

## Book Reviews

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## BOOK REVIEWS

*Constituents of Higher Plants, 6th Edition.* T. ROBINSON. Cordus Press, P.O. Box 587, North Amherst, MA 01059. 1991. iv+346 pp. 21×28 cm. \$18.50. ISBN 0-935118-03-0.

This revised edition of a book that has been available for about thirty years offers a reasonably good introduction to the secondary metabolites found in plants. The tone of the book is geared toward scientists who are not natural product chemists but who desire an introduction to the field and the types of compounds encountered in plants. There are chapters which cover carbohydrates; water-soluble organic acids; aromatic compounds such as lignans, coumarins, and naphthoquinones; lipids, both saponifiable and unsaponifiable; terpenoids, flavonoids; and alkaloids, as well as compounds not traditionally discussed in many natural product books such as peptides and proteins, nucleic acids, and prophyrins. Each chapter includes examples of the different types of structures found in each class of compounds with some information on their physiological properties, brief discussions of how they are isolated and characterized, and an overview of the biosynthetic pathways by which they are formed. At the end of each chapter are two lists of references, a list of general references to monographs and reviews about the particular class of natural products followed by a list of references to the primary literature from which the examples used in the chapter were drawn.

In general, while I do find this to be a useful book to introduce students or colleagues not familiar with plant-derived natural products to the broad classes of compounds which are encountered, I also find that some chapters are not as complete as I would like to see in an introductory book. Specifically, I though the chapters on terpenoids and aromatic compounds would have been strengthened by the addition of examples of more complex members of each class. A particular problem, in my view, is that the chapter on alkaloids contains only ten pages of text and only one page of specific structures. The alkaloids are a very important class of compounds, and this chapter clearly does not do them justice. I also feel that the discussions on characterization in each chapter need more detail on modern spectroscopic methods of characterization. I assume that the author did not focus on this since he was trying to reach a broad audience, but one of the uses for which I would recommend this book is in an introductory natural product course, particularly because it is inexpensive and provides a broad overview of the area. However, it would need to be supplemented with additional examples of each class of natural products, and how their structures are elucidated.

One additional interesting feature of the book is that the author is willing, for a reasonable fee, to provide the contents of the book on a set of computer disks to purchasers of the book. Future updates of the information in the book, and possibly future editions of the book, may be available on disks.

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*Oxidations in Organic Chemistry.* M. HUDLICKY. American Chemical Society, 1155 Sixteenth Street N.W., Washington, DC 20036. 1990. xx+433 pp. 15×22.5 cm. \$89.95 (cloth), \$49.25 (paper). ISBN 0-8412-1781-7 (cloth), 0-8412-1781-5 (paper).

The dramatic improvements in the art of organic synthesis over the last 50 years have been due to a variety of theoretical and practical advances. Not the least of these has been the development of new selective reagents. The practicing chemist has trouble in keeping track of these advances and so will welcome Dr. Hudlicky's book on oxidations in organic chemistry.

The first chapter (46 pages) describes a variety of oxidation agents ranging from oxygen through inorganic agents, organic oxidants, and finally enzymes. A brief indication of the scope of each reagent is given. The second chapter (8 pages) covers dehydrogenations.

The third chapter (216 pages) is the heart of the book. The discussion is in terms of oxidations of particular functional groups. There is a brief discussion of the use of the various reagents which have been used for each reaction (e.g., oxidation of phenols to quinones). Each section concludes with a list of the reagents and conditions used to effect the particular reaction as well as the yields and references. For example, over 90 conditions are given for the oxidation of primary alcohols to the corresponding aldehydes. Twelve sets of conditions are described for the oxidation of primary alcohols to acids. Oxidations of phosphorus, arsenic, sulfur, iodo, boron, silver, tin, and organo magnesium and mercury compounds are included.

Chapter 4 (21 pages) contains preparative procedures for 57 oxidations. The first 8 procedures describe the preparation of various reagents (e.g., PCC on alumina and activated  $\text{MnO}_2$ ). The rest of the examples refer to specific oxidations. The descriptions are brief but sufficient for any experienced organic chemist.

There follows 23 pages with 22 "correlation" tables that summarize the reagents available to perform each of the oxidations described in chapter 3. This is an excellent supplement to the indexes. The references (1207) are collected at the back of the book and are followed by author and subject indexes.

The coverage in this book is very broad. Inevitably this means that some depth is lost. However, those who need more detail are given plenty of references. The extensive table of contents, the correlation tables, and indexes make it very easy to find the information one needs. The book was published in 1990. The literature is covered thoroughly up to 1986 with some references into 1988. Some enantioselective oxidations are discussed, but this has been active field in the last few years, and the book, if written today, would contain more examples of these oxidations.

Hudlicky's book is similar to Larock's *Comprehensive Organic Transformations*, though the latter's scope includes all types of reactions and not just oxidations. Larock provides the reagents and references for each reaction. However, Hudlicky's more detailed approach makes it much easier to choose conditions from the available options.

Overall Dr. Hudlicky has done an excellent job. The book will be useful to all organic chemists, including graduate students, interested in synthesis. However, the price of this book for its paperback edition (\$49.25) is in stark contrast to the price (\$60.00) of Larock's much larger cloth book, which is published by a commercial publisher. Many of the monographs published by ACS relate to a rather narrow group of buyers. However, a nonprofit organization should surely be able to provide the paperback edition of a well written book of interest to graduate students and a wide range of organic chemists at a price lower than \$49.25.

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