

remark, namely, that no student, or even expert, not only in veterinary but also in medical and sanitary science, can afford to be without a copy of this excellent manual.

The type, paper, and binding, reflect great credit on the publishers.  
A. C. HOUSTON.

#### OUR BOOK SHELF.

*Elementary Botany.* By G. F. Atkinson, Ph.B. Professor of Botany in Cornell University. Pp. xxiii + 444. (New York: Henry Holt and Co., 1898.)

THIS is one of the best little books of its kind it has been our lot to look through for a long time. Pleasantly written, admirably printed and illustrated, it forms an excellent introduction to the study of the science of botany, and Prof. Atkinson is to be congratulated on the way which he has fulfilled the task he has set himself.

The book opens with a general account of a plant-cell and protoplasm, and the student is led through a simple course of vegetable physiology to investigate the ways in which plants live, move, and have their being. This method of beginning with physiology is novel, and there is a great deal to be said for it. It is calculated to arouse the interest which in the minds of all inquiring people, be they children or adults, always accompanies experiment. Prof. Atkinson has wisely limited his selection of experiments to those which require apparatus of only the simplest kind, but they are for the most part experiments which give an insight into the marvellous organisation and concomitant functional complexity which are characteristic of plant-life in general.

Then there follows an elementary account of the main groups of the vegetable kingdom, illustrated by well-chosen types. But the author by no means limits himself merely to these, and the connections and relationships of the different groups are clearly indicated. The chapters on Gymnosperms, which include a good account of the occurrence of antherozoids in Ginkgo and in the Cycads, are especially good.

The chapters on the general morphology of the flowering plant are perhaps rather advanced, and it might be questioned whether a little more attention to external morphology might not be desirable. The part of the book specially dealing with natural orders strikes us as the least attractive part of the book; but also it is far the most difficult, within narrow limits of space, to render either interesting or educationally valuable. Possibly in a future edition of the work the author may see fit to expand this part by the inclusion of more indications of the facies of, as well as of the trend of differentiation in, the different natural orders, even if the characters of biological interest have to be omitted.

The latter class of characters (biological) are, however, specially treated in the division on Ecology. In this part of the book the author has brought together, in addition to well-known examples, the fruits of his own observation in a country in which such research cannot but yield fruitful results. And the advanced, as well as the elementary, student will find much that is new and interesting in these last chapters. Of course the treatment is brief, but it is useful; the figures and many (not, however, all) of the illustrative photographs from nature are quite admirable.

From the above brief sketch it will be seen that the book is one which thoroughly deserves to be commended as calculated to attract instead of (as is too often the case) repelling the beginner.  
J. B. F.

*Animals of To-day, their Life and Conversation.* By C. J. Cornish. Pp. xii + 319. (London: Seeley and Co., Ltd., 1898.)

MR. CORNISH is such a bright and entertaining writer, and has also the art of looking at well-worn subjects from such new points of view, that the

republication of this series of articles from the *Spectator* may be welcomed by the zoologist as well as by the general reader. The author, it need scarcely be said, makes no pretence to study animals from a purely scientific or systematic standpoint; and regards the various domesticated breeds as meriting fully as much attention as their wild relatives. The adaptation of animals to their surroundings, the manner in which they exist under what appear to us unfavourable conditions, their speed, their antipathies, their susceptibility to human diseases, and their mental capacities and disabilities, form, indeed, some of his favourite subjects. But he also gives dissertations on the beauty and suitability to their uses of several domesticated breeds; while his chapters on acclimatisation, game-preservation, and, above all, on the terrible devastation inflicted on big game by "skin-hunters," are of almost absorbing interest.

In the commercial aspect of the subject, Mr. Cornish shows that while myriads of South African animals have been recklessly exterminated for the sake of their skins, yet that in Australia, where the marsupials are killed off in thousands from necessity, their valuable furs are for the most part wasted. And here it may be mentioned that, in referring to the commercial quotations of South African skins, the author makes merry at the inclusion of those of the "quagga," on the ground that the animal so-named is now extinct; but he ought to have known that at the Cape this title is universally applied to Burchell's zebra.

As beasts of burden for routes like that to the Klondike, the author speaks enthusiastically of the reindeer and Bactrian camel. Of the latter animal he observes that Englishmen have no practical experience; but if he had read the records of the second Yarkand expedition, he might have somewhat modified this statement. Wider reading might, indeed, in several cases have been an advantage to the author. For instance, in the chapter on "Thirsty Animals" he is very sceptical as to the power of any mammals to exist for a length of time without access to water; suggesting that the well-known instance of the giraffes in the Kalahari may be due to the presence of undiscovered sources of water in the interior of that desert. Had he been acquainted with Mr. W. T. Blanford's observations on the existence of certain Indian mammals in waterless districts, his scepticism might have been removed. Again, in another place, he is under the impression that wild dogs (*Cyon*) are nearer to domestic dogs than are wolves and jackals.

Such slight blemishes detract, however, but little from a very entertaining and instructive volume. Had we more writers of Mr. Cornish's stamp, the popularity of zoology, great as it undoubtedly is, would probably be largely augmented; and his present work can scarcely fail to increase his reputation as a successful writer.  
R. L.

*Text-book of Algebra.* By G. E. Fisher, M.A., Ph.D. and I. J. Schwatt, Ph.D. Part I. Pp. xiv + 684. (Philadelphia: Fisher and Schwatt, 1898.)

ON the whole this is a sound and instructive book. In the chapters on first principles the distinction between signs of operation and signs of quality has been very properly emphasised by a special notation, instead of being ignored; the treatment of systems of equations is excellent; and that of surds is much better than usual, although exception might be taken to some of the notation, and the existence of  $\sqrt{2}$  as a definite number cannot be proved (as the authors seem to think) by considering the diagonal of a unit square. The book is rather unequally written, and errors sometimes occur which contrast curiously with the accuracy which generally prevails. Thus in the proof of the remainder theorem the same symbol  $Q$  is used for two entirely different things; it is assumed without proof that if  $r$  is a proper fraction  $r^n$  be-