

BOOK REVIEWS*

Isopentenoids and Other Natural Products: Evolution and Function. W. DAVID NES. American Chemical Society. P.O. Box 57136, Washington, DC 20037-0136. 1994. viii + 255 pp. 15 × 22.5 cm. \$69.95. ISBN 0-8412-2934-1.

For the researcher in isopentenoids, in particular sterols, this might be a book to have. Although not comprehensive, this volume is quite informative and brings together several topics difficult to find in a single book.

The book is divided into two major sections. The first section, the evolution of isopentenoids, has seven chapters. The first chapter takes us into time and explores isopentenoids from sediments. It has an interesting section on sedimentary isopentenoids that have no known biological precursors as well as a compilation of selected biolipids in sediments. Chapter 2, my favorite, deals with hopanoids from eubacteria. It starts with an excellent introduction and discusses recent developments in hopanoid biosynthesis. This is a short chapter, but extremely well written and informative. Chapter 3 describes squalene cyclase enzymes and discusses the diversity in oxidosqualene cyclizations as well as the recently proposed aromatic hypothesis in oxidosqualene cyclization. Chapter 4, "Molecular Asymmetry and Sterol Evolution," is an extremely long chapter dealing with the different cyclization modes of squalene oxide, the formation of tetrahymanol, the cycloartenol-lanosterol bifurcation, and methylation of sterol side-chains. Chapter 4 starts with a probably unnecessary introduction to stereochemistry and some of the figures (e.g., Figures 14, 16, and 19) are of poor quality and extremely difficult to read. Nevertheless, the chapter is quite complete. Chapter 5, "Phylogenetic Distribution of Sterols," Gives us an idea of sterol distribution in algae, fungi protozoa, plants, and animals. The chapter is not comprehensive (what about sponges?) but complete enough to get a good idea of the distribution of sterols in these organisms. Chapter 6 takes us into the evolution of the oxysterol pathway, i.e., sterols bearing a second oxygen function, and Chapter 7 discusses sterol distribution in Ametabolous, Hemimetabolous, and Holometabolous insects. Both of the last two chapters are short, informative, and easy to read.

The second section, evolution of other natural products and membranes, has three chapters. Chapter 8 deals with the evolution of the endomembrane system which proposes that the plasma membrane was derived from the endoplasmic reticulum membrane by differentiation. This chapter should appeal more to biologists rather than to natural products chemists. Chapter 9 discusses the evolution and function of fatty acids and related metabolites, such as leukotrienes and lipoxins. This chapter is an attempt to distribute fatty acids throughout the main groups of organisms. This is a particularly difficult task since there are many exceptions and similar fatty acid profiles in genetically different organisms. I found the table on the phylogenetic distribution of fatty acid oxygenase enzymes particularly interesting and useful. The last chapter of the book deals with the evolution of lignan and neolignan biochemical pathways. This is one of the best chapters in the book, well written and comprehensive, and should appeal to the experts in the field.

In summary, this book should be of interest to a variety of researchers in the natural products community. Despite some of its problems, it already occupies a place in my personal library.

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Organic Electronic Spectral Data, Volume XXX. 1988. Edited by J.P. PHILLIPS, D. BATES, H. FEUER and B.S. THYAGARAJAN. John Wiley and Sons, Inc. 605 Third Avenue, New York, NY 10158. 1993. xiii + 929 pp. 15 × 23 cm. \$165.00. ISBN 0-471-10971-1.

This volume continues the useful series of compilations of uv-visible spectra abstracted from the chemical literature. Coverage is reasonably comprehensive with about 100 journals providing references in this volume, including the *Journal of Natural Products*.

Methods in Carbohydrate Chemistry, Volume X. Edited by J.N. BEMILLER. John Wiley and Sons, Inc. 605 Third Avenue, New York, NY 10158. 1995. xvii + 332 pp. 15 × 23 cm. \$69.00. ISBN 0-471-52940-0 (v. 10).

The latest volume in this well-regarded series marks the first that is not edited by the founding editor Roy Whistler. The organization and objectives of the series remain unchanged, however. This volume focuses on enzymic methods, and these are grouped into five sections: 1. Enzymic methods for the

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determination of monosaccharides, oligosaccharides, polyols, and aldonic acids. 2. Enzymic methods for determination of polysaccharides. 3. Enzymic methods for structural analysis of polysaccharides. 4. Enzymic methods for preparative purposes. 5. Selected methods found in other collections (an index of enzymic methods found in three other major works and earlier volumes of the present series). The volume closes with a Subject Index (14 pages).

Organic Syntheses Collective Volumes I–VIII. Cumulative Indices. Edited by J.P. FREEMAN. John Wiley and Sons, Inc. 605 Third Avenue, New York, NY 10158. 1995. xxiii+620 pp. 15×23 cm. \$75.00. ISBN 0-471-31192-8.

This volume continues the laudable practice of updating the cumulative indices for "Organic Syntheses," and the first eight collective volumes are now covered. Compound names are listed twice; first by the name used at the time of initial publication, and second by *Chemical Abstracts* index name. Other indices include those for solvents and reagents, type of reaction, type of compound, formula, apparatus, hazard and waste disposal, and author.

Aromaticity and Antiaromaticity. Electronic and Structural Aspects. V.I. MINKIN, M.N. GLUKHOVATSEV, and B. YA. SIMKIN. John Wiley and Sons, Inc. 605 Third Avenue, New York, NY 10158. 1994. xiii+313 pp. 15.5×23.5 cm. \$69.95. ISBN 0-471-59382-6.

This volume is addressed primarily to specialists and students in physical, organic, and organometallic chemistry, and has as its purpose "to help chemists to integrate the results of calculations on molecules and ions into the general body of chemical knowledge." After exploring the field in depth in over 300 pages, the authors conclude "we have to concede in the end that the commodity (aromaticity) we have been dealing in is somewhat illusory." They then hasten to add, "The other fact is the undeniable and very real usefulness of the aromaticity concept...".