Book Reviews

The Alkaloids: Chemistry and Pharmacology. Vol. 47. Edited by G. A. Cordell (University of Illinois at Chicago). Academic Press, Inc., San Diego, CA. 1996. ix + 381 pp. 15 × 23 cm. $110.00. ISBN 0-12-469547-7.

The 47th volume in this venerable series on alkaloids, which began in 1950, covers Lupine Alkaloids (114 pages), Biosynthesis in *Rauwolfia serpentina* (58 pages), Noniridoid Bisindole Alkaloids (54 pages), and The Ecological Activity of Alkaloids (128 pages). Also included is a cumulative index of past titles and a subject index. The only errors of any type noted were the misspelling of "usually" (p 148) and mistakes in structures **3** and **4** (p 228).

Chapter 1 by S. Ohmiya, K. Saito, and I. Murakoshi is an exhaustive treatise of the 148 lupine alkaloids that were either newly discovered or discussed in the literature during the period 1985−1993. Topics include occurrence, spectroscopy, syntheses, biotechnological studies, biological activity, chemotaxonomic aspects, and biosynthetic pathways. The latter section features a newly proposed aza-Cope rearrangement in the biosynthesis of Albine-type alkaloids. Excellent tables are a highlight of this chapter (e.g., mass spectral ions, and proton and carbon chemical shifts and coupling constants). Noteworthy is the authors' use of mass spectral fragmentation patterns to distinguish among the various types of lupine alkaloids (lupinine, sparteine, cytisine, etc).

The biosynthesis of *Rauwolfia serpentina* by J. Stöckigt begins with an informative history lession about this important plant, the uses of which in India date back 3000 years. The latest (1994) information on the biosynthesis of the numerous alkaloids produced by this plant is presented. A major feature is the author's work with a *R. serpentina* cell suspension culture, and this technology has progressed to the point of being able to yield, for example, 1.6 g of the alkaloid raucaffricine per liter of medium after 18 days of cultivation! Enzymatic transformations are thoroughly reviewed. Amazingly, some 20 enzymes have been isolated and purified from *R. serpentina*.

Chapter 3 on "Noniridoid Bisindoles" reflects the stunning synthetic virtuosity of nature. J. Sapi and G. Massiot have done a marvelous job in collating the large and diverse group of marine bisindoles, which generally contain bromine, the biologically important indolo[2,3-*a*]carbazoles from microorganisms, and plant noniridoid bisindoles. A highlight is the summary of the synthetic approaches to the indolo[2,3-*a*]carbazole alkaloids. Coverage includes some 1995 references.

The final chapter, by K. S. Brown, Jr., and J. R. Trigo, "The Ecological Activity of Alkaloids", is alone worth the price of admission. It complements and supplements the excellent essay by M. Wink (*The Alkaloids*, Vol. 43) with nearly 600 references in a brilliant extension of the latter chapter. Brown and Trigo immerse themselves completely in the fascinating topic of "Why Alkaloids?" They ask, and usually answer with voluminous supporting data, such questions as "Why do some organisms produce many different kinds of alkaloids and others accumulate only a single structure?" and "How important are alkaloids in intraspecific communication?" The answers to these and other fundamental questions are presented both in discussion format and in 12 tables chock-full of information and references. The authors are to be commended for their dazzling effort. Having once stepped on a fire ant nest in bare feet, I want to personally thank the authors for explaining why the fire ant venom is so incredibly painful!

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Pharmacological Methods in Phytotherapy Research, Volume 1, Selection, Preparation and Pharmacological Evaluation of Plant Material. By Elizabeth M. Williamson (University of London), David T. Okpako (University of Ibadan), and Fred J. Evans (University of London). John Wiley & Sons, Ltd., New York, NY. ix + 228 pp. 15 × 23 cm. $39.95. ISBN 0-471-94217-0.

The primary goal of this book is to explain the bases of standard pharmacological tests that are often performed with plant extracts and reported in the literature. The tone is pedagogical. There are 11 chapters; the first three are general (use of plant remedies in indigenous medical systems, presentation of experimental data, and preparation of plant materials), and the remaining eight describe tests that are specific for various medical conditions or disease states (gastrointestinal tract, liver and biliary system, cardiovascular system, antiinflammatory and analgesic activity, diabetes mellitus, nervous system, and endocrine activity). Numerous examples of actual experimental data are presented, mostly reprinted from articles that have been published in *Phytotherapy Research*. Throughout the text, the authors demonstrate great breadth of knowledge, as exemplified by brilliantly concise descriptions of human disease states and explanations of how drugs modulate adverse conditions. More generally, chemistry, biology, pharmacy, pharmacological activities, philosophy, and history are beautifully integrated. Facts of uncanny interest concerning natural product drugs are interspersed throughout the text, which itself is extremely well-organized, impeccably edited and concise.

It is perhaps due to the succinct manner in which the text is prepared that a few shortcomings may be noted. As examples, most figures and primary literature references are not highly integrated with the written text, a

larger number of graphics would have been desirable for a primer of this type (e.g., pictures of various apparatus, diagrams of organ systems, a few chemical structures, and pictures of actual tissues used in the pharmacological tests), and a broader overview of known test systems, perhaps in tabular form, would have been useful. Also, even though it is understood that this text covers classical methodology, some mention or overview of more contemporary methods (e.g., HPLC/MS, high-throughput screening, super critical fluid extraction) would have been worthwhile.

Nonetheless, this book is a delightfully intellectual primer that should be of use for pharmacy students (or other professional students interested in drugs), beginning graduate students, people moving into the field of pharmacological assessment of drugs, and others who require a general overview of these methods to better interpret related literature. The volume is a suitable tribute to the value of natural product drugs, which should make the book of broader interest for seasoned investigators, even those who routinely perform the type of pharmacological tests described in the text. A second volume is slated that "...will deal with toxicological evaluation, chemotherapy, isolated cell and enzyme systems, and alternatives to animal testing."

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The Responsible Conduct of Research. By Doré Beach (University of South Florida). VCH Publishers, Inc., New York, NY. 1996. ix + 228 pp. 17 × 24 cm. $35.00. ISBN 3-527-29333-7.

This slim volume is intended to serve as a text in applied ethics for graduate and postdoctoral students. Initial chapters of an introductory and historical nature are followed by more specific coverage of ethics relating to current issues, data management, laboratory procedures, mentoring, research grants and reviews, intellectual property, misconduct, and technology transfer. A useful glossary is included for those unfamiliar with terms such as "categorical imperative" and "epistemology."

Each of the ten chapters concludes with several case studies, questions for discussion, and recommended reading, as well as works cited in the text. The case studies constitute the weakest segment of the book. Each raises appropriate ethical questions without providing even potential answers. While it is recognized that definitive responses to many of them may not exist, it is also recognized that most graduate and postdoctoral students in the sciences are very myopically dedicated to their principal field of endeavor and are unwilling to devote much time to ancillary matters. It is far easier to imagine a group of them sitting around discussing the meaning of a particular peak in the mass spectrum of an unknown compound than debating the ethics of surrogate parenthood.

Also, even though they may be quite mature in years, graduate and postdoctoral students are still students; and students like to be provided with answers. If the author wishes his book to appeal to interested individuals rather than provide a framework for discussion in the relatively few classes in ethics in catering to science students, he should provide more answers. These could be conveniently included in an appendix in any future edition.

Aside from this rather significant weakness as a tool for self-instruction, the book contains much useful information and thoughtful discussion. Most scientists are probably unaware that the concept of informed consent first emerged from the Nuremberg war crimes trials, that behavior not considered overtly sexual can nevertheless be interpreted today as sexual harassment, or that maintaining inadequate research records can be considered as misconduct.

Both students—if they wish to spare the time—and their professors will find the volume a useful and handy reference presenting the essentials of ethical research conduct. Although it leaves unanswered many important questions, readers must remember that in ethics, as in other nonscientific disciplines, the answer may be a flexible one dependent upon the mores of the beholder.

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Natural Products: Rapid Utilization of Sources for Drug Discovery and Development. Edited by N. Mulford (International Business Communications). International Business Communications, Southborough, MA. 1995. vi + 339 pp. 21.5 × 28 cm. $895.00. (Spiral-bound paper).

This book is compiled from the edited and updated transcripts from the IBC conference, "Rapid Utilization of Natural Products: Sources for Drug Discovery and Development", held May 15−16, 1995, in San Francisco, CA.

As its potential in lead generation has quickly been realized, combinatorial chemistry has had a profound impact on the drug discovery process since its debut. Meanwhile, there is an emerging perception that chemical diversity, especially among small organic molecules, is no longer in short supply, and thus the role that other sources of chemical diversity such as natural products play in drug discovery process may start to diminish. In this environment, the publication of this monograph provides a timely and excellent antidote to this perception. The book demonstrates strongly that the novelty of chemical diversity discovered from natural products screening is not and will not be represented by traditional and emerging sources such as compound collections, combinatorial libraries, and rational drug design. The book, however, also makes it quite clear that many challenges to this field still lie ahead, and the bottom line will be how to turn bioactive natural products or their derivatives rapidly and cost-effectively into promising clinical trial candidates, and ultimately into successful drugs.

The book consists two sections and a total of 18 chapters, all of them written by experts in the field, and most of them from the forefront of the natural products drug discovery area of the pharmaceutical industry. The book is unique in the sense that it not only offers useful industrial perspectives and experts' opinions but also offers detailed technical know-how accumulated from the authors' extensive experience in natural products discovery and development, which is rarely seen in most natural products monographs.

Section I has 14 chapters. Following an introduction, the first three chapters are devoted to topics related to the UN Biodiversity Convention and to efforts and trends in globally accessing genetic resources. Chapters 2 and 3, in particular, deal with the utilization of natural product sources in Australia and China. From Chapter 4 to Chapter 14, excellent overviews are presented of many aspects that are crucial to a successful natural products discovery program. Both common and specific and strategic and practical approaches are well covered in these chapters, along with recent successful discovery examples. The key aspects of high throughput screening take up a large amount of space in the book, ranging from assay design, automation, adaptation, data management, and importantly, many special considerations for natural products. Specific examples of plant cell culture and indigenous medicinal plants are discussed as additional useful resources, and there is also a chapter concerning the business and economic perspectives of natural products drug discovery.

Section II consists of Chapters 14−18, and these five chapters are devoted to natural product purification, structure determination and special factors in problem solving. These are highly technically oriented and useful chapters. The lack of subject and other indices causes some inconvenience in using this book, and the high-end pricing (commercial, $895.00, academic $495.00) will prevent all but well-endowed libraries or individuals from purchasing it. However, overall, *Natural Products: Rapid Utilization of Sources for Drug Discovery and Development* contains a wealth of information and insights that will be valuable to scientists of many disciplines who are involved in natural products drug research and development.

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Herbal Medicines: A Guide for Health-Care Professionals. By Carol A. Newall, Linda A. Anderson, and J. David Phillipson (University of London). The Pharmaceutical Press, London. 1996. ix + 296 pp. 19 × 24.5 cm. £35.00. ISBN 0-85369-289-0.

In these times where the number of available therapeutic drugs is ever increasing, it appears paradoxical to many scientists that the general public continues to demand herbal remedies. Because this demand is steadily increasing, practicing pharmacists and other health-care professionals are acutely in need of a reference that provides factual information on medicinal herbs. The Royal Pharmaceutical Society of Great Britain recognized this need and subsequently commissioned the publication of this very useful volume.

The major part of this book (pp 19−275) is composed of monographs on the 141 herbs commonly present in herbal remedies sold through pharmacies in the United Kingdom (U.K.). The monographs are preceded by two short chapters. The first is entitled "How to Use this Handbook" and presents purpose, scope, and essential background information for the text. As the title implies, the reader should consult this chapter before referring to specific monographs. The second short chapter, "Introduction to the Monographs", provides an excellent overview of herbs and herbal remedies. Here, the section on safety is of particular value because of the widespread but mistaken notion that herbs are natural and therefore safe. The sections on herbal quality and efficacy would also be of interest and use to the health-care professional.

The 141 herbs covered in this book are arranged in alphabetical order and are detailed as a monograph. The format of each monograph is uniform throughout the text and allows easy access to information that may be of importance to the health-care professional. In addition to the scientific names, synonyms, and plant part(s) used, each monograph indicates whether the herb is, or has been, the subject of a monograph in the European or a national pharmacopeia. The legal category (licensed products) is an important informational feature. The "Introduction to the Monographs" chapter provides an excellent overview of legislation and herbal remedy licensing, which allows a greater understanding of the information associated with the legal category section of the monographs. The food use, herbal use, and doses are all listed in each monograph. Herbal doses do not appear regularly in texts of this nature, and therefore, this book would be particularly appealing to health-care professionals because of the many questions that can arise about the various herbals and their doses. Herbal constituents are listed briefly together with documented pharmacological actions. These listings logically lead to the important area of side effects and toxicity together with contraindications and warnings. The monograph section entitled "Pharmaceutical Comment" makes reference to the advisability of using the particular herb for medicinal purposes. Each monograph concludes with a set of references, and this list has been divided into two categories, general and specific. There are 35 general references given on p 17 that include a variety of books, pahrmacopeias, and review articles. In some cases, the authors exercised their judgement in citing only that specific literature which they considered pertinent to the monograph and complementary to the general references listed.

Herbal Medicines: A Guide for Health-Care Professionals is an excellent reference book not only for pharmacists but also for others who deal professionally with herbal medicines. Although the book does not have any illustrations, the introductory material, individual monographs, various tables, and extensive appendices are all integrated to give a book that contains a wealth of information on herbal medicines. Since many of the herbals described in this volume are sold in United

States pharmacies and health food stores, there may be a high demand for the book in this country as well as in the U.K. and other European countries. In addition to serving as a valuable reference to health-care professionals, the informed lay public and herbal-oriented research scientists may be attracted to the text. The price of the book is reasonable and thus allows interested individuals to own a personal copy. Pharmacies and related health care institutions where herbal products are recommended and distributed should have a copy of this book for use as a reference by professional caregivers.

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Classics in Total Synthesis: Targets, Strategies, Methods. By K. C. Nicolaou and E. J. Sorensen (Scripps Research Institute). VCH Publishers, Inc., New York, NY. 1996. xxii + 798 pp. 19 × 25 cm. $49.95. ISBN 3-527-29231-4.

In this book, Nicolaou and Sorensen use the published syntheses of over 30 molecules as the focal points for discussions of fundamental organic reactions and synthetic strategies. This book is unique in that the target molecules serve as a basis for the discussion of the reactions, rather than vice versa.

The authors discuss one synthesis per chapter, starting with Woodward's strychnine synthesis (1954) and continuing chronologically to finish with the author's synthesis of brevetoxin B (1995). The authors include target molecules from almost every structural class, including alkaloids, steroids polyterpenes, polyketides, polyether ionophores, β-lactams, and prostaglandins. The reactions discussed in the context of the syntheses of these compounds include cycloadditions, sigmatropic rearrangements, electrocyclic reactions, cationic and radical cyclizations, the Wittig reaction and its variants, asymmetric epoxidations and osmylations, along with many others.

In general, Nicolaou and Sorensen have been successful in both selecting and describing appropriate syntheses. The authors can be forgiven for selecting a large number syntheses from the Nicolaou laboratories, as the familiarity of the authors with these synthetic routes aids their use as pedagogical vehicles. The space available for discussion of particular reactions in a book of this size does limit the amount of detail provided; however, the authors offer numerous references to more rigorous treatments of individual reactions.

This book would function quite well as a text book for a graduate level synthesis class and also would be reasonably priced for such an application. Any individual interested in the history and the future of synthetic organic chemistry should also seriously consider acquiring this volume, and perhaps the one that might follow.

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