Book reviews

Advances in Carbohydrate Chemistry: Volume 22, edited by MELVILLE L. WOLFROM (Associate Editor R. STUART TIPSON), Academic Press, New York and London, 1967, xi+515 pages +Author, Subject, and Cumulative Indexes, $21.50.

The "Advances in Carbohydrate Chemistry" have established themselves as the most indispensable tool of the carbohydrate chemist, on the basis both of their critical discussions of carbohydrate reactions and of their extensive surveys of classes of carbohydrate compounds. Because of the excellence of past published volumes, the reader always expects reviews to be comprehensive, up to date, and authoritatively presented. In view of the limited number of carbohydrate chemists, the Editors should be congratulated on their generally judicious choice of contributors.

Volume 22 of this Series opens with a spirited description of the life of the late Fred Smith by R. Montgomery. This is followed by a far too short review of the acetolysis reaction presented by R. D. Guthrie and J. F. McCarthy. In view of the importance of this reaction for the elucidation of the structure of polysaccharides or for the preparation of rare sugars, it is regrettable that these authors did not consider writing a comprehensive chapter, although they observe that this 90-year-old reaction had never been reviewed in this Series. Thus, the authors overlooked the acetolysis of chitin, which resulted in the structure elucidation of this polysaccharide, and the acetolysis followed by saponification in the preparation, from their glycosides, of sugars readily forming a 1,6-anhydro ring, for example D-idose and D-talose. J. N. BeMiller, L. Goodman, and J. E. G. Barnett have provided comprehensive and authoritative reviews on the "Acid-catalyzed Hydrolysis of Glycosides", "Neighboring-group Participation in Sugars", and "Halogenated Carbohydrates", respectively. The first of these presents numerous and extensive Tables on rate constants and kinetic parameters, and the second covers a field in which the author has extensive experience. Barnett's article also contains numerous and valuable Tables which will save the reader many hours when locating data on halogenated derivatives. The Chapter by L. M. J. Verstraeten on "D-Fructose and its Derivatives" brings up to date a subject previously treated in Volume 7. This extensive and well-written review contains numerous Tables of D-fructose derivatives. It is unfortunate that neither this chapter, nor the chapter previously published in Volume 7, discusses the chemistry of the two most biologically important derivatives of D-fructose, namely, the 6-phosphate and the 1,6-diphosphate (Neuberg and Harden–Young esters). The various important biological roles suggested for the nitrogen-containing derivatives of D-fructose (pages 262, 272, and 279) have never been adequately demonstrated, unless the reader is willing to consider the nonenzymic browning of a dead tissue to be an "important biochemical process". The review by T. Ueda and J. J. Fox on "The

Mononucleotides" reports nearly 400 publications, and includes a Table listing all the mononucleotides and their various methods of synthesis. This chapter is an invaluable source of information for the scientist interested in the chemistry of nucleotides and nucleic acids, and, by itself, should be an inducement for the purchase of this volume. R. H. Marchessault and A. Sarko present an interesting discussion on the "X-ray Structure of Polysaccharides", with a critical appraisal of the early publications and of the limitations and promises of this method of structure elucidation. Volume 22 is completed by a review by C. T. Greenwood on "The Thermal Degradation of Starch", which will certainly be of great interest to starch technologists; as present knowledge of the mechanisms of this reaction is limited, this chapter seems rather premature.

Printing and editing of this volume are of the same high standards as those of the previous volumes.

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