

# Book Reviews

**Second Supplements to the Second Edition of Rodd's Chemistry of Carbon Compounds, Volume IV: Heterocyclic Compounds, Part C/D.** By M. Sainsbury (The University of Bath, Bath, UK). Elsevier Science, Inc., New York, NY. 1998. xiv + 281 pp. 15 × 22.5 cm. \$187.00. ISBN 0-444-82870-2.

The second supplement to Part C and Part D, Vol. IV, of *Rodd's Chemistry of Carbon Compounds* covers five-membered rings with two or more nitrogen, oxygen, or sulfur substituents. The exceptions are rings containing two nitrogens, pyrazoles, imidazoles, indazoles, and benzimidazoles, for which the expected chapter was not submitted. Thus the coverage includes isoxazoles, oxazoles, isothiazoles, thiazoles, 1,2,3- and 1,2,4-triazoles, oxadiazole, thiadiazoles, and tetrazoles. The chapter on four heteroatoms also mentions oxatriazoles, thiatrizoles, oxathiadiazoles, and dithiadiazoles. There is brief mention of selenium- and phosphorus-containing compounds in some chapters. The material is subdivided into four chapters: S. M. Fortt reviews the two-heteroatom rings; S. B. Bedford authored the chapter on triazoles, and M. Sainsbury the chapter on oxadiazoles and thiadiazoles; and J. H. Little provided the material on four-heteroatom rings. For each system, synthesis and reactions are covered in separate sections. References are given in the text, including first authors and the literature citation. There is an index consisting of specific chemical substance citations but with a few entries for synthetic methodology or pharmaceutical names. Perusal of any of these chapters gives a selection of reports of recent synthetic methods and novel reactions. Each of the chapters is presented as an update of the first supplement, and most of the references are to work reported in the early to mid-1990s. Other reviews are cited so the chapters serve as effective entry point to the review literature. The chapters generally assume prior knowledge of the chemistry of the ring systems so a new worker would probably want to refer back to more fundamental treatments.

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NP990751I

10.1021/np990751i

**Studies in Plant Science, 6: Advances in Plant Glycosides, Chemistry and Biology.** Edited by C.-R. Yang (Chinese Academy of Sciences, Kunming) and O. Tanaka (Suzugamine Women's College, Hiroshima). Elsevier Science Publishers, Amsterdam, The Netherlands. 1999. xiii + 428 pp. 16 × 24 cm. \$200.50. ISBN 0-444-50180-0.

This treatise is a compilation of the Proceedings of the International Symposium on Plant Glycosides held in August, 1997, in Kunming, People's Republic of China. The editors and publishers are to be sincerely congratulated

for assembling this compilation and making it available in such a timely manner.

There are fifty-four chapters in this volume, followed by a list of the contributors with addresses and an index of plant and organism names. The reproductions of the manuscripts are very clear, and the depth of coverage is excellent. In part, this depth results from the presentation of the plenary lectures, oral communications, and poster displays from the meeting, thereby permitting a greater diversity of coverage.

Although the discussions of the structure elucidation, chemistry and biology of steroid and triterpene glycosides, including those of ginseng, dominate (25 chapters), many other types of glycoside are also mentioned, including iridoid, sesquiterpene, diterpene, flavonoid, xanthone, stilbene, and phenylpropanoid types. The breadth of studies includes detection and analysis, isolation and structure elucidation, synthesis, formation in tissue culture, and biology. From the analysis of the 1200-year-old materials in the Imperial Store House, Shosoin, to the LC/NMR of the iridoids of gentian, to the synthesis of steroid saponins and the biological evaluation of the saponins of medicinal foodstuffs, natural product scientists will find that this potpourri contains much of interest from these excellent presentations. The liberal inclusion of spectra, charts, and picto- and photographic representations adds to the appeal. On the other hand, the volume would have benefitted from some more careful checking of the spelling and linguistic style (even the "Content" section has numerous typographical errors), although this rarely gets in the way of the quality of the science.

In spite of a very substantial price, this volume is certainly an important acquisition for any chemistry library and will be of special interest for anyone working with steroid and triterpene saponins, particularly with regard to their characterization and biological effects.

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NP9907533

10.1021/np9907533

**The Atlas of Spectral Data of Sesquiterpene Hydrocarbons.** By D. Joulain (Robertet S. A.) and W. A. König (University of Hamburg). E. B. Verlag, Hamburg. 1998. 661 pp. 21 × 29.5 cm. \$700.0. ISBN 3-930826-48-8.

This text is an excellent starting reference for scientists and students involved in sesquiterpenoid analysis, as intended by the authors. It contains the mass spectra and Kovats retention indices for 307 sesquiterpene hydrocarbons isolated predominately from natural essential oils of various plant species, and whose structures have been fully identified. In addition, it presents <sup>1</sup>H and <sup>13</sup>C NMR data for 305 and 222 compounds, respectively. A substantial portion of this information was previously unpublished and

therefore helps fill an information gap in natural products literature. Compounds are alphabetically listed in the main text, with two full pages dedicated to each entry. The first page for each compound begins with a common name from the *Dictionary of Terpenoids*, followed by its name from the *Chemical Abstracts Index*, and any other synonyms in the literature. Next is the chemical structure showing the absolute configuration, molecular formula, molecular weight, Chemical Abstract Service Registry Number, Kovats retention index, and sign of the optical rotation corresponding with the structural configuration presented. Below this is the sample origin, the compound's natural source(s), the NMR data, and one or two references identifying information from the literature, or as unpublished results. The second page presents the mass spectrum and repeats the chemical structure and common name. Sandwiched between the Introduction and main text is a seven-page alphabetical listing of the compounds with their retention indices and five appendices. Appendix 1 lists the acknowledgements and would be more appropriate as an attachment to the Introduction. Appendices 2 through 5 show the structures and numbering schemes for 82 sesquiterpene skeletal groups, list the compounds from lowest to highest retention index, list the compounds by molecular weight with the 8 most abundant peaks from their mass spectra, and list the compounds by their names in the *Chemical Abstracts Index*, respectively. These appendices do help the reader quickly access some of the key information in the main text. The book is thick, heavy, and somewhat awkward to handle. By reducing the font size and mass spectra the same information could have been presented in half the number of pages, making it less bulky and less expensive. At \$700, its availability is likely to be restricted to a central library rather than the laboratory or office book shelves, but these are minor factors. For investigators working with sesquiterpenes or essential oils this book is a valuable reference.

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NP990755N

10.1021/np990755n

**Stereoselectivity in Synthesis.** Tse-Lok Ho (National Chiao Tung University). John Wiley & Sons, Inc., New York, NY. 1999. xv + 333 pp. 15.5 × 23 cm. \$94.95. ISBN 0-471-32922-3.

The literature of contemporary organic synthesis is so massive and diverse that it is virtually impossible for practitioners to keep abreast of all of the relevant developments in their field. Consequently, authoritative compilations that focus on particular segments of the whole, such as Dr. Ho's most recent contribution *Stereoselectivity in Synthesis*, are welcome additions to the holdings of any research library. The title of this monograph is somewhat misleading, however, in that the bulk of the discussion deals only with substrate-controlled stereoselectivity. This

is an important area to be sure, but many readers may be disappointed in the lack of coverage devoted to asymmetric synthesis promoted by catalysts and reagents. On the other hand, it is clear that one cannot present everything in a book of this size, and in the author's defense, he has done an impressive job of assimilating and categorizing a very large and diverse body of information and condensing it into a manageable space.

The book begins with a short chapter entitled "Some Fundamental Concepts" in which a brief introduction to some of the basic concepts of stereoselective synthesis is presented. The strength of this chapter, which is probably too brief to properly inform the novice, is the collection of leading references which puts many of the most significant and fundamental developments of organic stereochemistry at the reader's fingertips. The remainder of the book is divided along logical and, for the most part, useful lines. Chapters entitled "1,2- and 1,3-Stereoiduction" deal with topics such as stereocontrol in enolate alkylation and cycloaddition that are illustrated by examples drawn from both the contemporary and "classic" literature. A separate section on A-strain issues within the latter chapter will be of interest to many readers. It is somewhat surprising that no mention was made of E. J. Thomas' important new work on remote stereoiduction with allylic stannanes in the chapter "Stereoiduction at Long Distances." While it is, of course, beyond the scope of this book to include every relevant example, emerging developments such as these merit some coverage if the book is to achieve its stated goals.

The remainder of the work presents a range of important topics such as group directed reactions, conformational and steric effects, as well as templating effects. Moreover, each section is supported with relevant, and often, numerous examples that serve to illustrate the concepts at hand. The chapter entitled "Thermodynamic Control and Kinetic Trapping" is noteworthy in that it attempts to deal with some issues that synthetic chemists often face in their work, but that are rarely addressed in most reviews.

The most problematic feature of *Stereoselectivity in Synthesis* is its readability. Sentences are often convoluted, requiring the reader to re-read them several times before understanding the points being made. There are frequent instances of word choices and sentence structures that tend to make the discussions more opaque than necessary. These problems made reading the book much more difficult than it should have been and, unfortunately, detracted from the otherwise positive features of the work.

Overall, *Stereoselectivity in Synthesis* will be a useful monograph for practitioners in the field of organic synthesis, particularly those graduate students and postdoctorals who have an interest in reading an overview of substrate-based stereoiduction or who are seeking quick access to useful leading references in this area.

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NP990756F

10.1021/np990756f