

SCIENTIFIC MUSEUM.

Dr. Antisel on the Cause of Volcanoes.

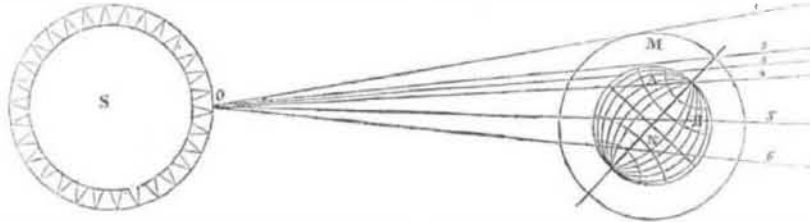
The following are Dr. Antisel's views respecting the cause of volcanoes, which we promised to present three weeks ago but which we have not been able to do before now.

After referring in advance to the internal heat of the earth, the lecturer observed that volcanoes were nothing more nor less than so many vents through which the contents of the interior of the earth were passed to the outside. There are about 270 of these vents active, though all of them are not in operation at the same time. One hundred and sixteen of them are on this Continent. Some ninety of them are in the Pacific, and the remainder are scattered over Europe and the islands of the Indian Seas, Sumatra, Java, &c., and along the islands of the Chinese coast. Volcanoes, in fact, are scattered all over the globe from the furthest north to the extreme south.—Those within the tropics, however, outnumber the others. There are about twenty volcanoes in action every year, so we have 250 of them quiescent—their action appears reciprocal, as one became silent another comes into operation. The lecturer pointed out upon diagrams the general features of the volcanic system, and went on to speak of the enormous amount of matter upheaved from the bosom of the earth by the force of volcanic action. Thus, in the eruption of Etna, 1659, the quantity of lava thrown out was twelve times the mass of the entire mountain itself. Vesuvius in 1780 emitted a stream of lava nine miles in length; and in 1805 a stream some three miles long and forty feet deep. In the year 69 an eruption of the same mountain utterly overwhelmed the cities of Herculaneum and Pompeii, as most know. These eruptions from time to time made in the appearance and configuration of the surface of the earth vast changes, as might naturally be expected. Dr. A. then went into a minute detail of the peculiarities of phenomena attending eruptions, and described in a graphic manner the terrific sublimity of the celebrated volcano of Kiranca, in the Island of Owyhee, and touched upon, in this part of his lecture, the difference which the Vesuvius of the present day presents when compared with that of the time of Strabo. This part of the subject was very intelligibly illustrated by several spirited diagrams. With regard to the source of the heat which occasioned the throwing out of such vast quantities of matter from volcanoes, there were many hypotheses advanced; but only two of them were tenable. The idea advanced by Sir Humphrey Davy was that the centre of the earth was composed of metals in a pure state, which, when coming in contact with water, evolved an expansive gas, and so produced earthquakes and volcanoes. The more probable theory, observed Dr. A., was this:—Our earth derived its heat from the action of the sun's rays upon it only. The action of the sun's rays was to produce an electrical current. When this current passed along a body that conducted well, no result was observable, but if we placed at the end of the wire a non-conductor—a charcoal point for instance—intense heat was the result. The sun's rays then passing through the atmosphere produced electrical currents which passing into the earth ignited the interior like the charcoal point. This he considered the most reasonable mode of accounting for the discharge of igneous masses through volcanoes. Were the earth heated interiorly by artificial means—as suggested by Davy—it might readily be supposed it would soon cool, seeing that its interior was exposed in 270 places, or the masses within would be consumed like coal by the ordinary mode of combustion. Though much destruction of life and property and many lesser evils resulted from the development of volcanic phenomena, yet they were not unattended by many advantages. Were it not for earthquakes, the land would not rise above the level of the sea. If it were otherwise we would have no dry land distinctively—no hills, consequently no rains, no rivers—of course no navigation, and everything ultimate would be reduced to one

great horizontal surface—in fine, chaos would be once more produced. Volcanic eruptions in themselves were beneficial. They throw within the reach of the hand of man copper, and silver, and platinum. Note for instance the vast quantities of copper found in the volcanic basalt on the shores of Lake Superior. Our porphyry, marbles, and finer descriptions of stone were all the result of volcanic action, and he need not add, that to the same origin we owed the exposure of that most valuable and deservedly prized of minerals—coal.

The Sun—Actinism.

An article in the "Scientific American" of Feb. 12th asserts that M. Niepce de St. Victor, has presented the third memoir on Helio-



typical preparations, that the sunlight possessed the strongest operative power from half-past nine o'clock till eleven A. M. Half an hour before or half an hour after the sun enters the meridian the operative power is much decreased, but continues steady until three o'clock, in the months of June, July, August and September.

Now, I could not reconcile this phenomenon with any of the popular theories upon light, and therefore sought to account for it in some other source, and I will proceed to lay before you what I consider to be the true cause. I suppose the sun to be composed of pure electricity—a cold invisible body—its electricity travelling to the earth in never-ceasing streams, striking our atmosphere by friction, thereby producing light and heat. I believe this to be the only theory that can explain this and other phenomena equally curious, which, until the discovery of M. Daguerre, escaped observation.

We will suppose S, in the accompanying engraving to represent the sun, and O the rays of light or electricity issuing therefrom, striking upon the atmosphere, M, and the globe,

Adulteration of Teas.

In "Hooker's Journal of Botany," 1852, is an interesting account by Mr. Bershold Seaman, naturalist of H. M. Ship Herald, containing some particulars of the processes of converting, by means of a facing or glaze, the low qualities of black tea, (Bohea Saushung,) valued at 4d to 6d per pound into high quality, green teas valued at 1s. to 1s. 6d. per pound, a fraud practised openly at Canton. The following is his own account:—

"I heard so much about tea, copper plates, picking the leaves, rolling them up with the fingers, boiling them in hot water, &c., that I became anxious to see with my own eyes the process of manufacture, of which the various books had given me such a confused idea.—One of the great merchants conducted me not only to his own, but also to another establishment, where the preparation of the different sorts was going forward. There was no concealment of mysterious proceedings, every thing was conducted openly, and exhibited with the greatest civility; indeed, from all I saw in the country, I was almost inclined to conclude that either the Chinese have greatly altered, or their wish to conceal or mystify every thing, of which so much has been said never existed.

The tea is brought to Canton unprepared. After its arrival it is first subjected to cleaning. Women and children are employed to pick out the pieces of twigs, seeds, and other impurities, with which it happens to be intermixed. The sorts which may be called natural are those gathered at different seasons; the rest are prepared solely by artificial means.

Without entering into a description of all those processes, it may suffice to take one as an example. A quantity of Bohea Saushung was thrown into a spherical iron pan, kept hot by means of a fire beneath. These leaves were constantly stirred about until they were thoroughly seared, when the dyes mentioned

chrome, or sun-colored Daguerreotypes, to the French Academy of Science. M. Niepce states that the morning light has a much greater photogenic action than the evening light. For example, if a prepared plate be exposed in the camera from nine o'clock till noon, the colored impression will be obtained in a much shorter time than if the same experiment were made from noon till three P. M. I am pleased to see this fact mentioned by M. Niepce, and presume that every observing daguerreotypist has noticed, more or less, this curious phenomenon of the sun's rays, while to all external appearance the light presents no difference. I found, from a number of experiments for several years, with very sensi-

N, the globe moving in the direction from A to B. It will be evident that the rays between Nos. 1 and 3, will afford the most powerful light, by travelling against the momentum of the atmosphere, No. 2 will remain stationary, while Nos. 4, 5, and 6 will travel with the atmosphere, minus the momentum. Now, if two persons are operating, one at A, with the ray No. 4, the other opposite A, with the ray No. 3; now No. 3 will be using those rays which travel against the velocity of the atmosphere, and with the globe, being of course the most powerful operative light, while No. 4 will be using those rays which travel with the atmosphere, and, meeting much less friction, possess a less operative power.

I have detected a marked difference in the intensity of colors in the prismatic spectrum, between the hours of ten and two o'clock, those in the forenoon being higher toned and fuller than those in the afternoon.

R. V. DE GUINON.

Williamsburg, Feb. 26, 1853.

[If the above theory is correct, the heat should also be greatest before noon.—ED.]

below were added, viz., to about 20 lbs. of tea one spoonful of gypsum, one of turmeric, and two or three of Prussian blue. The leaves instantly changed into a bluish green, and having been stirred for a few moments they were taken out. They of course had shriveled and assumed different shapes from the heat. The different kinds were produced by sifting. The small, longish leaves fell through the first sieve, forming Young Hyson, while those of a roundish granular shape fell through the last, and constituted Choo-cha or gunpowder.

[The blue was no doubt an inferior kind of indigo and not Prussian blue, as the former is much cheaper. Black teas, as retailed now are highly adulterated; we suppose there can be no doubt about this. More black tea is now used in the United States, than there was five years ago; it therefore becomes imperative that something should be done to prevent the sale of adulterated tea.

Cravats.

Professor Hamilton's remarks at the Buffalo College on asphyxia, and particularly that form caused by wearing tight cravats, may be of interest to the general reader.

Cravats were first worn by the Croats in the sixteenth century as a part of their military dress.

Public speakers, Members of Congress, and clergymen hang themselves by wearing cravats and stocks, high and tight, thereby impeding the return of blood from the head; this can be explained on physiological principles. The brain in speaking, is excited to increased action, a larger quantity of blood is sent to it, and unless it can find a ready return, produces congestion and apoplexy.

Students are not altogether free from the effects of litigation of the neck. It is surprising how little pressure is necessary to prevent the ready flow of blood from the head. Those who bend their heads forward in writing or studying, are apt to feel a dizziness

and heaviness in the head, which loosening their cravats or collars, altogether relieves, and the mind returns to its original clearness. In clergymen who are particularly prone to bundle their necks with large cravats, bronchitis is induced, and the vocal chords become relaxed as the consequence. Men who speak extemporaneously can speak longer and with greater ease than those who read, as their voice is not confined so much to one key, and can be modulated with greater freedom.

Tubular Bridge.

Speaking of a bridge near Montreal, the "Montreal Witness" says:—

"We have heard it whispered that the great English Company, which has contracted for the Canadian Grand Trunk Railway, may probably build a bridge across the St. Lawrence opposite Montreal, and that the said bridge will, it is thought, be tubular.

Fatal Camphene Accident.

Coroner Hilton held an inquest, on Friday last week, at the New York Hospital, upon the body of Mrs. Jane Bredner, who died from burns received on the preceding Saturday, at her residence, No. 20 Leonard street, her clothes having taken fire from the explosion of a camphene lamp which she was engaged in trimming. A verdict of accidental death was rendered by the Jury.

An Old Bible.

Mr. John Tregaskis, of No. 80 North Moore street, this city, informs us that he has in his possession, an older Bible than the two which have been mentioned in our columns. His Bible is dated 1599, with marginal notes by Beza. It was printed in London by the deputies of Christopher Barker, printer to the Queen's most excellent majesty.

The annual loss of human life from tigers at Singapore, chiefly among the Chinese settlers, is perfectly fearful, averaging no fewer than 360, or one per day.

LITERARY NOTICES.

SHIPBUILDERS' MANUAL—No. 2 of this exceedingly useful monthly periodical, intended as a Nautical Referee, by John W. Griffiths, author of the excellent work on Naval Architecture, is now published and can be had at 333 Broadway. This is a work to which every ship carpenter should be a subscriber.

MINIERS' MECHANICAL DRAWING BOOK.—No. 4 of this work, of which we cannot speak too highly, is now ready, and for sale by Dewitt & Davenport, this city.

"Graham's American Magazine," for March is a fine number. This publication shows much spirit and enterprise in its management, and enjoys a great and deserved degree of popular favor. Dewitt & Davenport, agents, Tribune Buildings, New York City.



Manufacturers and Inventors.

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