The Mineralogist.—The description and locality of every important Mineral in the United States.

(Continued.)

CHROMATE OF IRON.

Occurs in masses, grains and crystals, of a brownish black color ; brown powder ; rather metallic lustre ; uneven fracture ; and specific gravity of about 4. Infusible ; opaque ; brittle. Found at Milford, Ct. ; Cummington, Mass. ; Staten Island, N. Y. ; Hoboken, N. J. ; in detached masses on the Westchester and Lancaster roads, from 10 to 14 miles from Philadelphia ; Barehills, near Baltimore, Md. ; Loudon Co., Va.

CARBONATE OF IRON.

Occurs in masses composed of crystalline plates of a yellowish color ; vitreous lustre ; specific gravity of 4. Its surface presents a white color when scratched. Translucent, when newly broken ; infusible ; yields to the knife ; slowly dissolves in aquafortis. Exposed to the air, its surface becomes of a brownish black color. Occurs at Milford, Ct. ; and near Baltimore. Md.

CARBURET OF IRON. (BLACKLEAD.

Occurs amorphous and in crystals, of a dark steel-gray color ; glittering lustre ; and specific gravity of 2. Unctuous to the touch, and soils the fingers. Found at Sturbridge, Mass. ; Mount Monadnock, Sutton and Chester, N. H. ; Cornwall, Sharon, Hebron and Tolland, Ct. ; near Lakes George and Champlain, and N. Y. City, N. Y. ; Transylvania, Va.

MAGNETIC OXIDE OF IRON.

Occurs in masses, crystals and tnin plates, of an iron black color ; shining lustre ; specific gravity of 4.4. Becomes brown when heated. Insoluble in aquafortis. Found at Topsham, Me. ; Goshen, Pa. ; Wachita river, As.

NATIVE IRON.

Occurs massive, net-like, and presenting small cavities of the color of platinum, and specific gravity of 7.7. Malleable ; attracted by the magnet. Dissolves with ebullition in all strong acids. Found in Canaan, Ct., and Guilford Co., N. C.

PHOSPHATE OF IRON.

Occurs amorphous, of a greenish white or yellowish gray color when first exposed to air, changing to blue ; specific gravity about 2. Soft, and soils the fingers ; dull ; fusible. Found in mud and clay, at York, Me. ; Plymouth and Hopkinton, Mass. ; and Allentown, N. J.

SULPHURET OF IRON. (IRON PYRITES.)

Occurs massive, in crystals, and in hair-like portions, or cellular. Color, bronze. Metallic lustre ; hard ; brittle ; fusible. Specific gravity 4½. It is very abundant. Found near Sparta, N. J. ; Boston, Mass. ; Brookfield and Huntington, Ct. ; Brunswick, Me. ; Staten Island, Anthony's Nose, N. Y. ; 20 miles from Baltimore, Md. ; near Zanesville, and Steubenville, O. ; Strafford and Shrewsbury, Vt.

FIBROUS BROWN OXIDE OF IRON. (BROWN HŒMATITE.)

Occurs amorphous, showing circular elevations, and stalactical, of a brownish color, the outside resembling black glazed earthenware. It has a silky lustre, and fibrous structure.—Yields to the knife. Found at Bennington and Monkton, Vt. ; Salisbury, Ct. ; Staten Island, N. Y. ; Burlington Co. N. J. ; Lancaster, Jenkintown, and Messersburg, Pa. ; Gallatin Co. Ill. ; Lawrence Co. As.

FIBROUS REDOXIDE OF IROW. RED HŒMATITE.

Occurs amorphous, stalactical, and in concretions or portions resembling in form a bunch of grapes, having a brownish yellow or red, or steel gray color ; rather metallic lustre, and a specific gravity of 4 75. Receives a polish ; infusible. Found at Kent, Ct. ; and the Perkiomen lead mine, Pa.

COMPACT REDOXIDE OF IRON.

Occurs massive, slaty, kidney form, in rounded masses and crystals, of a reddish brown color with a mixture of steel gray. Specific gravity 3.5 to 5. Found at Canton, N. Y. ; source of the Gasconade River, Mi. ; Elk River, Tenn.

SANDY MAGNETIC OXIDE OF IRON.

Occurs finely crystallized, of an iron black color, being very magnetic, and having a black powder. Infusible. Localities : Topsham, Me., Somerset, Vt. ; Franconia, N. H. ; Williamstown, Woburn, Middlefield, Mass. ; Suckasunny, N. J. ; in the Highlands, at Crown Point, and near Lake Champlain, N. Y. **It is known under the name of *mountain ore.***

For the Scientific American.

Steam Engineers.

There is no class of mechanics in the world that have so much responsibility resting upon them as Steam Engineers. What vast amounts of property, and thousands and thousands of lives are intrusted in their hands.

Imagine the number of steamboats running on almost every sea, lake, river, and creek in the habitable world, and the endless lines of railroads, with the swift moving locomotive to which are attached its load of cars, the passengers all quietly enjoying themselves while moving probably at the rate of twenty or thirty miles per hour. Now every one of these steamboats and locomotives, no matter how large or how small, must have its engineer.

Did it ever strike you while driving along at such a fearful rate, that the black, grim looking men moving about this machinery, were the kings of that machine, holding your destiny, life or death, in their hands, who in a few moments could send you, as well as all those on board, to your last account, without giving you time to say, God have mercy.—If such has ever been your thought while travelling by steam, you have no doubt figured in your minds what very great responsibility was placed in the Engineer, and what kind of a man he ought to be. You would have a sober, steady, intelligent man, one that could plan, draw, build, run, and keep in order the machinery intrusted to his care, and with such a man you would have no fears about travelling, nor would there be any danger with an engineer possessing these qualifications, for if any thing should go wrong about the engines or boilers, he would know when, where and how to apply a remedy at once, he would be constantly on the look-out to see that every part of the machinery was in good order and had the proper attention from all those connected with the engine department, and could detect at once any neglect on the part of his subordinates in time to prevent *accidents*, as it is called, but more strictly *ignorance.*

Any man can open his watch case, examine the works, wind it up, and set it going, but could he make a watch, or take the machinery to pieces, overhaul, repair, put together, and set it running again. If he could, he would be a watch maker, but from the mere fact of his knowing how to open, look at the works, wind up, &c. you would not conclude he knew anything about the interior arrangement of his time piece. And thus it is with hundreds of Engineers, or rather, starters-and-stoppers, they go on board of boats, or on locomotives, and after being there a short time learn how to make fire in the furnaces, raise steam on the boilers, start and stop the engines, and are then put in charge of a machine they know no more about than the man does about the watch that he winds up, and they have to deal with an agent as subtle as the lightning from heaven. Surely such men as these should not be trusted with so many valuable lives, and such a vast amount of property, who through Ignorance, in a moment would consign every thing to destruction, How very careful then should the proprietors of steamboats and railroads be in the employment of Engineers, and take none but those who could pass a strict examination as to character and qualifications. J. M.

Mahogany Stain.

1. Pure Socotrine aloes 1 oz., dragon's blood ½ oz., rectified spirit 1 pint, dissolve and apply two or three coats to the surface of the wood ; finish off with oil or wax tinged with alkanet.

2. Wash over the wood with strong aquafortis ; and when dry apply a coat of the above varnish ; polish at last.

3. Logwood 2 oz., madder 8 oz., fustic 1 oz., water 1 gallon ; boil 2 hours, and apply it to the wood several times boiling hot ; when dry slightly brush it over with a solution of pearlash 1 oz. in water 1 quart ; dry and polish as before.

At the latter end of last year, stones of a dark brown color were forced out of the earth in great quantities at a place called Lobis, in South America. The stones floated on water and were thrown up in many places in the river. **They are of volcanic origin undoubtedly.**

The Speed of Electricity and the way to Measure It.

This is a continuation of the article on page 253, by S. C. Newman, Esq. of the Woonsocket R. I. Telegraph Office, and taken from the Patriot, as mentioned before.

Take any given length of insulated wire coiled into a small compass as convenient, fasten the two ends (horizontally) a little distance apart, unto a piece of board with a small break near each end of the wire. Electricity will exhibit no light or spark when passing through a conductor, unless it meets with interruption in its course, and this is what the little breaks at each end of the wire are for, that the fluid may be rendered visible at the two ends of the wire. Next, take a small revolving mirror, and place it so that it will reflect the sparks made at these breaks when the Electricity is permitted to pass over the length or coil of wire. The reflection of the sparks will be thrown upon the walls of the room, which should be darkened to render them visible. It next becomes necessary to know the exact number of revolutions the mirror performs in a second of time. The following is an accurate way. A Siren is an instrument used to denote the required number of vibrations in a second to produce a musical note of any particular pitch, and the note which the Siren produces will accurately indicate the number of revolutions made by its axle ; and by attaching the mirror to the axes of one of these Sirens, the number of its revolutions will be known while reflecting the electric sparks.

The next step is the arrangement of the room. The room should have an arched ceiling, in a precise semicircle, carefully measured and divided into geometrical sections. The apparatus is now supposed to be completed for solving the problem, that of accurately measuring, or as you express it, " computing" the wonderful velocity of Electricity.

The process of arriving at the required result, is a very simple mathematical one. Any number of revolutions of the mirror, and any length of the coiled wire will be sufficient, provided they are known. We will now suppose the wire to be twenty five miles in length and a continued series of discharges from an electrical battery passed through its length. The first spark will be seen at the little break at the first end of the wire, and the second spark will be seen at the break at the other end of the wire Now these two sparks will be seen (as far as the eye can detect) at the same instant of time, although the Electricity traveled twenty-five miles between the times it produced the two sparks, and here we meet the obstacle that had so long baffled the ingenuity of men. If the sparks were made at the same instant of time, as they appeared to the eye, then the transmission of Electricity must be instantaneous. But if there is any actual time between the production of the two sparks, then that must be the time the Electricity occupies in travelling twenty-five miles the length of the wire. To test this, let us apply the mirror. If the sparks are simultaneous, then the reflections will occupy the same relative positions on the wall that they do at the place where they are produced. But if there is a space of time between the production of the two sparks, the revolutions of the mirror will detect it. If we give the mirror one hundred revolutions per second, with twenty-five miles of wire, the reflections will be varied one-eightieth part of the circle of the arched wall. From the established laws of optics it is absolutely certain that the mirror has now made one-eightieth part of a revolution while the Electricity was passing twenty-five miles. Here we have a plain sum. In travelling twenty-five miles, the Electricity occupies one-eightieth part of the one-hundreth of a second, equal to one-eight-thousand of a second, and the sum becomes simply this :—If the fluid goes twenty-five miles in the eight-thousand of a second, how far will it go in one-second ? Ans. Two hundred thousand. Then subtract one tenth, which will more than cover any loss in the operation, though it is usual to do so, and you have an actual demonstration that Electricity travels with the " enormous velocity" of one hundred and eighty thousand miles in a single second of time!

Let us illustrate this truly wonderful velocity by a few familiar examples. The letter E is made the quickest of any in the Telegraphic alphabet. If I strike the writing-key of the telegraphic apparatus so as to produce the letter E at Woonsocket, it will be written at different places as follows :—from Woonsocket to Providence is 16 miles, and the E would be written there in the one-eleven-thousand-two hundred and fiftieth part of a second ; or in other words it would make five thousand and six hundred and twenty-five journeys to Providence and back in a second !—From Woonsocket to Washington is 445 miles by wire, and the letter E would be written at the Capital of the Nation in less than the one-four-hundreth of a second ; and would make more than two hundred journeys there and back in the short period of 60th part of a minute.

From Woonsocket to New Orleans is 1810 miles by wire—the letter E written as above, would be visible in New Orleans in a little more than the one-hundredth part of a second —or would make 49 entire journeys to the Crescent City and back to Woonsocket, and reach Camden, S. C., on the return portion of its fiftieth journey in a single second.

In these estimates the obstructions arising from way-stations are supposed to be removed.

We may regard the passage of Electricity as instantaneous, so far as any of our senses are concerned ; for its velocity is such, that it will start from Woonsocket, make 7 passages around our earth, and reach the Capital of the Chinese Empire on its eighth journey, in the brief space of a single second of time—a rapidity far too great to be detected by human vision, unaided by the apparatus I have endeavored minutely to describe.

This enormous velocity may rationally excite a wonder, and even a doubt, in the minds of such as have not investigated the subject ; but the insatiable mind of man has not been contented with a doubtful result :—the experiment has been tried with wire from half a mile to one hundred miles in length, and a great variety of velocities given to the mirror ; and whatever be the length of wire or number of revolutions of the mirror, the sparks will occupy the same relative position on the semi circular arch, required by the above given velocity ;—so that the result is fairly entitled to the rank of a mathematical demonstration.

There are many beautiful reflections to be drawn from the contemplation of Electricity, as it justly claims a high rank among the most brilliant productions in the physical world.

Kase's Patent Pump.

We understand that Mr. S. P. Kase of Danville, Pa., has made a contract with the government to furnish the national vessels with his valuable patent pumps, and is now engaged in preparing the necessary castings for that purpose. An examination was made under the superintendence of the Engineer in Chief Mr. C. H. Haswell, which resulted in the adoption of these pumps. We are satisfied from experiments made in our presence that their introduction into the national vessels will prove useful and satisfactory. For domestic uses, Mr. Kase's pumps are unsurpassed —many of them are now used in wells varying in depth from 10 to 95 feet deep, and capable of forcing water out of a pipe to the top of two story houses. A man may draw water from almost any depth, and throw it on a three story house by his own strength, thereby enabling him to convey water into any part of his house, to wash windows and carriages, to water his garden, pavement, flowers, &c. and rendering the atmosphere during the hot season cool, pleasant and healthy.—The pumps can be made of almost any size, throwing water at from 24 to 150 gallons and upwards per minute, and may be attached to any power. How much property might be saved from fire by having one of these pumps attached to every house in our villages and in the country.

There is no longer need to send abroad for Turquoise Oil Stone. A quarry has been discovered in Derby, Vt. which is said to be in all respects equal to the Eastern. It is now wrought successfully, and has been introduced into market. It is designated by the name of he " Gibraltar Oil Stone."