a summation of all preceding inorganic processes; and so far from proving that this is so, no one has been able to demonstrate that it could possibly be so. Is it true that analogy points to such a progress of investigation as will fill up the gap between inorganic and organic forms, and establish crystallization and organization to be convertible forces? The conclusion is hardly justifiable. To say that we shall know more than we now do, about the vital force, is one thing; to presume in advance what this knowledge will teach us, is quite another thing. "Vital force is but a name for something known only by its effects." Do we know any force, except by its effects? Have our experiments in chemistry ever gone beyond the point of watching the operations of Nature? Have we ever made a crystal? Have we not rather merely observed how Nature makes crystals, whether in the laboratory of the chemist or the greater laboratory of the earth? Do we not in the same way observe how Nature produces life, by the instrumentality of life? We are certain to learn more, but we are not certain to learn other, than what we have observed already.

The question of the origin of mind must be admitted to occupy a similar position. No theory which ignores the essential characteristics of man, can be accepted by man. We shall not succeed in reasoning away reason, nor obtain personal belief in the non-existence of faith. These phenomena of mental life are not to be excluded from the earth's history, nor explained by material hypothesis. "Man stands on the summit of the ages," as the poet says; but he stands as the top-stone of a pyramid, not the topmost branch of a tree.

There are, then, at least two epochs in the history of the earth's development, to account for which this law of development is insufficient. Indeed, Cotta does not attempt to account for them, but pronounces them facts, still unexplained. These unexplained facts, however, preserve the possibility of particular creations; and this being admitted, the doctrine of particular creations must be considered as by no means yet overthrown. This very mind of man, the origin of which is unknown, is admitted to be an acting power during the seventh or latest period of progress. The activity of mind, then, cannot be pronounced impossible during former periods. It is not necessary to claim so much for the theory of development. Its practical truth and value are not impaired by the doctrine against which it is sought to wield it. Whether we consider this series of cumulative change as the expression of a will or of a fate, a plan or a necessity, it is equally grand and beautiful; and in either case, moreover, it leads us to another most important conclusion. Assuming that the present total of phenomena is but a summation of all preceding processes of change, and accepting the necessary corollary, that such a summation represents but a temporary, or instantaneous, not a final maximum of multiplicity, we are irresistibly led back to a beginning of the material world. This present summation cannot be infinite, since it is still increasing; but if it be not infinite, then it cannot be the sum of an infinite ascending series. Retracing the steps of development, we find an ever-diminishing multiplicity, or, what is the same thing, an ever-increasing simplicity of conditions and forms. The myriad tribes of life are reduced to few and rude types; these vanish, and the vast variety of rock-formations, differentiated through unknown periods of cumulative transformations, contracts, as we proceed, back to the congealed crust, the liquid, fiery mass, the gaseous ball, the nebula, the *materia dissoluta*, "without form and void." Inevitably, irresistibly, we approach the primal condition of matter and force. As certainly as two converging straight lines intersect, so certainly does this process of integration bring us at last to the beginning of the series of change—the instant at which force began to act upon matter; in other words, the instant of the origin of matter, and of those modes of force which are expressed materially. Back of that there is only force—not forces; the Absolute. If geology has proved anything, it is, that organic life upon the earth had a beginning. Darwin's theory and our own observation agree in that, wherever else they may not agree. With equal force the law of development points out, what our observation cannot expect to confirm, that the material world also had a beginning. This conclusion, as a definite result of reasoning, has, it seems to me, been furnished to us for the first time by modern science. The old and favorite argument from effect to cause, and thus to first cause, was vitiated by the discovery that the relation of cause and effect in a material sense, is imaginary; and the materialist might construct his universe as a circle of changes, without beginning or end. Heat is transformed into motion, electricity, &c., and so back to heat. There is no progress in that. Matter passes through a thousand phases; but so far as we can perceive, the chemical elements continually reappear, unaltered in weight or quality. There is no hint of a beginning. The law of development puts into our hands a weapon which philosophers have sought in vain—the weapon of a mathematical demonstration. I do not mean the mathematical demonstration of the fact of the existence of a Divine Being. That fact lies entirely outside of our powers of reasoning. True science does not intrude upon the domain of Faith; and it is as presumptuous to attempt to *prove*, as it is to attempt to *disprove*, such a fact. But we may with propriety demonstrate, and rejoice in the demonstration, that the most rigorous material hypothesis leaves a place for our faith undisturbed. If I may so say, there is a niche or vacancy remaining in the system of the natural philosopher, which the conception of Divinity, and nothing else, can fill. Reason and moral intuition are brought into harmony. Science, like the human soul, cries out for God!

It remains to show that, as the idea of original creation, if not proved, is at least, not at all excluded by the theory of de-

velopment, so also the idea of successive creations neither conflicts with the actual law of development, nor impairs its beauty and symmetry. For the sake of brevity, I will indicate this argument mathematically, feeling assured that the use of numbers and equations in this sense, as a mere convenient symbolism, will not be misunderstood.

Development, as defined by this theory, must not be considered as progress towards perfection, in the ordinary use of that term, but as increase of variety by summation. But the word summation is itself borrowed from mathematics, and hints to us the representation of this increase by mathematical forms. The simplest conception is that of the geometrical series 1 : 2: 4 : 8 : 16 : 32, &c., in which the first term represents the original simplicity or uniformity, and the succeeding terms the increase of variety in geometrical ratio, each term being in reality a function of the preceding term, and therefore of the whole preceding series. The summation of the law of development is not, however, equivalent to the arithmetical sum of all the terms. On the contrary, each term is itself a temporary summation, and the total multiplicity of forms and conditions at any period would be the n^{th} term of the series, or

$$1+\frac{n-1}{1}+\frac{(n-1)\ (n-2)}{1.2}+\&c. \ldots\ldots = 2^{n-1}$$

But we may represent the increase of variety by more than one series, by different series joining as streams flow into a main river. We should then have

1	2	4	8	16	32
	1	2	4	8	16
		1	2	4	8
				1	2
1	3	7	15	31	63

This series is more in harmony with Cotta's description of the different acting forces and their effects. Thus, for instance, the first series represents the increase of variety through radiation of heat; the subordinate series, in turn, are those of chemical affinity, crystallization, aqueous agency, &c. The n^{th} term of this series

$$=1+2\left\{\frac{n-1}{1}+\frac{(n-1)\ (n-2)}{1.2}+\&c.\right\}=2\ (2^{n-1})-1$$

is the formula for total multiplicity at any point in the series. But this formula represents a special case under the more general formula

$$1+(1+x)\left\{\frac{n-1}{1}+\frac{(n-1)\ (n-2)}{1.2}\right\}=2^{n-1}+x\ (2^{n-1}-1)$$

for the n^{th} term of a series the ratio of which is constantly increased by x. This last formula is quite in harmony with the law of development; and this comparison of algebraic symbols indicates that the hypothesis of a continual increment of multiplicity by the creation of new forms is not only not excluded, but is actually hinted by the conditions of development. In other words, the appearance of successive agents, such as radiation, chemical force, crystallization, &c.—agents which are assumed to have been latent, i. e., virtually non-existent before, but which, once having entered into the series of series, become and remain ceaselessly active, is itself but a mode of successive creations—a special case under a general head; and, without impairing the authority of the law, we may substitute the general expression for the special one, as easily as we substitute x for a known quantity in the algebraic formula.

There are minor objections to the details of Prof. Cotta's theory, which still do not, as I conceive it, invalidate its practical usefulness. For instance, his hypothesis of the formation of a congealed crust around a liquid fiery nucleus, is perhaps untenable, in view of the fact that this congealed crust would be of greater density than the fiery-fluid nucleus, and that consequently we might rather expect the first solidification to have taken place at the center of the globe, not on its surface. It is hard to dislodge Pluto from the fiery seat which he has occupied since the age of fable; but relentless science seems to call him from his sanctum sanctorum, and thrust him forth upon a cold and continually refrigerating world, Unhappy son of fire! He is fallen upon evil times. Nothing is left him but a lingering death by radiation into space.*

Waiving all discussion of details, and regarding Prof. Cotta's theory as a comprehensive view of Nature, I must repeat, that it seems both beautiful and useful. It is a lens through which we view with new interest the history of our earth. We have ventured to make some corrections for the lens; and we do not see through it precisely what the owner does; but in spite of the imperfection of glasses and the difference in eyes, a good telescope is a good telescope. Long may the genial and brilliant Cotta yet sweep with his new instrument the field of the earth and sky!

* This passing allusion to the argument recently so strongly put by Mr. Sterry Hunt, is not intended to express a definite opinion on either side of the question, but only to notice, as candor seemed to demand, this modest point in the series, the remainder of which expresses the nearly unanimous belief of geologists.

☞ **The American tube well is meeting with favor in England.** The London *Mechanics Magazine* noticing a recent trial of the new system in Manchester says that water was reached in five minutes from the commencement of operations, and in twenty two minutes a depth of ten feet had been reached; the pump had been fitted to the top of the well, and a flow of water was obtained. One of these wells, to the depth of fifteen feet, has been sunk in the Botanical Gardens. The work was done in an hour, and an excellent supply of water obtained. The process is thus described: The well consists of an iron pipe 1¼ inches in diameter, about 12 feet long, pointed at one end, and perforated with holes about sixteen inches up the pipe, from the pointed extremity. A movable iron clamp is fitted round the pipe, and, upon the principle of pile-driving, a 56lb. hollow weight is raised and allowed to drop upon the clamp; thus the pipe is driven into the ground. Earth, sand, &c., first enter the pipe through the holes, and these are pumped out.

Mining Summary.

GOLD AND SILVER.

Nevada.

Twin River District.—The *Reveille* reports that the Murphy mine and mill of the Twin River company produced during the month of August the handsome sum of $44,055 20. Probably a brief description of this mine at the present time will be read with interest. We have the following particulars recently contributed to the San Francisco *Bulletin*: The work of exploration and development, says the correspondent, consists of an original prospecting shaft and an incline of no great depth, a tunnel driven in several hundred feet longitudinally on the ledge (which failed to reach any body of good ore), and the present working shaft reaching with the incline at its bottom to a depth of 130 feet, with extensive drifts on the ledge. The hoisting, heretofore effected by horse-power, is now performed by steam, substantial works for the purpose having recently been erected. Owing to water in the mine no ore is now being raised from its lower levels, and as a consequence the company's 20-stamp mill, one of the most perfect in the country, is running only half its batteries. The ore now being crushed yields between $90 and $100 per ton, which, coming from near the surface, is considerably less than the average of that worked the past year, the latter having run from $103 to $119 per ton. By careful assorting it would be possible to select a good deal of $300 ore from this mine, but in practice only one class is made, the good and bad all being thrown together. It requires roasting, the cost of reduction at the company's works being about $30 per ton. The rock is dry-crushed, the mill, when worked up to its full capacity, reducing about eighteen tons per day, giving a daily yield of over $2,000 in bullion. The cost of reduction is somewhat greater here than in most districts outside of Austin, owing to the high price of wood, which is growing scarce in the immediate neighborhood of the mine. This company is now paying $10 per cord for nut pine, delivered at their mill. They employ a force of forty-eight men in their mill and a somewhat larger number in and about their mine. The wages paid vary from $4 to $5 per day to the hand in gold. The Murphy ledge, which had a thickness of about sixteen feet on the surface, has expanded to something over twenty feet in the lowest level opened, a belt of six or eight inches thick next the hanging-wall carrying most of the pay ore, which at present strongly resembles that of the Gould & Curry mine. The ledge has carried this pay streak with great regularity from the surface, and there is every probability of its continuity downwards as well as longitudinally on the vein. With sufficient hoisting power to keep their mine free from water, the company expect to run their mill hereafter without interruption, in which event it is thought they can largely increase their product of bullion, swelling it the coming year to a sum approximating, and perhaps exceeding $600,000. There are along the Toyabe range, on the same slope with the Murphy mine, several other ledges of great promise, some of which have been thoroughly developed, and for the working of which mills are now being erected. The La Plata company, owning a series of rich ledges in Park canon, twelve miles north of the Murphy mine, are preparing to build a large mill for working their ores, which will probably be completed in the course of the summer. The Canada and Buckeye ledges, in Summit canon, four miles north of the Murphy, are likely to develope into valuable mines: the Great Smoky ledge, forty miles further north, now thoroughly prospected by an extensive tunnel, also displaying a heavy body of pay ore, and showing almost conclusive signs of great wealth.

Silver Peak District.—A correspondent writes: A single company owns nearly all the ledges of known value, as well also as the Red Mountain district adjoining it on the west. Over two years ago a 10-stamp mill was removed from Jacobsville, Lander county, and set up at Silver Peak. It was a rather poor concern, and the ore having been worked without roasting scarcely more than one half the metal contained in it was supposed to have been saved, yet the amount of bullion turned out by this mill was quite remarkable, the rock thus imperfectly worked having yielded about $200 per ton. This mill, together with the Vanderbilt ledge, the most valuable in the district, and several others of less importance was owned chiefly by Samuel B. Martin of San Francisco, who has since sold the same, retaining himself a considerable interest therein, to an Eastern company. The company having also purchased of the original locators, Hughs, Carpenter & Cammack, the principle mines in the Red Mountain district, together with a 5-stamp mill, also the property of those parties. This ten-stamp mill is to be removed to Red Mountain, to be employed, with the one already there, to reduce the ore of that district, which, carrying mostly free gold alone, is easily worked, while a large and in every respect superior 40 stamp mill will be put up this summer for the use of the company's mines at Silver Peak; much preliminary labor, such as clearing the site, procuring the lumber and other materials, shipping in of machinery, etc., being already performed. The new mill is to be propelled by two 100-horse power engines, each to be supplied with two boilers weighing 10,000 pounds a piece. It being the intention of the company to make the establishment first-class throughout, to which end the services of the most competent men have been secured in the several departments connected therewith, and the most liberal provision made in the way of money expenditure. To J. E. Clayton, the well-known geologist and mining engineer, has been committed the general superintendency of both the building and mining operations, all of which it may be predicted will be carried forward with skill, energy and economy, as Mr. Clayton brings to the discharge of his duties, besides a large fund of scientific knowledge, many years of practical experience as a miner and metallurgist. The prospects of this company are extremely flattering, and it is expected that the earnings of the new mill will, from the start, be large.

Pahranagat.—A correspondent of the *Bulletin* believes that this district contains a large number of lodes that will be worked with profit when effective mills come to be erected and suitable modes of treating the ores adopted. He says: Its advantages for wood and water in the vicinity of the mines, are not equal to those of most other districts in this section of the State, though it is not behind any other in extent of arable lands and a mild and healthful climate. A 5-stamp mill was put up in this district last season by a New York company, but it has not as yet accomplished much, being first obliged to suspend operations until roasting furnaces were built, and afterwards further interrupted from other causes. This mill was erected at Hiko, some miles from the mines, this being the nearest point at which sufficient water can be had. Another Eastern company are now putting up a 10-stamp mill at the same place. The Crescent company are also building a 5-stamp mill in this district, and it is possible that still others will be put up before the season closes, rendering it almost certain that steady and very considerable shipments of bullion will be made from Pahranagat before the end of the current year, not much heretofore having been produced in that district.

Silver Bend District.—Large prairie schooners are constantly arriving with mill machinery for the various mining companies operating here, says the Belmont *Reporter*, Aug. 31. The walls of the large mill of the Combination company are now nearly completed and in readiness for the roof—three sides being of brick, and the fourth or northern side three hundred and nine feet in length of granite—and the architect is only awaiting the arrival of lumber to complete the immense structure. The machinery will be placed in position as speedily as possible. The Belmont company will, in a few days overhaul their mill and place it in fine working condition, adding new cam shaft, improved pans and settlers, and increase their steam power by the addition of a boiler now upon the ground. About ten days will be required to make the improvements. In the meantime the mines of these companies are developing splendidly. The Combination are running a drift from their large vertical shaft to the vein. This drift starts at the water level, and is now in close proximity to the lode. Upon the erection of steam hoisting works, the machinery for which is now in transit, the shaft will be continued. The Belmont company in their incline upon the Transylvania No. 1, have driven a level north about one hundred and forty feet, in which the vein is found to be much wider than near the surface and carrying ore of unequaled richness.

Reese River.—The superintendent of the South American mine on Lander Hill reports, August 29th, that the ledge was struck in the vertical shaft at the depth of 160 feet. The vein is two feet thick, and is well loaded with ore that is estimated to work $200 to the ton, says the *Reveille* ..... The same paper, Aug. 27th, gives the following figures of the bullion shipments from this section of the State. They will be useful for future reference: The amount of bullion shipped from Austin—that is, from Reese River—in the year 1866, was $949,011. From Aug. 1st, 1866, to July 31st, 1867, a period of twelve months, the amount of bullion shipped from Austin was $1,145,263 60. For the seven months ending 31st of July, 1867, the shipments of bullion amount to $865,316 72, which is greater than the whole shipment of 1866. Our estimate of the product of 1867, is $1,800,000, and we should not be surprised if it reached $2,000,000. We have no hesitation in estimating the product of silver in the counties of Nye and Lander in 1868, at $5,000,000. Thenceforward the yield of silver will steadily increase.

Quarterly Returns of Mines in Lander County.—The Belmont *Reporter* says: The Assessor of Lander county has forwarded the following additional statement of the product of the Nye county mines, from ores worked at mills in Lander during the last quarter. He adds that "there are other small lots of less than a ton each which he omits." Even now, the true returns are not given as we happen to know that the amount of ore sent from the Fisherman mine to the vicinity of Austin for reduction is much nearer fifteen tons than the amount stated below. We are not disposed to be captious in this matter, but then, if the millmen render false statements, or the Lander county official muddles things up we would have them straightened out, so that when the statement appears upon the record as an official paper it can be relied upon as authentic. Here are the additional figures: 5 tons 1,753 pounds of Fisherman ore yielded $1,820 17—about $345 per ton; 3 tons 1,898 pounds of ore from the Desert Queen mine produced $1,567 54—near $390 per ton. Both of these mines are in Reveille district.

Colorado.

CENTRAL CITY, COLORADO, Sept. 4, 1867.

EDITORS AMERICAN JOURNAL OF MINING:

According to promise, I send you a few things in reference to mining in Colorado. Up to a very recent date there never was a worse discouraged people than this. It was owing to the general crippled condition of the mining companies, Indian troubles on the Plains, and the want of an adequate treatment for our complicated ores. Now the few stamp-mills that have persistently run always, are doing well. For instance, the Black Hawk company are taking out nearly a thousand dollars a day in currency. The Sensenderfer company are making a dividend of one per cent. a month on a capital of $1,000,000, easily and regularly. The Keith process is generally regarded as a failure, although the Colorado Ore Reducing company are running their mill successfully, treating ore at a cost of $12 50 per ton, doing well and never feeling better. The agent of the Hope company, at Gold Dirt, also sticks by the process, agreeing with the one above-mentioned that they save 80 per cent. of the gold. On the other hand, three other Keith process mills are idle, their management considering them failures. It may perhaps occur to the reader that the fault is in the ore or in the manipulators, rather than in the process. Such is certainly the case with some other processes. Mr. Bertola can make handsome profits on our ores with his treatment, but no one else seems able to. Must it not be for want of skill or patience. Crosby & Thompson have been putting up new works all the season. They have met with new difficulties, but are still sanguine as ever of final success. They are on the point of starting their new works. It is due to truth to say that Colorado has ceased to hope for anything from any of the notorious if not famous processes I have yet mentioned. What has within a month revived their drooping spirits to an extent not known before for three years, are successive lots in ten and fifteen ton lots, made by the firm of Reese, Krause & Buckner, with a new desulphurizing cylinder of their getting up. The secret of their success is thorough *roasting*, no matter how much time it requires. I have been here but two days, and cannot give you particulars. But our mining men have been watching it with eagle-eyes ever since it began work 1st January, and they are universally convinced that it is the desideratum long sought, found at last, that is to give us a healthy and enduring and increasing prosperity. We are so far from you that the effect in New York cannot be felt for some time. Still there may safely be an increase of faith. Stockholders should no longer despair, and allow their properties to be sold under the sheriff's hammer for trifling debts. Two or three parties are endeavoring to improve on the machinery of the process known as the "California process," and being on the right track their chances of success are worth estimating. The object is to reduce the time required in roasting, by the more economical use of heat, the better supplying of oxygen, the more thorough and equable distribution of the ore over the heated surfaces of the cylinders, plates, &c. Prof. Hill is inaugurating the Swansea process (smelting) on a small scale. He offers thirty per cent. in gold for ore worth $50 a ton, and so on a graduated scale upward to 60 per cent. for ore worth $200 per ton. It is going so late and he has got on so slow that not much is expected of him this season. The Kenyon company are also believed to have at last perfected a paying process. I think, from what I have so far heard, that its secret is roasting with salt, the effect of which will be readily understood. The only drawback is the high price of salt—about $5 a bushel. We have salt works in the South Park producing the article in great quantity, but they have so far a monopoly that they are only necessitated to just undersell dealers who draw their supplies from the States—a temporary evil, for enterprise will be driven to the improvement of other salt springs, of which there are at least a sufficiency on Colorado. Finally, the silver mines on Clear creek and Snake river are gradually but surely developing into a fact of the greatest importance. The more forward mines and works are producing bullion regularly, though as yet in small amounts. There are those who believe that our silver interests will soon grow to overshadow all others; among whom, however, is not your correspondent, who is ready now and ever to challenge the world to produce a richer mining district, and one containing more wealth or precious metal, or favored with superior advantages as to ease of access, climate, abundance of fuel and water, than the district four miles in diameter of which this town is the exact centre.

O. J. HOLLISTER.

Colorado.

Probably the following pleasant clippings from the *Register* of the 10th will serve as acceptably as leaders to our summary of items this week as any other we could select: Gold shipments for the two weeks ending the 3d inst., foot up something over $50,000. Messrs. Garrott, Martine & Co., sent off this morning three fine silver bricks, weighing in the aggregate 586 ounces, worth in coin $659 39.....We hear that the Pleasant Valley Gulch Mining company have struck a rich pay streak, which will add largely to their next clean up. Gulch mining all over the Territory has been more profitable and extensive this season than any previous one for three years.....Mr. Ryers writes encouragingly of the mines in and about Peru district to his paper, the *News*. A great deal of interest in that section has been manifested by several capitalists who propose testing its ores next season on a large scale.....Ovando J. Hollister came safely to hand Sunday. All yesterday was employed in shaking hands with his many friends, all of whom were or seemed to be rejoiced to see him once more at home.....We learn that Professor Hill offers 60 per cent. of the value of the bullion in ores, which contain ten ounces of gold, together with 60 per cent. of the value of the copper, estimating its value at $200 per ton. For ores containing two ounces of gold, he offers 20 per cent. of the value of the bullion contained as above for the copper and silver. For intermediate grades of ore he makes proportionate offers..... Crosby & Thompson's new process, of which great hopes are entertained, will be ready for active operations this week. The printer's prayers for its success will ascend continually. Perhaps *descend* would have been the better word, but no matter..... We don't expect Messrs. Crosby & Thompson to see any thing very pleasant in the last item .....In the vicinity of the Pewabic lode, which the *Register* thinks will, doubtless, prove one of the best in the country, a tunnel is being driven by a New Jersey company under the management of Mr. Baldwin. It is now over 300 feet into the mountain, running at right angles with the usual course of the lodes. It commences south of the principal lodes yet discovered and runs south. Thus far no lodes of value have been struck, but it can hardly be possible that they will continue any great distance without doing so, as rich lodes may be reasonably expected through the entire mountain. With due perseverance, the expenditures of the company will probably be amply repaid, and with good interest too, says the *Register*. .....The same paper, of September 3d, says: The California Reduction works cleaned up yesterday the product of fifteen tons second quality ore from the Smith & Parmelee mine. As a result, they obtained forty-seven and a quarter ounces of bullion, worth in the aggregate $85t 16 in coin, or $1,157 56 in currency, which is upwards of seventy-seven dollars per ton. From this ore by stamp-mill process only from eight to ten dollars per ton were obtained. This shows an increase of from eight hundred to nine hundred per cent. Nearly eighty-three per cent. of what the ore contained was saved. This result is eminently satisfactory, and may be regarded as the solution of the great question of saving our precious metals. From this time onward we may expect prosperity. Never before have we seen the time when we were ready so unreservedly to indorse any process or mode of working, and it gives us intense satisfaction to be able to do it on this occasion.....Alex. Cameron, on North Clear Creek, is taking out $17 per day to the man.....Messrs. E. Forsaith and J. B. Sutton, who have been mining for some time in Russell gulch, cleaned up $1,364 59 on Wednesday. The cost of working had been $317, leaving $1,047 59 as a nett profit. The ground was worked over before .....The Black Hawk Gold Mining company cleaned up and retorted to-day (August 24?), 359 ounces of gold as the result of one week's run from 80 stamps, on average ore from their Gregory mine. This we believe to be the largest run ever made in the Territory, in the same length of time. The gold product of the company's works for the last four weeks, was as follows: First week, 301 ounces; second week, 314 ounces; third week, 318 ounces; fourth week, 359 ounces. Total, 1,012 ounces, being a steady increase. We need but a dozen or more of such companies to make Gilpin a prosperous county. And yet we have plenty of lodes to supply the ores. .....The Georgetown *Miner* says: The amount of silver bullion taken out and shipped from this district during the month of August, is 5,056 98 ounces, the coin value being $6,317 21, currency value $8 212 67. Of the above, the Georgetown Silver Smelting company took out 2,992 ounces, the coin value being $3,825 33. During the month the works have been run only fourteen days. The amount taken out by Garrott, Martine & Co., was 2,064 98 ounces, coin value $2,491 88. These works have not been run to more than one third their capacity during the month, and during a large portion of the time they have not run at all. For the present month we expect the yield will be considerably larger than the month past. The question as to the richness of our ores, and the manner of saving the bullion contained in them is now satisfactorily solved, our people have full confidence in the two processes now in successful operation here, and this feeling alone has given a new impetus to mining throughout the district. Besides the two works mentioned above, the Red, White and Blue company are now running their Scotch hearth successfully, and we are in hopes to be able to include the yield from their works in reports hereafter.....A beautiful piece of silver bullion weighing twenty-four ounces was taken from six pound of ore from the William B. Astor lode yesterdy. The coin value of the bullion is $32 40. The ore was selected first-class, and shows $10,800 per ton. In a short time we expect to have the returns from one ton of selected first-class, and five tons of unselected ores from this remarkably rich lode. The parties owning this property are steadily driving ahead, developing its extent and richness.....Ore from the Potosi lode at Montezuma are being packed over for reduction.....We learn that reduction works on an extensive scale will be erected here during the coming fall and winter. .... A small quantity of ore from the Malabar lode, Peru district has been brought over to the smelting works for reduction.....On Monday last, a block of pure silver-bearing galena, the weight of which is estimated at upwards of fifteen hundred pounds, was raised from the New Boston lode.....We learn that the Muscovite company have recently sold to the Georgetown Silver Smelting company a large amount of galena ore, delivered at the mouth of the shaft..... Works upon the Nuckolls lode is being prosecuted with vigor. The east shaft has been finely timbered, and they are now sinking it. On Tuesday evening last a fine vein of rich pay ore was struck in the bottom of the shaft.....On Monday last we saw a beautiful bar of silver bullion, weighing 7 ounces 17 dwt., 998 fine, taken from twenty pounds of ore from the North American lode. The coin value of the bar is $10 20 at the rate of $1.020 per ton.....Professor Bowman, of the Red, White, and Blue works, is experimenting in the cupellation of the metal they are running from their hearth. He showed us a nice button of one half ounce in weight, taken by him from a half pound of ore. .....Mr. Kinney, one of the owners of the Young America lode, Downieville district, has a reverberatory furnace nearly completed. He expects to have it running in a couple of weeks, when we may expect reports from that famous lode that will astonish the incredulous.....The Denver *News*, of August 28, says: We are glad to note the fact that large quantities of gold dust are being brought into town. Each one of our banks this morning had fine lots on hand. At the First National there was about $3,500, at the Colorado National there was about $3,000, and a new lot of about thirty ounces just received from Summit county. At Hussey & Co.'s bank there were about 115 ounces of dust and retort. The same bank sent about 100 ounces to the mint this morning. In addition to the gold dust, we saw at the Colorado National three bars of gold which had just come from the mint. One was from California gulch dust, fineness in gold 858⅓, and in silver 136, weight 29 5-100 ounces, and valued in coin at $520 25. The second one was from Gold Run dust, fineness in gold 764½, and in silver 231, weight 17 ounces, and valued at 273 74 in coin. The third was from Fair Play dust, fineness in gold 824, and in silver 171, weight 7 91-100 ounces, and valued at $136 49 in coin. Our bankers speak encouragingly of the dust which is being brought in, and are able to demonstrate their words most completely.

Montana.

We summarize as follows from the Montana *Post*, Aug. 31: In Highland district the larger proportion of the lodes are gold-bearing, but specimens from some of these lately discovered and subjected to the action of fire, show rich in silver. The following are the names of leads in Highland district, Deer Lodge county:

No.	Names of Leads.	Depth of Shafts.	Width of Crevice.
1	Ballarat	45	55
2	Forrest Queen	15	51
3	A. P. Nevins	43	6
4	Gold Excell	16	3
5	Only Chance	50	3
6	Park	20	30
7	Taleoe	17	4
8	Bijou	13	7
9	East Wheel Rose	24	15
10	Oro Pietra	crev. found	6
11	Wilbur	44	7
12	Volcny	12	6
13	Gallus Widow	10	4
14	Belfast	16	47
15	South America	18	6
16	Reward	crev. found	33
17	Roanoke	10	6
18	Corydon	crev. found	6
19	Hyland	" "	7
20	Coleman	" "	8
21	Camp	23	5
22	I. N. Meyers	10	6
23	Bendigo	10	7
24	Red Mountain	11	6
25	Walerbury	crev. found	3
26	Iron Rod	" "	8
27	Highland Summit	10	5
28	Golconda	11	5
29	General Warren	crev. found	12

Messrs. Graves & Co. have an arastra running near Red Mountain City, and are doing well, from the clean up Mr. Mansfield reports to us. They are crushing from the Last Chance lode, which has a three and a half foot crevice. The dirt is hauled in a small wagon, and is drawn by one yoke of oxen. From six loads they cleaned up fifty-six ounces of retort, which sells at $23 per ounce, and left thirty ounces still remaining in the arastra. This would make $2,327 in currency, a return that should satisfy almost anybody .....Considerable interest has of late been manifested over the leads situated at the head of Ten Mile creek. A correspondent furnishes the following in reference thereto: In the spring of 1865 John Caplice, after many previous efforts, was rewarded with the discovery of a number of valuable silver lodes. The following season Col. Henry Allen and William Benner ascended the stream some three miles above the mouth of Beaver, and, at what is known as the Second Canyon, discovered the Canyon, Black Prince, A. W. Alley, Hursh, Hudwell, and several other lodes in the immediate vicinity, which are mainly silver, though on a working test the Canyon is found to yield $28 in gold to $64 in silver per ton, while the others, as the Black Prince, are nearly all silver, yielding but traces of gold, with $96 per ton of ore in silver, at a depth of from four to ten feet. Some three-quarters of a mile further down the creek is located another of Mr. Allen's leads, from which Professor Steitz obtained an assay of eighteen ounces of gold per ton of ore. Three-fourths of a mile above the canyon, on Rock creek, a tributary of Ten Mile, the same parties discovered the Henry Allen lode, with a forty foot crevice of gold-bearing quartz, a piece of which, from any part of the ledge, will yield a fine prospect by the ordinary process of the mortar and pan. Messrs. Tutt & Donnell, merchants of Virginia City, are largely interested, and will erect a smelter in the neighborhood. We understand they have other machinery on the way to the Territory which they propose erecting on others of their lodes not adapted to smelting. Col. Henry Allen leaves for the States in a few days for the purpose of procuring machinery to place upon some of his leads in the district, which he proposes to have in running order by a year from this fall. Plenty of wood, excellent water power and other facilities are here to guarantee successful mining.....From Mr. Countryman, who has just returned from Flint creek, we learn that the St. Louis & Montana Mining company's mill is rapidly approaching completion, and will be running in four weeks. The buildings are stone, the main building being 45x70 feet and the engine house 24x46 feet. There are fourteen men employed in developing the Cliff, Comanchee and Hope leads, which are developing beyond the most sanguine expectations of the company, and we judge from some of the rock brought to this city that there are boundless stores of treasure hidden in their rocky bosoms. There are eighteen men employed on the mill and other works, and matters are being pushed along expeditiously. .....D. W. writes from Yellowstone City, Aug. 18, that several companies have deserted Emigrant gulch. Five other companies remain and are toiling on, some confident, others with hopes somewhat blunted, yet still determined and persevering. The Bear gulch men are still at work sinking shafts. They report the same difficulty as at Emigrant—"boulders." Some good prospects have been gotten, however, but nothing to what has been reported.....A portion of the Bear gulch stampeders have returned. They have been to the Lake at the head of Yellowstone and report the greatest wonder of the age. For eight days they traveled through a volcanic country emitting blue flames, living streams of molten brimstone, and almost every variety of minerals known to chemists. The appearance of the country was smooth and rolling, with long level plains intervening. On the summits of these rolling mounds were craters from four to eight feet in diameter; and everywhere upon the level plains, dotting it like prairie dog holes, were smaller ones, from four to six inches and upwards. The steam and blaze was constantly discharging from these subterranean channels in regular evolutions or exhaustions, like the boilers of our steamboats, and gave the same roaring, whistling sound. As far as the eye could trace, this motion was observed. They were fearful to ascend to the craters lest the thin crust should give way and swallow them. Mr. Hubbel (one of the party,) who has visited this region before, ventured to approach one of the smaller ones. As he neared its mouth his feet broke through, and the blue flame and smoke gushed forth, enveloping him. Dropping upon his body, he crawled to within a couple of feet of the crater, and saw that the crust around its edge was like a thin wafer. Lighting a match, he extended it to the mouth, and instantly it was on fire. The hollow ground resounded beneath their feet as they travelled on, and every moment it seemed liable to break through and bury them in its fiery vaults. The atmosphere was intensely suffocating, and they report that life could not long be sustained there. Not a living thing, bird or beast, was seen in the vicinity. The prospectors have given it the significant name—"Hell!" They declare they have been to that "bad place," and even seen the "devil's horns;" but through the interposition of Providence (not to speak profanely,) their "souls have been delivered," and they emphatically aver if a "straight and narrow" course during their sojourn on the Yellowstone will save them, they will never go there again.....For the gratification of those who are fond of reading pleasant items, we clip the following from the Helena *Herald* of Aug. 24th: Messrs. Bohm & Mollitor on Monday assayed and run into bars $19,000, and on Tuesday over $10,000. The bars average in weight from 50 up to 387 ounces.....Messrs. Bohm & Mollitor yesterday assayed and run ten bars of gold for several parties in the city, making a total of 1,245 ounces, or about $25,000.

Idaho.

The editor of the Silver City *Avalanche* having visited several ledges, reports concerning their developments, etc.: The Whiskey shaft, now (Aug. 31,) down thirty-seven feet, at the bottom of which the ore has increased in quantity and quality, being considerably richer than that which yielded nearly $300 per ton a couple of weeks ago. The casings are three and a half feet apart, and according to the indications now the boys will have a ledge at least three feet wide of richly paying ore by sinking a few feet farther. At present the enterprising owners are running a tunnel on the ledge, which will tap the south side of the shaft at the bottom. Three days ago they had only about seven feet to run to connect with the shaft. When completed, the mine will be well ventilated, and much better facilities obtained for extracting the ore. We are informed that they intend very soon to take out enough rock to keep a mill crushing. If they do it will add greatly to the shipment of bullion from Owyhee.....The Baxter shaft is down now eighty-five feet, is well timbered, and the ledge is gradually becoming wider, being now about three feet, consisting mostly of a species of decomposed quartz, requiring no blasting, and very easily worked. There is quite a large quantity of ore on the dump, which is very much of the same character as the Poorman, being composed of black sulphurets of silver, and in several pieces of the ore that we examined specks of gold were plainly visible to the naked eye. .....The Pauper shaft is now down sixty-five feet, and we venture to say that the timbering is unsurpassed for beauty and solidity in the camp. There is about eighteen inches of ore resembling that of the Baxter very much, and if the ledge keeps improving as heretofore, a hundred feet will show a rich mine of at least three feet in width.....The Woodstock boys have now attained a depth of seventy-five feet on their mine. They are drifting north and south at that depth—have struck an inch vein of water in the north drift and intend to sink to a depth of one hundred feet, run a level, and stope out. In this mine there is at present about fifteen inches of quartz, consisting of some of the richest gold and silver ore we have seen in Owyhee. We understand that in a few days the Webfoot mill will commence crushing Woodstock ore.....At the Poorman mine we found everybody busy, and several teams engaged in hauling ore to the mills. In the mine they have recently come upon a large quantity of pure, white, and soft wax-like substance, interspersed with large masses of black sulphurets.....Mr. Gove, superintendent of the Oro Fino, informs us that they have just cleaned up, after crushing eighty tons of ore, amounting in the aggregate to a trifle over $13,300, or about $160 per ton. Mr. Gove also informs us that they are enlarging shafts, sinking deeper and getting things in shape so that they can employ many more hands. They will then run more levels and stope out. They will soon take out enough ore to run another mill, and perhaps two more. It will be a great improvement to our camp when two or three mills are turning out bullion from the Oro Fino mine, as they certainly will be in a few weeks at least .....The Iowa company, at Flint, on Tuesday, were down 116 feet on the Forrest ledge; at that depth it is seven feet between the casings, two and a half of which is first-class ore, containing shades of ruby silver. Gen. McQueen, superintendent, is highly pleased with the prospects. He informs us that Mr. Jacobs, who superintends the construction of their mill, will have it in running order in September.....Another rich ledge has been discovered in Flint, right in town. .....The Idaho *World* of the 28th says that fifty-five pounds of ore taken from the Atlanta ledge, in Yuba district, at a depth of eight feet from the surface croppings, was burnt, and crushed in a hand mortar, producing four and a half pounds of bullion. The ledge has been traced about a mile, and averages fourteen feet in width.

Missouri.

The Stockton, Cedar county, *Tribune*, of the 9th inst., has the following in reference to some silver mines in its vicinity: The silver mines of this county have proved to be much more valuable than the most sanguine dared to believe. Even those who were anxious to believe in the truth of the various reports, were fearful to do so, and for some time scouted the idea as absurd, while the incredulous laughed at the operations of the miners as the work of crazy men. But that time is passed. The mines are now a fixed fact, and are very rich. The first discovery was made in 1861, just prior to the opening of the rebellion, by an Irishman, who prospected with a hazel switch. He told Mr. Kennedy, on whose land the discovery was first made, that if he would sink a shaft eleven feet at the place indicated he would find silver. The shaft was sunk and the metal discovered. A quantity of it was taken out, and during the war was carried off by the rebels, except one small piece, that within three months was analyzed by one of the most skillful chemists of St. Louis, and by him pronounced to be ninety-five per cent. silver. This piece was smelted here before being sent to the city, which, of course, relieved it of a portion of the dross. The gentlemen who are now prospecting are not at all connected with the original discovery. They procured the privilege of digging on the farm of Samuel Hornbeck, adjoining that of Thomas C. Kennedy, where the first discovery was made, and went to work. The first shaft sunk found water at a depth of thirteen feet. Not being prepared to pump it out, they went about fifty feet from that and sunk another shaft, where, at the depth of seventeen feet, a lode of the precious ore was struck, and the hopes of the miners were more than realized. They went about eighteen inches into the lode and excavated one ton of ore. As soon as they ascertain the thickness of the lode they intend taking about a thousand pounds to an assay office for the purpose of ascertaining its value—that is, the per cent. of silver in the ore, which, as we stated last week, is believed to be twenty or thirty per cent. The gentleman who is controling the operations thus far is an experienced miner and scientific mineralogist. Having prospected through all the mining countries of the West, he now pronounces the country bordering on the Sac river to be richer in mineral wealth than any portion of California ever was. Will the *Tribune* oblige us with the name of that experienced miner and scientific mineralogist?

North Carolina.

We clip the following from an exchange: Two more gold mines have been discovered in Rowan county, North Carolina. Several specimens of quartz ore, exhibited to the editor of the Salisbury *Banner*, were speckled with the yellow ore, many of the little particles being half as large as a gram of wheat. These specimens are from the surface of the two recently discovered mines, which, it is said, are likely to prove very valuable.

Canada West.

The Portage Lake *Mining Gazette* has the following on the recently discovered Current River Silver mines: We hear various reports of the richness and extent of the native silver mines being opined on the Canada shore, eight milest east from Fort William. From all we can gather, the principal vein is about twenty feet wide, filled with spar and slate, and the metal is found on one of the walls in only about a foot in thickness, yet abundantly rich to pay well. The silver is found filling this portion of the vein rock in the same manner as the "shot stamp work" of our copper veins. Interspersed with it are particles of silver lead, intimating a co-relation between these two classes of deposits. It is rumored that several tons of the silver ore have been shipped east for testing, and that the best spots have been located by a party of Southerners, ex-rebels. Two extensive locations of land have been made, one of ten thousand and the other of fifteen thousand acres. From all the knowledge we have, we are strongly of the opinion that, after all, our Ontonagon friends are going a long way to find, under many disadvantages, what can be found very much nearer home with a corresponding amount of labor. Undoubtedly the Huron Mountains, and all that section of country lying between Huron Bay and the Iron range, known as the "Silver Lead Region," is identical with the Fort William range. There is the same granite base, traversed with greenstone dykes, quartz, and chlorite veins, containing the sulphurets of iron, copper, and galena. Native silver has not yet been found, but there is great likelihood it will be found in quantity yet.

Nova Scotia.

A correspondent of the Halifax *Mining Chronicle* submits the following assertions to the mining public: In Sherbrooke gold mines there are a great many quartz lodes, and it will take years to find out the value of them. Many mines that were abandoned three four, and five years ago are now paying handsomely; and good lodes are now being found every little while among those formerly abandoned. About one fifth of the labor performed as stated below has been in searching for lodes unproductive of gold, although enumerated here. The average pay of miners is about $1 25 per day. In the last five months, ending the 31st of August, the average number of men searching for lodes or mining, and the gold product, was as follows:

April,	100	men,	1,051	ounces,	1	dwt, 20	grains, gold.
May,	100	"	835	"	0	" 19	"
June,	94	"	594	"	19	" 0	"
July,	120	"	1153	"	11	" 11	"
August,	94	"	1350	"	14	" 6	"
Total, 5 months,			4985		7		8

which, if divided among the men, at $20 per ounce, would give each man $982 for five months' work, or $7 55 per day.

New Granada.

Readers of the JOURNAL OF MINING will recollect that about a year ago there was quite a rush of miners to the Barbacoas mines from all parts of the Union, more especially from California, but that stories of disappointment and sickness were written home by those early in the field, which soon quelled the threatened stampede, and finally caused the new Eldorado to be quite forgotten. It would now appear, by the following extract from the Panama *Herald*, that the mines are paying somebody there, in a quiet way, in quite a substantial manner. Says the *Herald*: The Favorita arrived at Panama from Guyaquil, August 1st, with over $57,000 in specie, and brings very flattering reports from the mines at Barbacoas. Mr. O'Connor is said to have taken out one hundred and thirty-two pounds of gold in three weeks, the greater part of which has been brought by this steamer to be forwarded to Europe. From Cali and other places in the interior of Cauca we also hear that several Americans engaged in mining there have been very successful.

COPPER.

Michigan.

The Grand Portage mine returns 22 tons, 1,018 lbs., for August, which, added to the products given in last week's JOURNAL OF MINING, makes the total for the district 398 tons, 1,825 lbs. The August product of the Central is reported as "over 80 tons," the exact figures not being given. The Cliff product will be about 70 tons. The Copper Falls product was 70 tons, 53 lbs. .....The *Mining Gazette*, to which we are indebted for the products given above, gives the following account of the Copper Falls mine: The product would have been heavier were it not for an accident in the back of the 60, some 750 tons of vein rock and masses slipping down and blocking up the stope. Fortunately it happened on Sunday, or many lives might have been lost. But a lot of mass copper is exposed to view in the broken ground. The rich run of vein in the 70 is now well opened, and is a perfect counterpart of that found in the back of the 60, and which has yielded so remarkably for the past five or six months. Stoping under and over the level is going on. The north end of the 70 is in the "slide," and through the lower and upper ash-bed. In the end and slide a mass weighing several hundred pounds has been taken out.....We condense as follows from the same pape, Sept. 12th: At the Huron some repairs are being made on the dam, indicating an early approach to resumption.....Orders have been received to increase the force of men at the Sheldon-Columbian mine. Lately about sixty men have been worked. About one hundred more will be added.....At the Red Jacket mine the boring machine is said to be working well, and a depth of ninety feet is reported as being obtained this week. Our readers will remember that this work is a small vertical bore, intended to cut the Calumet conglomerate on its underlay, at a depth of little more than five hundred feet.....At the Calumet one head of Ball's improved stamps is set up.....At the Albany and Boston the water has been pumped out, and a gang of miners were to have commenced stoping, &c., to-day. The hoisting engine has been thoroughly repaired, and is now ready for duty. The stamps and driving engine require a complete overhauling, which will be done immediately. It is encouraging to know that the commencement of work here gives employment to nearly one hundred men; and we shall watch with interest the operations to see whether individuals can pay a royalty and make money where an organized company cannot, though receiving the entire proceeds.....The Ontonagon *Miner*, September 7th, furnishes us items which we condense as follows: The Pennsylvania mine is looking well, raising forty tons of copper monthly, with a mining force of fifty-five men employed.....At the Rockland mine the adit level in the south workings has been connected, and shows very richly in copper. From present appearances, this stamp lode, the Flint-Steel vein, is eighty-five feet in width, thirty-five feet of the north portion of which will pay to work. The old workings are also looking well. A force of forty-two miners are employed.....It has been decided at the Minnesota to continue sinking in the old mine. They propose to sink Nos. 2 and 4 shafts —which are now down to the CXXX. fathom level—to the CL. fathom level; then cross-cut and drive east and west of No. 3 shaft and connect, and thus have a clear sweep. No. 2 shaft having the east vein, will be remembered as always having been very rich. The mining force, sixty men, now employed will not be increased.....The stockholders of the Nonesuch, at a recent meeting, decided to raise by assessment five thousand dollars, for a working capital, to be expended during the coming winter.

COAL AND IRON.

Pennsylvania.

On Wednesday last, says the Pottsville *Standard*, Sept. 14th, we visited and examined the different black-band openings in this part of the country. Between Minersville and Mine Hill Gap, and near the latter place, on the Lippincott tract, Messrs. Lemner & Culladge have opened the vein of black-band on the outcrop. The outcrop so much resembles that of the McGinnes vein at Mill creek, some five or six miles distant, that it is considered by experienced parties to be the same beyond a doubt. At St. Clair, Mr. James Lanigan has struck the vein of black-band in the slope immediately behind his furnace, and but a few yards distant. The solid ore, about three feet thick, has been struck at a distance of fifteen or twenty yards from the surface, on the south dip, above water level. The slope has now been sunk to a depth of thirty-two yards, and the ore will be taken out and immediately made use of in the furnace. At the McGinnes shaft, which is but a few hundred yards from Mr. Lanigan's furnace, repairs and improvements are still going on. The ore is being taken out at the same time, and it is expected that the arrangements now being made will greatly increase the quantity mined. At the slope of Jas. P. McGinnes & Co., east of Mill creek, mining is successfully going on. The ore is solid and good, and about thirty-three inches thick. Two or three hundred tons of ore are now lying on the bank awaiting shipment. About twenty men are employed at the slope, sixteen of whom are miners. At the working of Luther & Dreher, at Lick run, we found two drifts, each extending into the hill-side a distance of about fifty yards. The vein has been struck in both places. It is about four feet thick on the south dip, and about two feet thick on the north dip. Mr. Geo. W. Taylor of Pottsville has opened the vein of black-band on the Eagle Hill tract, about one and a-fourth miles northwest of Belmont. The vein, which is from twelve to fourteen inches thick, was struck on the south dip, about nine yards from the surface. Luther & Dreher's drifts, at Lick run, are from eleven to thirteen miles, in a direct line from the openings of Lemner & Culladge, near Mine Hill Gap; the McGinnes shaft, the slope of Mr. Lanigan, and the slope of Jas. P. McGinnes & Co., are about midway between the two, and the opening at Eagle Hill is between the latter and the openings of Luther & Dreher. We have obtained specimens of the outcrop at each place, and examined the solid ore wherever it has been struck, and have heard the matter discussed by several experienced persons, and we think that no one who will do the same can fail to be convinced that the same vein —the McGinnes vein of black-band—has been struck at each of those places, and consequently that it underlies at least an extent of country from eleven to fourteen miles in length in a direct line, and varying from one and a-half to two miles in width, in several different basins, while it is claimed that it has been found some miles still further east and west of the above named points. Besides the black-band, other ores are known to exist in this region, some of them of great value, and in some cases they are being worked, though on rather a small scale, on account of the general stagnation of business and the want of sufficient capital. We learn that a vein of argillaceous ore six feet thick, has been struck at the mines of W. B. Mayberry & Co., of Tremont. This ore is said to be extremely valuable.....The vein of concretionary ore on the southern slope of Broad mountain, near St. Clair, which was recently leased by Mr. James Lanigan, is now being developed by Mr. Llewellyn.....Messrs. Coleman & Steelfocht have been at work for two months past on the Lippincott tract, near Mine Hill Gap, taking carbonaceous ore from the dirt bank on the Holmes vein of coal, and burning the ore, which is successfully used by Messrs. Atkins Bro.'s in their furnace at Pottsville. We learn that it is the intention of Messrs. Coleman & Steelfocht to commence mining the ore as soon as the supply in the dirt bank is exhausted.

MISCELLANEOUS.

Wyoming.

The editor of the Salmon City *Mining News* gives some interesting particulars relating to this proposed new Territory, which is at present attracting considerable attention because of its reported mineral wealth, and also because its establishment must necessarily encroach upon the present boundaries of those Territories out of which its projectors propose it shall be made. Touching on this question, the editor launches into his subject, stating: Its boundaries, as suggested by preliminary legislation thus far, encroaches but little on Montana's domain. The 27th meridian on the east, 45th parallel on the north, and 41st parallel on the south, and the crests of the Rocky Mountains on the west, are the lines by the re-mapment—Utah being the greatest loser. From within fifty miles of its head it retains the entire valley of the Yellowstone, embracing a tract of land nearly three hundred miles long, by about fifteen wide, or 45,000 square miles, that cannot be surpassed for agricultural purposes. We claim to be posted in regard to this almost unknown region of the West. During Conner's expedition in 1865, we traversed over one thousand miles within the limits of this newly proposed Territory, and in 1866 we prospected for gold in the Big Horn mountains. We mapped that portion lying between the Big Horn and Wolf mountains; made a geological report for the Quartermaster-General. A few facts from this report would not come amiss, now that Gen. Buford and the Indian Commissioners have recommended giving up this country to the "noble red men of the forest." The Powder river, upon which is located Fort Reno, is about five hundred miles long, heading in the Big Horn mountains, running a N. N. E. course, emptying into the Yellowstone. For over two hundred miles from its head its bottoms are fertile, and with a little irrigating crops could be raised there that would astonish the Atlantic farmers. The same can be said of Crazy-woman fork, which empties into Powder river about thirty miles below Fort Reno. This stream is much smaller than Powder river, but it is a mountain stream, and always retains a good head of clear, cold water. The Clear fork heads in the main range of the Big Horn mountains, and empties into Powder river, one hundred and twenty-five miles from its head, and about twenty miles below the mouth of Crazy-woman. Coal creek, Little and Big Piney, are all large, beautiful mountain streams with Eden-like valleys —grassy uplands, bordered with lovely groves of timber. Fort Phil. Kearney is situated upon the last mentioned stream. Smith's lake, a beautiful sheet of water, two and one-half miles long by two miles wide, lies in a fine valley between Coal creek and Big Piney. Peno's creek, Goose creek and Little Tongue river are tributaries of Big Tongue river. Goose creek is nearly as large as Salmon river at this place, and has a valley fifteen miles wide by sixty miles long, every foot of which can be made to produce as much grain of any kind as the same amount of land anywhere in Illinois. Tongue river is over three hundred miles long, and has a valley as well calculated for agricultural purposes as any in the West. Fall river, Little Horn and various other little mountain streams are tributaries of the Big Horn—a stream large enough for navigation, with a fertile valley, in some places fifty miles wide and over three hundred miles long. Between the Big Horn and Yellowstone are several streams, with their lovely valleys and fine groves of timber. Among the most important of these streams are Clark's fork, Two Rose Buds, Stillwater, Big and Little Boulder—every one of which abound with fish. The stretch of country over which we have taken the mind of the reader is about three hundred and seventy-five miles in length and seventy-five miles wide, and not one acre of it but what can be used to good advantage for agricultural and pastoral purposes. From Santa Fe, New Mexico, to the head waters of the Missouri river, there is no portion of the eastern slope of the Rocky Mountains that can compete with this Big Horn country. Its mineral wealth is of no small consideration. There is a coal bed—one continuous strata—over one hundred miles long by fifty miles wide, at Coal creek, Big Piney, near the mouth of Peno's creek, and for one hundred miles down the Tongue river, this strata of coal is exposed to view, and is eight feet thick by actual measurement. In the Wolf mountains, near the banks of Tongue river, there is two oil wells that have been discharging the crude oil—same as that found in Pennsylvania—for no one knows how long. We obtained gold prospects, and saw any amount of quartz indications in the Big Horn mountains.

Virginia.

The Lynchburg *News* says: We were shown on Saturday several specimens of elegant marble, taken from a newly discovered quarry on the lands of Mr. J. Wills, two miles east of Buchanan, and immediately on the river. The specimens were of different colors, among them some as beautiful as any we have seen. One of the specimens, especially, attracted our attention from its beauty and exceeding fineness, and we were told that it belongs to that variety known to the trade as the "English Padello Marble," no specimen of which has heretofore been discovered in this country, as far as is known. Mr. Wills informs us that the veins of the different varieties on his lands are apparently inexhaustible, and it is his desire and intention to commence working them as soon as practicable.

Canada.

SHERBROOKE, C. E., Sept. 4, 1867.

EDITORS AMERICAN JOURNAL OF MINING: We take your excellent journal for our mines here, but never notice anything from this section in the paper, probably because no one is anxious to do the "writing up"—a process entirely uncalled for, as our efforts are entirely directed to producing—no marketing of stocks ever suggested. Knowing that you are pleased to publish from all sections, I enclose an article, written by a gentleman whom you probably know, on the mines and prospects of this section. I hope you can make use of it, in preference to anything written by private interested parties. There has been, and is still being, large amounts of capital invested in mining interests here, and there certainly should be a slight recognition of the fact; the more so now, as the wonderful discovery of silver has so lately been made. Prof. Brush, of Yale College, visited the mine incidentally on a pleasure trip through the mountains, and though just discovered at that time, he was astonished into many extravagant expressions of its wealth or richness; said it was certainly richer than one in twenty of the best "silver lodes" in the West. On all sides we now hear of prospecting for silver, and the strike has had a good effect throughout the lower townships.

W. H. ADAMS.

The following is the latter portion of the article sent us by our correspondent. The first part was published in last week's JOURNAL OF MINING: * * * My next visit was to the Suffield Gold and Copper Mining company's property, under the direct superintendence of General Adams. As this mine will speedily acquire great notoriety all over the world, I will give here what I was able to learn of its history. It was bought in June, 1866, and work was commenced in September of the same year on what they then called the copper shaft No. 1. Small amounts of native silver, as well as gold, had been found from the commencement, and the ore is said to have assayed a sufficient amount of silver to pay for its working. However, at a depth of one hundred and thirty-five feet, recently, a well defined silver vein was struck, running close to the side of the copper vein. Assays of this ore were made at the United States Assay office by Prof. Torrey, and also by Prof. Brush at Yale College, giving from average samples of ore (not picked) a result of from $75 to $160 per ton of silver. Picked samples, I am informed, yielded at the rate of $8,000 of silver to the ton of ore. I descended into the shaft and found both the copper as well as the silver ore in easily traced veins. The copper—of which about 1,500 tons have already been mined—seems to be at least seven per cent., while the silver ore, in a vein of about four and one-half feet in width, and assayed as above mentioned, is now being mined from one hundred and thirty-five feet downward. Drifts are already driven and vigorously worked on both sides of the veins. This ore is of a very peculiar kind; sulphurets of iron and copper, copper pyrites, zinc blende, together with sulphuret of silver, with frequent threads and leaves of native silver, beautifully crystalized in albite, are intimately mingled together, forming an ore until now only known to exist in Mexico. Near the mine, which is now energetically worked, stands a compact, handsome building destined for smelting the ore, with four furnaces near completion. I learn that this company was organized in September of last year under the laws of the State of Connecticut, with a fully paid up capital of $150,000. The office of the company is at Suffield, Conn.; H. E. Day, of Hartford, President; D. W. Norton, Secretary, and Samuel Austin, Treasurer. This mine does honor to this country, and shows how much can be done in a short time with energy and proper business talent. I wish I could say the same of the mines in the United States. Most of them are more worked for the sake of selling the stock and outside speculation than for developing the wealth of the country, to the loss and often ruin of the stockholders. These mines must be seen to be fully appreciated. My last visit was to the Golconda Gold company's property, only three fourths of a mile from the Suffield works, which are only about seven miles from Sherbrooke. This company is now superintended by one of the principal owners, under whose able and judicious management it gives signs of more active and well-organized life. Into the mill, in addition to the old battery of stamps, there had been recently placed some of Hugh's atmospheric crushers. These crushers seem to work well, and, as I am informed, give very satisfactory results. The amalgamation is performed by the well-known barrel process, however, with some important improvements. I visited several shafts from which rich quartz is being taken out. The veins are all well defined and of unusual width. Comparing these with the now so successfully worked quartz veins of the New Hampshire mines (the Lisbon and Lyman mines,) where at a depth of about thirty feet free gold can be seen on every side of the shaft, I feel fully convinced that the Golconda mines, pushed to greater depth, will soon show some more startling results. I witnessed several washings from the alluvial soil, some six feet from the surface, and extending over at least one hundred acres; in every instance free gold appeared, accompanied by quantities of black sand. If a new mill, containing the latest improvements, with desulphurizing and smelting works, were erected, with a capacity of working up fifty tons of rock per day, this company would occupy the first position in the northern hemisphere.

A. L. FLEURY,
Late Professor of Technology at the Medical University of Philadelphia, Pa.

SHERBROOKE, C. E., August 31, 1867.

☞ The growth of Iowa for the past two years has been gratifyingly rapid, as we learn by the census just completed. According to the figures, of which nearly all are official, the population in 1867 is 898,194; in 1865 it was 753,165—an increase in two years of 242,029, or 37 per cent. Iowa is a healthy State, physically and politically.

☞ The Cincinnati Common Council has decided by a city ordinance that gas shall cost only $2 per thousand feet.

MARKET REVIEW.

FRIDAY EVENING.

Gold and Silver Stocks—At the first board the principal sales were made at the following figures: Corydon, s.3, $1 15; La crosse, s.3. 70c; Rocky Mountain, b.3, 80c; Seaver, regular, $11 80; b.30 and s.3, $11 75; Smith & Parmelee, s 3, $5 00; Sensenderfer, (after call,) $9 95@10; California G. & S., 97c. At second call Consolidated Gregory sold, b.30, at $6,75; Edgehill, $4 95; New York Gold, s 3, $3 65; New York & Eldorado, s.3, $3 65; Rocky Mountain, s.3, 85c.

	Bid.	Asked.		Bid.	Asked.
Alameda Silver	— —	1 50	Kipp & Buell Gold	— 30	41
American Flag	90	1 00	La Crosse Gold	70	75
Atlantic and Pacific	— —	2 00	Liberty Gold	— —	— —
Bates & Baxter Gold	—	1 50	Manhattan	85 00	100 00
Benton Gold	90	95	Midas Silver	—	2 70
Bobtail Gold	— —	3 00	Montana Gold	15	19
Bullion Consolidated	90	1 50	New York	1 00	1 10
Columbian G. & S.	95	97	New York & Eld'o	3 65	3 75
Combination Silver	30 00	35 00	Nye Gold	3	5
Consolidated Gregory	6 60	6 65	People's G. & S. of Cal	5	30
Corydon	1 15	1 25	Quartz Hill	1 65	1 70
Edgehill Mining	4 90	4 95	Reynolds Gold	—	4
Gold Hill	—	4 00	Rocky Mountain Gold	85	90
Gunnell Gold	1 85	2 05	Seaver Gold	11 75	— —
Gunnell Union	—	40	Smith & Parmelee Gold	4 95	5 00
H'n G. & S. bs	85	90	Sensenderfer	9 90	10 05
Harmon G. & S. bs	— —	9 75	Symonds Fork Gold	—	10
Holman	8	10	Texas Gold	—	10
Hope Gold	15	40	Vandeburg	—	75

Copper Stocks.—Rockland sold, b.30, at $7; Davidson, at second call, sold, s.3, at $2; held at $2 10. Other stocks may be quoted as follows:

	Bid.	Asked.		Bid.	Asked.
Caledonia	....	10 00	Isle Royale	....	6 00
Canada	....	50	Knowlton	....	4 00
Central	26 00	....	Mendota	....	4 00
Charter Oak	....	3 00	Minnesota	4 00	....
Evergreen Bluff	....	10 00	Rockland	6 50	....
Hilton	....	1 00			

Petroleum Stocks. Were active at the board to-day. Buchanan Farm sold regular at 32c; Clinton, s.30, $110; Central, regular, 98; Rynd Farm, 18c.

	Bid.	Ask'd.		Bid.	Ask'd.
Bennehoff Run	$1 00	4 50	Manhattan	—	20
Buchanan Farm	30	31	N. Y. and Allegheny	3 00	3 10
Central		95	Pit Hole Creek	25	50
Clinton Oil	1 10	1 20	Rynd Farm	18	19
Excelsior	—	15	United Pet. Farms	10	
Germania	—	5	United States	3 50	4 00

Miscellaneous Stocks.—Quicksilver, 24½; Wells, Fargo & Co., 60; Adams, 65; American, 65; Mariposa pref., 17¼; Reading Railroad, 101¾; Erie, 63@63⅛; Pacific Mail Steamship Co., 130¾@111; Wallkill Lead, 46; Rutland Marble, $11 offered, $15 asked.

Government Stocks Quiet but steady at our quotations:

U. S. 6s, 1867	142 @ —
U. S. 6s, 1881, regular	110 @ 111⅛
U. S. 6s, 1881, coupon	110 @ 111⅛
U. S. 6s, 5-20s, 1862, regular	@ 109½
U. S. 6s, 5-20s, 1862, coupon	113⅞@ 114½
U. S. 6s, 5-20s, 1864, coupon	109⅛@ 109½
U. S. 6s, 5-20s, 1865, coupon	110 @ 110⅝
U. S. 6s, 5-20s, July, 1865, coupon	107¼@ 107⅞
U. S. 6s, 5-20s, July, 1867, coupon	107 @ 108
U. S. 5s, 1871, reg	116 @ 117½
U. S. 5s, 1874, cou'd coupon	— @ 110
U. S. 10-40s, regular	99⅛@ 99⅝
U. S. 10-40s, coupon	99¼@ 99⅝
U. S. 7 30s, June, large	106⅞@ 107
U. S. 7 30s, July, large	106 @ 107

Foreign Exchange—is firmer. The decline in gold has increased the disposition to buy bills, and in anticipation of a better demand, leading drawers have put up the rate about ¼ per cent. We quote:

London, (prime bankers') 60 days'	109⅝@ 109¾
London, (prime bankers') sight	110⅛@ 110¼
London, prime commercial	— @ —
Paris, (bankers') long	5.16¼@ —
Paris, (bankers') short	5.12½@ —
Paris, (bankers') short	5.18¾@ 5.17⅝
Antwerp	5.18¾@ 5.17½
Swiss	36 @ —
Hamburg (bankers')	41 @ —
Amsterdam (bankers')	40⅞@ 41
Frankfort (bankers')	78⅛@ —
Bremen (bankers')	71¾@ 72
Berlin (bankers')	

Gold Opened weak and after touching 143⅞@143¾ fell to 142⅞@143. The sales by the Sub Treasury, higher quotations for bonds at London than was expected, and the difficulty of carrying gold with a tight money market have depressed the premium: at the same time there appears to be a strong *bear* interest at work to force it down. The decline brought in importers as buyers, and the price reacted.

Copper.—The market has been very quiet, but prices are unchanged. The bulk of the stock is not offered. Detroit is quoted at 25@27, Portage Lake 26⅝, and Baltimore 25. A dispatch of the 16th, from London, quotes Chili at £73 10s.

Tin.—In the beginning of the week 2,000 slabs Straits, on the spot, were sold at 25⅛@25¾. It is now quoted at 26c., with small sales. Banca, 27c., with sales of 300 slabs, and English 23¼, all gold. The English market is unchanged at 90@91 for Straits.

Lead No wholesale business. Quotation for ordinary foreign 6 55 @ 40 gold.

Spelter—dull at 6¼@6⅝ for Silesia. Lehigh is quoted at 10¼.

Petroleum—Continues in fair request and buoyant at 18¾@19½c. for Crude; 15c. for crude in bulk; 31@35 for refined in bond; and 48@50c. for refined, free, per gallon. The main business was in refined in bond. The cable reports: Antwerp, Sept. 19, evening.—Petroleum is dull and prices have declined to 54½ francs. Liverpool, Sept 19, evening.—Petroleum, 10d. per gallon for spirits and 1s. 5d. for standard white.

THE IRON TRADE

Domestic—The market in pig iron is quiet, yet not at a stand still. Enough of business is doing to use up all the pig that may be made this season. In nails and spikes there is a fair demand. In other manufactured irons there is a little more doing, yet the market is not very active. Sales of best Anthracite No. 1 are bringing $44@45. The Boston *Shipping List* of the 18th says: "The demand for pig iron is moderate, but the market is quite firm and full prices have been realized. The sales have been at $43 to $45 per ton for Gartsherrie and other brands of Scotch No. 1; and $42 to $48 per ton for American. In bar iron the sales have been confined to small lots at previous prices. Russia sheet iron has been selling at 13½@14c. gold.

The yield of black-band ore, says the Pottsville *Standard*, though not very abundant is sufficient to justify future hope and past predictions. The amount shipped over the Mill Creek railroad for the week ending Sept. 7th, 1867, was 38 tons; previous, 3,268 13 tons; total, 3,307 tons.

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

Foreign—Recent reports from England, Wales and Scotland, show a more encouraging state of the markets. Business promises to be brisk, or at least sufficient to quiet the fears of the timorous. The London *Iron Trade Circular* of Sept. 7th, 1867, says: "The moderated briskness we have been lately noticing has continued. If money were easier to get in we should have even fewer complaints than usual towards the end of a quarter. The Scotch trade in pigs, no longer suspicious, gives creditable signs of revival, firmness, and strength of prices. In the Tyne Ports the dock wharves are covered with iron in all stages, and Cleveland pigs are moving off to foreign orders, as well as pushing themselves vigorously by quantities into places where, by admixture with better sorts, their lowness of price may compensate for their deficiency in quality. South Wales masters consider that they have reason to be satisfied with present orders. A sure sign of good business in merchant iron is the large importation of Swedish pigs for Sheffield and the Midlands, noted in the Tyne. This constitutes good evidence of orders on hand for the better and more remunerative classes of manufactured iron. Founderies, generally, are tolerably well employed, and rolling mill (the season considered, as we observed last week) fully at work. Colonial orders are coming in stronger, and more various." The *Colliery Guardian*, however, says that "the general impression among commercial men in the iron trade seems to be that no very great improvement in demand can be looked for this year."

A correspondent of the latter, writing from the North of England states: "The tone which now generally prevails is of a much more hopeful character than has prevailed for months past; and there seems now a reasonable prospect of all departments of the trade assuming something like a state of average activity before long. It was feared, some time ago, that the mills and forges would be scarcely able to find occupation during the winter months; but from the orders which have come to hand during the past month, it now appears probable that all the leading ironworks will be tolerably well supplied with work during the winter months."

Correspondence from South Wales assert the continuance of the improved feeling in the trade, yet "ironmasters are anxiously looking forward to the time when it can be said without hesitation that a tangible and substantial improvement has taken place; and the time cannot be far distant for the abundance of money must eventually be the means of sending more orders into the market. No considerable purchases have as yet been made by the home railway companies, but they are expected to become buyers to a large extent as soon as they can exercise their new borrowing powers. The exports to some of the foreign markets will bear favorable comparison with the corresponding period of last year, and efforts are being made by the ironmasters to get the present orders completed for Russia in time to enable vessels or steamers to return before the winter season sets in. Considerable demands are anticipated from the United States and East Indian markets, but the general opinion of those who are likely to be well informed upon the subject, is that there will not be any great improvement this year."

New York Imports.

The following table shows the quantity and value of iron imports at the New York Custom House for the week ending and including Sept. 13, 1867:

	QUANTITY.	VALUE.
Iron, Hp. tons	64	$2 950
Iron, Pig, tons	1,402	20 799
Iron, R. R., brs	8,065	43,025
Iron, Sheet, tons	32	3 091
Iron, other, tons	619	22,225
Total value		$92,085

Boston Imports of Pig Iron from Jan 1 to Sept. 14.

	1867.	1866.
From Great Britain, tons	23,779	17 824
Coastwise ports	6,449	9 896
Total	30 228	27,720

Shipments of British Iron to the United States.

The following statement exhibits the quantity of British Iron and Steel exported to this country during the months of July, 1866, and 1867, respectively:

	July 1866.	July 1867.
Iron, pig and puddled, tons	5,439	8 719
" bar, angle, bolt and rod, tons	4,222	3,582
" railroad of all sorts, tons	6,584	15,588
" castings, tons	27	490
" hoops, sheets and boiler plate, tons	1,736	4,525
" wrought, other, tons	1 061	702
Total tons	19 078	33,606
Steel, unwrought, tons	1,894	1,441

The following shipments of Iron and Steel were made to the United States from Liverpool during the week ending August 31st:

CHAINS AND ANCHORS—Boston, 43 tons chains, 3 tons anchors; New York, 30 tons chains; San Francisco, 13 tons chains.

IRON, BAR AND BOLT—Boston, 470 tons; Galveston, 43 tons; New York 65 tons; San Francisco, 98 tons.

IRON, HOOP—Boston, 37 tons; Galveston, 7 tons; New Orleans 419 tons; New York, 51 tons; Philadelphia, 1 ton; San Francisco, 28 tons.

IRON, PIG—Baltimore 34 tons; Boston, 70 tons.

IRON PLATE—New York, 651 tons; Philadelphia, 50 tons.

IRON, RAILROAD—New York, 75 tons; Philadelphia, 207 tons.

IRON WIRE—San Francisco, 3 tons.

IRON, ROD—Boston, 14 tons; New York, 49 tons.

IRON SHEET—Boston, 65 tons; New Orleans, 2 tons; New York, 52 tons; Philadelphia, 1 ton; San Francisco, 27 tons.

STEEL—Boston, 21 tons; Galveston, 2 tons; New Orleans, 55 tons; New York, 115 tons; Philadelphia, 8 tons; San Francisco, 6 tons.

During the same period the exports from Cardiff, South Wales, were to New York 1,556 tons of rails.

A number of orders have been received in Wales for rails for the United States, but there has been some difficulty in placing them.

Marquette, Mich, Iron Trade.

The clearances of iron from the port of Marquette, for the week ending September 5th, 1867, amounted to 5,815 tons of iron ore, and 258 tons of pig iron.

The receipt of ore and pig at the same place, up to and including Saturday, Aug. 31, 1867, by the Marquette and Ontonagon Railroad, were 9,250 tons of iron ore. We subjoin a tabular statement:

IRON ORE.	WEEK	TOTAL.	PIG IRON	WEEK.	TOTAL.
Pitts & I. A.	2,290	45 251	Morgan Iron Co.	176	4 600
Edwards' Mine	......	2,839	Greenwood Iron Co.	72	4 614
Cleveland	1,174	28,327	Bancroft Iron Co.	......	2,028
Marquette	319	4,929	Collins Iron Co.	84	3,328
Lake Superior	3,885	82,016	Michigan Iron Co.	133	3,169
New England	206	7,757	Iron Cliff Co.		57
Washington	479	14,166			
Jackson	......	130			
Ore to local furnaces	906	14 038	Total, pig iron	9,725	16,676
Total iron ore	9,259	195,402	Total ore and pig iron	9,725	212,078

Market Prices.

NEW YORK, Sept 20, 1867.

Anthracite, No. 1, best	$41 00@45 00		Charcoal, cold blast	$55 00@60 00	
" " 2x, fdry	40 00	42 00	Old Wrought scrap, tin yd	50	....
" Grey Forge	35 00	38 00	English rails, gold	52 50	55 00
Scotch Pig, from vessel	43 00	44 00	Nails and spikes	5 75	....
Rods—⅝ & 11-16, round and sq.		110	Rods—5-16, round and square.		130
½ & 9-16, "		112½	¾ " "		135
7-16, "		121	3-16 " "		165
⅜ "		125			
Ovals and half rounds, ¾ to 1½		130	Ovals and half rounds, ½ & 9-16,		140
⅝ & 11-16,		135			
Hoops, 5-8		190	Hoops, 1		110
¾		160	1⅛		—
⅞		150	1¼ to 2		$13½

BOSTON, Sept 18, 1867.

[From Boston Shipping List.]

Swedish—common ass'd	$150@165		Russia, sheet	$19@20
English—com	85	90	Scotch Pig, No. 1,	
do refined	95	100	Gartsherrie	41@45
do sheet, per lb	6½@10c.		No. 1, other brands	42 48

PHILADELPHIA, Sept. 19, 1867.

Anthracite Pig, No. 1,	$44 00@$45 00		Hoop Iron, 1 and up	145 00@	....
do do No. 2	40 00	42 00	" ⅞	160 00	....
do do No. 3,	35 00	38 00	" ¾	170 00	....
Charcoal Wheel	50 00	55 50	" 5-8	210 00	....
" Blooms	105 00	115 00	" ½	240 00	....
Scotch Pig (by cargo)	43 00	45 00	Nails and spikes	5 40	....
Railroad Bars (Am.),	80 00	85 00	" 4d	6 90	....
Refined Bar	85 00	90 00	" 3d	7 40	....
Common "	80 00	85 00	" 3d, fine	7 90	....
Band Iron, 1¼ to 6 } 12 " 3-16 }	115 00	125 00	Boiler Rivets	7½c per lb.	
Hoop Iron, 1¼ and up	140 00	....	Railroad Spikes	5½@6c. per lb.	

LONDON, Sept. 7, 1867.

(From the London *Mining Journal.*)

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

THE COAL TRADE.

NEW YORK, Sept 20, 1867.

Domestic—Trade has been fair during the past week but not generally up to dealers expectations. Freights are a little firmer. The regular Scranton sale is advertised in our columns to take place on Wednesday next, 25th inst., at the usual time and place. 75,000 tons are to be sold, deliverable at Elizabethport, and 10,000 on the line.

Our correspondent at Beach Haven, states that the connecting lines of Canal have been repaired—as a consequence some two or three hundred boats which have been idle for weeks must have, by this time, commenced running. Our informant adds: "there is now a pressing demand for coal and boats to several localities which cannot be supplied fully, and we expect to hear of short supplies generally, owing to the lateness of the season."

The North Branch Canal has at last, says an exchange, been got in navigable order, and boats are passing in considerable numbers, conveying anthracite to the Western New York markets.

The Coal Trade of this city has suffered another loss in the demise of FRANKLIN F. RANDOLPH, senior partner of the old and respected firm of Randolph & Skidmore, also President of the Wilkesbarre Coal and Iron Company. He died on Wednesday last in the vigor of manhood, honored and respected.

The quantity of coal shipped by the Philadelphia and Reading Railroad, for the past week, is 78,874 tons; for the season, 2,340,805 tons; by canal, week, 22,938 tons; for the season, 681,992 tons.

The following Table shows the quantity of Coal shipped over the principal roads for the week ending Sept. 14, 1867, compared with that shipped the same time last year.

	1866. WEEK.	1866. TOTAL.	1867. WEEK.	1867. TOTAL.	DECREASE.
Phil. & Reading R.R.	67,417	2,982,712	70,716	2,261,931	720,781
Schuylkill Canal	30,848	952,439	22,607	659 054	293,385
Lehigh Val. R. R.	42 379	1 582,631	47 591	1,528,360	54,271
Lehigh Canal	33 412	708 015	35,979	634 330	73 685
Del & Hudson	40,424	937,484	42,656	915,886	21,598
Union Coal Co. Rail	114	363	......	......	......
" " " Canal	60	379	1,638	8,468	......
Scranton North	9,187	299,684	13,429	307,448 i	7,764
Scranton South	20,723	751,765	20,763	903,209 i	151,444
Penn'a Coal Co. Rail	19,140	256,413	21 010	575,528 i	319,115
" " Canal	827	17,326	951	15,486	1,840
Wyoming North	......	57 489	......	13,133	44,556
Wyoming South	16,635	317,981	11 804	220,291	97,690
Shamokin	14 784	410,528	10,929	331,835	78,693
Trevorton	1 325	40,217	50	37,594	2,623
Short Mountain	......	62,105	1,522	46,849	15,256
L. V. Co	......	36 262	......	41,242 i	4,980
Broad Top	......	178 628	......	161 005	17,623
Williamsto'n	......	32 060	......	77,215 i	45,155
Total	297,278	9,624,481	301,645	8,738,864	......
1867	......	8,738,864	......	......	......
Decrease	......	885,617	......	......	......

Lehigh and Mahanoy Coal Trade,

For week ending Sept. 14, 1867.

NAMES OF SHIPPERS.	WEEK	TOTAL.
Trenton Coal Co	......	1,791 02
Mount Etna	506 02	1,194 00
Mahanoy Coal Co	......	10,813 09
Delano Colliery	......	35,661 02
Glendon Coal Co	33 12	13 050 10
Rathburn, Stearns & Co	......	25,431 01
E. S. Silliman	2,617 06	78 328 07
McNeal Coal & Iron Co	1,858 02	73,433 06
Knickerbocker Coal Co	1,013 18	39,472 09
Thomas Coal Co	756 12	24,088 17
Williams & Herring	121 19	9,149 03
Shamokin Valley Coal Co	422 04	3 392 18
New Boston	1,224 09	16,918 06
Other shippers	......	31 04
Total	8,551 04	332,438 08
Corresponding week last year	4 396 05	269,075 19
Increase	4,157	63,362 09
Decrease	......	......

Lehigh Coal Trade.

SHIPPED FOR THE WEEK ENDING SEPTEMBER 14, 1867.

SHIPPERS.	CANAL. Week. Tons.	CANAL. TOTAL. Tons.	RAILROAD. Week Tons.	RAILROAD. Total Tons.
FROM MAUCH CHUNK.				
Lehigh Coal & Navigation Co	....	....	....	....
Summit Mines	13,571	223,863	....	....
Room Run Mines	....	1,313	....	....
John Laubach & Co	....	352	....	....
Other Shippers	....	....	....	....
Total	13,571	225,529	....	....
FROM B. M. REGION.				
John Connery	....	....	....	1,534
W. T. Carter & Co. (Coleraine)	662	8,062	1,983	63,021
Spring Mountain Coal Co.	646	2,918	3,758	100,705
Thomas Hull & Co. (N. Y. & Lehigh Co).	563	7,587	1,163	72,917
Honey Brook Coal Co	-1,664	21,254	1,607	101,420
German Pennsylvania Coal Co	253	6,491	1,494	27,501
Beaver Meadow (D. W.).	....	....	93	1,329
Other Shippers	....	....	16	141
Total	3,729	49,314	10,057	369,582
FROM MAHANOY REGION				
McNeal Coal and Iron Co	80	3,805	1,795	69,770
Knickerbocker Anthr. Coal Co.	....	1,413	1,013	38,320
North Mahany Mines (Mahanoy Col. now B. & C.)	....	730	....	10,668
Delano do	....	1,140	....	33,872
Primrose Mines (Rathbun, Stearns & Co.)	....	....	....	25,625
Walter, Brothers & Co. (now Bedford & Cox)	....	82	....	....
Mount Etna Coal Co	292	292	16	799
Trenton Coal Co	....	184	....	1,609
Glendon Coal Co. (Glendon Colliery)	....	....	33	13,127
Thomas Coal Co	....	1,322	156	23,060
Williams & Herring	....	189	121	8,971
E. S Silliman	....	....	2,617	77,593
East Boston	....	....	....	505
New Boston Coal Co	....	....	1,221	16,852
Shamokin Coal Co	....	....	422	3,392
Other Shippers	....	....	....	111
Total	372	9,160	8,082	324,280
FROM HAZLETON REGION.				
A. Pardee & Co. (Hazleton)	2,867	51,620	3,764	97,306
G. B. Markle & Co. (Jeddo)	2,360	36,723	2,624	88,299
Wm. S. Halsey & Co. (Mt. Pleasant)	127	3,235	558	6,628
Buck Mountain Coal Co	1,572	29,335	1,290	37,662
Sharpe, Weiss & Co. (Council Ridge)	1,289	22,552	1,727	54,733
Coxe, Brothers & Co. (Cross Creek)	471	7,396	666	12,905
Ebervale Coal Co	1,019	24,347	1,063	48,959
Stout Coal Co	811	14,681	777	24,538
Harleigh Coal Co	851	13,633	1,069	28,181
Ashburton Coal Co	95	1,582	....	432
East Sugar Loaf	....	....	4,561	98,891
Upper Lehigh C. Co	738	9,026	1,872	34,605
Highland	695	9,333	986	13,383
Mount Hall	....	88	112	582
Other Shippers	....	....	172	262
Total	12,899	223,547	21,247	546,373
FROM WYOMING REGION				
Newport Coal Co	....	3,533	....	783
Warrior Run Mining Co	....	2,056	465	8,315
Parish & Thomas	558	7,544	1,218	30,521
New Jersey Coal Co	518	4,550	49	11,860
Lehigh & Susquehanna Coal Co	....	2,933	....	11,245
Germania Coal Co	183	5,657	66	11,069
Franklin Coal Co	....	5,507	....	8,763
Audenried Impr'v't & Coal Co	750	5,058	....	7,691
Valley Coal Co	....	189	....	384
Wilkes Barre Coal and Iron Co	2,647	53,635	615	49,025
Baltimore Coal Co	247	13,557	308	29,613
Union Coal Co	....	5,323	....	7,652
Wyoming Coal & Transp'n Co	183	6,508	276	16,826
Everhart Coal Co	....	2,618	....	1,904
Morris & Essex Mutual	....	....	305	6,022
H. B. Hillman & Co	....	....	28	6,861
Bowkley, Price & Co	....	....	....	1,745
T F. Hunt & Co	....	....	....	774
John Horton	....	96	....	....
Mineral Springs	....	....	496	3,046
Other Shippers	501	7,488	136	187
Total	5,406	126,779	3,966	214,295
Grand Total	35,979	634,330	43,353	1,454,530
Total 1866	33,412	708,015	33,039	1,371,862
Decrease	....	73,685	....	....
Increase	2,567	....	10,314	82,668

RECAPITULATION

RAILROAD.

	Forwarded East by Rail from Mauch Chunk.	Deliv'd at M. Chunk, and on line of road ab. that point	Total by Rail	Deliv'd at P.H. Junction and Mauch Chunk for Canal.	Total by Railroad and Canal
	Tons.	Tons.	Tons.	Tons.	Tons.
For the week	43,353	16	43,369	4 221	47,591
Cor'ng week last year	33,039	....	33,039	9 340	42,379
Previously this year	1,411,177	13,488	1,421,665	56,103	1,480,768
Total	1,454,530	13,504	1,468,035	60,324	1,528,360
Same time last year	1,371,862	784	1,372,647	209,984	1,582,631
Increase	72,353	12,703	85,057	......	......
Decrease	......	......	......	149,659	54,271

CANAL.

	Week.	Season.
Total from Mauch Chunk	13,571	225 520
" B. M. Region	3,729	49,314
" From Mahanoy Region	372	9 160
" Hazleton Region	12,399	223,547
" Upper Lehigh Region	....	....
" Wyoming Region	5 406	126,779
Total	35,979	634,330
Same time last year	33 412	708,015
Increase	2,567	......
Decrease	......	73,685

Schuylkill Coal Trade.

BY RAILROAD & CANAL, FOR WEEK ENDING SEPT. 19, 1867.

	Railroad.	Canal.
St. Clair	38,208	......
Port Carbon	7,430	......
Pottsville	1,704	......
Schuylkill Haven	21,273	......
Auburn	1,743	......
Port Clinton	8,416	......
Total for week	78,874	22,938
Previously this year	2,261,931	659,054
Total	2,340,805	681 992

Pinegrove Coal Trade for 1867.

Amount transported during the month of August:

	MONTH.	TOTAL.
Lorberry Creek	$12,757 12	$74 055 14
Good Spring	3,895 65	25,783 03
Union Canal Railroad	16,552 17	99,838 17

Cumberland Coal Trade.

For the week ending Sept. 14, 1867.

From the Alleganian.

COAL TRADE BY RAILROAD.—Statement of Coal shipments over the Baltimore and Ohio Railroad for the week ending Sept. 14 1867:

	Tons
From C. and P. R. R.	
American Company	1,577 06
Consolidation	3 697 08
Borden	732 19
New Hope	168 10
Midland	22 12
From Eckart R. R.	Tons.
C. C. and I. C.	716 16
Spruce Hill	......
Blaen Avon	22 07
Total	6,737 19
From George's Creek via Piedmont.	Tons.
George's C. & I. Company	2,226 01
Central do	1,108 10
Atlantic do	632 17
Piedmont do	1,015 03
Swanton do	352 10
Barton do	1,172 10
Potomac do	1,479 08
George's C. M do	972 17
Franklin do	1,097 13
Hampshire do	1,522 03
Total	11,579 12

BY C. & O. CANAL.—There were dispatched from the port of Cumberland, during the last week, boats laden with 15,827 05 tons of coal, forwarded by the following companies:

American	3,928 16
Borden	1,649 03
Central	3,813 06
Consolidation	1,887 00
Cumb. Coal & I.	2,921 15
Hampshire	1,626 04
Total	15,827 05

Coal transported over the Cumberland & Pennsylvania Railroad, during the week ending September 7th, and for year:

	To Canal	To B. & O. R. R.
For week	10,927 01	15,359 10
For year	240,696 06	377,425 14

During the corresponding period of 1866, there were delivered to the Baltimore & Ohio Railroad 396,158 04 tons, and to the Chesapeake & Ohio Canal 192 881 08 tons.

Prices of Coal by the Cargo.

[CORRECTED WEEKLY.]

At New York, Sept 25 1867.

Schuylkill Red Ash, choice	$5 75@	$6 00
" Ordinary	5 25	5 50
" White Ash Lump	5 25	5 50
" Steamboat	5 25	5 50
" Broken	5 25	5 50
" Egg	5 25	5 50
" Stove	5 25	5 50
" Chestnut	4 00	4 25
Lehigh White Ash Lump	5 37	...
" Broken	5 12	....
" Egg	5 12	....
" Stove	5 20	....
" Chestnut	4 20	...
Wilkesbarre Lump	5 25	....
" Broken & Egg	5 50	....
" Stove	5 50	....
" Chestnut	4 75	....

SPECIAL COALS.

Dealers' Quotations.

Diamond Vein Red Ash, Schuylkill	....	....
Locust Dale White Ash, "	....	....
Honey Brook " " Lehigh	5 50	....
Harleigh " " " "	5 50	....
Spring Mountain " "	5 50	....
Sugar Creek " " "	5 50	....
Ashburton " " "	5 50	....
Fulton White Ash	5 50	....
Stout	5 50	....
Old Company's " "	5 50	....
Buck Ridge " " Shamokin	5 00	....
Henry Heils, E. Franklin, Lorberry	5 50	....
New England Red Ash	5 25	....
Broad Mountain	5 25	....
Wyoming	5 00	....
McNeal Co.	5 50	....
George's Creek (Balt.)	5 25	....
" " (Georgetown)	4 75	....
Locust Mountain (Repplier)	5 50	....
Duncan Red Ash "	6 00	....
Wilkesbarre Coal & Iron Co.	5 25	....
New Burgh Orrell Gas Coal	9 00	....
Despard Gas Coal	9 00	...

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

At Philadelphia, Sept. 25, 1867.

Lehigh Lump and Steamboat	$5 00@	.. ..
" Broken and Egg	5 00	.. ..
" Stove	5 00	.. ..
" Chestnut	3 75	..
Schuylkill Red Ash Prepared	4 25	4 50
" Chestnut	2 75	.. ..
" White Ash Lump and Steamboat	4 25	.. ..
" Broken	4 25	.. ..
" Egg and Stove	4 25	.. ..
" Chestnut	2 75	.. ..
Locust Mt. Lump, and Steamboat	4 25	.. ..
" Broken	4 25	.. ..
" Prepared	4 25	.. ..
" Chestnut	2 87	.. ..
Lorberry Coal	4 25	..
Shamokin	4 75	.. ..
Franklin, (Lykens Valley)	4 75	.. ..
Broad Top	4 75	.. ..

Scranton Coal at Elizabethport, Sept 25, 1867.

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

Lump	$4 40@	— —
Steamer	4 40	— —
Grate	4 40	— —
Egg	4 75	— —
Stove	5 00	— —
Chestnut	4 40	— —

Prices for Pittston Coal at Newburgh, Sept 25, 1867.

(Corrected weekly by Penna. Coal Co.)

Lump, per ton of 2240 lbs	....	.. ..
Steamer, " " "	$4 40	.. ..
Grate " " "	4 40	.. ..
Egg " " "	4 40	.. ..
Stove " "	4 60	.. ..
Chestnut "	3 90	.. ..

70 cents additional to New York.

Lackawanna at Rondout, Sept 25, 1867.

(Average contract prices for year.)

Lump	5 00	@.. ..
Steamer	4 55	@.. ..
Grate	5 00	@.. ..
Egg	5 00	@.. ..
Stove	5 00	@.. ..
Chestnut	4 60	@.. ..
Pea	4 00	@.. ..

Lehigh Coal at Elizabethport, Sept. 25, 1867.

Lump	5 50@	.. ..
Steamboat and Broken	5 25	— —
Egg	5 25	— —
Chestnut	4 50	— —
Stove	5 50	— —

At Baltimore, Sept. 25, 1867.

Wilkesbarre & Pittston W. A. by cargo or car	$5 25@	5 50
Lykens Valley, R A. " "	5 50@	5 80
Sunbury & Shamokin R. or W. A. " "	5 00	5 35
From wharf or yard, 75c. to $1 per ton additional.		
Retail, delivered, per 2,240 lbs	7 00@	7 50
George's Creek and Cumberland f. o. b. at Locust Point	5 00@	— —

At Havre de Grace, Md.

Wilkesbarre or Pittston, W. ash, on board	$4 85@	5 10
Sunbury or Shamokin, R. or W. ash "	5 00@	5 10
Lykens Valley, R. ash, "	5 10@	5 25

At Georgetown, D. C.

George's Creek and Cumberland, on board	$4 25@	4 50

George's Creek and Cumberland Coal.

Run of mine, f. o. b. at Locust Point at Georgetown	$5 00@	5 25

Wilkesbarre Coal at Elizabethport, Sept 25, 1867.

(Corrected by Wilkesbarre Coal & Iron Co.)

Lump	4 75	.. ..
Steamer	5 00	.. ..
Broken	5 00	.. ..
Egg	5 00	.. ..
Stove	5 25	.. ..
Chestnut	4 50	.. ..

Prices of Provincial Coals.

[CORRECTED WEEKLY BY LOUIS J. BELLONI, JR., 43 PINE STREET.]

Duty $1.25 per ton.

Block House (on board)	$2 00	gold
Gowrie "	1 75	"
Lingan "	1 75	"
Sydney "	2 25	"
Picton "	2 25	"
Little Glace Bay "	1 87½	"
International Co.'s "	1 75	"
Slack Coal, B. H., "	75	"
" I. G. B.,	1 00	"

Prices of Foreign Coals.

Duty $1.25 per ton.

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

Liverpool Gas Caking	$10 00
" " Cannel	13 00
" House "	16 50
" " Orrel	15 00

Per ton 2240 lbs.

PRICES FROM YARD.

Liverpool Orrell, screened	17 00@.. ..
" Cannel, "	20 00@22 00

per ton 2000 lbs., delivered.

Coal Freights.

(Corrected Weekly.)

From Port Richmond, Philadelphia.

Amesbury Point	2 20	— —	Lynn and dis	2 20	— —
Boston	2 00	— —	Medford	2 50	— —
" bridges	03	— —	Marblehead	2 20	— —
Bath	2 00	— —	New York	1 30	— —
Cambridge	2 00	— —	New Bedford	1 75	— —
Cambridgeport	2 00	— —	Norwich	1 75	— —
Chelsea	2 00	— —	Providence	1 75	— —
Charlestown	2 00	— —	Roxbury	2 25	— —
Fall River	1 75	— —	Salem	2 00	— —
Greenpoint	1 30	— —	Saco	2 75	2 60
Hyannis	2 25	— —	Winterport	2 25	— —
Hartford	2 35	—			

From Newburgh.

RIVER.	CO.'S BOATS.		EASTERN.		
Albany	50@	.. ..	Boston	1 80@	.. ..
Barrytown	35	.. ..	Bridgeport	1 12½	.. ..
Catskill	35	.. ..	Bristol	1 50	.. ..
Cold Spring	30	.. ..	Dighton	1 50	.. ..
Coeymans	45	.. ..	Fall River	1 45	.. ..
Coxsackie	40	.. ..	Mystic	1 30	.. ..
Fishkill Landing	20	.. ..	New Haven	1 12½	.. ..
Greenbush	50	.. ..	New London	1 30	.. ..
Haverstraw	45	.. ..	Newport	1 45	.. ..
Hudson	35	.. ..	Norwalk	1 12½	.. ..
New York	70	.. ..	Norwich	1 40	.. ..
Nyack	50	.. ..	Pawtucket	1 65	.. ..
Peekskill	40	.. ..	Providence	1 50	.. ..
Poughkeepsie	25	.. ..	Stamford	1 12½	.. ..
Rhinebeck	30	.. ..	Stonington	1 30	.. ..
Saugerties	35	.. ..	Warren	1 45	.. ..
Sing Sing	50	.. ..			
Stuyvesant	40	.. ..			
Tarrytown	50	.. ..			
Troy	55	.. ..			
West Point	30	.. ..			
West Troy	55	.. ..			
Yonkers	55	.. ..			

From Elizabethport.

Albany	$1 00@	— —	New London	1 15@	— —
Boston	1 75	1 80	Newport	1 40	— —
Bridgeport	1 00	— —	New York	55	60
Fall River	1 40	— —	Norwalk	1 00	— —
Hartford	1 50	— —	Norwich	1 30	— —
Hudson	1 00	— —	Pawtucket and towing	1 50	— —
Lynn	— —	— —	Portland	1 95	— —
Middletown	1 25	— —	Portsmouth	2 15	— —
New Bedford	1 45	— —	Providence	1 40	— —
Newburyport	2 05	— —	Salem	1 80	— —
New Haven	1 00	— —	Taunton	1 40	— —

From Washington, N. J.

Hackettstown	$ 58	Drakesville	$ 1 08
Waterloo	81	Dickerson's Basin	1 11
Stanhope	90	Iron Dale	1 19
Port Morris	99	Dover	1 24
Rockaway	1 32	Paterson	1 75
Denville	1 33	Pompton	1 75
Boonton	1 44	Bloomfield	1 85
Little Falls	1 70	Newark	1 90

From Baltimore.

To Philadelphia	$1 40@	— —	Boston	2 25@	2 50
New York	2 10	— —	Sound Ports	2 25@	2 50
Washington	1 10	— —	Norfolk	1 00@	— —
Annapolis	75	— —	Richmond	1 30@	— —

From Georgetown or Alexandria.

To Philadelphia	$1 50	— —	Boston	2 75	2 50
New York	2 15	— —	Sound Ports	2 25	2 50

Provincial Freights.

	Currency
Sydney to N. Y.	$3 00
Sydney to Boston	2 75
Lingan	3 50
Lingan to Boston	3 00
Cow Bay	3 00
Cow Bay to Boston	2 87
Cow Bay to Portland	2 50
Big Glace Bay	3 87½
Little "	3 00

Foreign Freights.

New Castle and Ports on Tyne	£17@ keel.
Liverpool	12s 6d@ 15s

Rates of Transportation to Tide Water, June 1, 1867.

PHILADELPHIA & READING RAILROAD.

From Pottsville to Philadelphia	$2 17
" " Port Richmond	2 07
" " New York, drawback off	2 80

SCHUYLKILL NAVIGATION.

From Pottsville to Philadelphia	2 08
" " New York, drawback off	2 88

Wyoming Valley Canal.

	Tolls.	Freights.
From Wilkesbarre to Havre de Grace	97c.	$1 55
" " Columbia	69	1 20
" " Middletown	67	1 10
" " Harrisburg	65½	1 05

OTHER AVENUES.

From Mauch Chunk to Philadelphia, Canal, including unloading	1 88
" " Philadelphia, via North Penna Railroad	2 00
" " Elizabethport, via N. J. Central Railroad	2 03
" " Port Johnson	2 10
" " New York	2 63
" " New York via Del. Div. and Raritan Canal, including unloading	2 67
" " New York via Morris Canal	2 39
" " Hoboken via Morris & Essex Railroad	2 10
" " New York	2 20
From Elizabethport to Buffalo, via New York Canal, a distance of about 451 miles—freight, $2 62, toll 78 cents	3 40

The shipping expenses at Elizabethport and Port Johnson vary from 25 to 30 cents.

BOSTON STOCK MARKET.

(By Telegraph.)

BOSTON, September 20, 1867.—Prices bid to-day were as follows:

Allouez	19	Huron	—
Calumet	30	Isle Royal	—
Hecla	—	Minnesota	4⅜
Canada	—	Quincy	24
Copper Falls	26½	Cary Improvement	6½
Franklin	18	Rockland	—
Hancock	—	Boston Water Power	15⅝

Sales at Boston Stock Exchange, September, 19.

375 shares Allouez	19	100 shares Hancock	8¾
150 do do b.10	9¼	150 do Pewabic	14¾
170 do Copper Falls	26¾	100 do Rockland	6⅝
50 do do	26⅝	250 do Bullion C.	1
50 do do	26½	50 do do	90c.
200 do Franklin	18½	SECOND CALL.	
150 do Hancock	8⅞	100 do Water Power	17
150 do do	8½	50 do Rockland	6⅝
30 do do	8¾	150 do do b.60	6⅞

FOREIGN MARKET REVIEW.

London Weekly Metal Report.

LONDON, E. C., September 6, 1867.

A fair amount of business has been transacted in metals during the past week, and a hopeful feeling prevails.

IRON.—Bars continue to be quoted from £5 15s. to £6 5s.; rails, £5 10s. to £6. Staffordshire iron is more enquired for. Scotch pig-iron closes firm, at 51s 3d. cash.

COPPER is a shade easier, but holders are firm. Manufactured, £82 to £84; tough, £80 to £81. In Australian no transactions; £81 10s. cash, for Wallaroo, and £86 for Burra. Chili is in buyers' favor, and quoted £72 10s. for bar, and £92 for ingot. Ore and regulus, 14s. 9d., to 15s. per unit.

TIN.—After the large business lately done, there has been a pause. A few holders are more anxious to realize, but the quantity offered is small. The market closes firm. We quote straits, £89 to £90, Banca £95. In Holland the market is steady, at 54¾f. and 55¾f. ex sale. English is firm at recent advance.

TIN-PLATES steady.

LEAD without change, and in moderate demand, at £19 15s., and L. B., £20 2s. 6d.; W. B. £21 15s.

SPELTER again slightly dearer, but nothing reported. We quote spot £21 15s., and specials, (outports), same price.

VON HADELSZEN & NORTH.

Saving Life After Colliery Explosions.

The recent colliery explosion in England seems to have stirred up the inventive talent of that country, and turned it towards devising means, not only for the prevention of such catastrophes hereafter, but for the rescue of miners who may be unfortunate enough to be in a colliery when an explosion occurs. We give the following from the *London Mining Journal*, more because of the novelty of the inventor's ideas than from any belief in the practicability of his scheme. Says the *Journal:* Mr. C. J. Pownall proposes to construct in various parts of the underground workings of the mines a number of chambers, which shall be capable of holding a number of men. These chambers are to be hollowed or tunnelled out of the sides of the seam or workings, or to be of wrought or cast iron, timber, brick, stone, or other suitable material, which shall be so placed in recesses hewn or excavated at the sides of the workings that they shall be exposed as little as possible to the violence of the explosion. These chambers, and the door or entrance to them, can be, if found necessary, fire and water proof, and are to be rendered as air-tight as possible, and to have a loaded valve to each, for the escape of the vitiated or superfluous air from the inside. Each of these chambers is to be supplied with pure or fresh air, by means of air-pumps, fans or blowers, driven by the wind or the pumping-engines of the pit, or other suitable motive power; and this pure air is to be conducted into the chambers through wrought iron, cast-iron, India-rubber, or other pipes, which should be laid under the floor or surface of the workings, and carried in at the back of the air-chamber, to protect them from injury by explosion or otherwise. Wires, properly insulated, can be laid through or alongside of the air-pipes, for the purpose of affording the means of telegraphic communication from the chambers to the pit bank. When it is expected that noxious gases are accumulating, or have accumulated in the pit, from the effects of an explosion or otherwise, instead of the miners to whom the explosion has not already proved fatal having to make their way to the bottom of the shaft, in doing which they are generally overcome by these gases, Mr. Pownall intends that they shall take shelter in those chambers, which are suitably placed to be most readily reached by them. In these chambers they could remain for a considerable period (fresh air being continually supplied by the pumps or fans) until relief was afforded to them, or until they could with safety reach the bottom of the shaft; and for this purpose he further proposes that there should be kept in each chamber a number of ordinary air-belts, or elastic bags, already charged, or which could be charged with air when required for use from valves or taps on the air supply-pipe in the interior of the chamber, and from these belts or bags each man could inhale pure or fresh air while making his way through any noxious gases towards the shaft.

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

NEW YORK, SATURDAY, SEPTEMBER 21.

CONTENTS OF THIS NUMBER.

PASCAL AND NEWTON.

An attempt has recently been made by M. CHASLES, a distinguished member of the French Academy of Sciences, to show by means of an alleged correspondence between BLAISE PASCAL and ISAAC NEWTON, that the honor of discovering the law of gravitation belongs to the former. SIR DAVID BREWSTER, the biographer of NEWTON, in a recent letter to the *Athenæum*, pronounces the correspondence a series of forgeries, on the various and apparently conclusive grounds. The two most satisfactory are the facts, that NEWTON never wrote in French, whereas the alleged letters to PASCAL are in that language, and that NEWTON's great mathematical powers were developed very slowly, and not until after his sixteenth year, whereas the alleged correspondence makes PASCAL hear of his precocity in this respect, and write him encouraging letters, when he was only eleven years of age.

Strangely enough, the French Academician continues to insist upon the authenticity of his documents; and the commission appointed by the Academy to inquire into the matter seems, for some unexplained reason, to be unable to put the question to a decisive trial.

As the correspondence brought forward includes letters from ten other personages, besides the two principals, the forgery, if forgery it be, is an absurdly complicated one. It is hardly conceivable that one should prepare more than a thousand different documents, when one or two would be equally plausible, and infinitely less liable to detection. The anger of SIR DAVID BREWSTER and his "French foe" only retards the final settlement of the question; in the investigation of which the French and English *savans* must amicably unite, or much time will be spent in fruitless wrangling.

It is not probable that the solid fame of Newton will be impaired by the result of the strictest inquiry. If any man has left behind him proofs of the actual hard work by which he wrought his great achievements, it is he. The flashing genius of a brilliant mind like that of the versatile PASCAL, is not likely to obscure his glory. Besides, this is not the first time that his share in the great discovery, with which his name is indissolubly connected, has been called in question. The claims of JEREMIAH HORROCKS, a remarkable young astronomer, who died in 1641, in the twenty-third year, have been presented and discussed; and it is, we believe, generally admitted that the unfinished calculations which he left behind comprise a partial demonstration. NEWTON is well known to have been an ardent admirer of HORROCKS, whose works he distinctly acknowledged himself indebted for assistance in regard to the lunar emotions; yet the result of careful comparison seems to prove that the great philosopher attained his end by ways and methods of his own. The most that we can say is, that if HORROCKS had lived long enough, he would probably have arrived, by his own route, at the same goal. We suggest that much of M. CHASLES documentary evidence may be genuine, and yet only prove that PASCAL was at work in the same direction. The gigantic labor of NEWTON was the demonstration, not the mere discovery (in the loose popular sum) of the law; and unless this was suggested to him by PASCAL, the glory of his achievement is undimmed.

EXTRACTING SILVER FROM LEAD BY ZINC.

The old and approved method of extracting silver from lead is cupellation, or the subjection of the argentiferous lead to an oxidizing flame, under the action of which, a part of the oxides of lead passes away in fumes, and a part is absorbed by the hearth of bone-ash or other suitable porous material. The Pattinson process, of which so much is said, is merely a concentration, preparatory to cupellation, by means of which the amount of lead to be oxidized is greatly reduced, and lead which contains too little silver to be worth cupelling is so divided as to yield a portion, in which all, or nearly all, the silver is collected. There is no fault to be found with the purity of the silver resulting from cupellation. The most serious objections to the process lie in the loss of lead, and the expenditure of fuel required, first to oxidize the metal, and afterwards to reduce the resulting litharge and minium to metal again. Sometimes, it is true, the latter process is unnecessary, as the litharge may be sold as such, or returned as a flux to smelting furnaces. On the whole, however, while the process of cupellation is one of the most complete and satisfactory in metallurgy, it is not to be claimed as economically perfect; and adverse circumstances may render it both inconvenient and costly. Herr C. F. FLACH, of Prussia, has recently patented in England a process for extracting silver from lead by the use of zinc, the principle of which is the formation of an alloy of zinc, silver and lead, which is skimmed from the surface of the melted lead, and afterwards run down in a small blast furnace with siliceous fluxes, and the final very rich regulus of lead is subjected to cupellation. It will be seen that this, like the Pattinson process, is really a concentration; and the final operation is, as usual, a cupellation; but the concentration is carried so far that the expense and loss by cupellation is reduced to a minimum. The desilvering of lead by zinc has been frequently attempted; but it has not proved economical, on the whole, and the result has been unsatisfactory from a metallurgical point of view, because the lead always remained alloyed with zinc. It is claimed, in an article in the *Mechanics' Magazine*, for FLACH's method, that an entirely pure lead is obtained, and that there is a gain of three to four per cent. of silver as compared with the old mode of treatment by Pattinson's process. Messrs. BALBACH & DIEFENBACH, of Newark, if we remember rightly, introduced, some time ago, a similar process into this country. We have never heard what were their actual working results, and should be glad to obtain trustworthy information upon this important point. A casual examination of their method, made some months ago, enables us to say that we are inclined to prefer its details to those of the FLACH process. The novelty and the real merit of both must consist in their particular manipulations; for the general principles of this mode of desilvering lead have been in the books for some years. For American metallurgists, the disadvantage of the new method is, that it requires more skill on the part of workmen than the old one; and skill is a commodity with us more scarce than fuel and more costly than lead.

THE BRIDGE TO BROOKLYN.

The able report of Mr. ROEBLING on the proposed suspension bridge to Brooklyn, is before the public. There is little to be said against his estimates. They are probably accurate; and if they are not so, few living engineers could undertake to correct them. Mr. ROEBLING is a very accomplished civil engineer; and if there is one thing he knows better than another, it is suspension bridges. Perhaps his predilection for this style of structure, and his thorough acquaintance with its advantages, lead him to be somewhat partial in his judgment of other and rival propositions. He condemns tunnels on the ground of expense, and claims for his aerial roadway greater ease of construction, economy and durability. On these heads there is room for doubt; but we incline, on the whole, to prefer the suspension bridge, though it should cost more. The most serious question is almost taken for granted in the report. Will the bridge compete successfully with the ferries? If we may draw any conclusions from the financial success of the Thames tunnel, the competition will result in favor of that line which offers the cheapest transit. After the first curiosity is satisfied, people will prefer riding on the boats at two cents or less, to traveling over the bridge at five cents. The expectation that the bridge will obtain all the passenger traffic at present enjoyed by five ferries, will scarcely be realized. It would not be surprising if the contest should prove disastrous to both parties at first; though there is reasonable ground to believe that a bridge, connecting directly with New York and Brooklyn railways, would speedily build up a large traffic for itself, stimulating increased growth in our sister city, and profiting in turn from its own results. In any case, we should bid adieu to the ferries with considerable regret. They form a very pleasant part of our daily homeward journey; and horse-cars would scarcely console us for their loss.

UNDERGROUND RAILWAYS.

Among the various schemes which have from time to time been proposed for the improvement of facilities of travel between the lower part of Manhattan Island, the region vaguely known as "up town," and the suburbs still further North, the plan of an underground railway has been frequently mentioned; and the great success of the Metropolitan Railway of London has been cited, to prove its practicability. A question has recently arisen in London, regarding the condition of the atmosphere on the Metropolitan Railway, the settlement of which is a matter of literally vital importance. The sudden death of a lady passenger was made the subject of a coroner's inquest; and as it was the third occurrence of the sort within a few weeks, and the evidence seemed to connect it with the oppressive heat and oder of the subterraneous passage, the jury ordered a chemical analysis of the atmosphere of the tunnel; and the directors of the Railway, being anxious that the facts should be inquired into by competent and impartial persons, so as at once to remove all possible cause for anxiety, have requested Dr. Letheby, the medical officer of health for the city of London, in conjunction with other eminent experts, to make a thorough investigation and report. Pending the results of these inquiries, we can only say, that it ought not to be impossible to ventilate properly a railway tunnel; but unless it can be proved in any given case that this point is secured beyond the possibility of disaster, the public will be disinclined to make use of that particular railway, not only, but the uncertainty concerning it would affect unfavorably all arrangements for underground transit. There are already opportunities enough, in railway travel, for sudden death; no one desires to see the list of awful possibilities increased.

THE FAIR.

The thirty-seventh annual exhibition of the American Institute is a decided success. The spacious arsenal in Fourteenth street is well filled with a collection of the products of American skill and industry, various and extensive enough to suit every taste, and so conveniently arranged as to be studied leisurely or surveyed carelessly with equal ease and comfort. We are not over-partial to colossal and unwieldy exhibitions. Once in a while they are well enough, but the real impulse of progress is given by more frequent and less magnificent displays of industrial achievement. In a word, we think the Fair of the American Institute is just large enough to secure the maximum of interest and usefulness in proportion to the trouble and expense of its arrangement and maintenance. On the other hand, there are certain departments in which it is wofully deficient; but we conceive these to be the departments in which but little progress has been made during the past year; and we are content to see the space occupied with articles of greater novelty and practical interest.

The only visit we have thus far found time to make, was devoted to a stroll through the department devoted to machinery, in which the display, as all agree, is unusually fine. The number of engines and pumps on exhibition is apparently much greater than was anticipated; and the steam-power is inadequate; but as two extra boilers are being set, and a third, of large dimensions, is promised, this inconvenience will be but temporary, and we may expect the machines to be running all at once, next week, instead of taking turns, as they are now obliged to do. Our attention was attracted first by a magnificent stationary engine, (Babcock & Wilson,) from the Hope Iron Works, the neat workmanship, solidity, precision and silent working of which scarcely leave anything to be desired. At the other end of the room is a second stationary engine from the Washington Iron Works, the appearance of which is very fine. We did not see it in motion, and are unable to judge of the merits of the patent governor and cut-off with which it is provided. The variety of rotary pumps, hydraulic pumps, pneumatic pumps, duplex pumps, caloric pumps, steam-siphons, and what not, is bewildering. Among them we notice some familiar and approved machines, such as Claytou's steam pump, with its ingenious patent sliding journal boxes and general thorough workmanship, the handsome machines of Campbell & Hardick Brothers, both direct-acting and crank pumps a superb Woodward hydraulic pump, and a Root engine, which, for a trunk engine, is as good as anything we are acquainted with. The rotary pumps and the steam siphon are well represented, and are very useful and convenient machines. One of the most curious pumps is Pease's pneumatic pump, a small glass model of which is on exhibition. It is a pity that the larger working model, which we have seen elsewhere, does not accompany it. The invention strikes us as likely to be very convenient, under certain circumstances, to miners, since it allows the use of crooked pipes, and has no valves nor piston to get out of order. As to its economy, compared with a regular steam pump, in places where the latter can be used with average convenience, that is another question. Mr. F. S. Pease is also the exhibitor of some beautifully clear and brilliant samples of petroleum and other oils. J. P. Upham & Co, of Claremont, N. H., exhibit a model of a stationary engine, in which there is nothing novel or striking but its exquisite beauty of form and finish. They deserve a flattering notice; for we don't see how they will ever get any other reward for their skill and patience. We hope their serious work is half as well done. "Governors" are as plenty at the Fair as they were the other day, at Antictam. We noticed that of Pickering and Davis, which was illustrated re-

cently in our columns. Unfortunately it is not attached. Thomas Prosser and Son exhibit the Grimshaw Compressed-Air Hammer, and a pretty collection of samples of their work in steel, including sections of steel rails, specimens of the various stages of production, and models of steel cannon, tastefully arranged. Colwells, Shaw and Willard exhibit their lead-encased block-tin pipe in a great variety of ways. One would hardly think it possible to sound so many variations on a mere pipe. There is something more than fancy in the display, however; for the different samples serve to set forth unmistakably the structure and the merits of this truly valuable invention. The process of manufacture, which is the most striking part of the whole thing, is not, and perhaps could not be, illustrated. The exhibition of the Bishop Gutta Percha Company is very interesting and suggestive. The case of telegraph cables naturally leads one to ask why everybody should run to England for work of that kind. There is proof positive that American manufacturers can do anything in the cable line that needs doing. We are glad to know that the lines under the East River were furnished by the Bishop Company. The display of minerals is meagre in the extreme, containing, in fact, nothing worthy of notice except the fine samples of graphite, exhibited by Joseph Dixon & Co., Jersey City. We wish these gentlemen had appended the name of the locality. The exhibition of minerals without such information is no better than a farce.

We cannot devote further space to the Fair this week; but we anticipate pleasant hours at the arsenal in the course of the next four weeks, and we may inflict upon our readers the results of our observation. This thought consoles us for the omissions of our present account.

NEW PUBLICATIONS.

We have received a pamphlet containing a description of new machinery applicable for boring artesian wells, for mining and other purposes, invented by COLIN MATHER, Esq., of Manchester, England. The description is not accompanied with drawings, and we forbear expressing a decisive opinion from the mere perusal of the text; but it is evident to us that Mr. MATHER's invention (represented by Mr. CHARLES POMEROY BUTTON, 697 Broadway) is calculated rather for boring with large diameters, than for the ordinary artesian wells such as we have them in the petroleum regions. The use of boring machinery in sinking air-shafts, and bores of several feet in diameter, is not yet introduced in America; yet, in some cases, it is highly to be recommended.

THE AMERICAN NATURALIST—*a Popular Illustrated Magazine of Natural History*, is the most beautiful popular scientific monthly on which we ever laid delighted eyes. Its exquisite typography and plates, its interesting original articles and judicious selections, combine to make it a welcome visitor wherever it comes. We may almost say that it is alone in its peculiar field; and it is certainly rare, that a monopoly should possess so high a degree of excellence. Salem, Mass., the place of its publication, and the seat of the Essex Institute, under the auspices of which the *Naturalist* appears, is probably, of all the cities of the United States, the one most enthusiastic for science. The meetings of its scientific associations are attended with a zeal and interest which puts larger cities to the blush; and the citizens who join the frequent scientific excursions into the surrounding country are numbered by hundreds. One would think the whole population of Salem had turned naturalists. Out of such a warm and kindly atmosphere comes this excellent periodical. May it thrive according to its deserts! is the very best we could reasonably wish for it. The September number contains articles on the Geysers of California, the Encampment of the Herons, Artificial Oyster Cultivation in France, The Quadrupeds of Arizona, The Home of the Bees, and the Chignon Fungus, together with a number of reviews, the usual Natural History Miscellany, and the very useful and appropriate Nat. Hist. Calendar, giving an account of the insects to be seen in September.

SECOND REPORT OF THE NEW MEXICO MINING COMPANY.—We are indebted to the courtesy of Mr. FRED. W. JONES, Secretary, for a copy of this pamphlet. As it is nearly ten years since the New Mexico Company was incorporated, we must confess that the meagre information furnished by this report is matter for surprise. Mr. JONES has done the best with the data at his command, and, indeed, the general impression produced by his statement is favorable to the value of the property and the caution, solvency and gradual progress of the company, though not at all to its energy, earnestness and capacity. The lack of water is a great difficulty; and the means suggested for obtaining an abundant supply are an aqueduct fifty-five miles long, and an artesian well. The well, from all appearances, would be less expensive, and at the same time the less likely to succeed. Has the company tried dry crushing?

THE MARQUETTE WEEKLY PLAINDEALER.—We are in receipt of No. 1, vol. 1, of a neatly printed and well compiled newspaper bearing the above title. In a letter to us, the editor, ALEXANDER EWARTS, Esq., late of the *Lake Superior Mining Journal*, says: "We have mailed you Nos. 1 and 2 of our effort. It is far from what we hope to make it." The latter clause refers, we presume, to the publication of mining news, as the number before us is complete in every department save that, to us, all important one. Touching the former clause, we have to say, that No. 2 has not come to hand. We presume it has gone the way of many others of our exchanges and letters, because of misdirection. *Journal of Mining* and *Mining Journal* undoubtedly mean the same thing, in fact; but the Post-Office clerks are of opinion that mail matter differently addressed should go to two parties at least, and distribute accordingly. The consequence is, that a great deal of matter intended for us never reaches this office. If correspondents, exchanges and others would bear in mind these facts, and when they address us, write AMERICAN JOURNAL OF MINING, our distinctive title would insure safe carriage.

DISCOVERY OF A LOST ART OF THE EGYPTIANS—THE ROBBINS PROCESS FOR RENDERING WOOD IMPERISHABLE. *An Invaluable Improvement, susceptible of Universal Application.* This pamphlet is published by the *National Patent Wood Preserving Company*, and contains a curious mixture of good sense, science, and nauseous humbug. We have already published and illustrated an account of this process by Professor S. B. BRITTAN, and we give place, this week to another communication from the same pen; because the subject is one of interest to the public, and, not least, to miners, and the articles referred to are intelligently and forcibly written. On the other hand, we must remark that it is already a good while since this process was brought forward; why do we not hear of actual results? The assumption that ROBBINS' process is entitled to all the credit gained for BETHELL'S, and the constant re-quotations of old articles from the *Scientific American* will not forever suffice, in the place of evidence. Mr. R's apparatus is all he can have patented; and it is his apparatus which needs to be demonstrated a success, not his chemistry, nor the mummies of Thebes. We should advise the company to say as little as possible about the Lost Art of the Egyptians, which they certainly have not discovered, and to avoid alluding to "our American genius, Mr. LOUIS S. ROBBINS." That gentleman was the "genius" of the Hermetical Barrel Company,—an organization, the memory of which is preserved undecaying (after the true "Egyptian" fashion) by the odor of the petroleum its barrels would not contain. The history of that affair is yet to be written; but the materials are ample; and while they exist, we scarcely think the name of Mr. LOUIS S. ROBBINS will greatly assist the introduction of a "chemical patent," by means of a stock company, in the city of New York. As regards the process itself, we certainly do not mean to condemn it, on the flimsy evidence which has induced so many to accept and endorse it. We can afford to wait for trustworthy data before attempting to judge. Meanwhile, any pertinent and intelligent communication, either for or against it, is welcome to our columns.

THE JOURNAL OF THE FRANKLIN INSTITUTE, for September, has its usual interesting scientific miscellany, a conclusion of the Lectures of Mr. LEEDS on Ventilation, a continuation of RAND'S, on Mineralogy, and of Dr. MORTON'S, on Electricity and Light. A very good number.

ASSESSMENTS.

Evergreen Bluff Mining Co. (L. S.) $2.00 per share, payable Oct. 1.

DIVIDENDS.

Ralphone Oil Tract Co., at 73 Broadway, 8 cents per share, payable Oct. 1; Washington & W. B. Oil Co., at Philadelphia, 5 cents per share; Oil Basin Petroleum Co., at Philadelphia, 1 per cent. on demand.

MEETINGS.

Buchanan Farm Oil Co., at 14 Beaver street, Sept. 20, 2 P. M.

STATEMENTS.

The clerk of Ontonagon county furnishes reports of Companies mining in that county which we tabulate as follows:

Companies.	Capital actually paid in.	Invested in Real Estate.	Personal Estate.	Debts as near as can be ascertained.	Credits.	Copper produced.
Aztec.....	$143,046	$60,000	$32,200	$22,023	200	40 tons.
Massachusetts..	90,000	90,000	none.	none.	none	none.
Algomah.....	41,954	36,254	"	"	2,913	"
Malden.....	80,000	70,000	2,115	"	none.	"

Correspondence.

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

CAUSES OF VEGETABLE DECOMPOSITION.

REVIEW OF A CORRESPONDENT.

EDITORS JOURNAL OF MINING:

Some time since I read, in the *Scientific American*, an editorial digest of the claims of one of its correspondents, who assumes to have invented a "new and improved method for the preservation of wood against decay." When the peculiar views and specific claims of a man are thus given to the press, they not only become public property, but this voluntary publicity implies an invitation to others to subject the same to trial by such means as may be comprehended within the limits of a free, just and honorable criticism. Moreover, when such claims involve the recognized facts and principles of science, in their application to the arts, and hence to the fundamental interests of society, the demand for such an ordeal becomes the more imperative, to the end, that multitudes may neither waste time in a resort to fruitless expedients nor exhaust their means in the pursuit of unworthy objects.

1. It is alleged that "the microscope reveals the cause of decay as due to parasites feeding on albuminous substances."

This assumption does not agree with the facts; but let us first define the term. In botany a parasite is a plant without the proper organic means or instruments to enable it to draw its nourishment directly from the unorganized elements, but which derives its support from other plants to which it attaches itself. When the term is employed in respect to entomology and zoology, it presents some insect or minute animal which lives on the superior forms of animated nature.

Now the microscope does nothing to show that the parasites constitute the producing cause or active agents in the process of decay, nor can this claim be otherwise demonstrated. On the contrary, according to Ehrenberg and other scientific authorities, while these creatures exist wherever organized matter is undergoing decomposition, it does not appear that the decomposing process is due to their presence. "Wherever organized matter exists in a decomposing state, there they abound, 'acting as scavengers in devouring, in the state of comminution and decay, those particles of decomposing matter, which, if left to be diffused throughout the atmosphere, might be productive of the most pernicious malaria.'"* Brande, in his encyclopedia, says: "It is not certain that *dry rot* is caused by these parasites; on the contrary, the terms are applied to "spontaneous decomposition *without the presence of fungi*;" or when these parasites "appear long after the commencement of the disease" in the wood. Edward Andrew Parnell, in his Chemistry Applied to Manufactures, Arts and Domestic Economy, page 77, says: "It is now generally admitted that the fungi and insects are not to be considered the origin, but the result of dry-rot." We doubtless mistake the effect for the cause when we presume that the parasites cause the decay of vegetable and animal substances. The fact is they are generated in, and are a product of, the process of decomposition, and they live but to consume and assimilate those elements which would otherwise render the earth and air unsuited to the essential conditions of health and life. To this end, if we may credit Ehrenberg, they multiply at the rate of millions daily. In the light of these facts and observations, it will be apparent, that *the treatment* of wood by superheated steam, will not suffice to protect it from decay. If the parasites had any active or vital existence before the albumen of the wood was in a state of putrefaction, the heat might possibly destroy some of the species; but the truth is, they are chiefly distinguishable *after* the process of decomposition has fairly commenced. They are only "found in all vegetable and animal infusions" after the same "have been kept a sufficient time" to develop their existence in and through the decomposition of such substances.† The parasites must, therefore, be regarded as a result and not as the cause of decay.

2. The *American's* correspondent maintains that charring wood is not necessary to its preservation. Subjecting wood to a temperature but little above the boiling point, presents decay because it destroys all parasitic genera. "This idea, original, I believe, with myself, . . . I claim as my invention."

The idea that charring wood is not essential to its preservation from decay, is in no possible sense original with the writer in the *American*. Neither Ryan, Burnett, Payne, Boucherie, Bethell nor Robbins, ever charred wood to preserve it. The correspondent's claim, in this respect, is wholly fallacious. But the idea for which originality is claimed, may be the assumed destruction of all parasitic genera, by a temperature that is above the boiling point. Now we are assured, by the best authorities, that the "polygastric infusoria are very tenacious of life;" while they are injuriously affected by strong poisons, they are capable of enduring great extremes of heat and cold, and are found alike beneath the snows on the highest peaks of the Alps, and in the hot springs that perpetually boil from the heat of volcanic fires.‡ The claims of the correspondent referred to, certainly belong to the realm of *invention*, but not in the sense he has implied. In what does his discovery consist? He denies that charring wood is necessary to its preservation. Does his invention consist in his negation of a proposition which nobody affirms? Or does he simply propose to patent a process for killing animalcules? If this constitutes the original idea or invention, it is obviously worthless. The albumen in the wood may coagulate in a temperature of 160° Fahrenheit, but no degree of heat will suffice to protect any vegetable or animal substance from parasites. Suppose we admit that a temperature of 212° will destroy the parasitic genera, what then? This will not protect wood from decay; besides these genera exist in water and in the air as well as in organized substances, and they may be readily deposited on the surface and in the pores of such wood as may have been previously treated by superheated steam. If vegetable decomposition is due to the pressure and action of the parasites, the proposed treatment does not afford the highest protection to wood any longer than it is kept at the high temperature which may be presumed to be fatal to the parasitic genera. As soon as it is exposed to air and moisture, at ordinary temperatures, the development of the parasites may commence again, and "Ehrenberg asserts that the *Hydatina seta* increased in twelve days to sixteen millions, and another species, in four days, to one hundred and seventy billions."

Scientific experiments have already fully established the fact, that any infusion of vegetable or animal substance may be boiled for hours and subsequently, if it be exposed to the atmosphere, it will soon swarm with myriads of microscopic creatures. The only way to prevent this is to wholly exclude the air. This establishes a condition incompatible with the laws that determine their existence; but whenever the air is again admitted, the whole infusion becomes alive as readily and completely as if it had never been boiled. Hence, if the decay of wood were really due to the presence of polygastric or other infusoria; and if a proper degree of heat would effectually destroy the living genera of all such, it would still be necessary to either preserve the temperature of 212°, more or less, or otherwise to keep the wood so treated in an exhausted receiver, where it could never come in contact with the parasitic genera that everywhere exist in the air. It is sufficiently evident, that the exposure of wood to the operation of oxygen and moisture—after it has been treated by hot air or superheated steam—might soon suffice to cover its surface and fill the pores with these infinitesimal germs and forms of life.§

A treatment of wood which simply proposes to empty the pores and leave the ligneous fibre unprotected, even by the natural fluids, will not render it indestructible. True, the application of heat will coagulate the albumen of the sap, and thereby render the same insoluble in water; but this is insufficient, as Dr. Ure most positively affirms.‖ It neither closes the pores nor otherwise protects the fibrous portions of the wood. The capillary tubes being left open, and exhausted of the vital elements of the living tree, they readily take up an increased quantity of water, if exposed to a humid atmosphere. This water escapes by evaporation when the wood is exposed to the action of the sun's rays. The constant vicissitudes of temperature, and the ever-varying degrees of moisture rapidly diminish the elasticity of the fibre, and at length completely destroy the integrity of the wood.

The alleged discovery of the *American's* correspondent, and the method of its practical application, seem to be resolved into the process of seasoning wood by hot air and superheated steam, which many others have done before him. Having shown that this practical treatment of wood is of little value, as a means of perserving it from decay, it cannot be necessary to consider "the advantages" of the new process which are said to chiefly consist in greater simplicity and economy. Surely there is no economy in unproductive labor, and simplicity, in respect to method, is a doubtful recommendation when the method itself is proved to be comparatively worthless.

The ancients were accustomed to preserve both vegetable and animal forms and substances by a process that rendered them so far imperishable, that many of them have come down to us in a state of surprising completeness. These may be seen in the museums of Egyptian and other antiquities. Three thousand years have neither obliterated the outlines of mortality, nor destroyed the cerements that inclose the forms of the dead. It is well known that they employed bituminous

* The reader may consult Ehrenberg and Loeuwenhook; also, see Redfield's Nature in Living Forms, p. 690.

† Orr's Circle of the Sciences, Vol. I, p. 87.

‡ See Redfield's Zoological Science.

§ Orr's Circle of the Sciences, Vol. II, p. 217.

‖ Although the albumen contained in the sap of the wood is the most liable and the first to putrify, yet the ligneous fibre itself, after it has been deprived of all sap, will, when exposed in a warm, damp situation, rot and crumble into dust. To preserve wood, therefore, that will be much exposed to the weather, it is not necessary that the sap should be coagulated, but that the fibres should be protected from moisture, which is effectually done by this process.—*Ure's Dictionary of the Arts.*

substances in the embalming process. But most of the modern experimenters have vainly attempted to impart this quality of unlimited durability to wood, by saturating the same with some metallic solution. The only exceptions worthy of recognition in this connection, are furnished by the process of Mr. Bethell, of England, and that of Louis S. Robbins, the American inventor, the claims of whose superior method were ably presented in the *Scientific American* of the date of the 17th of February last. There can be no reasonable doubt that Mr. Robbins' process is the nearest approximation to that of the old Egyptians, and it fully realizes all that the other modern experimenters have aimed to accomplish. S. B. B.

NEW YORK, Sept. 18, 1867.

New Modes of Making Steel.

The Paris Exhibition is particularly rich in specimens of steel obtained direct from pig iron or iron ore by certain new methods of conversion, recently invented, partly with an intention of avoiding Mr. Bessemer's patents, and partly also with an idea of removing from the iron the noxious admixtures as sulphur, phosphorus, and other elements which have proved unassailable by the Bessemer process, and by most of the other methods adopted for making steel. We have already noticed Mr. Siemen's new plan of making steel direct from the ore in a regenerative gas furnace, and we have noted other applications of the Siemen furnace to the manufacture of cast-steel direct. There are two inventions of this kind in the French department, both represented by some very fine specimens of steel, made by a direct process in the Siemen furnace, and without crucibles. The two inventors, we believe, are now involved in a lawsuit for infringement of patents, although it is difficult to see how either of the two can substantiate any claims, with the exception of more or less unimportant details. The two inventors are M. Berard, of Paris, whose operations are carried out at Montataire, and Messrs. Emile and Pierre Martin, of Paris, the well known proprietors of the forge at Sireuil, France. M. Berard has the idea of exposing his pig iron to a protracted series of alternative decarburizations and recarburizations. He works a quantity of molten pig iron in a Siemen furnace, through which an oxidizing current of heated gases, or a flame containing a surplus of air, is passed. The oxygen of the air is thus enabled to act upon the impurities contained in the iron in the same manner as it does in the Bessemer process. After continuing this action for a certain time, M. Berard reverses the process, that is, he introduces a flame which contains a surplus of gas, and is, therefore, capable of parting with some of its carbon, so as to restore it to the liquid iron. By this alternating process M. Berard believes that he is in a position to protract the process of conversion to any desired length of time, and to give the oxygen an opportunity of removing from the mass a greater quantity of impurities than can be got rid of by the Bessemer process. M. Berard make use of the current required for working the regenerators of the Siemens furnace for effecting his alternating operations. He divides the furnace into two halves, each forming a receptacle for a quantity of molten pigs, the two compartments being separated by a bridge made of fire-bricks. The flame entering the furnace at one side must pass over one mass of iron before it can reach the bridge, and after that it passes over the second charge of iron. The oxygen of the flame is taken up by the carbon contained in the first bath of iron, and the flame is thereby made a reducing one before it passes the bridge; the latter is sometimes also covered with pieces of coke or charcoal, so as to add still more carbon to the composition of the flame before it passes over the second bath of molten iron. The process is usually carried on so as to have fresh pig iron on one side, while a nearly decarburized material is contained in the second compartment, one change of currents only being made. The fresh flame, therefore, always passes over the crude pig iron first, and afterwards reaches the decarburized mass, which it converts into steel. M. Berard is very far from having as yet got his process into anything like a practical working condition. The small quantity of good steel he has produced hitherto is the pick of a disproportionate amount of failures, and to all those who are acquainted with the difficulty which exists in removing sulphur and phosphorus from the iron by the oxidizing influence of the air, it must appear extremely unlikely that the means resorted to by M. Berard, however protracted their action may be, can effectually serve the purpose for which they are intended. M. Berard also intends to add mixtures of wrought iron, steel scrap, and other similar matter to his pig iron, but for this he has no special claim as an inventor, the process of mixing pig iron with decarburized iron, or with iron ore, being very old and universally known. Messrs. Emile and Pierre Martin have introduced a system of steel manufacture which is of far greater practical value and importance, although it contains no more novelty in its abstract principle than the first named process. Messrs. Martin, however, have succeeded in making their process a commercial success. The Martin process is now in operation at the works of Messrs. Schneider & Co. at Creusot, at Messrs. Verdie's, at Eirmini, and in three or four other French steel works, and its results are very satisfactory, both with regard to the quality of steel produced and to its economical production. Messrs. Martin's mode of operation consists in the following process:—A quantity of pig iron, say a charge of three or of five tons, is melted, in a Siemen furnace with a dish-shaped bottom, or it is run into the furnace from a cupola or blast furnace. It is then exposed for about half an hour to a very high temperature, care being taken to keep the flame slightly overcharged with gas, by which means the burning of the fire-bricks of the furnace-top is said to be avoided or lessened. After that time a quantity of wrought iron, scrap steel, scrap or iron ore, or a mixture of these substances, is added to the mass. These additions are repeated in intervals of about thirty minutes, and they are made at charges of about two hundred weight at each time. The articles charged into the furnace are all previously heated to redness, so as to avoid any cooling influence upon the liquid mass. The process continues in this manner for about six hours. Towards the end of the operation the temperature of the furnace is raised as far as the nature of the combustion will permit. The quality of the metal produced is carefully tested from time to time by removing the metal, and coated bring it into a small ingot mould, the ingot being afterwards tried under the hammer. The operator has thereby at all times, complete control over the course of the process. He can judge how near the product obrained at any given moment comes to the desired quality of steel, and he can adjust his operations and additions accordingly. Messrs. Martin have found it advisable, in the production of steel to follow the same course as has been adopted in the Bessemer process, viz. to decarburize the iron completely at first, and then to add a sufficient quantity of spiegeleisen to effect the desired combination of iron and carbon. In M. Martin's process the facility for working up old iron and steel scrap is a very important point. The conversion of old iron rails and of similar articles into steel has become a great desideration in our recent practice. In the Bessemer process this is feasible, but the proportion of wrought iron which can be added to the pig iron in the converter is comparatively small, and any excess endangers the proper fluidity of the charge. The largest proportion of wrought iron that has, to our knowledge, been added to a charge in the Bessemer converter was 30 per cent. of old rails mixed with very gray hematite; but then the rails were thrown into the converter at a welding heat, and the pig iron run upon them immediately. M. Martin says that he can use two-thirds of old rails with one-third of pig iron without difficulty, only the rails must be of good iron, free from sulphur and phosphorus, since the Martin process will no more remove these elements from the iron than the Bessemer process will. Messrs. Martin have produced the same graduation of metals containing more or less carbon, in proportion as has been obtained by the Bessemer process. They make a "mixed metal," half cast iron, half steel, the same as Mr. Bessemer uses for his hammer-heads and anvils. They produce tool steel of remarkably good quality, also soft steel, of homogeneous metal and ultimately the very softest kinds of decarburized iron, to which they have given the name *fer fondu*, or "cast wrought iron." This latter substance is somewhat similar in its nature and fracture to the homogeneous iron shown in the exhibitions of several iron-works in the British section. Messrs. Martin's process seems to be worthy the attention of steel-makers, and it is very likely to come in as a very useful adition to the Bessemer process of working up scraps and old materials into marketable steel.—*Engineering*.

Method of Black Lead Production in California.

A correspondent of the San Francisco *Bulletin* recently visited the Plumbago mines near Sonora, in California, and describes the methods of production: The apparatus used for separating the black lead from the dirt, when the mine was first worked, consisted of a wooden barrel, perforated with small holes, an iron rod passing through it lengthwise. The ends of the rod formed journals which, resting on two upright posts, the "machine" being turned by hand, by means of a crank, precisely like a barrel churn. The dirt to be washed being put into the barrel, by means of an opening at the side, a small stream of water was led to the top of the machine, by means of a pipe. After a few minutes turning, all the black lead, sand and fine dirt were washed through the holes, and all the stones and lumps remained in the barrel, and were thrown out at every charge. The water containing the finer materials was received in a tank, about five feet deep, placed immediately under the barrel, the only outlet from this tank being a shallow spout a few inches from the top. The graphite, being in exceedingly fine particles floated off in the water which passed over this spout, while nearly all the sand and other materials remained in the tank. The water, with the graphite in suspension, was then passed through a series of shallow tanks made of boards. After running the machinery for several days, the water was let out of the shallow tanks, and the sediment they contained left exposed to the sun for a few hours, when it became blackened, ready for the market, that obtained from the last of the tanks being finer than from the first, but all being exceedingly fine. An analysis made of some from the last tank showed 97 9-100 carbon. Nearly 200 tons of black lead were made by this crude process, which being sent to New York, Philadelphia, England and other countries where it is much used in manufactures, its extreme purity speedily created a market for all that can be sent at $100 per ton. The value of the article being thus established, the gentlemen owning the mine prepared to work it on a more systematic plan. Among other improvements for that purpose they erected a number of iron cylinders moved by water power, for washing the dirt, instead of the barrels and man power. The water and sediment passing from these cylinders, were conveyed by the pipes into a large tank, constructed of stout planks, and strongly framed, capable of holding 1,000 tons of liquids. When this tank was full—requiring about three days for that purpose—its contents were permitted to settle for 24 hours, when the dirty water was let off from the surface, and a powerful stream of clean water let on, which forced the sediment through spouts into 18 shallow tanks, each 20 feet wide by 25 feet long, and 1 foot deep. After remaining in these tanks about three days the water is let off, and the sediment exposed to the sun. In 24 hours it becomes hard enough to be taken out in blocks, when it is laid on platforms made of plank, and in another 24 hours is ready for shipment. From 25 to 30 tons per week were prepared by the method. But this quantity falling far short of the demand, other improvements have been recently introduced, by which from 20 to 25 tons are prepared daily. These recent improvements consist of a sort of arastra or puddling machine for washing and separating the ore, instead of the cylinders. This machine consists of a circular bed 20 feet in diameter, with water tight sides 3 feet high, in the center of which is an upright with four arms, to which are attached "stirrers" instead of grinders, as in an arrastra, as it is not desirable to grind this ore, only to separate its particles. This apparatus is set in motion by a water-wheel. Fifteen Chinamen are consantly employed wheeling the ore into this machine. A small stream of water passing through it carries all the lighter materials away. The rocks and sand are let out by a slum gate every three or four hours. The water containing the black lead is conveyed by a flume to a mammoth tank built in the ground, 200 feet long, 150 feet wide, and 7 feet deep, capable of holding 30 days collection. This tank has been constructed at great expense, its entire surface being coated with a cement prepared expressly for that purpose, sufficiently smooth to prevent the black-lead adhering, and so porous as to prevent its retaining moisture after the water has been let off. When this tank is filled with 3 feet 4 inches of sediment it is considered full, and after residing for a few days the water is let off and the sediment exposed to the sun. In two days, in warm weather, it is sufficiently dry to be taken out and laid on the drying platforms, and, in 24 hours after, it is ready for shipping.

Cox's New Cement Mill.

Some time ago, says the San Francisco *Bulletin*, Captain Cox of this city invented a new cement mill, which he has tried at his brother's well known cement claim, a mile and a half from Placerville. The cement of the claim on which the machine of Capt. Cox was tried, is the hardest and most difficult to work of all the cement in the neighborhood, and it has been almost a perfect success. It is driven by water and is capable of crushing five tons of cement a day. It cleans the stones contained in the material as bright as marbles. The claim could not, on any other system, have been worked to pay, while by the machine now used (the experimental one) it has paid expenses and left a profit on the original outlay from the first. The second machine of this pattern is just being completed. It has something of the character of a pug mill. It consists of a large pan, six feet in diameter by two feet deep, of wrought iron. It has a skeleton or frame floor attached to the lower rim of the pan by screws; through the centre passes a three inch upright shaft, to the upper end of which is affixed the bevel wheel combining with the power. Just above that part of the shaft a little higher than the level of the pan, four cast iron arms are attached, from two of which depend three teeth plows or mullers, and four from the other two. These teeth have a little twist outwards, so as to give a lateral motion to the cement as they pass round, and are so arranged as to cover every part of the pan at each revolution of the shaft. The floor is made in cast iron segments, resting on the skeleton frame, and they are perforated with slits or interstices of one-quarter or two-third inch wide by five inches long. Through these apertures the comminuted part of cement is washed into the sluices. The gravel escapes, when clean, by opening two hinged doors or flaps, which let the gravel pass into a tail sluice. The cement is admitted by a hopper, and the pan will contain a ton at a time. The operation of disintegrating that quantity does not take quite eight minutes; and two or three revolutions, when the flap doors are open, will clean the pan. The advantage of such a machine may be seen by the statement of the inventor, borne out by experience, that it will do the work of a forty stamp mill; and while to erect the one, at the mine, would cost $40,000 the other can be built for $2,000.

Patent Claims.

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

The following claims have recently been issued from the United States Patent Office:

68,702.—APPARATUS FOR VAPORIZING AND BURNING LIQUID HYDRO CARBONS.—Frederic Cook, New York City.

1st. I claim the steam and oil pipes, L and N, having the connecting valve, V, for the purpose specified.

2d, A combustion chamber for burning liquid hydrocarbons, made of fire-clay or its equivalent, in sections or staves, in the manner and for the purpose as shown and described.

3d. The inverted chamber or hood, k, when arranged for the purpose and in the manner shown.

4th, In the apparatus for burning liquid hydrocarbons, the arrangement respectively of the steam pipe, L, and oil pipe, n, for the purpose of volatilizing the lighter portions of the oil by the heat of the steam.

68,703.—VAPORIZING AND BURNING LIQUID HYDROCARBON.—Frederic Cook, New York City.

1st, I claim a retort or vaporizing chamber for oil burning furnaces, the upright portions of which are made of water legs or pipes communicating with the boiler, and the bottom of iron fire-clay or other suitable material as a vaporizing surface, substantially as shown and described.

2d, In an apparatus for vaporizing and burning hydrocarbon liquids, I claim a retort or chamber having a removable bottom plate as set forth.

3d, The retort or vaporizing chamber suspended from the boilers substantially in the manner specified and shown.

68,704.—APPARATUS FOR BURNING PETROLEUM AND FLUID, MADE THEREFROM.—Frederic Cook, New York City.

I claim the use of plates and deflectors or either of them within the retort thereby forming compartments therein, for the purpose of retarding the flame and producing a more perfect combustion.

The use of retorts having perforations for the admission of air in combination with the flues or compartments substantially as described for the purposes set forth.

I claim the construction and arrangement of the oil supply pipe, H, with its connections. The cooler, H', and the regulating valves, J Y, substantially as described.

I claim protecting the oil feeding pipes and apparatus from the heat of the furnace by the fire clay tile or other suitable material substantially as described.

I claim the general construction of the apparatus described and shown.

68,705.—METHOD OF USING LIQUID HYDROCARBON AS FUEL.—Frederic Cook, New York City.

1st. I claim producing the requisite pressure in the oil tank by means of the steam pressure in the boiler substantially as described.

2d, In an apparatus for burning petroleum or other inflammable oils, I claim forcing the oil into the furnace by means of artificial pressure in a supply tank, substantially such as is herein described, said pressure being created in any of the modes herein mentioned.

68,706.—APPARATUS FOR BURNING PETROLEUM AS FUEL.—Frederic Cook, New York City.

1st, I claim in a furnace for burning petroleum or other liquid hydrocarbons as fuel, the feeding apparatus connected with, and arranged as a part of the furnace door.

2d. The employment of a cutter or cleaner for the purpose of cleaning the oil pipe substantially as set forth.

3d, The arrangement of the deflecting till, W, when used for the purpose and in the manner substantially as described and shown.

68,707.—METHOD OF BURNING HYDROCARBON OILS AS FUEL.

1st, I claim the arrangement substantially as described, by which water is applied and evaporated by the plates, Q Q, or other equivalents, when used for this purpose substantially as set forth.

2d, The cap, M, arranged within the cap, G, and perforated as described, so that air may be forced through it for the purpose and in the manner specified.

3d, The pipe, N, arranged as and for the purpose described, in combination with its two connections, one with the steam space, and the other with the water space of the boiler.

4th, In combination with the air chamber, J, I claim the air pipes, K, through the water legs of the boiler for the purpose of introducing air into the furnace substantially as described.

68,708.—PROCESS OF VAPORIZING AND DECOMPOSING HYDROCARBON LIQUIDS IN THE PRESENCE OF STEAM.—Frederic Cook, New York City, and John A. Bassett, Salem, Mass.

1st, We claim in an apparatus for decomposing hydrocarbon oils with steam, the arrangement and construction of the apparatus shown, having the several parts or their equivalents arranged and operating together, in the manner and for the purpose specified.

2d, The process herein described whereby hydrocarbon oils and steam are decomposed simultaneously into gases, and used in the production of heat as set forth.

On-dit about Minerals, &c.

☞ **A great geological curiosity has just been deposited in the** museum of the Hartley Institution at Southampton, England, consisting of a piece of flexible stone about two feet long, seven inches wide, and more than one inch in thickness, having the appearance of rough sandstone, which bends with slight pressure like a piece of India rubber or gutta percha of the same size. This very interesting specimen of geology was obtained from Delhi, in the East Indies. In its natural position the stone is said to run in thin layers in the soil in which it is found, but is so rare in India that it finds a place in the museums at Calcatta. We are informed that there is a similar stone, but not so wide as the one under notice, in the British Museum, and another in the museum of the School of Mines, but specimens are very rarely to be met with. Although the stone has a gritty appearance, no grit or dust is thrown off by the motion given to it when under pressure.

☞ **A British exchange says: During the late depression in the** mining interest of Cornwall more than 5,000 of the miners of West Devon and of the sister county have left the places of their birth to find employment elsewhere. About 1,000 of these have left the Tavistock district, and 4,000 have left Cornwall. Some of them have gone into Scotland, and others are employed on the Metropolitan lines of railway. About 1,000 of the number have remained in England and Scotland, and the remaining 4,000 have gone to America, Canada and New Zealand.

☞ **The consumption of lead in California alone, in the form of** shot, pipe, sheets, etc., at present exceeds 1,000,000 lbs. per annum; and the

extraction of the silver and saving of other products in preparing the metal will enable them to place it in the market at a still greater reduction in cost; as it is, it can be laid down here cheaper than the imported article from Europe or the Atlantic States.

☞ The Montana *Post*, of August 24th, says, That Dr. James Dunlevy, while exploring the head waters of the Yellowstone, discovered a salt water lake, covering about forty acres. The water is always at the boiling temperature; meat thrown in was boiled in less than forty minutes. The water contains a large per centage of tincal, the crude material from which borax is manufactured.

☞ Mining, says the *Scientific American*, is being prosecuted in New Hampshire with good success. A mine in Lisbon has yielded $4,000 in gold since January, and 417 tons of "dressed copper" have been taken from a mine in the same vicinity.

[Very good success indeed, if it didn't cost anything to work the mine.—Ed. J. of M.]

☞ The Sydney *Herald* says, that "The diggings at the Morinish, Queensland, promise to turn up something as valuable as gold, in the shape of precious stones. Six different varieties of stones have been obtained and forwarded to Sydney for inspection. Crystal quartz is found on many of the Queensland gold fields.

☞ To show how completely iron steamboats are superseding wooden steamboats, it may be mentioned that only forty of the latter were built in England last year, while two hundred and eighty iron steam vessels were built.

☞ The largest income returned at San Francisco last year was that of Florinza Hayward, the owner of a coal mine. It was $165,233.

[If we are not very much mistaken Mr. Hayward owns a little gold mine too.—Ed. J. of M.]

☞ A California exchange says that it is contemplated to erect lead smelting furnaces on Catalina Island, near San Bernardino, where there is an important lode of argentiferous galena.

☞ The Erie Railway Company has sent twenty-five tons of iron to the Syracuse Steel Works, to be made into steel rails, by the Bessemer process.

☞ A coal mine has been discovered near Water Valley, Mississippi.

All Sorts.

☞ In a cave in the Yatinde, in the southern part of the Department of Chohteca, Honduras, there is said to be a natural curiosity, called the "Fountain of Blood." The fountain consists of a stream of dark resembling blood, which drops steadily from the roof of the cave upon the floor beneath. It forms pools of coagulated matter upon the floor, and imparts its color to a small brook which flows from the cave. The liquid has not only the color, but the taste and smell of blood, and when exposed to the air for a short time emits a very disagreeable odor. No satisfactory analysis has been advanced concerning it.

☞ A transport service, organized from Port Said to Suez by the Suez Canal Company, has already acquired some importance. The business done during the last ten months has considerably increased, and the Peninsular and Oriental Steam Navigation Company is said to be contemplating the despatch of coal to its Suez station by this route.

☞ It is stated that Hon. Oakes Ames, of Massachusetts, has contracted to build nearly the whole of the remaining portion of the Union Pacific Railway—some 600 miles, passing through the Rocky Mountain region—receiving therefore over $47,000,000. This is believed to be the largest single contract ever entered into by one man.

☞ The Union Pacific Railroad is now (Sept. 17.) finished 460 miles west of Omaha, and within 50 miles of Cheyenne City, Kansas. The branch Pacific railroad is completed 12 miles beyond the station just occupied by the Commissioners, which carries the track 270 miles west of the Missouri river.

☞ Sixty years ago there was scarcely a craft larger than a canoe on the Western lakes. In 1841 the lake trade amounted to $65,000,000, and it is expected to reach $1,000,000,000 by 1870.

☞ One Hugh McElroy, a Montana miner, lately shot himself. The coroner's jury called in the case brought in a verdict "that the deceased committed suicide, and that he did it in *self-defence*."

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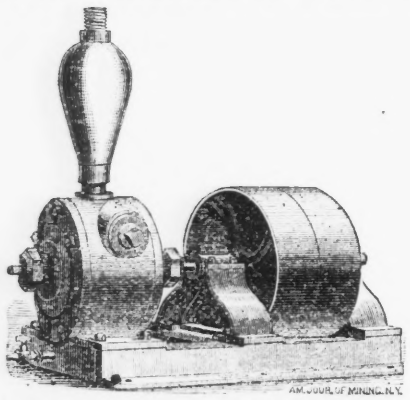

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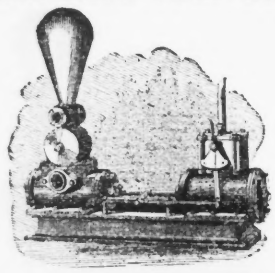

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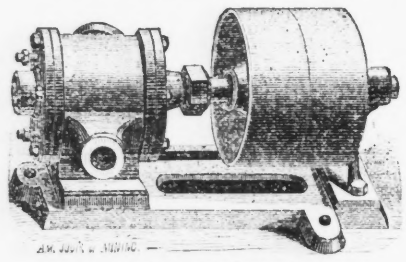

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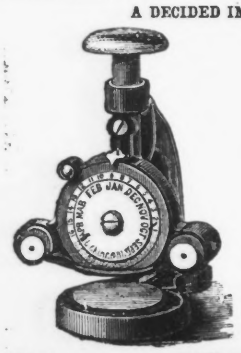

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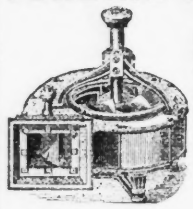

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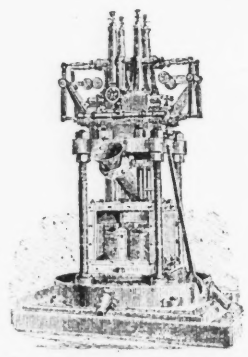

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NYE COUNTY, STATE OF NEVADA

Offer Bonds having Five Years to run, bearing interest at the rate of

TEN PER CENT. PER ANNUM,

Payable half yearly in Gold, at the Office of the Company,

NO. 430 WALNUT STREET, PHILADELPHIA,

Or at the Office of

THOMAS BARCLAY,

No. 4 WALL STREET, NEW YORK.

These Securities form a first claim on the entire assets of the Company, and are exchangeable for ordinary Stock of the Company at the option of the holder, at any period during the five years. For particulars and other information apply to

JACOB ZEIGLER,

Secretary and Treasurer, at the Office of the Company, or to THOMAS BARCLAY, No. 4 WALL STREET, New York.

September Coupons for 1867 will be paid by either of the parties above named. 5:4:4t

BOILERS.

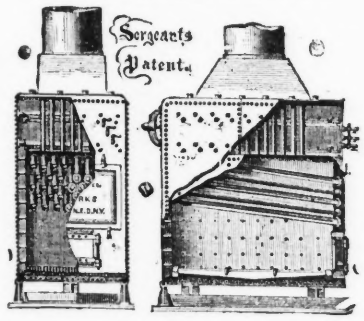
THE GREATEST IMPROVEMENT OF THE AGE.

Sergeant's Patent Boilers.

ACKERMAN & VOGT,

STEAM BOILER WORKS,

OFFICE, 279 FIRST STREET, BROOKLYN, E. D.



Manufacturers of

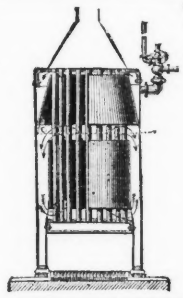
SERGEANT'S PATENT BOILERS,

which will raise more steam from the same amount of fuel, and occupies less space than any boiler now in use.

Also of all kinds of Steam Engines and Boilers. High and Low Pressure Boilers, Tanks, Filters, Kettles, Curbs, Oil Stills, &c. New and Second Handed Boilers constantly on hand.

THOS. ACKERMAN, HENRY VOGT.

Send for circular. 17-2 qp



THE HICKS BOILER,

WILL NOT SCALE,

WILL NOT FOAM,

GIVES DRY STEAM,

Send for Circular to

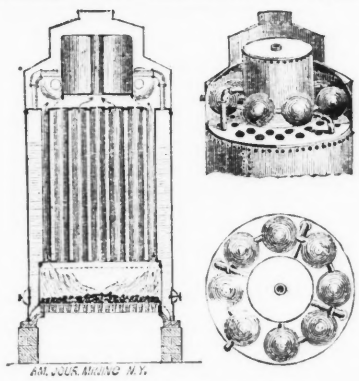
JAMES M. HICKS,

No. 85 LIBERTY STREET, New York City.

11:3:1qp

DAVIS' PATENT

STEAM SUPERHEATING BOILER.



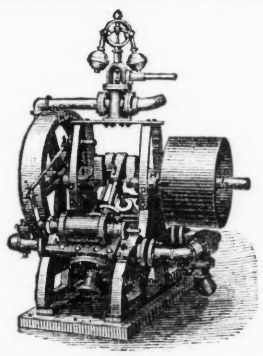
GREAT SAVING IN FUEL.

☞ Among the many in use would refer to two (75 horse each) now running the machinery of the New York Tribune.

Manufactured by the Duplex Steam Boiler Manufacturing Company, Long Island City, Long Island. (Opposite 34th Street Ferry, New York.)

☞ Send for Illustrated Circular. ☜ 25:2:qp

PIONEER IRON WORKS,



OFFICERS:

A. BASS, President; E. KEIGHTLEY, Sec'y and Treas.;

J. V. BEEKMAN, Manager.

Nos 4, 5, 6, CONOVER STREET (ATLANTIC DOCK) SOUTH BROOKLYN.

Pioneer Patent Oscillating Engine, Double and Single,

FOR MINING, MANUFACTURING AND MARINE PURPOSES.

ALSO,

BOILER TANKS, SHAFTING PULLEYS, HANGERS, and STEAM FITTING.

10:vol2:qp

INCRUSTATION OF

STEAM BOILERS,

This greatest of evils in the use of steam is entirely prevented by the "Anti-incrustation Powder" of

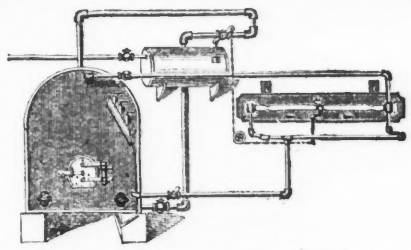
H. N. WINANS, 11 WALL STREET, EW YORK.

INVENTED AND INTRODUCED IN 1855

now ten years in successful operation in over 6,000 boilers, without injury, and saving many times its cost in fuel and repairs.

A clean boiler generates steam more freely, and will outlast en dirty e in-crusted ones 3.13.ps.

BOND, TURNBULL & CO., MANUFACTURERS OF THE



STEAM BOILER FEEDER.

PATENTED MAY 23d, 1865.

361 WEST TWELFTH STREET,

12:3px (Late Troy street.) NEW YORK.

W. S. FOX & CO.,

DEALERS IN

STEAM ENGINES AND BOILERS,

LATHES, PLANERS, STEAM PIPE AND FITTINGS, SHAFTING, PULLIES AND BELTING.

Also Manufacturers of

FOSTER'S PATENT PEAT,

AND

PAPER BOX MACHINES,

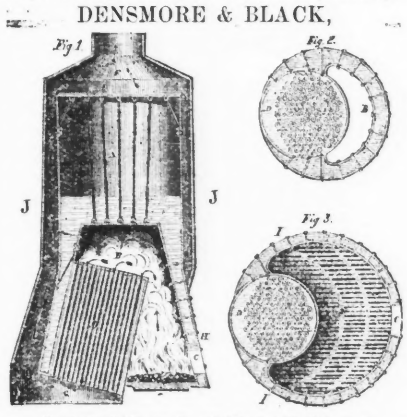
11:3:xm 470 WATER ST, (cor. Pike,) N. Y.

STEAM ENGINES.

DENSMORE'S BOILER.

Patented September 15, 1863. Manufactured by

DENSMORE & BLACK,



388 TO 402 WEST 43d ST., (WEST OF 11TH AVE., N. Y.

D, tube cylinder. B, fire-box. E, fire-grate. C, fire-door. A, steam-room. J, sheet iron jacket. The arrows indicate the direction of the draft. The jacket is not always used. When not used, the flue is led directly from the bottom of the tubes to the chimney, as at G, Fig. 1.

A large number of these Boilers are in use, some of them having been used over four years, and GIVE PERFECT SATISFACTION IN EVERY INSTANCE.

It is the most durable Tubular Boiler ever made. The expansion from heating is perfectly easy on all the Plates, and especially on the Tubes; so much so that not a tube has ever become leaky in one of these Boilers.

It is a perfect smoke-burner, as arranged with hollow stay-bolts for smoky fuel, and a series of carefully tried experiments, made for the purpose of testing the comparative Economy of this and three other kinds of Boilers, revealed the important fact that this boiler evaporated two pounds more water to every pound of coal consumed than either of the other boilers.

It costs less money per horse power than most of the Boilers in use, requires no brickwork to set it up, takes up but little room, has a first rate draft, is not liable to foam, is convenient to repair, and is without a rival.

Sizes ranging from 15 to 300 horse-power, all made of the best of iron and workmanship, and furnished promptly to order.

13:3ps **DENSMORE & BLACK.**

JOHN B. FULLER,

47 DEY STREET, NEW YORK CITY,

MANUFACTURER AND DEALER IN

PORTABLE AND STATIONARY

STEAM ENGINES AND BOILERS.

From 2 to 250 Horse Power.

Most approved circular and upright Saw Mills, Grist Mills, Sugar Mills, and all kinds of Mining and Plantation Machinery on hand and built to order.

☞ Shafting Pullies, Leather and Rubber Belting, and all kinds Iron and Woodworking Machinery.

☞ Machinery and Railway Supplies in store and shipped at the lowest rates. 4:7:tf

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

Manufacturers of Andrews' Patent

OSCILLATING ENGINES,

CENTRIFUGAL PUMPS, AND TUBULAR BOILERS.

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

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

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

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

Portables from **2** to **20** Horse-Power. Send for descriptive pamphlets and Price-lists July1:qp q

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PASSAIC MACHINE WORKS.

CORNER OF PASSAIC AND OGDEN STREETS, NEAR PASSAIC RIVER.

Fourth Block North of the Morris & Essex Rail Road Depot, NEWARK, N. J.

MANUFACTURE

STEAM ENGINES,

BOILERS, SUGAR MILLS, SAW AND GRIST MILLS, EMBOSSING MACHINES, Calenders, Geering, Pullies, Hangers and Shafting, Cast and Wrought Iron Pipe and Fittings, for Steam and Water;—Power, Drop & Foot Presses, MACHINISTS' TOOOLS OF ALL KINDS, WM. WATTS' PATENT STEAM PUMP.

Iron and Brass Castings Made to Order. Jobbing Promptly attended to. Terms Easy, and all Work Warranted.

WATTS, CAMPBELL & CO, Proprietors.

WM. WATTS, DANIEL T. CAMPBELL. GEO. WATTS.

12:2:qp

BIRD'S PATENT.

OSCILLATING ENGINES,

FOR

MINING, MARINE AND MANUFACTURING PURPOSES.

COMBINING SIMPLICITY, DURABILITY AND ECONOMY.

These Engines work a slide valve in a stationary steam chest, and require no packing around the trunnions.

These engines are offered at 20 per cent. lower than any other make of equal power or quality of finish.

All size constantly on hand or made to order.

W. E. BIRD, 163 Bank street, New York.

Call and examine, or send for circular. 14-3-ps

STEAM ENGINES.

HUBBARD & WHITTAKER,

102 FRONT STREET, BROOKLYN, N. Y.

Manufacturers of

HIGH AND LOW PRESSURE STEAM ENGINES

Also,

BOILERS, SUGAR MILLS, HYDRAULIC PRESSES, and TINMEN'S TOOLS Of all descriptions.

SHAFTING, PULLEYS, AND IRON AND BRASS CASTINGS, Constantly on hand.

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STEAM ENGINE WORKS,

IRON AND BRASS FOUNDERS.

MANUFACTURERS OF

Steam Engines, Boilers, Sugar Mills, Tanks, Hydraulic and Hydrostatic Machines, and Machinery used in the Arts and Manufactures.

CORNER WATER AND ADAMS STREETS, BROOKLYN, N. Y.

R. B. DUYCKINCK, Treas. 2:4xm **WM. ARTHUR, Pres.**

PORTABLE STEAM ENGINES,

COMBINING THE MAXIMUM OF

EFFICIENCY, DURABILITY AND ECONOMY,

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

20:2:xm J. C. HOADLEY & Co., Lawrence, Mass.

PORTABLE AND STATIONARY

STEAM ENGINES.

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

Manufactured by the

ALBERTSON & DOUGLASS MACHINE COMPANY,

NEW LONDON, CONN. 8:3:xm

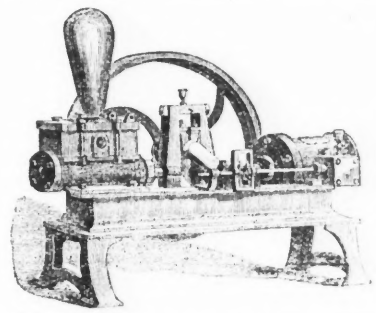
STEAM PUMPS.

J. CLAYTON'S

Patent Steam Pumps,

HAND PUMP AND STEAM ENGINE COMBINED.

These pumps contain every desirable quality in a steam pump, are made of the best material, and in the best manner, and are the cheapest first-class pumps in the market. For cut and description see JOURNAL OF MINING, No. 18, Vol. I. Please send for circular.



All sizes of pumps made to order at the shortest notice.

7.4.ps JAMES CLAYTON, 102 Front street, Brooklyn, N. Y.

HYDRAULIC WORKS,

MANUFACTORY,

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

Mining Pumps,

Water Meters, Oil Meters; Water Pressure Engines; Stamp Mills for Gold, Silver and Copper Ore; Eaton's Patent Amalgamators for Gold and Silver Steam and Gas Pipe, Valves, Fittings, &c.; Iron and Brass Castings.

☞ Send for Circular. H. R. WORTHINGTON,

19-2 qp 61 Beekman street, New York.

STEAM PUMPS.—GUILD & GARRISON,

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Manufacturers of Steam Pumps, Steam Engines, Vacuum Pans, and all the necessary connections. The Steam Pumps are of the following class, namely

EXCELSIOR,	AIR VACUUM
BALANCE WHEEL,	DOUBLE PLUNGER,
DUPLEX,	WATER PROOF JOINT,

and a number of other plans adopted for different purposes. These Pumps are suitable for all the various kinds of Pumping. Manufactured and for sale at the STEAM PUMP WORKS, Cor. South Tenth and First Street, WILLIAMSBURGH, NEW YORK. 2:4 qp.

CHAPPELL'S PATENT

STEAM VALVELESS PUMP

OR

BILGE EJECTOR.

Address

CHAPPELL MANUFACTURING COMPANY,

4:3:xm 99 BANK STREET, New York

PUMPS! PUMPS!! PUMPS!!? PUMPS!!!

ALL KINDS OF

STEAM POWER, ROTARY, LIFT, SUCTION,

AND

HAND PUMPS,

And all kinds of Gas and Plumber's Tools and Fittings, Wholesale and Retail, at the Lowest Rates, by

4:7:tf J. B. FULLER,

47 Dey street, New York

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THE BRITISH AND NORTH AMERICAN ROYAL MAIL STEAMSHIPS, BETWEEN NEW YORK AND LIVERPOOL,
Calling at Cork Harbor, and
BETWEEN BOSTON AND LIVERPOOL,
Calling at Halifax and Cork Harbor.
SCOTIA leaves New York, Wednesday, September 4.
CUBA leaves Boston, Wednesday, September 11.
PERSIA leaves New York, Wednesday, September 18.
CHINA leaves Boston, Wednesday, September 25.
RUSSIA leaves New York, Wednesday, October 2
JAVA leaves Boston, Wednesday, October 9.

FROM NEW YORK TO LIVERPOOL.
Chief Cabin Passage............$150
Second Cabin Passage............80

FROM NEW YORK TO PARIS.
Chief Cabin Passage............$165

FROM BOSTON TO LIVERPOOL.
Chief Cabin Passage............$125
Second Cabin Passage............70

Payable in gold, or its equivalent in United States currency.
Berths not secured until paid for.
An experienced surgeon on board.
The owners of these ships will not be accountable for specie or valuables unless bills of lading having the value expressed are signed therefor.
For freight or passage apply to
10:4:3t E. CUNARD, No. 4 Bowling Green.

LONDON AND NEW YORK STEAMSHIP LINE.—Passage to London or Brest, $110, $75 and $30 currency. Excursion tickets at reduced rates available for six months.
ATALANTA, Capt. Pinkham, from New York, September 14.
BELLONA, Capt. Dixon, from New York, September 28.
CELLA, Capt. Gleadell, from New York, October 12.
WM. PENN, Capt. Billinge, from New York, October 26.
The elegant British iron steamship ATALANTA will leave Pier No. 3, North River, for London, calling at Brest, on SATURDAY, Sept. 14, at 12 M.
Until further notice all the steamers of this line will call at Brest to land passengers. Tickets sold through by rail to Paris at 25 per cent. less than regular rates.
Freight will be taken, and through bills of lading given to Havre, Antwerp, Rotterdam, Amsterdam and Dunkirk.
For passage apply to ROBERT N. CLARK, No 26 Broadway.
For freight apply to No. 54 South street.
10:4:1 HOWLAND & ASPINWALL, Agents.

STEAM BETWEEN ANTWERP AND NEW YORK.—The Liverpool, New York and Philadelphia Steamship Company, Inman Line, will dispatch one of their steamships between Antwerp and New York every four weeks, commencing with
CITY OF CORK............September 7
Sailing from New York :
CITY OF CORK............October 2
From Pier No. 45, North River.
For further information apply at the Company's office.
JOHN G. DALE, Agent, No. 15 Broadway.

FOR ST. THOMAS AND BRAZIL.—United States and Brazil Mail Steamship Company. Regular Mail steamships sailing on the 22d of every month.
HAVANA, Capt. George B. Slocum, September 22.
NORTH AMERICA, Capt. L. F. Timmerman, October 22.
SOUTH AMERICA, Capt. E. L. Tinklepaugh, November 22.
These elegant steamers sail on schedule time, and call at St. Thomas, Para, Pernambuco, Bahia and Rio de Janeiro, going and returning. For engagement of freight or passage, apply to GARRISON & ALLEN, Agents,
10:4:3t No. 5 Bowling Green, New York.

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JOHN GALT,

WHOLESALE DEALER IN ROOFING SLATE.

SOLE AGENT FOR THE

EAGLE SLATE COMPANY OF VERMONT,

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

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

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GENERAL DEPOT,

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

Established in 1850.

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Chicago : James Parker, corner Franklin and Washington Streets.
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New Orleans : J. J. Lee, 368 Magazine Street.
☞ I am prepared to give parties the prices of Slate delivered throughout the United States at the nearest Railroad Station.
Orders by mail will receive prompt attention. 17:2 xm.

ATTENTION, TINNERS, SLATERS, QUARRYMEN ARCHITECTS AND DEALERS

STAFFORD'S SLATE TABLES,

With Practical Instructions to those unacquainted with

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Exhibiting over Thirty Sizes Roofing Slates ; showing the Surface, in Squares and Feet, covered by any given number of Slate, from one to twenty thousand. Likewise, several Tables showing the Number of Squares and Feet in any given quantity of Tin Plate. Also, Several Useful Tables to Builders, Slaters and others.

JUST PUBLISHED BY

COOK, OVERFIELD & SNEDEKER,

25 Dey st., New York, and 405 Commerce st., Philadelphia.
PRICE THREE DOLLARS. Sent by mail, postage pre-paid, on receipt of $3.
8:3:qp

FOR SALE.

A PARTLY DEVELOPED SLATE QUARRY FOR sale or lease in Georgia. Within twenty miles of Rome, Georgia, there is a magnificent SLATE QUARRY, partly developed, standing two hundred feet above the ground, comprising forty Acres, just taking in the highest point of the Mountain, which is positively a solid mass of inexhaustible Slate of the finest kind. This property is now being worked in a small way by five or six Welshmen, who made for the proprietors last year over $5,000. Slate from this Quarry is now laid down in Louisville, Ky., for about $8 60 per square, where it is worth $15. It is now being sold at the Quarry for $12.

The Quarry is situated on a creek capable of being made serviceable for Mills or Factories for manufacturing the Slate into Billiard Beds, Mantels, etc., etc., for which there is a ready market. Title perfect.

These particulars may be relied on as being strictly true. Further information, terms, etc., may be obtained by addressing B. F. J., care office JOURNAL OF MINING, 37 Park Row, New York, where a photograph of the property may be seen. 4:6:tf

A LEAD MINE FOR SALE OR LEASE.

The undersigned desires to communicate with some person or persons that will furnish capital to push forward the development of a lead mine, situated near Shullsburg, Lafayette Co., Wisconsin, that promises largely. The locality is within the richest mining district of Wisconsin. From the main shaft, which is now 106 feet in depth, seventy-five tons of lead ore have been taken of the very best and purest quality, and from other shafts varying in depth from thirty to sixty feet, 150 tons more have been taken, all within an area which would be covered by a square of two acres of ground. Upon the property there is a house for the accommodation of Miners, an engine of thirty horse power, a pump of 16 inch bore, and all the necessary tools for mining purposes. Also furnishing for the house, etc., etc. This property consists of the fee simple of 126 acres of adjoining land, at one-tenth royalty. Specimens of ore from the main shaft may be seen at the office of the AMERICAN JOURNAL OF MINING, 37 Park Row, N. Y. Address EDWARD MELOY,
12:4t Shullsburg, Lafayette Co., Wis.

FISK & HATCH,

BANKERS,

And Dealers in

GOVERNMENT AND OTHER DESIRABLE SECURITIES,

No. 5 NASSAU STREET, N. Y.,

Recommend to Investors the

FIRST MORTGAGE BONDS

OF THE

CENTRAL

PACIFIC RAILROAD COMPANY.

This Company is constructing under the patronage of the

UNITED STATES GOVERNMENT

the Western end of the

Great National Railway across the Continent.

Their line will extend from Sacramento, California, across the Sierra Nevadas to the

RICHEST AND MOST POPULOUS SECTION OF CALIFORNIA,

and thence through the

GREAT MINING REGIONS OF THE TERRITORIES,

To the vicinity of Salt Lake City. It forms the

SOLE WESTERN LINK

of the only route to the Pacific which is adopted by Congress and

AIDED BY THE ISSUE OF UNITED STATES BONDS.

Their road is already completed, equipped and running for ninety-four miles from Sacramento to within twelve miles of the summit of the Sierras, and a large amount of the work of grading, tunnelling, etc., beyond that point has been accomplished.

THE FIRST MORTGAGE BONDS

of this Company afford unusual inducements of safety and profit to investors, for the following among other reasons, viz. :

FIRST—The rate of interest is Six Per Cent., in Gold, payable semi-annually in the City of New York.

SECOND—The principal is payable in Gold at maturity.

THIRD—The cost of the Bonds, Ninety-five per cent. and accrued interest is Ten per cent. less than that of the cheapest Six per cent. Gold Bearing Bonds of the Government.

FOURTH—The United States Government provides nearly half the amount necessary to build the entire road, and looks mainly to a small per centage on the future traffic for re-payment.

FIFTH—Owing to this liberal provision, accompanied with extensive grants of public lands, by which the Government fosters this great national enterprise, its success is rendered certain, and its financial stability is altogether independent of the contingencies which attend ordinary Railroad enterprises.

SIXTH—The security of its First Mortgage Bonds is therefore ample, and their character for safety and reliability is equalled only by that of the Government itself.

SEVENTH—The net earnings of the completed portion are already largely in excess of the interest obligations which the Company will incur on twice the distance, and are steadily increasing, rendering the uninterrupted payment of the interest absolutely certain.

EIGHTH—At the present rate of Gold they pay nearly 8½ per cent. per annum on the amount invested.

The Bonds are issued in denominations of $1,000 with semi-annual Gold Coupons attached, payable in New York, and are offered for the present at 95 per cent. and accrued interest (in currency) from January 1.

Orders may be forwarded to us direct, or through the principal Banks and Bankers in all parts of the country.

Remittances may be made in drafts on New York, or in Legal Tender Notes, National Bank Notes, or other funds current in this city, and the Bonds will be forwarded to any address by Express, free of charge. Inquiries for further particulars, by mail or otherwise, will receive punctual attention.

FISK & HATCH,

BANKERS AND DEALERS

IN

GOVERNMENT SECURITIES,

No. 5 NASSAU STREET, NEW YORK.

N. B.—All kinds of Government Securities received at the full market price in exchange for the above Bonds. Also,

All Descriptions of Government Securities

KEPT CONSTANTLY ON HAND,

And Bought, Sold, or Exchanged.

Gold Coin and U. S. Coupons bought, sold and collected.

DEPOSITS RECEIVED ON LIBERAL TERMS, SUBJECT TO CHECK AT SIGHT.

COLLECTIONS MADE THROUGHOUT THE COUNTRY.

Miscellaneous Stocks and Bonds bought and sold at the Stock Exchange on commission for cash.

Special attention given to the Exchange

SEVEN-THIRTY NOTES

(all the series for the new

FIVE-TWENTY BONDS OF 1865,

ON THE MOST FAVORABLE TERMS.

8:3 3m

THE

UNION PACIFIC

Railroad Company.

THEIR FIRST MORTGAGE BONDS AS AN INVESTMENT.

The rapid progress of the Union Pacific Railroad, now building west from Omaha, Nebraska, and forming, with its western connections, an unbroken line across the continent, attracts attention to the value of the First Mortgage Bonds which the Company now offer to the public. The first question asked by prudent investors is, "Are these bonds secure?" Next, "Are they a profitable investment?" To reply is brief :

1st. The early completion of the whole great line to the Pacific is as certain as any future business event can be. The Government grant of over twenty million acres of land and fifty million dollars in its own bonds practically guarantees it. One fourth of the work is already done, and the track continues to be laid at the rate of two miles a day.

2d. The Union Pacific Railroad bonds are issued upon what promises to be one of the most profitable lines of railroad in the country. For many years it must be the only line connecting the Atlantic and Pacific ; and being without competition, it can maintain remunerative rates.

3d. 378 miles of the road are finished, and fully equipped with depots, locomotives, cars, &c., and two trains are daily running each way. The materials for the remaining 141 miles to the eastern base of the Rocky Mountains are on hand, and it is under contract to be done in September.

4th. The net earnings of the sections already finished are *several times greater* than the gold interest upon the First Mortgage Bonds upon such sections, and if not another mile of the road were built, the part already completed would not only pay interest and expenses, but be profitable to the Company.

5th. The Union Pacific Railroad bonds can be issued only as the road progresses, and therefore can never be in the market unless they represent a *bona fide* property.

6th. Their amount is strictly limited by law to a sum equal to what is granted by the U. S. Government, and for which it takes a *second* lien as its security. This amount upon the first 517 miles west from Omaha is only $16,000 per mile.

7th. The fact that the U. S. Government considers a second lien upon the road a good investment, and that some of the shrewdest railroad builders of the country have already paid in five million dollars upon the stock (which is to them a third lien), may well inspire confidence in a first lien.

8th. Although it is not claimed that there can be any better securities than Governments, there are parties who consider a first mortgage upon such a property as this the very best security in the world, and who sell their Governments to re-invest in these bonds—thus securing a greater interest.

9th. As the Union Pacific Railroad bonds are offered, for the present, at 90 cents on the dollar and accrued interest, they are the cheapest security in the market, being 15 per cent. less than U. S. Stocks.

10th. At the current rate of premium on gold, they pay

Over Nine Per Cent. Interest.

The daily subscriptions are already large, and they will continue to be received in New York by the

CONTINENTAL NATIONAL BANK, 7 Nassau street.
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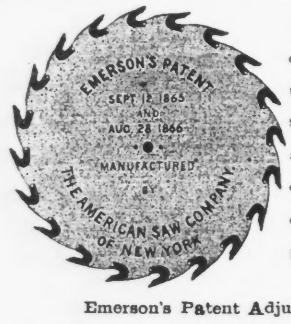

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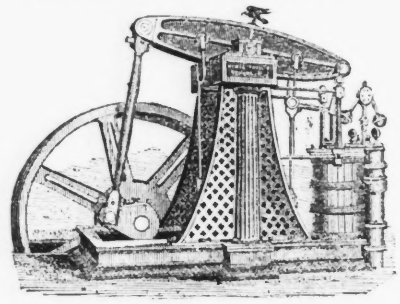

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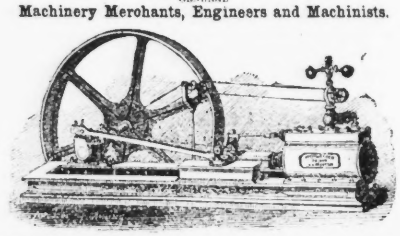

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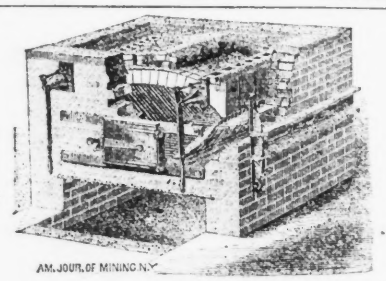

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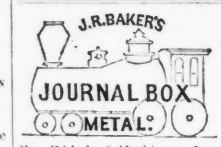

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