

Book Reviews

Organic Reactions, Volume 47. Edited by Leo A. Paquette (Ohio State University, Columbus, OH). John Wiley & Sons, Inc., New York. 1995. xii + 582 pp. 15 × 22.5 cm. \$95.00. ISBN 0-471-11737-4.

This volume of the well-known series consists of one chapter by R. D. Clark and A. Jahangir entitled "Lateral Lithiation Reactions Promoted by Heteroatomic Substituents." The seminal report by P. L. Creger at Parke-Davis in 1970 that *o*-toluic acid, when treated with LDA, leads to a tolyl carboxylate dianion allowed synthetic chemists to contemplate both chain extension on and carbo- and heteroatom annelation to benzoic acid derivatives. In the ensuing years, this reaction has been used ingeniously and adapted extensively by numerous chemists, among which the authors of this chapter stand out for their significant contributions. The review is timely and especially valuable in that it links the lateral metalation (LatMet) tactic to the increasingly useful directed ortho metalation strategy (DoM) (cf. Gschwend, H. W.; Rodriguez, H. R. *Org. React.* **1979**, *26*, 1; Snieckus, V. *Chem. Rev.* **1990**, *90*, 879). Extent of coverage is defined as only including *o*-tolyl systems without α -substituents; *m*- and *p*-tolyl (directed metalation group) aromatics, although also activated to deprotonation, are excluded.

The present volume follows the standard practice expected of this Series in the comprehensive survey of the different heteroatom substituents that promote LatMet and systematic discussion of the methods of generation, stability, reactivity, and synthetic utility of the *o*-tolyl anions. Both aromatics and heteroaromatics are covered. The various electrophiles that undergo reaction with these species are catalogued, and the influence and compatibility of ring substituents in LatMet processes are delineated. Also as expected, mechanistic discussion is provided in order to facilitate conceptualization for synthesis. Particularly useful is the comparison and complementarity between LatMet and DoM. Over 200 pages of tables and 340 references up to 1994 are provided. The well-illustrated synthetic utility section presents application of LatMet to the construction of over 30 natural products.

The authors have made a major contribution by the review of a widely scattered and difficult to search subject. The writing is clear and the organization is superb. The volume will take its place in the venerable *Organic Reactions* series and receive broad use by both academic and industrial synthetic chemists.

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The Alkaloids: Chemistry and Pharmacology, Volume 50, The Alkaloids: Chemistry and Biology. Edited by Geoffrey A. Cordell (University of Illinois at Chicago). Aca-

dem Press, San Diego, CA. 1998. xvi + 590 pp. 15 × 22.5 cm. \$125.00. ISBN 0-12-469550-7.

This volume is the fiftieth in a series covering special topics in the chemistry and biology of alkaloids. Like earlier volumes in the series, this book consists of in-depth reviews of various topics by experts in relevant aspects of alkaloid chemistry. However, as one might expect for a fiftieth edition, this volume is especially rich in chapters that present interesting historical perspectives from a number of internationally known senior investigators in the field. There are 14 chapters ranging from 26 to 59 pages in length. Most of these are extensively referenced, with several citing well over 100 references. The volume begins with a fascinating biographical chapter summarizing the career of the Founding Editor of the series, Canadian alkaloid chemistry pioneer R. H. F. Manske (authored by D. B. MacLean and V. Snieckus). This chapter alone offers a strong case for seeking out this volume. It includes selected quotations, pictures, and even copies of several pages from Manske's M.S. and Ph.D. theses. Other chapters that could be described as having a special, long-term historical flavor include entries on the nature and origin of amphibian alkaloids (J. W. Daly), the biochemistry of ergot alkaloids (D. Gröger and H. G. Floss), and the history and future prospects of camptothecin and taxol (M. E. Wall and M. C. Wani). The remaining chapters cover other general aspects of alkaloid chemistry, and many of these also offer interesting philosophical or historical insights. Several of the entries place an emphasis on biological, biochemical, and biotechnological aspects of alkaloid chemistry. These include reviews of alkaloid chemosystematics (P. G. Waterman), molecular genetics of plant alkaloid biosynthesis (T. M. Kutchan), bioactivity of unnatural alkaloid enantiomers (A. Brossi and X.-F. Pei), prospects for metabolic engineering in the production of alkaloids (R. Verpoorte, R. van der Heijden, and J. Memelink), and chemistry and biology of steroidal alkaloids (A.-ur-Rahman and M. I. Choudhary). The remaining chapters place more emphasis on synthetic chemistry. Aside from one chapter describing miscellaneous synthetic studies in alkaloid chemistry (C. Szántay), these are dedicated to specific compound classes and include reviews of the synthesis of *Aspidosperma* alkaloids (J. E. Saxton), biomimetic synthesis of monoterpenoid indole alkaloids (H. Takayama and S.-I. Sakai), structure, synthesis, and pharmacology of the pseudodistomins (I. Ninomiya, T. Kiguchi, and T. Naito), and recent aspects of the isolation, structure elucidation, and synthesis of natural polyamine derivatives (A. Guggisberg and M. Hesse).

All of the chapters in this volume are neat, well-proofed, and attractively illustrated, with a uniform format differing from one chapter to the next only in the structure drawing style. Although the cost of this book is in line with other volumes of its type, such costs make it difficult to suggest that individuals should purchase their own personal copy. However, this volume is a particularly valuable entry in

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