Hand-book of Zoology, with Examples from Canadian Species, Recent and Fossil. By Sir J. William Dawson, LL.D., F.R.S., &c. Third Edition, revised and enlarged. (Montreal: Dawson Brothers, 1886.)

IN this little work, the President of the British Association for the Advancement of Science has concentrated into some 300 pages a very fair account of the principal divisions of the animal kingdom. It is specially adapted for Canadian students, inasmuch as the examples of every group are selected, as far as possible, from species found within the limits of the Dominion. The fact of the volume having reached a third edition shows that Sir William Dawson's plan and method have been appreciated. That the arrangement adopted is altogether unexceptionable, and that all the most recent discoveries in zoological science are taken advantage of, we could not fairly say. For example, *Eozoon* is still treated of as if it were without doubt an organic structure; the unquestionable affinity of the larval Ascidian to the Vertebrate embryo is but faintly alluded to; and the much-talked-about *Peripatus*—one of the most singular types of Arthropodal life—seems to have been altogether omitted from the list. Yet there is, in the main, an absence of the serious errors which are too often found in such manuals. The volume is well illustrated and well printed, and will, we have no doubt, be of much service as a text-book in Canadian schools of science.

Theory of Magnetic Measurements. By Francis E. Nipher, A.M., Professor of Physics in Washington University, President of the St. Louis Academy of Science. (New York: D. Van Nostrand; London: Trübner and Co., 1886.)

DURING the last twenty years there has been considerable activity amongst observers on land and at sea in adding to our knowledge of the magnetism of the earth, and it is certainly desirable, if not necessary, that those busy workers, who are only acquainted with the practical use of the instruments employed, should know something of the theory of the magnetic measurements upon which they may be engaged.

To those conducting magnetic surveys under English auspices, the article on Terrestrial Magnetism in the "Admiralty Manual of Scientific Inquiry" has proved a valuable aid in showing both what was required and the practical means of obtaining observations on land and sea, with the methods of calculating the results. The theory of the subject, however, is beyond the intended scope of the Manual.

The magnetic survey of the United States has, during the period under consideration, been continuously carried on under the Government and private enterprise, and Prof. Nipher has been one of the diligent workers, as shown by his survey of Missouri, published in NATURE, (vol. xxiii. p. 583). In the book before us he combines some excellent practical information for those undertaking the observation of the three magnetic elements on land, with the theory of the several magnetic measurements thus made.

A large portion of the book is necessarily occupied by the theory of the horizontal force magnetometer and its several parts. Here the reader will find some differences from the English notation. For instance, H is substituted for X when denoting the horizontal force, and I for K, as the moment of inertia of the deflecting magnet. A more important departure from the usual method of calculation will be noticed in the omission of the coefficient of induction μ, which has been so entirely rejected as not even to be discussed. The retention of this coefficient has already been challenged elsewhere, but the general support of European practice seems to forbid any change until its place in our formulæ has been proved unnecessary. In the concluding pages there is an article on the systems of units adopted in magnetic measurements, and plates of the unifilar magnetometer and dip-circle generally used.

The appendix is devoted to a discussion of the method of least squares in the reduction of observations, an article on graphic methods, with the aid of which so much may be done to shorten the labour of computation, and some tables giving the times of the elongation of Polaris with its corresponding azimuth for the years 1886-95, from which the true meridian may be readily deduced for declination-observations. These tables will probably be found convenient in latitudes between the northern tropic and the Arctic circle.

The large domain of magnetic observations at sea is not touched upon, but intending observers on land should be pleased to possess a book of this kind, which might be included in their travelling equipment without fear of adding much to the weights to be carried.

The Coming Deluge of Russian Petroleum. By C. Marvin. (London: R. Anderson and Co.)

THIS pamphlet does not pretend to add to our limited knowledge of the origin of petroleum or of its connection with the Tertiary deposits and volcanic activity of the Caucasus. It is in reality an appeal to English enterprise to direct its attention to at least the carrying trade of a district so rapidly growing in industrial importance. The enormous figures given (*e.g.* more than a million gallons a day from a single well) are enough, however, to stimulate scientific as well as Stock-Exchange inquiries, and the development of communications between Baku and the West is sure to be, sooner or later, fruitful in geological results. G. C.

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 insure the appearance even of communications containing interesting and novel facts.*]

The Cambridge Cholera Fungus

I HAVE read with great surprise Mr. Gardiner's letter in your issue of January 20 (p. 271). We are there told that on reconsideration Mr. Gardiner has now come to the conclusion that the organism which he saw in Prof. Roy's preparations of the intestinal mucous membrane—which Prof. Roy took to be the more usual and typical form, and which Mr. Gardiner then thought to belong to the Chitridiaceæ—is probably the particular phase in the life-history of Bacterium known as an involution form, *i.e.* "a thin and somewhat moniliform filament which at one end exhibited a distinct nodular swelling." If Mr. Gardiner has studied the filaments of a growth of mould in animal tissues, he must have come across numbers of such forms. But granting for the sake of argument that what Mr. Gardiner saw in Prof. Roy's specimens bears a resemblance to and is in reality an involution form of Bacterium, how about the branched threads figured in the Report by Messrs. Roy, Brown, and Sherrington in No. 247 of the Proceedings of the Royal Society, on p. 179?

Each of these two figures introduced here, no doubt as typical representations of the organisms in the mucous membrane, shows unmistakably BRANCHED mycelial threads of a true fungus. If what Mr. Gardiner has seen in Prof. Roy's preparations is an involution form of some Bacterium, then the branched threads figured in Messrs. Roy, Brown, and Sherrington's Report are something else, unless somebody started the novel and extraordinary view that a Bacterium possesses branched mycelial threads like a true fungus.

I should be glad to hear Mr. Gardiner's opinion as to these branched mycelial threads figured on p. 179 of the Proceedings of the Royal Society, No. 247, in the Report by Messrs. Roy, Brown, and Sherrington. E. KLEIN