

India are reproduced; the original seeds which were obtained in South America were sown at Kew, and the young plants sent thence to the East, but the precarious nature of the undertaking may be inferred from the fact that only about three per cent. of the seeds germinated. It is pleasant to read here and there spontaneous testimony to the value of the Royal Gardens at Kew and of the Indian Botanic Gardens.

Of controversial subjects the coffee leaf disease attracted most notice, considerable space being devoted to the reports and letters of Mr. Marshall Ward, and to the discussions arising therefrom. On p. 15 is a complacent suggestion that as crops cannot always be got from the branches of the coffee tree they might be got in another form from the roots by grinding up the cockchafer that there abound and selling the beetle powder, mixed with a little coffee, as real coffee, carrying on the entire manufacture in Ceylon to prevent any tampering on the part of dishonest middlemen in London! This pleasant notion is based on the assumption that "the British public will consume anything not absolutely dirt that is sufficiently adulterated to suit their palates."

The marked contrast between our home agriculture and that of the tropics is afforded in the very few and scanty references to live stock of any kind. English agriculturists are continually relying more and more on their flocks and herds and less on their corn crops for remunerative returns. There is, indeed, a solitary reference to Aden cattle, which are bred inland, and derive their name only from the port whence they are shipped. They have a high reputation as dairy stock, and have been used with success for crossing with some of the Indian herds on the Government farm at Saidapet, Madras. The only allusion to sheep-farming is to that of Australia.

Of course, in such a volume as the one before us, the matter is necessarily of a very heterogeneous character, but it is all concerned more or less directly either with agriculture itself, or with the economic and industrial aspects of the art as pursued in the hotter regions of the globe. As a record of the experience of tropical planters, of the difficulties and drawbacks of climate and of soil they have to contend with, of the good or indifferent results which have attended their efforts at acclimatisation, of the measures they have adopted to minimise the evil effects of insect or fungal attacks, and not less as an interesting historical summary of the progress of tropical agriculture, such a work as this carried out on the lines on which it has been begun cannot fail to possess a permanent value. Young men especially, who, having learnt something of the art of agriculture in the stern school of British farming, would fain try their skill under a tropical sun, will find collected here a large mass of useful information such as perhaps it would hardly be possible to obtain elsewhere.

W. FREAM

OUR BOOK SHELF

Vorlesungen über Pflanzen-physiologie. Von Julius Sachs. (Leipzig: Wilhelm Engelmann, 1882-83.)

THE fourth edition of Prof. Sachs's well-known text-book of botany being nearly exhausted, his friends and publishers urged him to set about the preparation of a

new edition; but the revision necessary for the publication of the fourth edition had been so irksome that nothing would induce the author to attempt the task again. Moreover his views on many important questions concerning the physiology of plants had changed: points once considered all-important had lost much of their importance, and expanded views acquired in the progress of time could not be made to fit into the framework of the old work.

Prof. Sachs for years has been a most successful teacher of botany. His text-book, large and technical though it was, has had a most successful career in German-speaking countries; translated into French by an eminent French botanist, and into English under the auspices of the Delegates of the Clarendon Press at Oxford, there needed no higher testimonies to its worth; still, instead of being content with the success of his volume, he now refuses to look at it, and utterly casts it from him. "As long as the artist is pleased with his work, he can add a touch here and there, or can even go in for greater changes; but this is not sufficient when the work has ceased to be the expression of his idea, and this is the attitude I stand in with regard to my text-book." This state of mind has resulted in the publication of the fine volume which we now notice; in size and general appearance it differs very little from the author's text-book, but under the style of lectures it appeals to a wider circle of readers than mere college students. Ardently anxious that the very important modern views on plant physiology should be known to all fairly educated people, these lectures, without sacrificing scientific accuracy, are written in a style as free as possible from the fatiguing use of long and purely technical words; they are purposely written too in a slightly dogmatic style, for it is clearly a lecturer's duty to put before his audience his own individual views upon even debated questions; his hearers have a perfect right to know what impression the general aggregate of scientific facts has made upon his mind, and while this would be out of place in a technical text-book of the science, it harmonises well with a course of lectures.

At the end of each lecture some—we could have wished for more—bibliographical notes are added for the benefit of those readers who wish to plunge deeper into the subject.

The publishers wished that a new revised edition of the systematic part of the text-book should have been "tagged" on to these lectures, but Prof. Sachs declared that he had neither time nor inclination for the task, which he commits to the care of Prof. Göebel, whose separate treatise on this part of the subject has lately made its appearance. We hope the day may not be far off when these charming lectures on plant physiology will be read in English by a large number of our cultivated public.

E. P. W.

Accented Five-figure Logarithms of Numbers from 1 to 99999 without Differences. Arranged and Accented by L. D'A. Jackson. (London: W. H. Allen, 1883.)

IN this work are comprised two sets of tables. The first set (pp. 1-221) is indicated by the above title-page; the second is entitled "Accented Five-figure Logarithms of Sines, Tangents, Cotangents, and Cosines of Angles from 0° to 90° to every Hundredth of a Degree" (pp. 224-270). There is, further, a one-page "Comparison of French and English Decimal Scientific Systems at 32° and 39° Fahrenheit in vacuo." The possessors of the same author's "Accented Four-figure Logarithms" are already acquainted with his principles of accentuation; to those who have not this work we need only say that *excess* and *defect* are clearly indicated in the printing, and that the degree of accuracy attainable in any piece of calculation is very rarely inferior to that reached by the longer calculations with the ordinary seven-figure tables. The logarithm of any number is seen at a glance, so that there