

Book reviews

Carbohydrate Chemistry, Volume 10, J. S. BRIMACOMBE (Senior Reporter), A Specialist Periodical Report of the Chemical Society, London, 1978, xiii + 524 pages, £32.

At the end of 1968, the *Specialist Periodical Reports — Carbohydrate Chemistry* was one of the first two titles in this series to be published by the Chemical Society, London. With the present report, the number of volumes published has reached double figures; and the success of each volume unreservedly shows that the decision by the Chemical Society to launch this series was a very wise one. Several attempts have been made by various organisations to provide fast and comprehensive coverage of the chemical literature, which is increasing at an enormous rate. Some, for example, *CA Selects*, serve a real need in this area, but no other publication achieves its aim, the coverage of the progress in major areas of chemical research, in such a lively form as does *Specialist Periodical Reports*, of which *Carbohydrate Chemistry* is a prime example. This, coupled with the fact that the coverage is systematic and comprehensive, rather than selective, makes each volume an indispensable book on the library shelf of the active, specialist chemist.

Volume 10 of *Carbohydrate Chemistry*, like its predecessors, is divided into two parts. Part I covers mono-, di-, and tri-saccharides and their derivatives, and is further sub-divided into 27 chapters, mainly on the basis of classes of compounds, but providing also chapters on methods. The chapters deal with free sugars, glycosides, ethers and anhydro sugars, acetals, esters, halogenated sugars, amino sugars, hydrazones and osazones, miscellaneous nitrogen-containing compounds, thio and seleno sugars, derivatives with sulphur in the sugar ring, deoxy sugars, unsaturated derivatives, branched-chain sugars, aldehydo sugars, aldoses, dialdoses, and diuloses, sugar acids and lactones, inorganic derivatives, cyclitols, antibiotics, nucleosides (the largest chapter of Part I, 165 references), alditols, oxidation, physical methods such as n.m.r., i.r., and u.v. spectroscopy, mass spectrometry, X-ray crystallography, ultrasonic relaxation measurements, and polarimetry, separatory and analytical methods, and the synthesis of optically active, non-carbohydrate compounds from carbohydrates as sources of chirality.

Part II covers the progress in the field of macromolecules and is subdivided into 7 chapters reporting on general methods, plant and algal polysaccharides, microbial polysaccharides, glycoproteins, glycopeptides, animal polysaccharides, enzymes, glycolipids and gangliosides, and the chemical synthesis and modification of oligosaccharides, polysaccharides, glycoproteins, enzymes, and glycolipids. The largest chapter is that on glycoproteins, glycopeptides, and animal polysaccharides (620 references); it is also one of the most condensed chapters (an average of 11 references per page).

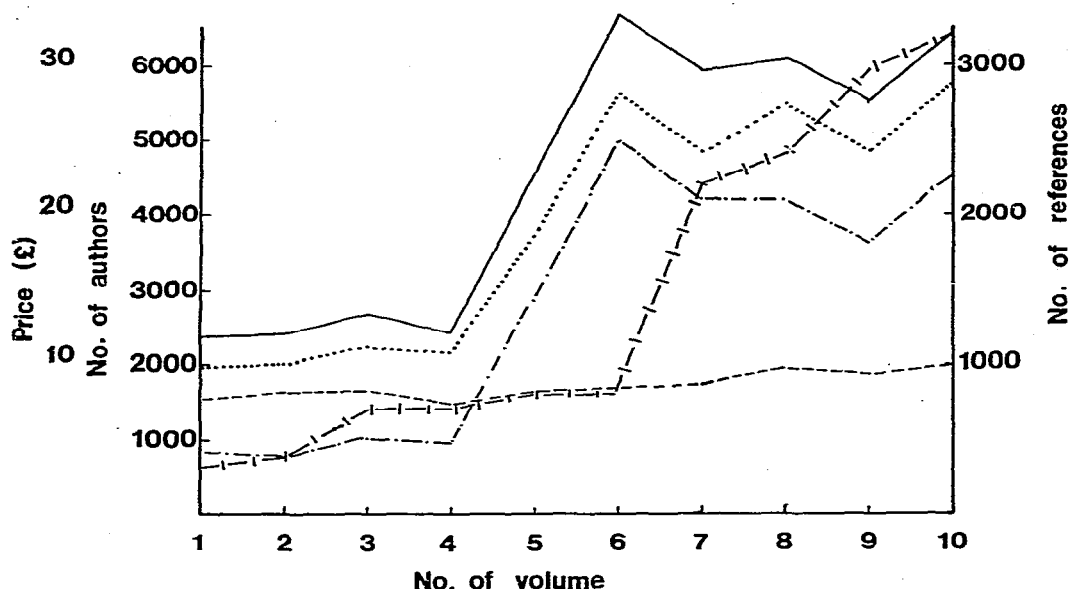


Fig. 1. Ten years of "Specialist Periodical Reports — Carbohydrate Chemistry": ———, number of references in Part I (Mono-, Di-, and Tri-saccharides); ———, number of references in Part II (Macromolecules); ———, total number of references reported; ·····, number of authors quoted; —|—|—|—|, price at time of publication.

The volume provides a report on 3196 papers published in 1977. The publishers and editors of *Carbohydrate Research* should find satisfaction in the fact that just over 10% of these papers were published in their journal.

The occasion of the publication of the tenth *Report* prompted me to trace its development (Fig. 1). Whereas the number of references covered in Part I (mono-, di- and tri-saccharides) has increased over the period of 10 years by a factor of only about 1.3 (from 765 to 975), the corresponding figure for Part II (macromolecules) is about 5.3 (from 421 to 2221). The precise reasons for the difference in the rate of accumulation of knowledge in the two areas is not easily ascertained. Financial support for research now available might have shifted activities into the fields of medicine, food, and ecology. However, the figures may not be a true reflection of the total research efforts made. Undoubtedly, the achievements in the field of small molecules, particularly the developments of new stereospecific and regiospecific syntheses and degradations, as well as advances in the various physical, separatory, and analytical methods, have enabled many authors to tackle the more complex problems of macromolecules.

Although the price of the *Report* has increased by a factor of 10, the reporters must be pleased that, over the ten years, the price per reference which they process has increased by a factor of only 3.8.

Carbohydrate Chemistry, Volume 10, as all its predecessors, is testimony to the industry of the team of reporters, first led by R. D. Guthrie (Volumes 1–3) and

subsequently by J. S. Brimacombe. They should be forgiven if the odd paper is omitted, or if they sometimes attach a different significance to a paper from that intended by the author. It would be idle to comment on the style of reporting, the divisions made within each volume, *etc.* The reporters themselves have often invited suggestions for the improvements of these *Reports*. It must be plain to everyone that the reporters' task is a Herculean one, which they have accomplished with enthusiasm whilst maintaining a high standard.

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The Glycoconjugates, Volume II, edited by MARTIN I. HOROWITZ AND WARD PIGMAN, Academic Press, New York and London, 1978, xvi + 464 pages, \$39.50.

This two-volume treatise on the glycoconjugates (also known as complex carbohydrates) is welcome literature for both the novice and the expert. Whereas Volume I dealt with chemical aspects of the glycoconjugates, this volume treats the more biological aspects of these substances. It was a wise decision to include glycoproteins, glycolipids, and proteoglycans together in these volumes, because these three groups of substances are closely related, and their closeness seems to grow with time.

The lengths of the articles in this volume range from relatively short (~20 pages) to reasonably long (nearly 100 pages). A regrettable exception (4 pages) is a chapter on "Signals for Degradation of Glycoproteins" by Ashwell and Morell; this is one of the most rapidly developing areas of glycoproteins, and a more expanded coverage would have been well justified.

Most of the chapters are of excellent quality, and expertly written, although many manifest a cavalier disregard for the Rules of Carbohydrate Nomenclature. Especially outstanding chapters are "Structure and Biosynthesis of Connective Tissue Proteoglycans" (by Rodén and Horowitz), "Glycoprotein Biosynthesis" (by Schachter), and "Glycolipid Biosynthesis" and "Glycolipid Catabolism" (both by Dawson). The chapter on "Surface Membranes" (by Glick and Flowers) succinctly presents views on cell-surface membranes from the standpoint of glycoconjugates.

Although both volumes of the treatise clearly reflect the considerable advances that have been made during the years since the publication of such classics as *The Glycoproteins* [2nd edition, Gottschalk (Ed.), 1972] and *The Carbohydrates* [Vols. IA, IIA, and IIB; Pigman and Horton (Eds.), 1970-1972], the materials contained in Vol. II are more refreshing than those in the first volume. The Editors stated that only one volume was originally planned, but that it had to be expanded to two volumes. Considering that these two volumes cover only mammalian glycoconjugates, and assuming that the high rate of progress in these areas will continue, it may not be