

fusely illustrated in the text, and contains one coloured plate showing the elements and structures brought to light by the application of various methods, staining agents and other reagents. A full bibliography is appended, but an index is lacking, which is a great mistake.

(2) The second volume is one more adapted to the needs of the biologist or of the general reader, inasmuch as it gives a general survey of the structure and functions of the bacteria and of their activities. The first two chapters are devoted to a consideration of the size, form, development, and occurrence of the bacteria and to the methods employed in studying and cultivating them. Chapters iii.-vi. deal with their morphology and the structure of the bacterial cell. As regards classification (chapter vii.), the author divides bacterial organisms into two suborders, the Haplobacterinæ and the Desmobacterinæ, the former including the single-celled bacteria, the latter the thread-forming organisms such as *Leptothrix*, *Crenothrix*, *Cladothrix*, and *Beggiatoa*. As an appendage of the Haplobacterinæ he recognises the Mycobacteriaceæ ("Pilzbakterien"), in which he places such organisms as the tubercle bacillus and Actinomyces, and the Myxobacteriaceæ or "slime bacteria." Truly the classification of the bacteria is still in a very unsatisfactory condition!

Variation and mutability among the bacteria are discussed at some length, after which the conditions of life and general physiology of the bacteria are dealt with: assimilation and dissimilation, fermentation, nitrogen fixation, &c. Finally, the occurrence and distribution of bacteria on the earth's surface, in arable, grass, and wooded lands, in water and dwellings, are considered. The book is exceedingly well conceived, and contains a mass of trustworthy information with sufficient references to the literature. It is well printed and illustrated, and is supplied with adequate indexes to the matter it contains and to the authors mentioned.

R. T. HEWLETT.

OUR BOOKSHELF.

Guide Scientifique du Géographe-Explorateur.

By P. Crépin de Beauregard. Pp. x+250+2 plates. (Paris: Gauthier-Villars, 1912.) Price 10 francs.

THIS work is not intended for the ordinary traveller who wishes to prepare a sketch-map of the country which he traverses, and to determine with moderate accuracy the position of his halting places. M. Crépin de Beauregard, who has had much experience of surveying both in France and in Indo-China, has prepared a handbook for the

trained surveyor who has a certain knowledge of mathematics and has to undertake work of considerable accuracy in new countries in order to provide a control for subsequent topographical surveys. The treatment is consequently in a large degree theoretical, though actual examples from work in the field are given, but the simpler and less precise methods of topographical surveying are not included.

The first chapter deals mainly with the trigonometrical formulæ involved, while in the second the theodolite is discussed as being the instrument employed, and the errors introduced by dislevelment, &c., are investigated. Coming to the astronomical determinations which the surveyor requires to make in the field, the most suitable methods of determining the local time, the latitude of a station, and the azimuth of a mark are fully discussed theoretically, and an example of each is worked out. In these cases each observation made is worked out separately and a mean value of the results is obtained, though the probable error is not considered.

In that part which treats of triangulation the author deals with the computations which are necessary in first and second order triangulation where the surface is treated as that of a spheroid, and in third order work where spherical formulæ suffice. Map projections occupy a chapter, and these are not limited to those types which are likely to be employed by those who are surveying a new country, but include all the principal types. The book should be of much use to those trained surveyors who are steadily extending the network of triangulation in Algeria and Tunis, in Indo-China and Madagascar.

H. G. L.

Introduction to the Rarer Elements. By Philip E. Browning. Pp. xii+232. Third edition. (New York: John Wiley and Sons; London: Chapman and Hall, Ltd., 1912.)

To this edition of Dr. Browning's book several additions have been introduced and numerous changes made. The chapter on qualitative analysis has been enlarged by the inclusion of new diagrams, new material has been added to the chapter on technical applications, and a table of spectroscopic lines and plates showing typical spectra have been introduced. The second edition was reviewed in NATURE of April 15, 1909 (vol. lxxx., p. 182).

A First Book of Electricity and Magnetism. By W. Perren Maycock. Fourth edition. Pp. xxii+351. (London: Whittaker and Co., 1913.) Price 2s. 6d. net.

THE first edition of Mr. Maycock's little book was reviewed in the issue of NATURE for January 14, 1892 (vol. xlv., p. 248). The present issue has been revised thoroughly and enlarged considerably, and the author has been successful in his desire to "carry the reader over the threshold of a subject whose theoretical and practical extents are very far-reaching."