

Book Reviews

Spectroscopic Methods in Organic Chemistry.

Edited by Manfred Hesse, University of Zurich, Switzerland, Herbert Meier, University of Mainz, Germany, and Bernd Zeeh, BASF, Limburgerhof, Germany. Theme, New York, NY. 1997. viii + 365 pp. 19 × 23.5 cm. \$54.00. ISBN 0-86577-667-9.

“Spectroscopic Methods in Organic Chemistry” follows a standard format by having separate chapters on U.V./visible spectroscopy, I.R./Raman spectroscopy, N.M.R. Spectroscopy, and Mass Spectra. The summary provided on the outside back cover implies that this book is intended for two target audiences. The first is students in a course in spectroscopic methods for organic structure elucidation while the second is professional chemists who need a reference text in practical spectroscopy. My immediate reaction was that it was unlikely that one book could adequately serve both purposes. This has been confirmed by more detailed examination. While the book has strengths, there are two key weaknesses that I believe render it unsuitable for a course text in spectroscopic methods for structure elucidation. First, there are no problems at the end of individual chapters and the short final chapter gives only seven problems combining different types of spectroscopy. I regard this as totally inadequate for a course text. Second, so many topics are covered that many key topics are covered superficially or so concisely as to be almost incomprehensible for nonexpert users. I found that the sections on 2D NMR were particularly weak, a problem compounded by the absence of any 2D spectra in the seven structural problems. Therefore, I believe that either the old standard “Spectrometric Identification of Organic Compounds” by Silverstein, Bassler, and Morrill or the new “Organic Structural Spectroscopy” by Lambert, Shurvill, Lightner, and Cooks would be much more suitable for a course of spectroscopic methods for organic structure determination.

On the other hand, “Spectroscopic Methods in Organic Chemistry” does cover a far wider range of topics than many other texts on this subject, e.g., solid-state NMR, ^{15}N , ^{19}F , and ^{31}P NMR, analysis of mixtures, mass spectra of contaminated samples, and hybrid spectroscopic methods such as GC/MS and LC/MS, to name just a few. It also contains numerous spectroscopic correlation tables and very complete lists of references for individual topics. Thus, it would serve as a useful reference text for someone engaged in natural products research, and since it is reasonably priced, I recommended its acquisition for either an individual or Department library. In terms of format, tables and diagrams are generally well prepared and readable. However, the type is small and the text is crowded and difficult to read. Although it appears to be relatively

free of typographical errors, my copy had sixteen missing pages, apparently due to an error in binding.

William F. Reynolds

Department of Chemistry
University of Toronto
Toronto, Ontario M5S 3H6, Canada

NP970104W

S0163-3864(97)00104-3

A Dictionary of Natural Products. Terms in the Field of Pharmacognosy Relating to Natural Medicinal and Pharmaceutical Agents and the Plants, Animals, and Minerals from Which They Are Derived. By George Macdonald Hocking, Auburn University, Auburn, AL. Plexus Publishing, Inc., Medford, NJ. 1997. xxix + 994 pp. 17.5 × 25 cm. \$139.50. ISBN 0-937548-31-6

The present book is actually the second edition by the same author of a reference work published in 1955 under the title *Dictionary of Terms in Pharmacognosy and Other Divisions of Economic Botany*. Throughout this updated version of the work the erudition of Dr. Hocking is readily apparent, and *A Dictionary of Natural Products* will probably qualify as being the magnum opus of this eminent pharmacognosist, who is to be congratulated on such a superb effort. While the I do not claim to have read this book from cover to cover, I have spent many pleasant hours perusing entries of personal interest, and have learned a great deal as a consequence. For example, in footnote 2528 of Appendix A on p 957, now-obsolete synonyms for “pharmacognosy” include “pharmacography”, “pharmacomathy”, and “organic materia medica.” Subfields of “pharmacognosy” (this term was first used in 1815) were “pharmacoergasy” (crude drug cultivation and collection), “pharmacoemporia” (handling of crude drugs by importers), and “pharmakodiakosmie” (commercial packaging).

In the dictionary proper, which is very extensive (nearly 900 pages and over 18 000 entries), the author has made an outstanding and exhaustive effort to bring together a body of fragmented knowledge that does not exist elsewhere in a single source. Many of the reference sources are now out of print. The bulk of the volume thus contains entries on biochemical terms, compound names (inorganic and organic), crude drug descriptions, economic botany, medical terminology, microscopic analysis, organism (mainly plant) binomials, and short taxonomic monographs. This is backed up by nearly 3000 explanatory notations in Appendix A (the bibliography), of which many provide highly intriguing and fascinating personal insights along with the relevant scientific literature citation or citations. Appendices B–G deal, respectively, with general reference works on pharmacognosy and economic botany; a list of important serials in the field of pharmacognosy

and related areas (with a subappendix on periodicals devoted to certain plant crops such as coffee, cotton, and sugar); terms describing the properties and therapeutic uses of drugs and pesticides; diagrams of inflorescence and flower types; taxonomic classification schemes for organisms; and a list of plants yielding rubber. At the beginning of the volume, in addition to the "Preface" and "Explanatory Foreword", there are sections entitled "Abbreviations", "Geographical Abbreviations", "Symbols Used in Pharmacognosy and Economic Botany", "Greek Alphabet", and "Plan of Definitions". The overall slant of the information provided is very definitely toward terrestrial plant drugs rather than products from marine organisms and is biological in its major focus as opposed to chemical. It is perhaps not unfair to comment that some of the information contained in this volume is of historical rather than contemporary interest. The book appears to be relatively free of typographical errors, and has a very attractive dust cover featuring photographs of *Aconitum napellus*, *Allium sativum*, and *Artemisia argyi*.

As the modern professional curricula of pharmacy schools in the United States and other countries become more and more oriented to clinical matters as opposed to the basic pharmaceutical sciences, there will be few people left with the type of broad knowledge embraced by the various entries in *A Dictionary of Natural Products* once the present generation of pharmacognosist faculty members retires. Therefore, the value of this book will become more evident as time goes on, especially with an ever-increasing interest in phytopharmaceuticals (herbal remedies). This volume will be extremely useful as a reference tool to those entering pharmacognosy and natural products research and, accordingly, can be highly recommended for institutional library purchase. It can also be recommended for purchase by those involved in the industrial production of medicinal plants and botanical drugs. In addition, individuals interested in medicinal and economic plants but without a formal scientific or medical training will find much valuable information explained in a clear manner in this dictionary.

A. Douglas Kinghorn

*College of Pharmacy (M/C 781)
University of Illinois at Chicago
833 South Wood Street
Chicago, Illinois 60612-7231*

NP970105O

S0163-3864(97)00105-5

Downstream Processing of Natural Products: A Practical Handbook. By Michael Verrall, SmithKline Beecham Pharmaceuticals, Surrey, U.K. John Wiley & Sons, West Sussex, England. 1996. xviii + 354 pp. 15 × 22.5 cm. \$84.95. ISBN 0-471-96326-7.

This book contains 21 chapters written by specialists in the production of natural products derived from fermentation. While no substitute for a chemical engineer, the book provides a wealth of details and considerations that must be made during scale-up. Valuable descriptions are provided of specialized manufacturing equipment, including the pros and cons of alternate equipment and the tests used to select between them. Interesting techniques and examples of actual processes are included that one would be wise to consider during process identification.

Most chapters in the book are appropriate, well written, and correctly focused. They provide important insights and considerations to ensure that a bench process merges well with the necessities of the pilot and manufacturing scales. In particular, we appreciated the discussion of Good Manufacturing Practice (GMP), a topic not normally included in the training of process identification chemists.

The book stresses topics important to the isolation of pharmaceutical molecules derived from fermentations. Subjects of utility to other areas of natural products isolation such as biomass handling and drying, grinding, and liquid/solid extraction are often not included. We were disappointed not to find discussions of large-scale crystallizations, techniques for the drying of temperature-sensitive solids, and formulation. In addition, we would have appreciated information, including economic implications, for topics such as (a) techniques appropriate for the isolation of molecules with lower market value than pharmaceuticals, (b) strategies for reducing the number of solvents used in isolation processes, and (c) large-scale water-removal techniques other than lyophilization.

This book will be a valuable reference for those who take natural product isolations from the bench to larger scale. We hope that the editors will consider a sequel that addresses additional topics more appropriate for the processing of non-fermentation-derived natural products.

David Bailey and Chris Murray

*Hauser, Inc.
5555 Airport Boulevard
Boulder, Colorado 80301*

NP970106G

S0163-3864(97)00106-7