may limit the circulation of this text to library collections and faculty offices.

Thomas J. Caggiano

Wyeth-Ayerst Research
CN 8000
Princeton, New Jersey 08543

JM9800548

S0022-2623(98)00054-5

Monosaccharide Sugars. By Zoltán Györgydeák and István F. Pelyvás. Academic Press, San Diego, CA. 1998. xviii-508 pp. 15.5 × 23.5 cm. ISBN 0-12-550360-1. $89.95.

This book is a compendium of the literature on methods for C−C bond formation, degradation, and epimerization of monosaccharides. It contains approximately 1700 references and is divided into three parts. The first and largest part, 370 pages, describes the ascending synthesis of monosaccharides by long-known methods, such as the formose or cyanohydrin reactions, as well as more recent methodologies using nitroalkanes, malonesters, phosphoranes, and organometallics. The second part, 95 pages, covers the degradation of monosaccharides and related acids to smaller chiral synthons. The final part, 20 pages, deals with sugar epimerization.

Each chapter is illustrated by relevant examples taken from fields as diverse as *C*-saccharide, antibiotic, nucleoside, and isotopically labeled saccharide synthesis. Despite these useful examples, little or no mechanistic information is given on the reactions presented. Collections of known sugar derivatives are summarized in many tables, and the influence of experimental conditions on the reaction products is briefly discussed. Suitable experimental protocols are given for each type of transformation. While this is helpful, particularly for older chemistry published in difficult to obtain or foreign language journals, it is likely that most chemists would want to return to the original literature before attempting a synthesis.

Although the authors use systematic carbohydrate nomenclature, recently established by IUPAC, it would have been helpful for the authors to have included a primer on carbohydrate nomenclature for the nonexpert. There is no author or compound index, limiting the value of the compendium as a fast reference. The subject index is very simple and generally useful to find syntheses of a given type of sugar or examples of particular reactions. While some references are quite old (1860s), more recent, important references (1995−1997) are discussed in a brief addendum.

The utility of this book is as a general overview and compendium, comparing useful strategies for synthesis of higher-carbon sugars and related chiral synthons from simple carbohydrate derivatives. This book has little value for the carbohydrate chemist, focused primarily on oligosaccharide targets of biological and pharmaceutical importance, as constituent monosaccharides must be designed and protected with a specific target in mind. This book is somewhat more useful for the medicinal and synthetic chemists wishing to investigate the use of monosaccharides as chiral building blocks to prepare more complex targets.

Hélène G. Bazin and Robert J. Linhardt

Division of Medicinal and Natural Products Chemistry
College of Pharmacy
University of Iowa
Iowa City, Iowa 52242

JM980096W

S0022-2623(98)00096-X

Reviews in Computational Chemistry, Volume 11. Edited by Kenney B. Lipkowitz and Donald B. Boyd. Wiley-VCH, Inc., New York, NY. 1997. xxiv + 431 pp. 16 x 24 cm. ISBN 0-471-19248-1. $120.00.

The book is number 11 in the series started in the mid-1980s to cover recent advances in the burgeoning field of computational chemistry. In the decade since the first Gordon Conference on computational chemistry, we have witnessed amazing advances in the field. It is fair to say that computational chemistry as an element of the discovery process for new materials and drugs has become mainstream. With some refinements, and more powerful machines and algorithms, we use essentially the same force fields as a decade ago and the same fundamental theory in ab initio calculations. The bigger strides in recent years are in the application of computational methods and the linkage of thermodynamic theory to quantities like receptor structure, ligand structure, and molecular electronic properties.

The preface of the book starts with a philosophical note by explaining that the theme of the volume is "computer aided ligand design" and "modeling of biomolecules". It is further explained that "ligand design", not "drug design", is the proper nuance for what is being described, because the design of a drug encompasses a large number of downstream scientific analyses and disciplines beyond the strictly computational. The editors assert: "One of the best ways for the computational chemist to influence the drug discovery process is to supply essential information and good ideas, which, when implemented help drive a pharmaceutical project toward a successful conclusion." Thus the thrust of the book is how to optimize the role of computational chemistry in drug discovery.

Briefly, Chapters 1 and 2 discuss the multitude of new methods which have been developed for de novo design of ligands. Chapters 3 and 4 survey and discuss current advances in 3-D QSAR methods. In Chapter 5, the emphasis is on using computational methods to calculate partition coefficients, which are important in classical drug design work. Chapter 6 details recent work in the treatment of counterions in the modeling and simulation of DNA structures. Finally, the volume is concluded with an appendix entitled "Compendium of Software and Internet Tools for Computational Chemistry."

The book appropriately begins with two complementary chapters on de novo design of ligands. The first chapter provides a general introduction. The author systematically reviews and explains each of six major classes of methods: fragment location, site point con-