

Helmholtz and Thomson. It is to be hoped that the latter will soon complete his papers on *Vortex Motion* and give them to the world. But why does no one else work in the same field? Has the multiplication of symbols put a stop to the development of ideas?

OUR BOOK SHELF

Natural History Transactions of Northumberland and Durham. Vol. IV. Part II. (Williams and Norgate.)

THIS volume of upwards of 250 pages confirms the reputation already attained by the Tyneside Naturalists' Field Club, as being one of the most efficient provincial scientific societies in the kingdom. Nearly all the papers are of real and permanent value, and it is to be hoped that ere long some means will be found of bringing the work of this and similar societies before a larger public than is likely to be reached by "Transactions," which are seldom seen by any but the members or their friends. A large part of the volume is devoted to the excellently compiled Meteorological Reports for 1870 and 1871, by the Rev. R. F. Wheeler, M.A. There is here much valuable material, more interestingly and artistically put together than such reports usually are. Mr. T. J. Bold contributes a well-arranged catalogue of 151 species of *Hemiptera-Heteroptera* of Northumberland and Durham. Mr. Bold contributes besides many valuable notes on various other kinds of insects found in the district so well worked by the Tyneside society; Mr. Bold deserves the highest credit for the quantity and quality of his work. Messrs. A. Hancock and T. Atthey describe a considerable portion of a Mandibular Ramus of *Anthracosaurus Russellii* (Huxley), found in the new ironstone shale of Fenton; they also add some notes on *Loxomma Almanni* (Huxley), and on some additional remains of *Archichthys Sulcidens* (Hancock and Atthey), recently found at Newsham. The same gentlemen contribute a few remarks on *Dipleris* and *Ctenodus*, and on their relationship to *Ceratodus Forsteri* (Kreff). A well-arranged list of the non-parasitic marine *Copepoda* of the north-east coast of England is Mr. G. S. Brady's contribution to the volume. The President's address, consisting mainly of a graphic account of the numerous club excursions during 1871, is the last paper in the volume, one of the most valuable features of which is the numerous and carefully executed lithographs which are appended. Nearly every paper is illustrated. Altogether it is a thoroughly satisfactory specimen of work.

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. No notice is taken of anonymous communications.]

Phosphorescence in Fishes

THE only reliable observations of active phosphorescence in fishes during life, known to the writer, are the following, to which, perhaps, may be added, the somewhat obscure observations on *Hemiramphus lucens*, communicated to G. Cuvier by Reinwardt:—

1. The observations of the two Bennetts ("Whaling Voyage" and "Gatherings in Australia") on a small luminous shark (*Squalus fulgens*: *Isistius brasiliensis*, Q.G.). (Perhaps also observed by Giglioli.)

2. The observations of J. Bennett on the luminosity of *Scopelus stellatus* (L.C.).

3. The luminosity of the head of *Astronesther niger* observed by Reinhardt (Videnskab. Meddel. f.d. naturhist. Forening: Kjöbenhavn, 1853).

Very probably the faculty is widely diffused among *Scopeloids* (*sensulatore*), and Dr. Günther may be quite right in speaking

of certain enigmatical organs in the skin of these fishes as their "luminous phosphorescent organs."

In Mr. Saville Kent's very sensible remarks on the phosphorescence (erroneously ascribed to several other fishes), in vol. vii. p. 47 of NATURE, I find a statement that startled me a little, viz., that "it has been proved beyond doubt that certain fish, *Cyclopterus lumpus*, for instance, do possess highly luminous properties" (during life, of course, or Mr. S. K. would not have mentioned it at all in this connection). I think that the observations regarding *Cyclopterus lumpus*, upon which this statement is based, are unknown to other zoologists than the writer, and that they would be much obliged to Mr. S. K. for a reference to his source of information.

Z.

Movements of the Earth's Surface

IT is, I believe, commonly supposed by geologists that the movements of the surface of the earth are caused by the refrigeration and contraction of the interior. But since the glacial epoch the surface of the earth has become warmer; consequently since that time a heat wave must have been passing from the surface towards the centre; and consequently since that time no refrigeration nor contraction of the interior can have taken place. If, therefore, movements of the earth's surface were due to this cause only, no such movements should have taken place since the glacial epoch.

F. W. HUTTON

Wellington, New Zealand, Nov. 10, 1872

Meteor Observed at Mauritius

ON Nov. 7 last, about 7 o'clock, P.M., I saw the most beautiful meteor fall that I ever remember observing in my life. My face was turned in the opposite direction, but an unusually brilliant and sudden flash of light, above the brightness of the moonshine, caused me to turn suddenly round in the direction the effulgence came from, and I saw a very large meteor majestically falling through the distance, seemingly of about eight or ten yards. I am not much of an astronomer, but I think it must have fallen, apparently, from some point in Aquarius. What particularly struck me in its appearance was that it was beautifully distinct, and round as the full moon, but seemingly about the $\frac{3}{4}$ th of a diameter larger. I ought, perhaps, rather to compare it to the moon at the end of her first quarter. [See p. 231 of this Number.]

A quarter of its disc only was luminous and brilliant, while the upper three-quarters emitted no luminosity, being of a dull, dusky, stone-brown colour. Here the circular outline was perfectly distinct, while the brightness of the lower limb took away all distinctness of outline there, making it appear slightly more prominent, besides throwing beyond the outline of the meteor itself a beautiful soft, steady, very bright radiance of a bluish white tint, which illuminated momentarily the whole heavens. It was observed by other people, and one person described to me having seen a similar meteor fall about this time last year, the disc appearing "about the size of a saucer," entirely luminous, but then no moon was shining.

W. WRIGHT

Moon's Surface

MAY not the white, telescopic appearance of the moon's surface, resembling snow in many parts, be explained by the fact that the extinct volcanoes of our satellite are covered with crystals of salt?

Any person who is accustomed to view the moon through a telescope must, I think, have been struck with the dazzling snow-white appearance of the mountains. May not an explanation of this be deduced from the experiences gained by the last eruption of Vesuvius?

"One of the most curious phenomena observed is the power of burning lava to retain an enormous quantity of water and salt, which it does not allow to escape till it begins to cool. . . . The formation of salt is shown generally over the whole stretch of lava emitted in 1872. Soon after the surface cools it is covered with a light crust of salt."—See NATURE, vol. vii. p. 2.

Is it not, therefore, probable that the numerous lava beds of the extinct volcanoes in our satellite may be coated with salt, bleached to the whiteness of snow?

C. H. W. MERLIN

British Consulate, Athens, Nov. 23