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Book review

Advances in Carbohydrate Chemistry and Biochemistry, Edited by Derek Horton, Academic Press, Inc., New York, 1994, Vol. 50, pp xxi + 390, ISBN 0-12-007250-5, $95.00

This series of "Advances" has now reached its 50th volume, the first being published in 1945. The first chapter in that volume dealt with the Fischer cyanohydrin synthesis and the first chapter in the current volume also celebrates the work of Fischer with a review from R. Lemieux and U. Spohr on how Emil Fischer was led to the lock and key concept (*Schlüssel–Schloss-Princip*) for enzyme specificity. Now, 100 years after this metaphor was first used, it still forms the basis of much of the theory of molecular recognition as we know it today. E.F. Hounsell has dealt with the physicochemical analyses of oligosaccharide determinants of glycoproteins. Unequivocal characterization of many oligosaccharide structures, using physicochemical techniques has provided data for computer-graphic molecular models in order to visualise those sugar sequences important in molecular recognition.

Anomeric-oxygen activation for glycoside synthesis has been extensively reviewed by R.R. Schmidt and W. Kinzy. A search for new methods for glycoside synthesis has been stimulated in recent years because of the understanding of the biological significance of the carbohydrate portion of many glycoconjugates. The authors deal in depth with the *O*-glycosyl trichloroacetimidates, which have generally been found to be the most acceptable glycosyl donors.

Synthetic reactions of aldonolactones are surveyed by R.M. de Lederkremer and O. Varela. The main reactions (acetalation, acylation, chain elongation, ester formation, reduction and β-elimination) are covered in depth. The synthesis of deoxy sugars, the glycosylation of aldonolactones and the use of aldonolactones as chiral precursors for the synthesis of natural products are also covered.

A fascinating account of recent developments in the molecular structure of Lipid A, the endotoxic center of bacterial lipopolysaccharides, has been assembled by U. Zähringer, B. Linder and E.T. Rietschel. The primary structure of lipid A of different Gram-negative bacteria is described, together with some of its characteristic biological properties.

Developments in the synthesis of glycopeptides containing glycosyl L-asparagine, L-serine and L-threonine have been reviewed by H.G. Garg, K. von dem Bruch and H. Kunz. The authors have concentrated on the description of several new amino- and carboxyl-protecting groups and new methodologies which have been developed since an earlier review in 1985.

Finally, mention must be made of an excellent obituary to the legendary R.S. Tipson

which was contributed by D. Horton. Tipson's first involvement with *Advances in Carbohydrate Chemistry* was as a contributor to Volume 8, then as an assistant editor to M.L. Wolfrom starting with Volume 9 and continuing through to Volume 48.

The editors' preface to Volume 1 intended the series to provide a means for individual contributors to furnish critical integrating reviews. It is clear that this requirement is still being maintained.

R.J. Sturgeon
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