of ornithology we welcome Mr. Vennor, and only trust that many years will not elapse before he gives us a second instalment on the birds of Canada.

OUR BOOK SHELF

The Use of the Spectroscope in its Application to Scientific and Practical Medicine. By Emil Rosenberg, M.D. (New York: Putnam, 1876.)

THIS is an essay on the use of the spectroscope which obtained the Stevens triennial prize for 1876, awarded by the College of Physicians and Surgeons.

It treats mainly of the absorption spectra of blood in its normal state and after being acted upon by other substances. The first chapter gives a very short account of the optics of the spectroscope, which the author does not pretend to treat fully; then follows a short notice of the emission spectra of the metals. The absorption bands of oxyhæmoglobin (scarlet cruorine) and their change to the one reduction band of hæmoglobin (purple cruorine) by the abstraction of oxygen, discovered by Prof. Stokes, then comes in for recognition. The remainder of the book is chiefly on the absorption spectrum of blood with reference to forensic medicine and its spectrum after the introduction of foreign matters and gases.

It appears from the numerous references that the author has compiled this essay from books and papers rather than from observation, and the authors referred to are with few exceptions Germans. We think the book is well suited for the perusal and reference of the medical profession and others taking up this special subject.

Journey in the Caucasus, Persia, and Turkey-in-Asia. By Lieut. Baron Max von Thielmann. Translated by Charles Heneage, F.R.G.S. Two vols. Map and Woodcuts. (London, Murray).

BARON THIELMANN'S journey, which was made in the year 1872, embraced all the Caucasian region, much of the western shore of the Caspian Sea, with the long stretch of country between Tabrez, Hillah, and Beyrout. Though this is a region about which a good deal has been written, the Baron's narrative will be found to contain a considerable addition to our knowledge. His observations on the people and the antiquities of the countries traversed are especially valuable, while the work contains as well much interesting topographical and geographical information. The Baron is an exceedingly pleasant travelling companion, and as Mr. Heneage has made a thoroughly readable translation, the work will be found of value both to the stay-at-home reader and as a guide to the intending tourist.

LETTERS TO THE EDITOR

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.*

The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.]

Structure and Origin of Meteorites

IN the abstract of Mr. H. C. Sorby's lecture "On the Structure and Origin of Meteorites," given in NATURE, vol. xv., p. 495, in reference to the subject of glass globules observed by the lecturer in certain meteorites, the condition in which glassy particles given off by terrestrial volcanoes occur, is contrasted with that produced artificially in furnace slag by the action of a strong blast of hot air or steam. In the furnace slag "pear-shaped globules, each having a long hair-like tail," are described as being formed, whereas in the case of volcanoes the glassy particles are said, when given off, to be immediately solidified on entering the atmosphere, and to remain as mere fibres, as Pele's hair, or more or less irregular laminæ, like pumice dust. In fact, the formations in the two instances are closely similar. In the crater of Kilauea, in the Island of Hawai, wherever the well-known Pele's hair is in process of formation, long-tailed pear-shaped globules are formed in abundance, and a large proportion of the "hairs" are to be found with larger or smaller globules in connection with their ends.

I saw the formation of Pele's hair in two places in the crater.

In the one instance the formation occurred at the margin of one of the small lakes of molten lava. The lake was inclosed by a range of low cliffs, against the bases of which the waves of the extraordinarily fluid lava were constantly surging, being kept in perpetual commotion by the violent discharge of gases from beneath. The waves splashed up against the cliffs and spray and large drops were thrown into the air, and on the leeward side of the lake were driven by the wind over the top of the cliff so as to fall on a level platform of rock which was even with its summit.

The platform appeared as if melted pitch had been splashed out all over it, and was covered with small masses of pitch-like looking lava. Those of the masses which had evidently completely solidified before reaching the platform in their fall were pear-shaped, whilst in other cases where hardening had not been complete, the elongate masses falling in the soft condition had become flattened into irregular shapes, which showed more or less evident traces of the coiling of the masses as they fell.

All the masses had tails, some short and spike-like, others long and hair-like, and there was every gradation between stiff fine rods of transparent lava and the perfectly elastic hair of which a handful could readily be raked together with the fingers on the platform in a very short time.

In the other instance, the Pele's hair was seen by me around one of the small hollow cones or lava fountains which are constantly formed in the crater. The cone was not active at the time I saw it. It was surrounded with the small lava masses thrown out by it and forming a deposit closely similar to that formed at the margin of the lake, except that numerous larger lumps occurred amongst the smaller ones.

Very striking objects in the crater are large bubbles which have been formed in the lava when molten by the escaping gases. The surfaces of the bubbles are composed of extremely thin transparent laminæ, which look just like thin green bottle glass. Such bubbles are encountered at almost every step on the floor of superficially solidified lava, on which the visitor walks in the crater.

A remarkable peculiarity of the Hawaian lava is its extreme fluidity when in the molten condition. This property has brought about the unusual form of the great mountains of the island composed of it, which have so gradual a slope that the observer can hardly credit their great height when viewing them from the sea.

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On the Simplest Continuous Manifoldness of Two Dimensions and of Finite Extent

IT could hardly fail to be instructive if Mr. Frankland would explain the following obvious paradox in his theory (NATURE, vol. xv., p. 515). Let two "straight lines" XOX′, LOL′, make an angle XOL other than a right angle, and consider the shortest line PN from a moving point P in LL′ to XX′; from the assumptions, this is a "straight line" perpendicular to XX′. As P moves from O along OL, it will by and by, according to the theory, be at L′; that is, on the other side of XX′, if our "straight lines" are "of the same shape all along." Now, to put it algebraically, how does the perpendicular come to change sign? It does not pass through infinity, for the manifoldness is of finite extent: it does not vanish except when P is at O; and though it is conceivable in itself that N should travel to a maximum distance along OX and come back again while P moves on, yet this contradicts our principal assumption, for each perpendicular will then have two points in common with LL′. Is a door of escape to be found through any interpretation of "continuous"? Or, while "there is nothing self-contradictory in the definition," is there something in it contradictory of the superposition-principle by means of which its consequences are worked out?

The theory is partly exemplified upon the surface of revolution got by bending a hemisphere till it closes up. Correspondence is pretty close as to points in the equator and the simpler figures symmetrical to it.

C. J. MONRO

Hadley, Barnet

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