

Taking these two works together, they may be recommended to the expert botanist, as said, as books of reference in cases where he wishes rapidly to extend his definition of special terms.

OUR BOOK SHELF.

First Steps in the Calculus. By A. F. van der Heyden. Pp. vi+216. (London: Edward Arnold, 1906.) Price 3s.

THE modest claim expressed by the author in his preface, in the hope "that a step in the right direction has been taken towards producing a text-book suitable for an ordinary class in a Secondary Day School," is a claim which it would be impossible to deny. Experience has shown that geometrical illustrations, such as those on pp. 32-34, 45, and 96, are actually of great help to beginners, and we quite agree with the author that complicated theorems, such as Taylor's expansion (when applied to any but rational integral functions), should not be taken too early. The introduction (p. 93) of Lodge's treatment of the connection between integration and summation would be good if the step where the assumption is made were clearly pointed out. But there are many points which the author might have considered more fully before issuing the book. While the sine and cosine are properly differentiated, it is surprising to find such a clumsy method employed for the tangent. In order to differentiate a power the beginner is required to swallow the usual series of terms which vanish in the limit, instead of treating the power as a product.

In one or two places, in putting the chord of a curve equal to the corresponding arc, a line of explanation, or even a reference number, would have made things much clearer. The introduction of e as early as chapter vi. is no doubt in accordance with traditions, but it is a pity to defer the study of the calculus until the text-books in algebra referred to for a discussion of exponential series have been read. Rational integral functions, with applications to geometry and physics, afford plenty of material for the beginner. Lastly, the questions in examples ix. are very important indeed, but they give difficulty to many students who can hardly be described as beginners. The general conclusion is that the book would be more correctly described by a title which did not suggest something so *very* elementary. It is well suited for the class-room.

A Manual of Hydraulics. By R. Busquet. Translated by A. H. Peake. Pp. viii+312. (London: Edward Arnold, 1906.) Price 7s. 6d. net.

THIS book is a translation of a French treatise on hydraulics by Prof. Busquet, of the École industrielle de Lyon. It claims to be a text-book of applied hydraulics in which complete technical theories, and all useful calculations for the erection of hydraulic plant are presented. The translator appears to have done his work well, and to have given the meaning of the author in English terms and phrases. While the same arithmetical methods used in the original have been adhered to, the dimensions have been changed into ordinary British units, and the constants given in the formulæ have been modified to suit the change. The first three chapters deal with the elementary principles of the flow of water in open channels and pipes, and the last chapter with the flow over weirs. These subjects are dealt with in a simple and practical way. They do not, however, contain any information

that is not to be found in English text-books on the same subject.

The fourth chapter, which occupies about half the book, is devoted to the theory and description of hydraulic motors and engines used to transform the energy contained in a head of water into mechanical work. The use of waterfalls hitherto has been limited, because the application of the energy could only be used locally, but since electricity has come into use for the transmission of power to great distances, water has assumed a new and increased value as an economical source for the production of power, and the construction of hydraulic installations is increasing at a rapid rate. The use of water-power and the machinery required to adapt it to commercial use have received very little attention from the authors of modern English and American treatises on hydraulics.

The writer does not know of any book that deals with this subject in so practical a way as the one under notice. The several kinds of water-wheels in use are described and illustrated, and their theoretical and useful value demonstrated. Turbines, which are now being largely used for the distribution of water-power, are freely dealt with, and the merits of the different forms of this machine discussed. The book is calculated to be of service both to students of practical hydraulics and to those engaged in designing and carrying out works for the utilisation of water-power.

Guide to the Principal Families of Flowering Plants. (After Engler's System.) By J. Adams. Pp. iv+46. (Dublin: Sealy, Bryers and Walker, 1906.) Price 1s. net.

A CONVENIENT summary for determining the orders of flowering plants is a much required desideratum. The difficulties in compiling such a summary are very great, not the least being due to the impossibility of defining the limits in certain cases between allied orders. Mr. Adams has not attempted such details, preferring to leave out a large number of orders and to sacrifice difficult distinctions to brevity and general utility. With regard to the statement that the book is after Engler's system, this applies only to the names of the orders; the method of separation is purely artificial. Thus, in the Archichlamydeæ, parasites and insectivorous plants are first eliminated, then consideration of the vegetative organs provides the next stages in differentiation. So far as practical tests have been applied with a few orders, the tables have given quite satisfactory results.

The Extra Pharmacopœia of Martindale and Westcott. Revised by Dr. W. Harrison Martindale and W. Wynn Westcott. Twelfth edition. Pp. xxx+1045. (London: H. K. Lewis, 1906.) Price 10s. net.

THIS most useful volume has now reached its twelfth edition, and extends to more than a thousand pages. The pages are small ones, but packed with information, and the paper is thin, so the volume still remains one of handy size. The book is more than its name indicates; it not only includes remedial agents which have been introduced up till now into medical practice, but contains a great deal of information regarding recent research in disease. For instance, we find an excellent summary of the present state of the cancer question, the newest methods of bacteriological investigation, and a concise statement of modern views on toxins and antitoxins, serum therapy, opsonins, and the like. No busy practitioner can afford to do without such a convenient and trustworthy *vade mecum*.