

Book review

Stereochemistry of Carbohydrates by J F STODDART (University of Sheffield, England), Wiley-Interscience, New York, 1971, xi + 249 pages, £7 00

The material in this book is presented in an up-to-date and refreshing manner, highlighting new approaches to the presentation of stereochemical and conformational principles of carbohydrates and areas for future development. In outlining the configurational isomerism amongst the carbohydrates, the traditional approach is discarded, correctly in my view, and the material is put forward in terms of the symmetrical properties of constitutional, symmetrical isomers, using point-group theory. Principles and terms are clearly enunciated in the first two chapters of the book, and it is here that the reader will probably encounter difficulty in assimilating a variety of terms that, in general, will be unfamiliar. Nevertheless, this terminology has found wide acceptance in chemistry and will help to bridge the gulf that separates the carbohydrate chemist from his colleagues in other areas of chemistry. The new generation of chemists will certainly benefit from this approach.

Subsequent chapters deal competently with the conformational behaviour of carbohydrates, including pyranoid rings, furanoid rings, acyclic derivatives, septanoid rings, oligosaccharides and polysaccharides, and then the physical methods that are commonly used in studying the stereochemistry of carbohydrates, notably nmr spectroscopy and polarimetry. The final chapter discusses the important role that isomerism plays in carbohydrate chemistry, by reference to the equilibrium of reducing sugars in solution, the formation and interconversion of glycosides, the formation of lactones, and the important reactions involved in the formation of cyclic acetal derivatives. Key references are given at the end of each chapter, and in conclusion there is both an author and subject index. The text is illustrated by the liberal use of good diagrams, formulae, and tables. The author and publishers are to be commended on the high standard of presentation.

In many ways, the carbohydrates are unique amongst organic compounds, and their stereochemistry is no exception, in that constitutional, configurational, and conformational isomerism are usually superimposed upon each other, adding to their fascination and interest. This book will lead to a greater appreciation of the important contributions that carbohydrate chemists have made to current stereochemical theory.

I recommend the book unreservedly to all carbohydrate chemists, and to chemists interested in stereochemical topics. Students taking courses in carbohydrate chemistry will want to refer to this book, and consequently it should be available in all scientific libraries.

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