

OUR BOOK SHELF.

The Efficient Life. By Dr. Luther H. Gulick. Pp. xvi + 105. Illustrated. (London: W. Heinemann, 1907.) Price 3s. 6d. net.

"The Efficient Life" is a useful addition to our stock of knowledge of how to maintain health and vigour under the conditions of the present-day manner of living. Man has become in civilised countries mostly a dweller in cities during the past fifty years, and even the small portion of human beings who follow a country life is tinged by the customs and ways of the city.

Dr. Gulick applies himself to telling us how to counteract the deteriorating effects of (town) life, and he has executed his task well. It is an artificial life we lead, and the means of ameliorating its evils must necessarily be by artificial devices. Following the chase and tilling the soil were the natural avocations of man, but these natural means of physical development cannot be followed by the majority nowadays, and we have to be content with bodily exercises, breathing exercises, games, and such substitutes as we can devise to make up for nature's plan. That we are to succeed is another question, but if we are it is by following the ideals and methods Dr. Gulick has set before us. In "The Efficient Life" the author deals with almost every phase of our daily round of life. Food, drink, fatigue, sleep, exercise, baths, and general physiological states are dealt with in an attractive and masterly style which everyone can understand and no one can study without benefit.

Although by neither proverbial quotations nor by lectures can we gain health, yet, by dint of persistence in teaching the public by means of these, great good may come; and in time the thoughts they give rise to come to be, imperceptibly perhaps, part and parcel of our daily life. In this way a better perception of how to counteract the deteriorating effects of the modern manners of living may be attained, and with such efficient guides before us as the one given by Dr. Gulick, the end may be hoped to be attained, gradually, perhaps, yet none the less surely.

Flowers of the Field. By the Rev. C. A. Johns. Revised and edited by C. Elliott. Pp. xx+316. (London: G. Routledge and Sons, Ltd., 1907.) Price 7s. 6d. net.

Judging by the useful purpose it has served in the past, Johns's "Flowers of the Field" may almost be regarded as a "classic," and now it shares with the classics the fate of being produced in two versions. The opinion is often expressed that the editions bearing a date antecedent to 1899 were excellently adapted to the use of amateur collectors of flowers, but the publishers, considering it advisable to bring the book up to date, remodelled it at the same time. In the version now before us, Mr. Elliott claims that the old form is maintained except for revision, the augmentation of descriptions and the addition of new coloured plates. It is evident that the text has been subjected to considerable revision, especially in the matter of re-arranging the species of some of the larger genera, but there are other places where emendations were required, such as assigning Paris to the Trilliaceæ and Acorus to the Orontiaceæ, retaining the genera *Apargia* and *Fedia*, and the binomial *Lactuca alpina*. Where the present edition differs from, and falls short of the original work is in the size and number of the cuts, and the elimination of guiding headlines under the large genera. The coloured plates are good reproductions, but in many instances the drawings are scrappy and attenuated. An apparently unimportant and yet important change is the increase in size and

bulk of the volume. While recognising that Mr. Elliott has made changes for the better in the text, mistakes such as "aureole," "Hiberna," "paralias," are not infrequent. It is probable that the botanist who possesses an old edition of the book will be satisfied with his antique.

Cyclopedia of American Agriculture. Edited by L. H. Bailey. In four volumes. Vol. I.: Farms. Pp. 618 + xviii. (New York: The Macmillan Company; London: Macmillan and Co., Ltd., 1907.) Price 21s. net.

CYCLOPEDIAS seem to be coming into fashion again; Morton's "Cyclopedia of Agriculture" was one of the best books dealing with the old high farming of the middle of the last century, but it has found no successor, though we understand one is under preparation at the present time, and now we receive the first instalment of a monumental work from America. The book opens with a description of the various districts into which the continent may be divided, the cotton States, the corn-belt States, the arid States, &c., each section being contributed by a writer specially acquainted with the locality in question. Then follows an exceedingly interesting and valuable chapter on planning, stocking, and equipment of various types of farm, with a discussion of the capital required in each case. Other sections of this chapter deal with water supply, farm buildings, and machinery, this latter an article that would be of service to the English farmer. Further chapters treat of soils and fertilisers, and are of a more ordinary text-book type, as again is the last chapter dealing with the atmosphere. This, indeed, is too much a general essay on meteorology, and not at all of a character to draw the farmer to a more intelligent personal study of the weather and the forecasting which is within his own power.

The book is profusely illustrated with wood-cuts and process blocks, but while many of the photographs are of interest and are necessary to develop the text, a great many seem to have been inserted on the general encyclopedia principle of stick a picture in wherever you can, however diagrammatic and irrelevant it may be. Indeed, we are at times reminded of the delicious illustrations to "Wisdom while you wait." While we cannot recommend this cyclopedia to the English farmer, so different is the agriculture of the two countries, it should find its place on the shelves of the teacher, who can obtain from it a good many hints and suggestions for application on this side.

LETTERS TO THE EDITOR.

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Root Action and Bacteria.

THE experiments mentioned by Mr. F. Fletcher in NATURE of July 18 (p. 270) bear only on the functioning of roots once they have come into activity, not on their passage from the dormant to the active condition.

The probable analogy between the bursting of a dormant root-bud and the germination of a seed has led me to investigate the latter, and some of the results already obtained tally exactly with those obtained with trees. Seeds of *Lolium perenne*, sterilised by carbon disulphide, were planted in soil or sand which had been previously treated in various ways; the water-contents of the medium were the same in every case, and re-inoculation from the air was prevented. All the experiments were made in