

Book review

Advances in Carbohydrate Chemistry and Biochemistry: Volume 42, edited by R. STUART TIPSON AND DEREK HORTON, Academic Press, Orlando, FL, and London, U.K., 1984, xii + 394 pages + Author and Subject Indexes, \$65.00, £49.00.

This volume continues a remarkable series of annual publications that constitutes an essential reference collection for any scientists interested in the chemistry and biochemistry of carbohydrates. The series has been characterized by the judicious selection of topics and authors, meticulous editing, and excellent printing and production. These standards are maintained fully in the present volume.

A warm, sensitive, and comprehensive description of Dexter French's career has been prepared by one of his early students, John Pazur. This obituary not only presents a full and well-written account of French's multitudinous contributions to our knowledge about the chemistry and biochemistry of starch but also brings out the vigorous, zestful, and effervescent personality of the man. It will be much appreciated as a tribute to one of the most outstanding and well-known carbohydrate chemists of our time.

Stephen J. Angyal has written a superb chapter on the composition of reducing sugars in solution. The importance of ^1H - and ^{13}C -n.m.r. spectroscopy for studies of the tautomeric behavior of sugars is clearly delineated, and numerical data are assembled conveniently in six tables at the end of the chapter. There is excellent discussion of the relative stabilities of various forms, and of the effects of inorganic compounds, substituents, temperature, and solvent.

The synthesis of branched-chain sugars is dealt with in a chapter by Juji Yoshimura, who provides an extensive description of the various reactions used and their stereoselectivities. The chapter concludes with a brief but interesting account of biological activity of branched-sugar nucleosides.

Another synthesis topic is covered in a chapter, by H. Yamamoto and S. Inokawa, on sugar analogs having phosphorus in the hemiacetal ring. Here, the authors cover the syntheses, structural analyses, and biological activities of monosaccharides having phosphinediyl or phosphonyl groups in the hemiacetal ring.

The usefulness of ^{13}C -n.m.r. spectroscopy in the determination of carbohydrate structures is further advanced by a reference chapter on carbon-13 nuclear magnetic resonance data for oligosaccharides. K. Bock, C. Pedersen, and H. Pedersen have prepared this extension of an earlier chapter on monosaccharides (Vol. 41 of this series), and provided 22 tables of chemical-shift data for oligosaccharides, nicely organized by constituent monosaccharide(s), anomeric configuration, and linkage position.

A chapter on ketonucleosides by K. Antonakis covers the synthesis of these unstable compounds, their spectral properties, and their use as intermediates through stereospecific reduction and nucleophilic additions. The ketonucleosides have interesting antiviral activity, and also have been postulated as key intermediates in the biosynthesis of naturally occurring nucleosides that inhibit DNA synthesis.

Present knowledge about plant cell-walls is far from complete, despite the voluminous record of research on this topic. In the largest chapter in this volume (117 pages, 689 references), P. M. Dey and K. Brinson have written a well-organized review that evaluates the research in this complex field, and delineates the areas of controversy. The chapter includes a substantial section on fruit ripening that is highly informative and readable, even for those who are not plant physiologists.

The final chapter, on L-arabinosidases, by Akira Kaji, must surely be one of the shortest (10 pages, 44 references) ever published in this series. Nevertheless, this summary of sources, purification, and substrate specificities of this group of enzymes will be valuable for anyone who wants to use L-arabinosidases in structural or biosynthetic studies.

The carbohydrate community owes an enormous debt of gratitude to the editors for the maintenance of such high quality in the continuing publication of this series.

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Glucose Syrups: Science and Technology, edited by S. Z. DZIEDZIC AND M. W. KEARSLEY, Elsevier Applied Science Publishers, London, 1984, x + 276 pages, £35.00.

This useful monograph describes the background and present operations of the glucose syrup industry in a short Introduction and seven well-written chapters. These syrups, known as corn syrups in the United States of America, may be made from any starch. Contemporary materials need not contain more than one percent of free D-glucose, and need not be connected with corn. Thus, they comprise a wide variety of materials which have very different compositions and properties, and find such diverse applications as natural sweeteners for confectionery, preserves, soft drinks, and frozen desserts; fermentation media for the production of alcoholic beverages; and suspending, thickening, or humidifying agents in animal feedstuffs, pharmaceuticals, cosmetics, paper, and tobacco products.

The industry has grown, not merely by increased consumption of corn syrups, but by the introduction of new types of starches and starch hydrolyzates used as