plaque, and provides comparisons of various sugars, reduced sugars, and starch as evaluated by this method. I. MacDonald's discussion of body weight response to nutritional sweeteners reveals small differences between caloric energy and metabolic energy in various mono- and di-saccharides. M. J. Stock and N. J. Rothwell point out that variation in "diet-induced thermogenesis" among individuals may contribute to the obesity problem. The metabolic basis of this concept is also discussed.

Papers of group III, on the manufacture, properties, and uses of carbohydrates are represented by W. M. Nicol in chapter 2, in which sucrose is surveyed from those standpoints. The use of sugars in confectionery is discussed by P. H. Wiggall, with specific examples of how the physical state of sugars in candies is controlled in order to attain desired texture, appearance, and stability. Chapter 4, by P. D. Fullbrook, describes the production, composition, properties, and uses of malt syrups made by extraction of malted grains, and how addition of enzymes improves manufacturing efficiency. Similar products made by enzymically catalyzed hydrolysis of starch are also discussed. T. J. Palmer presents an outline of the production, functional properties, and uses of D-glucose, corn syrups, and high-D-fructose corn-syrups. Lactose and lactitol are discussed by P. Linko, who points out that the low sweetness and unique crystallization characteristics of lactose make it especially good for certain food applications. The enhanced solubility and sweetness of lactitol also provide advantages for certain uses. In chapter 7, L. H. Hyvönen and P. Koivistoinen show that the taste properties and reactivity of D-fructose call for modified baking-procedures when this sugar is used. Advantages of using D-fructose in a variety of food products are also discussed.

In general, this book should be of value to practising food technologists and to students, because it brings together a lot of pertinent information and ideas in a convenient way. All the chapters are well written and interesting.

Mac Chemical Research and Development ROBERT V. MACALLISTER
1717 Harrison Drive
Clinton, IA 52732

Carbohydrate Chemistry (*A Specialist Periodical Report*): Volume 12, edited by J. F. KENNEDY AND N. R. WILLIAMS (Senior Reporters), The Royal Society of Chemistry, London, 1981, xv + 591 pages + Author Index, £70.00; $143.00.

Since the inception of the series in 1968, the *Specialist Periodical Reports on Carbohydrate Chemistry* have provided detailed summaries of the successive annual increments of literature in the field. Volume 12 reviews research reported in 1978. Comprised, like its predecessors, of two independently edited parts, this volume contains over 3400 literature citations. Although many articles are cited more than

once, it is clear that, over the designated period, the coverage of published material relating to carbohydrates is exhaustive.

Part I of the Report, subtitled *Mono-, Di-, and Tri-saccharides and Their Derivatives*, was compiled by B. E. Davison, R. J. Ferrier, and N. R. Williams. Dr. Williams acted as senior reporter, having replaced Prof. J. S. Brimacombe in this role. Following a brief introduction, and a chapter on the free sugars, there are 15 chapters dealing with various substituted and modified sugars, *e.g.*, glycosides, acetals, amino sugars, and branched-chain sugars. Chapters on antibiotics and nucleosides follow, and the section is rounded out by chapters on n.m.r. spectroscopy and conformational features, other physical methods, separatory and analytical methods, and the synthesis of optically active, non-carbohydrate compounds.

This organization, standard for the series, is overall logical and convenient. However, it may be hoped that changes will be considered as emphases change within the field. For example, the continued use of the heading "Glycosides" to embrace work on the synthesis of oligosaccharides obscures the growing importance of the latter topic. Also, one wonders why some of the literature on this topic is reviewed in Part I, and some in Part II.

The generous use of well drawn formula charts in Part I makes this section relatively easy to read, despite the high density of information contained therein.

Part II, subtitled *Macromolecules*, and compiled by J. F. Kennedy, I. M. Morrison, C. M. Sturgeon, and R. J. Sturgeon, makes up over 60% of the Report. In addition to chapters on plant and algal polysaccharides, microbial polysaccharides, glycoproteins, and glycolipids, there are major chapters on enzymes and on the chemical synthesis and modification of oligosaccharides, polysaccharides, glycoproteins, etc. The length of this part reflects recent, vigorous research activity in areas of carbohydrate chemistry that overlap with biochemistry.

The chapters of Part II are fully subdivided, making it easy to locate information on a specific topic. A noteworthy feature of this Part is the use of extensive tables to summarize work on the preparation of affinity media and immobilized enzymes by the coupling of proteins and other ligands to agarose.

In perusing this Report, the reader becomes keenly aware of the enormous effort that must have gone into preparing it. The reporters' work is surely a labor of love, and the reviewer is therefore reluctant to offer criticism. It must, however, be noted that typographical and minor technical errors occur frequently. Many of these are trivial, but some may mislead unwary readers. Examples are: ". . . acetonation of D-xylitol, . . ." on p. 6, and the omission of C-6 from formula 2 on p. 112.

Although preparation of the *Specialist Periodical Reports* is admirably thorough, their usefulness is circumscribed by the long delay in their publication—well over two years after the close of the period covered. Thus, they are not a current awareness tool, but, rather, will serve readers needing complete surveys of fairly recent developments in areas with which they have not maintained familiarity. On this basis, the

present volume of the *Reports* should be available in any center where there is an active interest in carbohydrate chemistry or biochemistry.

Department of Biochemistry LAURENS ANDERSON
College of Agricultural and Life Sciences
University of Wisconsin, Madison, WI 53706

Wood Chemistry: Fundamentals and Applications, by EERO SJÖSTRÖM, Academic Press, New York, 1981, xi + 223 pages, $22.00.

Wood chemistry has been a multi-disciplinary subject of long-standing interest, as it encompasses the intricate structure of plant cell-walls, and the fundamental properties of a versatile, structural material that forms the basis of the pulp and paper industries. This interest has recently been enhanced by renewed efforts in applications of wood as a renewable, raw material for conversion into different forms of fuel, chemical compounds, and even feed. The broad aspects of this subject cover not only the chemistry of the cellular, natural products but also the border lines of biology and engineering. In this book, the author starts with a discussion of the cellular structure of wood, followed by a general introduction to carbohydrate chemistry, before discussing the chemistry of wood polysaccharides, lignin, extractives, and bark. He then deals with the chemistry of pulping, bleaching, cellulose derivatives, and chemical compounds from wood.

The book is based on an earlier volume in Finnish by the same author. It is written in, or translated into, good and free-flowing English, except for a few unusual words and usages, such as "emulgator" for emulsifier, and "two-acid" for dibasic. The subject is covered along the traditional lines, with emphasis on pulp and paper chemistry, and the contributions, which are indeed impressive, of Scandinavian scholars to this subject. Unfortunately, there is very little discussion of fundamental approaches for utilization of wood as a source of fuel and chemicals, or of the underlying principles of combustion and conversion which are of considerable current interest. The chemical treatments of wood for preservation, fire protection, or dimensional stability (which is of particular interest to wood technologists) are completely omitted.

The materials presented are generally sound and accurate, scientifically, except for minor errors in the formulas (resonance structures) and mix-ups in some carbohydrate chemistry. The Haworth perspective formulas, which were devised to get away from the problems of Fischer projection formulas, are portrayed as having the ring structure perpendicular to the plane of the paper, and substituents parallel to this plane; and yet the formulas are drawn correctly, being tilted, with the side towards the viewer darker. The classification of epoxides is expanded to include three- to six-membered anhydro rings. The chemistry of wood components is presented