Book Reviews

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Common Poisonous Plants and Mushrooms of North America. NANCY J. TURNER and ADAM F. SZCZAWINSKI. 1991. Timber Press, 9999 S.W. Wilshire, Portland, OR 97225. 1991. xv + 311 pp. 15 × 23 cm. $55.00. ISBN 0-88192-1179-3.

This is one of the best organized books for quick reference to poisonous plants and mushrooms which I have encountered. Two introductory chapters, one on plants and the other on mushrooms, deal with the toxins involved, initial treatment, and the plant materials to preserve so that quick accurate identification by an expert can take place. The color illustrations are, with minor exceptions, excellent and show the critical parts of the plant which are necessary for accurate identification. Such exceptions as the poor photo of *Psilocybe semilanceata* and photos such as *Laburnum* or Golden Chain, which should be enlarged to show more detail, are rare and detract very little from the total work. The organization of the book into sections dealing with mushrooms, wild flowering plants, house plants and plant products, wild vines, etc. enhances quick access by the user. A valuable appendix treats specialized subjects such as toxic plants that taint milk of browsing cows or goats, and medical herbs of questionable safety. A glossary that explains botanical terms and an extensive reference list for access to additional information are also included. I highly recommend this book for schools, libraries, emergency rooms, and the general public. It is especially useful for all outdoor-oriented organizations or individuals, especially those who have or work with children.

ORSON K. MILLER JR., *Virginia Polytechnic Institute and State University*

Dictionary of Plants Containing Secondary Metabolites. J.S. GLASBY. Taylor & Francis Ltd., 1900 Frost Road, Suite 101, Bristol, PA 19007. 1991. 488 pp. 21.5 × 28 cm. $209.00. ISBN 0-85066-423-3.

This book represents a compilation of ca. 4800 chemical compounds isolated from plants up through the end of 1987. The plant taxa are arranged alphabetically with a listing of the chemical compounds reported to occur in each species. The general chemical class for each compound precedes a listing of chemical entities representing the class. Following this information are listed the references from which the information was obtained. An alphabetical chemical index (389 pages) gives page numbers on which information pertaining to the plant source can be obtained.

The dictionary, written without any introduction or explanation as to the scope of coverage (plant groups) and as to how the data included were searched, sorted, selected, edited, and double-checked for scientific accuracy and for consistency on format and style, is prematurely published. Preceding many of the references cited in the dictionary are parenthetical letters, i.e., A, B, F, N, P., etc., without explanation. Also lacking is an indication of which plant parts were investigated. The dictionary covers higher plants, some basidiomycetes and marine algae.

With respect to the botanical aspects, a glaring inconsistency regarding the scientific names of plants exists in the dictionary. There are genera with and there are genera without family affiliation. Even for those with family affiliation the choice of family name to use has not been researched; thus we have Compositae and Asteraceae, Umbelliferae and Apiaceae, or Labiatae or Lamiaceae used, in addition to others. In some cases the family assignment of a genus is even wrong. For example, *Citrus* is indicated as either Rutaceae or Zygophyllaceae; *Asimina* as either Roseaceae or Annonaceae, and *Hernandia* as either Lauraceae or Hernandiaceae, while *Brickellia* (Compositae) is listed as Eupatoriaceae and *Asteracantha* (= *Hygrophila,* Acanthaceae) as Asteracanthaceae. Sometimes the tribe or subfamily in which a genus belongs is given, while in other cases the family names both in a strict sense and a broad sense are used, such as *Hypoxis* (Amaryllidaceae/Hypoxidaceae), etc. Clearly, generic names have not been verified, either for spelling (even *Cephaelis* the well known ipecac-producing plant, is misspelled as *Cephalis*; *Arctostaphylos* as *Arctostaphlos*) or for scientific accuracy and correctness; for example, the genus *Belamcanda* (Iridaceae) is placed as two entries, one under *Balameanda,* the other *Belameanda,* while *Belamcanda* itself is not listed. *Aristeguietia* (Compositae) is also listed under the misspelled name *Arcteguietia*. There are cases where a drug Latin name is used in place of the proper Latin binomial, such as *Cortex* (for a nonsensical specific name such as *Cortex chinae* and *Cortex condurango*) and *Condurango* (for a nonsensical name *Condurango cortex*) for *Marsdenia* (Apocynaceae). The same applies to *Cascara* (hence *Cascara segrada* for *Rhamnus purshiana*, the well known laxative-producing plant). Similarly, botanical synonymy has not been verified, with the result that *Catharanthus roseus* (Apocynaceae), the well known anticancer plant, is given as three separate entities, *Catharanthus roseus, Lochnera rosea,* and *Vinca rosea. Adenanthera peregrina* (Leguminosae), a well known and

thoroughly studied hallucinogenic plant from South America, is also listed under *Piptadenia peregrina*. The chemically well-studied plant *Eleutherococcus senticosus* does not even appear in the dictionary. Other well-studied species are not found in the dictionary.

With respect to the chemical aspects of the dictionary, the index lists ca. 4800 chemical entities in plants. There are at least 8000 known alkaloids, and our NAPRALERT database contains at least 75,000 distinct plant chemical entities. It seems obvious that the author did not include chemical compounds based on analysis of essential oils. Further, the important anticancer alkaloids vinblastine and vincristine are not listed as occurring in *Catharanthus roseus*, a plant that contains over 100 alkaloids. The dictionary lists fewer than a dozen alkaloids in this plant. The dictionary lists a few alkaloids from the important and well-studied drug plant *Atropa belladonna*, but the most recent reference to the chemistry of this species is 1901. The widespread flavonoid kaempferol is listed as occurring in only 45 species of plants! The carcinogenic phenylpropanoid safrole is listed as occurring in only two species; our database shows that it occurs in at least 50 species. Whereas the title indicates that the occurrence of secondary metabolites in plants would be covered, many common fatty acids and amino acids are listed. One could go on and on to point out the lack of depth and breadth of the data on the occurrence of chemical compounds in plants, but these examples should suffice to point out the deficiencies.

Overall, the dictionary is replete with botanical errors, which only perpetuates errors already entrenched in the literature. The author, a chemist, should have enlisted the aid of a qualified botanist to coauthor the work, which would have made the volume much more useful. The author has only touched the surface with regard to listing all chemical compounds in plants; the number of truly interesting chemical entities that are not found in the book, but reported in the literature, cannot even be estimated.

The dictionary can only be recommended as a flawed reference source to those who might luckily from time to time find it useful. However, one would always have to consult the original references in the book to ascertain the real occurrence of the chemical compounds.

D.D. SOEJARTO and N.R. FARNSWORTH, *University of Illinois at Chicago*

Organic Chemistry in Action. The Design of Organic Synthesis (Studies in Organic Chemistry Volume 41). F. SERRATOSA. Elsevier Science Publishing, Box 882, Madison Square Station, New York, NY 10159. 1990. xxii + 396 pp. 16.5 × 24 cm. $148.75, ISBN 0-444-88345-2.

The book *Organic Chemistry in Action* by F. Serratosa could possibly serve as a text for a graduate course in organic synthesis. Some parts of the book are extremely useful; for example, Chapters 1,2, and 3 introduce analytical methods for synthesis as well as the newer concepts of molecular complexity.

The rest of the text then addresses the practice of synthetic design. Much of it reflects the thinking of Evans with respect to consonant/dissonant disconnections, which is a popular and useful type of reasoning. However, the text on the whole is difficult to use in terms of systematic methodology retrieval. For example, too much emphasis is placed on aldol-type processes or electrocyclic reactions, and not enough on common reactive intermediates such as carbenes, nitrenes, nitrile-oxides, etc. The stereochemical discussion (sections 9.3 and 9.4) is reasonable, especially when it comes to descriptive terms and definitions.

The text includes a copy of CHAOS (Computerisation and Heuristics Applied to Organic Synthesis), a program for IBM PCs or fully compatible systems. The program was written as an instructional aid for beginners and is intended to help the reader see how the heuristic principles and methodologies developed in the book can be applied.

The present version of the CHAOS program contains a few "bugs" and as noted by the author (Chapter 11) it has a number of significant limitations. For example, the program does not account for stereochemical features, and it occasionally gives either redundant or very unusual results. Although future versions of CHAOS may prove more helpful, the present version is of little value as an instructional aid. It does, however, provide the reader with an interesting insight into what is currently being done in the area of computer-assisted synthesis.

In summary, the author has made an excellent attempt at putting together a standard synthetic text, but it is difficult to read, leads to some confusion, and contains too much "retrosynthetic analysis," which is the way of the past. Parts of this book might be used in a first year course in synthesis.

TOMAS HUDLICKY and ANTHONY A. MOLINERO, *Virginia Polytechnic Institute and State University*

Organic Synthesis, Volume 69. Edited by L.S. PAQUETTE. John Wiley and Sons, 605 Third Avenue, New York, NY 10158. 1990. xx + 328 pp. 15 × 22.5 cm. $34.95. ISBN 0471-54560-0.

This latest volume continues the long-standing tradition of this series in publishing checked and edited procedures for the synthesis of organic compounds. This volume contains procedures for the synthesis of 30 compounds, together with a list of unchecked procedures available from the editors, and cumulative author and subject indexes for Volumes 65–69. The continuing importance of the preparation of enantiomerically pure compounds is highlighted by three methods for kinetic resolution by enzymatic means and several procedures that are stereocontrolled or that produce important chiral auxiliaries or reagents. As with preceding volumes in the series, this volume is an essential resource for anyone involved in organic synthesis.

DAVID G.I. KINGSTON, *Virginia Polytechnic Institute and State University*