

book; but to Cornish ears it will sound as oddly as if he alluded to a 2-feet rule, or to a 2-years old colt, or as if he spoke of a Guardsman as a "six-feeter."

A very full and accurate index greatly adds to the value of the work. The insertion of the names of von Cotta, von Groddeck, and von Sandberger under the letter V is, however, open to objection.

Prof. Le Neve Foster is to be congratulated on having enriched our technical literature with a contribution of substantial value. Undoubtedly the best book on the subject in the English language, it bears comparison with the treatises of Callon and Haton de la Goupillière in French, and with those of Serlo and Koehler in German. It should find a place in every mine office, and, by being carefully studied by mine managers, should help to raise the British ore and stone mining industries from their present depressed condition.

BENNETT H. BROUGH.

DR. ADLER'S OBSERVATIONS ON GALL FLIES.

Alternating Generations: a Biological Study of Oak Galls and Gall Flies. By Hermann Adler, M.D., Schleswig. Translated and edited by Charles R. Straton, F.R.C.S., Ed., F.E.S. With illustrations. (Oxford: Clarendon Press, 1894.)

THE order *Hymenoptera* has never been a popular study, in the sense in which the *Coleoptera* and *Lepidoptera* have become so during the last century, but it probably numbers among its votaries nearly three times as many students as any of the remaining orders. Nor is this surprising, for although it cannot compete with the *Lepidoptera* in beauty of colouring, it surpasses the *Coleoptera* in its variety of form, and is probably more numerous in species than any other order. It supplies us with some of the most valuable products which are yielded by insects, such as honey and ink, and stands at the head of the insect world, both in intelligence and in diversity of habits.

The *Aculeata*, or ants, bees, and wasps, and, after these, the *Tenthredinidæ*, or saw-flies, have generally received most attention from those entomologists who have specially devoted themselves to the study of the *Hymenoptera*. But within the last twenty or thirty years, several entomologists have occupied themselves with the study of the *Cynipidæ*, or Gall Flies, and have discovered a system of alternate generations in these insects almost as remarkable as that which had previously been observed in the *Aphididæ*, or Plant-lice, which belong to the very different sub-order *Homoptera*.

One of the most important contributions to this subject was Dr. Adler's treatise, "Über den Generationswechsel des Eichen-Gallwespen," which was published in the *Zeitschrift für wissenschaftliche Zoologie* for 1881 (vol. xxxv.), with three coloured plates; and it is this work which Dr. Straton has now brought within the reach of every English entomologist.

As a rule, works on many branches of science become obsolete shortly after publication, and are seldom required except by specialists; but this does not apply to observations on transformations and habits. Men who have sufficient patience, taste and opportunity to make

such observations of real value are few and far between, and their results, if sufficiently accurate, remain of permanent value, however much they may be enlarged by future observations. Hence Dr. Straton has rendered a real service to science by publishing an English edition of a work of this description, which was originally issued several years ago in a costly periodical, which would hardly be accessible, even to those who can read the original, except in metropolitan or university libraries. Dr. Adler's work has been carefully and accurately translated, including his descriptions of the insects observed, his table of alternating generations, and his observations on gall-formation, oviposition, &c.; and the coloured plates have been faithfully reproduced, though the original stones had been destroyed.

Dr. Straton has added an introduction, a chapter on *Cynips Kollari*, synoptical tables of galls, a classification of the *Cynipidæ*, and a bibliography and index. The introduction deals with the history of the study of galls, and the questions of parthenogenesis, alternating generations, &c., in arthropods, and more especially in the *Cynipidæ*, the changes in the ovum and sperm-cells being described in detail, with reference to the views of Weismann and others; and Dr. Straton's own remarks will be found interesting to embryologists in general. Incidental remarks on gall parasites, and other points unconnected with the main subject of the book, are occasionally introduced.

We have only to regret that it has not occurred to Dr. Straton to add the principal bibliographical references to descriptions, &c., of each species, and a note as to whether it is common or rare in England. These additions, which might have been placed between brackets, to distinguish them from Dr. Adler's work, would have added to the usefulness of the book, which may probably penetrate to country places where the information which it contains cannot be supplemented by reference to larger works; to which, however, it is very necessary to refer the student, that he may know what to consult if he wishes to pursue the subject further. This want is only imperfectly supplied by a bibliography, absolutely necessary as this is for advanced students, and also to indicate the extent of an author's reading, and the sources from whence he has derived his information.

W. F. K.

OUR BOOK SHELF.

Hygiene. By J. Lane Nottter, M.A., M.D., and R. H. Firth, F.R.C.S. Pp. 374. (London: Longmans, Green, and Co., 1894.)

Primer of Hygiene. By Ernest S. Reynolds, M.D. Pp. 158. (London: Macmillan and Co., 1894.)

THOUGH it is not expressly stated that Dr. Nottter's book "has been designed to meet the requirements of the syllabus of the Science and Art Department," the work is issued in the series of manuals published by Messrs. Longmans for students working up for South Kensington examinations, from which fact it may be inferred that such students will use it as a text-book. And as the author is an examiner in hygiene under the Department of Science and Art, his book doubtless contains the kind of knowledge that commands marks. Therefore teachers would do well to adopt it for their classes; and all writers of other text-books covering the same ground may regard