

of substances which have a profound influence on physiological processes. It is the object of Dr. Dakin's monograph to describe these intermediate stages, and the reader may be satisfied that he will obtain the latest information on the subject. The book is to be highly recommended. It has a good index and a complete bibliography. The section on carbohydrates has been almost entirely rewritten since the previous edition. The description of oxidations which can proceed with the aid of water without free oxygen is of interest in itself, but such processes are of subsidiary importance in the higher animals, since these cannot exist without free oxygen.

With reference to certain views held as to the significance of catalase, the author concludes that there is no evidence that this enzyme has any connexion with oxidation; it may, however, be of use in decomposing excess of hydrogen peroxide, produced in the course of autoxidation, into inactive oxygen. The author points out that he is not concerned with the thermodynamics of the various reactions, nor with the catalytic mechanisms by which they are brought about, although he devotes a few pages to autoxidation and the peroxide systems, and to the important glutathione system of Hopkins. This omission is not to be regarded as a serious defect, because the object of the monograph is of a different kind. It reminds us, however, that there is an urgent need for a monograph dealing with the thermodynamics and general physical chemistry of the oxidation mechanisms of the living organism.

W. M. B.

*A Treatise on the Integral Calculus: with Applications, Examples, and Problems.* By J. Edwards. Vol. 2. Pp. xv+980. (London: Macmillan and Co. Ltd., 1922.) 50s. net.

In the second volume of his large treatise on the integral calculus, Mr. Edwards deals with multiple integrals, gamma functions, Dirichlet integrals, definite integrals in general, contour integration, elliptic functions, the calculus of variations, Fourier series and integrals, mean values and probability, and the harmonic analysis. The volume contains an immense collection of formulæ and questions extracted from examination papers and from the older literature of the subject, which may prove useful for reference to the sophisticated reader, but are more likely to repel than to inspire the students for whom the book appears to be intended.

Mr. Edwards is confessedly out of sympathy with modern tendencies in mathematical education, and thinks that students do not learn enough skill in manipulation. He prefers that they should devote their energies to acquiring proficiency in methods which are in many cases obsolete, rather than that they should obtain the same results by a systematic application of a few powerful general theorems. This tendency is particularly obvious in the chapters on definite integrals and on elliptic functions. In consequence, that residuum of problems for which the older methods are still the most suitable receives rather less than justice. His use of the methods of differentiation and integration under the integral sign, change of the order of integration, etc., is uncritical, and is not likely to conduce to clear thinking on these important subjects. His definition of a function of a complex variable is unsatisfactory,

and entirely misses the point in failing to emphasise the crucial importance of the existence of a unique derivative. In the bibliography of the chapters on the calculus of variations he refers the reader to a number of obsolete treatises, but ignores the important modern works of Hadamard and Kneser.

The teacher of to-day may use this work for reference himself, but he will scarcely wish his pupils to make their first acquaintance with the processes of analysis from its pages.

E. G. C. POOLE.

*Farm Buildings.* By W. A. Foster and Deane G. Carter. (Agricultural Engineering Series.) Pp. xv+377. (New York: J. Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1922.) 15s. net.

THE little work under notice is intended to guide the American farmer and agricultural student in designing and constructing farm buildings. It is stated that farm buildings have had their most rapid development in America in the years since 1910. Prior to that one could, and indeed still can, find the early buildings put up by the first settlers, made of logs, if trees were abundant, or of sods or boards if they were not, as happened on the prairies. Now, however, these rough constructions have largely disappeared, or remain only as stores of subsidiary importance, and their place is taken by large new and characteristic-looking structures of steel and concrete. The change is not only one of convenience: it represents a great saving on the farm. It is estimated that at least 100,000,000 dollars is lost annually to American farmers through depreciation of farm machinery due to lack of proper housing; that 200,000,000 dollars are lost annually owing to the consumption of badly stored food by rats; and further, that considerable increases in milk and meat production could be obtained if the animals were better housed.

The authors discuss the best types of barns, stables, cowsheds, pigstyes, etc., and give many illustrations showing how to adapt the design to the available situation or space, and what materials should be used in construction.

The English agricultural student will find the volume of particular interest for its sections on silos, pigstyes, and cattle-sheds, and for a fund of information showing how the American farmer, suffering from even greater shortage of labour than his British confrère, has nevertheless succeeded in putting up buildings of undoubted utility.

*British North Borneo: An Account of its History, Resources and Native Tribes.* By Owen Rutter. Pp. xvi+404+plates. (London, Bombay, and Sydney: Constable and Co., Ltd., 1922.) 21s. net.

ALTHOUGH Sir West Ridgeway, the chairman of the British North Borneo Company, contributes a preface to this volume, it is in no sense an official publication. This will be appreciated by those who are conversant with recent criticisms of the company's methods of administration. The author is both fair and unbiassed.

The story of North Borneo is not without stirring incident. In the last century its coast was infested with pirates, whose extermination was first undertaken seriously in 1845 at the instigation of Rajah Brooke of Sarawak. Their subjugation was completed only in 1879, the year the British North Borneo Company was