

enthusiasm and by his introduction to the fascinating work of Fabre.

The author shows us Arcachon, not as a modern creation on a promontory in a featureless lagoon, but as the product of great natural forces, conspiring for the health of man. The winds blow over it fraught with warmth from tropic waters; the sands are kept from wandering by the growth of aromatic pines; and the subsoils that can be traced southward across the vast Pliocene estuary of the Landes represent for the naturalist the spoils of the Central Plateau and the Pyrenees. Like Prof. Tornquist in East Prussia (*NATURE*, vol. lxxxv., p. 468), but with a little more professional formality, Dr. Lalesque has conquered in a field that offered little promise to the unobservant eye.

G. A. J. C.

Our Bookshelf.

Iron Bacteria. By Dr. David Ellis. Pp. xix + 179 + v plates. (London: Methuen and Co., Ltd., 1919.) Price 10s. 6d. net.

IN this book Dr. David Ellis has compiled a monograph on a subject which he has largely made his own, and on which he can speak with first-hand knowledge. The group of micro-organisms discussed is important, and one of the makers of geological history, for many of the bog iron ores owe their formation largely to the activities of iron bacteria, and other iron ores may be due to the same cause. In modern life these organisms are of importance to the water engineer in relation to water reservoirs, the corrosion of conduit pipes, and the general appearance and clarity of water supplies.

The iron bacteria are a heterogeneous group of organisms, scarcely bacteria in the strict sense, belonging to several genera—*Leptothrix*, *Cladothrix*, *Crenothrix*, and others. The iron is collected from the water in which they live, and stored in a concentrated state as ferric hydroxide in the mucilaginous sheaths which surround their bodies. The ferruginous deposit in the membrane is often so great that it exceeds the volume of the organism itself, and the iron-impregnated membrane may persist for long after the dissolution of the organism.

Some of these organisms may occasionally multiply in a very short time to such an extent as in the course of a few weeks to change entirely the character of the water in which they are present, as was the case at Cheltenham in 1896. They may also cause encrustations in the pipes, and the group is therefore of considerable economic importance. Six species are fully described, and methods of treatment to retard their activities in water supplies are detailed. The book is well produced and illustrated, and forms a standard work on the subject.

R. T. H.

Meteorology for All: Being some Weather Problems Explained. By Donald W. Horner. With an Introduction by M. de Carle S. Salter. Pp. xvi + 184 + vii plates. (London: Witherby and Co., 1919.) Price 6s. net.

THE science of the weather may well make a wider appeal than any other branch of science, and the opening for a book which is not only scientifically accurate, but also simple and easily comprehended, is therefore very great. The author of the present work has realised that the opening exists, and has endeavoured to fill it, but his attempt can scarcely be considered successful. A few quotations will illustrate the nature of the book. In estimating cloud amounts on the scale 0-10 we are told that "if there is one cloud upon the horizon or in any part of the sky we put 1." For obtaining true bearings from a compass, "the magnetic variation in the British Isles is now 14° W." Again: "There is no more sure precursor of a gale than the 'wind-dog,' or coloured parhelion" (p. 2), which may possess some degree of truth, but scarcely seems compatible with: "When these halos are coloured and accompanied by parhelia or mock suns, they generally precede very dry weather" (p. 110). Even in such a simple matter as giving the equivalent velocities of the Beaufort numbers, the author falls into error. Some chapters are better than others, but the book can certainly not be recommended as a safe guide to put into the hands of the non-technical reader without previous knowledge of meteorology.

J. S. D.

The Psychology of the Future. ("L'Avenir des Sciences Psychiques.") By Emile Boirac. Translated and edited with an introduction by W. de Kerlor. Pp. xiii + 322. (London: Kegan Paul, Trench, Trubner, and Co., Ltd., n.d.) Price 10s. 6d. net.

THE author deals with the more debatable classes of psychical phenomena discussed at the Paris Congresses of Experimental Psychology of 1911 and 1913, and defined as "the phenomena which, produced in animate beings or as an effect of their action, do not seem to be entirely explicable by the laws and forces of nature already known." They are classified as: Hypnoidal, including dissociation of personality and "cryptopsychism" (subconscious action); magnetoidal, which are supposed to comprise mesmerism, telepathy, and "hyloscopic" phenomena (unexplained actions of inanimate objects on animate beings); and spiritoidal, which imply agents of a psychological nature more or less analogous to human intelligence. The author proposes the term "bi-actinism" (bio-actinism?) for any phenomena in which a radiating influence is apparently exerted at a distance over other animate beings. For "clairvoyance," or knowledge obtained by certain individuals apparently independently of the normal senses, he prefers the term "metagnomy." On the question of the spiritistic hypothesis the author maintains a non-committal attitude.