

Carbohydrate Chemistry; edited by JOHN F. KENNEDY, Oxford Science Publications, Clarendon Press, Oxford, U.K. 1988, xi + 664 pages + Subject Index, £ 75.00.

Three text books on Carbohydrate Chemistry appeared in 1987–1988. The first two were introductory in nature, and designed for graduate and undergraduate students. The third, the present text, is more advanced, and is designed for researchers in the field. It is, however, less detailed than Pigman and Horton's *The Carbohydrates*, which, although somewhat old (18 years have passed since the first of this four-volume series appeared), remains the definitive work in the field.

The book under review is written in the same format as the *Specialist Periodical Reports on Carbohydrate Chemistry*, published by the Royal Society of Chemistry. This is not surprising, since many of its authors are also reporters for the RSC publication. The book is divided into three parts: I, *Chemical Identification and Properties of Carbohydrates*; II, *Synthesis of Carbohydrates*; and III, *Biotechnology of Polysaccharides*. Seven of the fifteen chapters are co-authored by the editor (J.F.K.), six by C. A. White, two by C. M. Sturgeon, and the remaining ones by specialists from the U.K., the U.S.A., Sweden, and New Zealand.

Part I starts with two chapters by Kennedy and White on *The classification of monosaccharides, oligosaccharides and polysaccharides*, and *Identification and structural analysis of monomeric and polymeric carbohydrates*. These are followed by a long chapter by A. K. Mallams on *Carbohydrate-containing antibiotics*, and two short chapters, on *Nucleosides*, and on *Glycolipids and gangliosides*, by J. A. Secrist and I. A. Morrison, respectively. The next four chapters deal with polysaccharides. Three, namely, *Plant algal and microbial polysaccharides*, *Glycosaminoglycans and proteoglycans*, and *Carbohydrate-directed enzymes* are authored by Kennedy and White, and one, by R. J. Sturgeon, discusses *Glycoproteins and glycogen*.

Part II starts with two excellent chapters on monosaccharides, one by N. Baggett on the *Synthesis of monosaccharides*, and the other, by R. J. Ferrier, on the *Synthesis and reactions of monosaccharide derivatives*. These are followed by two chapters on polymeric saccharides. The first, by the Swedish team of P. J. Garegg and A. A. Lindberg, is entitled *Synthesis of oligosaccharides for biological and medical applications*, and the second, by C. M. Sturgeon, is on *Synthesis of polysaccharide derivatives*.

Part III comprises only two chapters: *Biotechnology of polysaccharides*, by A. J. Griffiths and J. F. Kennedy, and *Biotechnology of bioactive derivatives of polysaccharides*, by C. A. White and the Editor.

The text is well edited and contains very few typographical errors. Nevertheless, some errors can be found in a number of formulas. It is hoped that, in future editions, these mistakes will be corrected, and that additions will be made in the text. For example, in the Chapter on structural analysis, a section is needed to

cover the use of n.m.r. and c.d. spectroscopy and mass spectrometry in structure elucidation. The book in its present form is, however, quite useful. It is informative, easy to read, and up to date. It fills a gap in the carbohydrate literature, and will therefore be a welcome addition. It constitutes a worthy achievement for which the authors are to be congratulated.

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Modern Carbohydrate Chemistry, by ROGER W. BINKLEY, Marcel Dekker, New York, 1988, xi + 322 pages + Subject Index, \$90.00 (North America), \$108.00 (elsewhere), \$49.75 (orders of five or more copies for classroom use only).

This very readable and enjoyable book seems to be correctly targeted towards undergraduate and graduate students who wish to expand their knowledge of carbohydrate chemistry beyond what is given in typical organic chemistry texts, and to those organic chemists and even carbohydrate chemists who need to review particular synthetic procedures or reaction mechanisms in this field. However, this is carbohydrate chemistry in the narrow sense of structure and organic chemical reactions; the reader should not expect to find much discussion, if any, of analytical, biochemical, or spectroscopic aspects. The general approach is definitely modern, and extensive use is made of conformational and mechanistic interpretations, especially for many of the more-recently developed reactions of carbohydrates.

Chapter 1, "Introduction", provides brief descriptions of the role of carbohydrates as natural products, and of carbohydrate chemistry, past, present, and future. Chapter 2, "Definitions", categorizes the monosaccharides, oligosaccharides, polysaccharides, and certain carbohydrate derivatives. Chapter 3, "Structural Representation", describes the use of wedge-slash formulas for cyclic and acyclic systems, and Fischer and Haworth projections, and also introduces the concept of α and β anomers. Chapter 4, "Stereochemical Designation: The D,L System" includes reasons for retaining this older system of nomenclature, and mentions a specific example where the *R, S* convention is less useful than the D,L system. Chapter 5, "Naming of Carbohydrates", leads the reader through some of the intricacies of carbohydrate nomenclature by means of a series of examples of structures and names of monosaccharide and oligosaccharide derivatives.