

the series, and departmental libraries should make every effort to acquire it.

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Chemistry of the Amazon: Biodiversity, Natural Products, and Environmental Issues. Edited by Peter Rudolph Seidl, Otto Richard Gottlieb, and Maria Auxiliadora Coelho Kaplan. American Chemical Society Symposium Series 588, Washington, DC. 1995. xii + 315 pp. 15 × 22.5 cm. \$89.95. ISBN 0-9412-3159-1.

In November 1993, shortly after the Rio Summit of 1992, the First International Symposium on Chemistry of the Amazon was held in Manaus, Brazil, under the joint sponsorship of the Associação Brasileira de Química, the American Chemical Society, the Centro de Tecnologia Mineral, and the Instituto Nacional de Pesquisas da Amazonia. *Chemistry of the Amazon: Biodiversity, Natural Products, and Environmental Issues*, provides an account of this Symposium.

Since the Brazilian Amazon accounts for just over 30% of the earth's tropical rainforests, this region is a uniquely important biological resource. Unfortunately, it is also a resource under enormous external pressure. Estimates of losses of the Amazonian tropical forest due to deforestation range from a very conservative 8% (40 million ha) to upwards of 12%. One important purpose of the International Symposium was to develop an understanding of how chemistry might contribute to the preservation of Amazonian biodiversity.

The range of subjects included in this multiauthored, 300-page volume is enormous. Included in its 22 chapters are thoughtful overviews of the potential for the discovery, among Amazonian natural products, of new drugs and agrochemicals, somewhat less exciting discussions of chemotaxonomy, detailed accounts of various specialized areas of natural products chemistry (ranging from terpenes to lignans and proteins), and discussions of some extremely serious environmental problems. There are clear expositions of the devastation resulting from slash-and-burn agriculture and from the aggressive expansion of the lucrative timber industry. One chapter is devoted to a careful description of the disastrous consequences of unregulated gold mining activities. This uncontrolled and highly decentralized mining activity is responsible for discharging over 100 tons of mercury into the environment annually!

It is as difficult to summarize the contents of this brief symposium volume as it would be to describe the Amazonian area itself in a few words. However, any chemist with even a casual interest in the opportunities and the problems that are connected with studying and learning from the world's largest biodiversity resource would do well to

read this very important account of the many ways that chemistry plays a crucial role in Amazonia.

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Potions, Poisons, and Panaceas: An Ethnobotanical Study of Montserrat. By David Eric Brussell (Southern Illinois University). Southern Illinois University Press, Carbondale, IL. 1998. xvi + 176 pp. 22.5 × 17.5 cm. \$69.95. ISBN: 0-8093-1552-1.

Should I ever visit the small island of Montserrat, I will surely take this small book with me. It is a concise catalog of 282 ethnobotanically important plants from the island, estimated population ca. 12 000 people. Of the species covered in the book, 207 (73%) are medicinal, 123 (44%) are used for food, 49 (17%) are poisonous, 41 (15%) are a source of wood, 27 (10%) are associated with voodoo and folklore, 14 (5%) are sources of fiber, 9 (3%) are utilized for production of dyes, 8 (3%) are employed as aphrodisiacs, and 32 (11%) have various, miscellaneous uses that include use as hallucinogens, aromatics, insect repellents, ornaments, brooms, and teeth-cleaning agents. Kapok from the silkcotton tree, *Ceiba pentandra*, for example, is used locally to stuff voodoo dolls and placed over the front door as a protective charm when the occupants leave. The wood is used to make dugouts. Some of the nonuseful species are tabulated in the appendix where the author lists the dates and places of collection for his 378 collections on the island.

In Hawaii, fruits of the pantropical shrub known as Noni (*Morinda citrifolia*) are being harvested for a developing commercial medicinal market in the U.S. The *Morinda* account is thus included below to show typical coverage for a species:

***Morinda citrifolia* L.; Hog Apple, Painkiller, Chiddle Grape.** This small tree has opposite elliptic leaves, white tubular flowers in balls, and large whitish-green multiple fruits that have an odor similar to limburger cheese. It is native to India. Specimens were collected on St. George's Hill and at Blackburn Airport near Trants. Brussell C-269, C-311. The crushed or heat-wilted leaves are used topically to relieve pain and as poultices for boils, bruises, and wounds. The immature macerated fruits are mixed with salt, and the resulting paste is applied topically to areas around broken bones. Juice from the root is applied externally to treat skin eruptions. Tea made from the leaves and bark is drunk as a tonic. The odoriferous fruits are edible.

While I appreciate the hard copy of the book, I think that a smaller pocket-sized edition would have been more practical, at least for those lucky enough to visit the island. There are 52 photographs, 24 in color, the remainder black

and white. It is not always clear that all the ethnobotanical information is derived from the island, but I assume so.

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Monosaccharide Sugars: Chemical Synthesis by Chain Elongation, Degradation and Epimerization. By Z. Györgydeák and I. F. Pelyvás. (Lajos Kossuth University, Debrecen, Hungary). Academic Press, San Diego, CA. 1998. xviii + 508 pp. 15 × 22.5 cm. \$89.95. ISBN 0-12-550360-1.

Monosaccharide Sugars in an extensive compilation of new developments in the growing field of modern synthetic monosaccharide chemistry drawn together in the form of a textbook and offering a summary of the synthetic manipulation of monosaccharides in all three categories: elongation, degradation, and epimerization. The novelty of this book is that it is written from the perspective of a synthetic organic chemist using naturally occurring, inexpensive starting materials in organic synthesis, and it covers all three title transformations. The volume emphasizes experimental details for all published literature, including that from non-English-speaking countries, which is difficult to obtain for many carbohydrate chemists.

The Foreword, written by the late Professor Sir Derek H. R. Barton, introduces the reader to the importance of modern aspects of synthetic carbohydrate chemistry. Specific reference is also given to "chiral synthons" and their usefulness in synthetic carbohydrate chemistry. The short, two-page Introduction outlines the purpose and goals of the volume and justifies the selection of all three areas of synthetic manipulation. The first chapter deals with "Ascending Synthesis of Monosaccharides" and is broken into two subchapters, "Buildup with Total Synthesis" and "Buildup of Sugars with Ascending Synthesis", which are discussed in seven sections. The first subchapter concentrates on cyanohydrin synthesis (Kiliani-Fischer synthesis) and offers an excellent tabular summary of starting saccharides and reaction products. It concludes with 119 important references. The second subchapter discusses "Miscellaneous Methods for Extension of the Monosaccharide Chain" and is divided into 12 sections. Grignard reagents and organolithium, organotin, organoboron, and organosilicon reagents are discussed there. The aldol condensation, hydroformylation of glycals, chain extension of aldehyde sugars with thiazole, furan, pyrrole, and the Reformatsky reaction are also covered in detail in these sections. Additionally, ascending syntheses with aldehyde saccharides, sulfonic acid esters, and nitrogen-containing saccharides are reported. Each section extensively discusses all the methods, concluding with broad, up-to-date references (470). Additionally, selected experimental procedures are included in each section, beginning in the first subchapter. This particular innovation enhances the usefulness of the book as a laboratory handbook and as a quick reference.

Chapter 2 describes "Descending Syntheses of Monosaccharides" and is divided into four subchapters. The first subchapter, entitled "Disulfone Degradation", describes the well-known methodology of dithioacetal oxidation to sulfones followed by descent with a base into an aldose with

a chain shorter by one carbon atom. This subchapter concludes with 31 references. The last subchapter is entitled "Degradation of Saccharides with Oxidative Methods" and consists of six sections. All the oxidative methods including periodate, hypochlorite, peroxide, and lead tetraacetate reactions are discussed here. The last notable section, entitled "Chain Shortening of Saccharides by Means of Photochemical Methods", illustrates the photochemical degradation of sugars, which are divided into two groups: "Light-exposure-induced" and "Metal-ion-catalyzed reactions". References for each section are most recent and up to date.

Chapter 3, entitled "Preparation of Sugars with Isomerization", consists of three informative subchapters. The first subchapter, "Epimerization of Saccharides in Alkaline Media", presents four types of transformation, anomerization, aldose-ketose isomerization, reversible aldol reaction, and β -elimination and concludes with 56 references. The second, short subchapter, entitled "Epimerization of Sugars with Molybdate Ions", provides experimental procedures for the above methodology for the preparation of important monosaccharides such as gulose, talose, lyxose, and ribose. The last subchapter, "Epimerization of Saccharides with Amine Complexes of Transition and Alkaline Earth Metals", provides a general experimental procedure for these transformations and concludes with 24 references.

The Appendix, "Notes Added in Proof", summarizes the most important recent results on monosaccharide synthesis. It covers the literature roughly through June 1997 and is organized according to the respective previous chapter/section numbers. The book concludes with an extensive, 9-page subject index. The organization, unification, and presentation of the material is highly commendable. The book is well-produced, and the written material is free of any obvious errors.

This textbook provides the foundation for a course in synthetic carbohydrate chemistry or in a special topics course, for it introduces students to the newest developments. Thus, the volume is an indispensable reference for lecturers, especially in the emerging new field of modern synthetic carbohydrate chemistry. It should be an essential addition to any institutional library. In addition, the attractive price of the book should convince all scientists and graduate students engaged in research on the chemistry of carbohydrates to purchase it for their personal library.

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Enzymatic Reactions in Organic Media. By A. M. P. Koskinen (University of Oulu) and A. M. Klibanov (Massachusetts Institute of Technology). Blackie Academic & Professional, Glasgow, U.K. 1996. xiii + 314 pp. 15.5 × 23 cm. \$119.00. ISBN 0-7514-0259-1.

Most pharmaceuticals and agrochemicals are more efficient when presented as the enantiomerically correct isomer. During the last decade, dramatic advances have been made in the use of enzymes in nonaqueous media to produce these important biologicals.

This book has assembled significant contributors in the field of nonaqueous enzymology. Each provides an au-