

The Botany of Iceland. Edited by Dr. L. Kolderup Rosenvinge and Dr. Eug. Warming. Part i. "The Marine Algal Vegetation." By Dr. Helgi Jónsson. Pp. vi+186. (Copenhagen: J. Frimodt; London: John Wheldon and Co., 1912.)

DANISH botanists are to be congratulated on the vigorous manner in which they attack the botany of the various dependencies of their kingdom. In the "Botany of the Faerøes" (1901-1908) the results of a systematic investigation of the flora and vegetation of those islands were presented, and with the completion of that work a similar survey of the botany of Iceland has been commenced.

The first part of the Iceland series, namely, the marine algæ, by Helgi Jónsson, has now appeared. It begins with the systematic list, which is concisely dealt with. An interesting account of the phytogeographic components of the flora follows, together with a comparison of the floristic features of neighbouring areas. The remaining pages are occupied with a detailed description of the algal communities, and notes on the biology of the species. A new method of classification is employed; three main vertical "zones" are recognised, and the communities of the littoral zone are subdivided according to their illumination requirements. It is open to question whether these divisions will meet with general approval, but all will agree that Dr. Jónsson has furnished a most valuable contribution to algological literature.

A. D. C.

A Medical and Surgical Help for Shipmasters and Officers in the Merchant Navy; including First Aid to the Injured. By W. Johnson Smith. Revised by Dr. Arnold Chaplin. Fourth edition, revised. Pp. xviii+355. (London: Charles Griffin and Co., Ltd., 1912.) Price 5s. net.

DR. CHAPLIN has re-written the portions of the work dealing with the causation of diseases, so as to incorporate the recent advances in our knowledge, especially of tropical diseases. The new scales of drugs and medical and surgical appliances, issued by the Board of Trade in January, 1912, have been included, and in other ways the volume has been brought into line with present-day requirements.

A Handbook of Wireless Telegraphy: its Theory and Practice. By Dr. J. Erskine-Murray. Pp. xvi+442. Fourth edition. (London: Crosby Lockwood and Son, 1913.) Price 10s. 6d. net.

A REVIEW of the third edition of Dr. Erskine-Murray's book will be found in the issue of NATURE for August 24, 1911 (vol. lxxxvii., p. 240). The additions to the present edition include a new chapter on the telegraphic efficiency of a wireless system; a theory of abnormal ranges, by night and by day, deduced directly from telegraphic observations, now included in the chapter on transmission; and new sections in other chapters on the Poulsen, Goldschmidt, and new Telefunken systems.

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LETTERS TO THE EDITOR.

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On the Appearance of Helium and Neon in Vacuum Tubes.

At the last meeting of the Chemical Society, Sir William Ramsay, Prof. Collie, and Mr. Patterson described some experiments which they regard as proving the transmutation of other elements into helium and neon. I have been making experiments of a somewhat similar character for some time, and though the investigation is not yet finished, the results I have obtained up to the present time seem to me in favour of a different explanation from that put forward at the Chemical Society. I described some of these experiments in a lecture at the Royal Institution on January 17, but as the separate copies of that lecture have not yet been issued, I will give here an account of some of the experiments which seem to me to have the most direct bearing on the phenomenon in question.

I used the method of positive rays to detect the gases; this method is more sensitive than spectrum analysis, and furnishes much more definite information. I may say that the primary object of my experiments was to investigate the origin and properties of a new gas of atomic weight 3, which I shall call X₃, which I discovered by the positive-ray method. This gas, as well as one with an atomic weight 20 (neon?), has appeared sporadically on the photographs taken in the course of the last two years; the discharge in the tube being the ordinary discharge produced by an induction coil through a large bulb furnished with aluminium terminals, and containing gas at a very low pressure. There seems to be no obvious connection between the appearance of either of these lines and the nature of the gas used to fill the tube; the 3 line has appeared when the bulb was filled with hydrogen, with nitrogen, with air, with helium, or with mixtures of hydrogen and oxygen in various proportions; the 20 line when the bulb contained hydrogen, nitrogen, air, hydrochloric acid gas, mixtures of hydrogen and oxygen.

The experiments I made had for their object the discovery of the circumstances which favour the production of X₃, and to test whether it was triatomic hydrogen produced by the discharge, as this is the alternative to its being a new element. I have found that the conditions which lead to a considerable production of X₃ generally give rise to the appearance of helium and neon. Indeed, in the great majority of cases in which I have observed the appearance of traces of helium and neon these gases have been accompanied by larger quantities of X₃; this gas seems to have escaped the notice of the readers of the paper at the Chemical Society. I may mention, too, that along with neon of atomic weight 20 there is a line in these circumstances corresponding to an atomic weight 10 or thereabouts. Though this is probably due to neon with two charges of electricity, it is generally brighter in comparison with the neon line than is usual for the lines corresponding to doubly and singly charged atoms, so that it is not impossible, though perhaps unlikely, that it may be due to a new gas.

The positive rays for the analysis of the gases were produced in a vessel containing gases at a low pressure. I shall call this the testing vessel; the vessel in which the various processes for generating X₃