

Book reviews

Advances in Carbohydrate Chemistry and Biochemistry: Volume 41, edited by R. STUART TIPSON AND DEREK HORTON, Academic Press, New York and London, 1983, x + 374 pages + Author and Subject Indexes, \$56.00

Scientists concerned with the chemistry and biochemistry of carbohydrates have been admirably served for close to the past forty years by this series of volumes on "Advances" in the field. They will not be disappointed with the current volume, which continues to provide the type of authoritative, comprehensive coverage that we have, perhaps, come to take for granted.

A warm tribute to the memory of J. K. N. Jones has been contributed by W. A. Szarek, M. Stacey, and G. W. Hay, who were among his closest associates at various stages of his career. One can readily appreciate from this obituary not only the splendid character of the man, but also the important influence he had on developments in several areas of the chemistry and biochemistry of carbohydrates. It will evoke fond memories for numerous former students, colleagues, and fellow scientists worldwide, all of whom will recall the remarkable respect and affection he engendered.

Very appropriately (although, apparently, by chance) two of the articles in Volume 41 are authored by graduates of "Ken" Jones' laboratory — P. A. J. Gorin and H. J. Jennings.

The latter author deals with capsular polysaccharides, and the relationship between their structures and the roles they play in the immune response to bacterial infection. Attention is focused principally on polysaccharides used, or of potential use, as human vaccines, and a lucid description is given of key concepts governing immunology and bacterial virulence for those of us who are non-specialists in that field.

In the article by E. Barreto-Bergter and P. A. J. Gorin, the structures of polysaccharides from fungi and lichens are delineated, based on the literature from 1967–1980. It nicely supplements reviews on microbial polysaccharides in earlier volumes of "Advances". Ten different categories of polymer, representing a host of individual types, are included. As the authors make abundantly clear from the wealth of structural detail amassed during this relatively brief period, the chemical, biological, and spectroscopic methods currently employed for the characterization of highly complex polysaccharides are impressively effective.

Both this article, and that of Jennings, serve to emphasize the increasing prominence of ^{13}C -n.m.r. spectroscopy in the determination of polysaccharide structure. An essential adjunct to these spectroscopic applications is the availability

of appropriate ^{13}C -n.m.r. parameters for the sugars that constitute the polymers. Although there is now an extensive literature on the subject, K. Bock and C. Pedersen have accomplished the onerous task of evaluating and collating the data from numerous sources, as well as filling in some gaps. Their presentation of chemical-shift data in this volume, together with a concise treatment of the techniques and methodology of ^{13}C -n.m.r. spectroscopy, constitutes an important source of reference material. (Nevertheless, one may hope that ongoing advances in instrumentation, and also in such techniques as two-dimensional n.m.r. spectroscopy, will obviate the need for others to repeat such laborious undertakings in the future, because more-direct means for interpreting spectra should then become feasible.)

The value of n.m.r. spectroscopy in structural investigations on large, complex carbohydrates is, of course, by no means restricted to observations on ^{13}C nuclei. With the introduction of high-field spectrometers in recent years, the analytical power of ^1H -n.m.r. spectroscopy has been greatly enhanced. An outstanding illustration of this fact is found in an article, by J. F. G. Vliegthart, L. Dorland, and H. van Halbeek, on carbohydrates from glycoproteins. Spectra of some seventy *N*-glycosylally linked oligosaccharides comprising the *N*-acetylactosamine and oligomannose types of structure, most of them recorded at the lofty level of 500 MHz, have been analyzed in remarkable detail. Comprising 165 pages in all, this is surely one of the more extensive articles to appear in the "Advances" series.

In the sixth article, D. P. Delmer offers a timely appraisal of the mode of biosynthesis of cellulose. It makes fascinating reading because, experimentally, the problem is so complex and challenging that controversy surrounds virtually all aspects of the synthetic mechanism, and the author nicely rationalizes why, despite the relatively large body of research on the subject, such controversy exists.

In common with earlier volumes, the standard of editing is exemplary, and the quality of the Figures and formulas, as well as the general layout, is excellent throughout.

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Dietary Fibre: edited by GORDON G. BIRCH AND KEN J. PARKER, Applied Science Publishers, London and New York, 1983, xi + 298 pages + Subject Index, £ 28.00.

This book has 16 contributions presented to the 13th Annual International Industry-University Co-operation Symposium held at the National College of Food Technology (University of Reading), Weybridge, Surrey, 1982. The authors