

soldered into a hole in the tin can, instead of using the obvious two-holed cork which will carry both the safety tube and the exit tube.

In spite of these faults, however, the book will no doubt be of some use both to teachers and students of practical organic chemistry classes. N.

OUR BOOK SHELF.

Nights with an Old Gunner, and other Studies of Wild Life. By C. J. Cornish. With illustrations. Pp. xii + 307. (London: Seeley and Co., Ltd., 1897.)

MR. CORNISH'S books are widely known, and thoroughly deserve their popularity. He delights in the observation of live animals, especially birds; he describes with detail, yet with animation; and his sketches are rich in human interest. Few better books could be offered to a young fellow fond of nature, but not loving to take his pleasure too seriously. They inspire the love of close observation, and will help to make naturalists of a particularly good kind—men who will study their animals alive, and amidst natural surroundings. The illustrations are attractive, and some of the photographs from life included in this volume are acquisitions to natural history.

Critics are bound to be critical, and we shall notice the trifling matters which we would see amended in another edition. A naturalist, bred in another part of England, may be puzzled by such local words as "marrun grass," "crab grass," and "king crab." The present writer wants to know what they are, but cannot easily find out. The comparison of the shrimp and prawn (p. 87) is not exact, and we are startled to read of the hundred mouths of the sea-anemone (p. 81). A little more information might have been given about the food, and especially about the winter-food, of the beaver. This would have led to an explanation of the purpose of the dam. But Mr. Cornish does not attempt to tell all; what he tells is told so pleasantly that we long for more. L. C. M.

Untersuchungen über den Bau der Cyanophyceen und Bakterien. By A. Fischer. Pp. 132, and 3 plates. (Jena: G. Fischer, 1897.)

THIS little volume is very full of information on methods of fixing and staining, and on the results of high power observations of these minute organisms. Fischer's principal conclusions are that staining depends on physical and not chemical properties of the dyes and cell-substances, and consequently there are no such things as nuclear stains.

That the cell of the Cyanophyceæ consists of a central body clothed with a true chromatophore and devoid of a nucleus.

That neither the sulphur-bacteria nor the other schizomycetes examined contain a nucleus, and that the interpretation of bacteria as composed of a nucleus denuded of protoplast is incorrect. Also that "Die starke Färbbarkeit der Bakterien mit Kernfarbstoffen ist ein Mythos."

With regard to these and many other points concerning the structure of the bacterium-cell, it would appear probable that Bütschli—whose conclusions are especially criticised—should have something to say; and judging from certain extremely pretty preparations of *Tolypothrix* which Dr. Scott exhibited a few years ago, and from recent work by Mr. Wager on the nuclei of bacteria, it may be that Fischer's interpretation of the stained groups of chromatin-like filaments, granules, &c., as "probably reserve materials," will not be accepted as final.

In any case, the work is a most acceptable contribution to the controversy on this extremely difficult subject, and two of the three plates suggest the question why can we so rarely have English memoirs so well illustrated?

Electricity and Magnetism for Beginners. By F. W. Sanderson. Pp. ix + 244. (London: Macmillan and Co., Ltd., 1897.)

THIS little book is "intended to form a first course for boys who have already learnt the elements of mensuration, statics, dynamics, and heat"; the object being "to introduce the student to the principal laws of" electricity and magnetism, "and give him a working knowledge of the quantities involved."

This object is, on the whole, well attained, though we cannot help thinking that the book would be more valuable to beginners if it covered less ground, and dealt with the elementary portions at somewhat greater length.

The experiments described are well chosen and well arranged. It is intended that the student shall repeat them himself, and for this purpose they are admirably adapted, the apparatus required being of the simplest character. The diagrams, too, are excellent, both in execution and design.

Each chapter ends with a set of numerical examples.

Altogether, a boy who has mastered the book will possess a very creditable acquaintance with the elements of his subject. A. P. C.

Organic Chemistry for the Laboratory. By Prof. W. A. Noyes, Ph.D. Pp. xi + 257. (Easton, P.A.: Chemical Publishing Company, 1897.)

IN this attractive-looking and admirably printed work the chief practical methods of modern organic chemistry are illustrated by directions for the preparation of a large number of compounds by means of typical reactions. The various substances involved are classified according to their constitution, one chapter of the book dealing with acids, another with hydrocarbons, &c., and in all cases the chemistry of the reactions is discussed. Nearly a hundred different preparations are described, some of them of considerable difficulty; but in all cases the directions are clear and sufficient, without being unnecessarily detailed, whilst copious references to original literature are given. The book is intended to serve both for advanced students and for beginners; but, like many other works on the same subject, it is somewhat lacking in suitable experiments to illustrate the earlier portion of the lecture course from which the student derives his acquaintance with the theoretical side of the science. A. HARDEN.

The Reliquary and Illustrated Archaeologist. Edited by J. Romilly Allen. New series, vol. iii. Pp. 256. (London: Bemrose and Sons, Ltd., 1897.)

THIS fine volume does credit to British archaeology. It is made up of the four quarterly numbers issued this year, and is the most attractively illustrated publication that has come before us for some time. The periodical is, to quote the sub-title, "devoted to the study of the early Pagan and Christian antiquities of Great Britain; mediæval architecture and ecclesiology; the development of the arts and industries of man in the past ages; and the survivals of ancient usages and appliances in the present." The volume has thus a very comprehensive scope, and it contains articles of interest to every archaeologist, numerous critical reviews, and notes on archaeology and kindred subjects.

The Commercial Uses of Coal Gas. By Thomas Fletcher, F.C.S. Pp. 104. (Warrington, Manchester, and London: Fletcher, Russell and Co., Limited.)

GAS engineers and fitters will find this little volume, which is a supplement to one on "Coal Gas as a Fuel," worthy of attention. The book contains many notes which will be found particularly serviceable in workshop practice, and in the laboratory as well. One of the chapters "On the Use of the Blowpipe," for workshop purposes, deserves special mention. The book may be taken as a statement of the advantages of coal gas as a fuel.