Book Reviews

Annual Reports in Medicinal Chemistry. Volume 18. Edited by Hans-Jürgen Hess. Academic Press, New York. 1983. xi + 340 pp. 25.5 × 17 cm. ISBN 0-12-040518-0. $32.00.

During his editorship of *Annual Reports in Medicinal Chemistry*, Hans Jürgen Hess has done a brilliant job of selecting topics which reflect the current thrusts and directions of medicinal chemistry. Volume 18 is an excellent example. Of the 32 chapters that appear in this volume, less than 10 appeared in Volume 17—but they are topics that continue to be of widespread interest. Examples include "Pulmonary and Antiallergy Agents" (John Catt and Elizabeth Gillespie); "Analgesics, Opioids and Opioid Receptors" (William Lever, Kwen-Jen and John McDermed); "Antihypertensive Agents" (John Baldwin and Charles Sweet); "Recombinant DNA Technology" (John Lowe and Peter Hobart); "Calcium Antagonists" (H. Meyer, S. Kazda, and P. Bellemann); "Antibacterial Agents" (E. S. Hamanaka and Mike Kellogg); and "Antineoplastic Agents" (Victor Marquez).

Volume 18 includes new chapters that review both on-going peaks of medicinal chemistry research and activity, as well as those in molecular biology which lay the groundwork for future medicinal chemistry opportunities. The chapter by James Keller and Lilia Beauchamp, "Antiviral Agents", is representative of the first group. This chapter reviews the extensive work on agents active against DNA viruses, particularly the antiherpes agents, and briefly describes efforts in developing agents active against RNA viruses. Ronald Ellis, Deborah DeFeo, and Edward Scolnick have written an outstanding review on "Oncogenes". Their review is important reading for all medicinal chemists.

Other new chapters of wide interest include "Structure–Activity Relationships of Calmodulin Antagonists" (Walter Prozialeck); "Antipsychotic Agents and Dopamine Agonists" (Tomas de Paulis, Astra Läkemedel); "Progress in Atherosclerosis Therapy: Hypolipidemic Agents" (John Prugh, Stanley Rooney, and Robert Smith); "Natural Killer Cells: Role in Cell-Mediated Immunity" (Ronald Goldfarb and Michael Berendt); "Agents for the Treatment of Peptic Ulcer Disease" (David Bays and Roger Stables); and "Recent Advances in Drug Delivery System Technology" (Norman Henderson).

Annual Reports in Medicinal Chemistry continues to be the single most important reference for medicinal chemists everywhere. The 1983 addition to the series reviews literature through early to mid-1983. It includes a good compound name and code number index, as well as cumulative chapter titles keyword and author indexes. Volume 18 is especially recommended for teachers in academia interested in making their courses timely, and in having revisions of their texts reflect modern directions of medicinal chemistry.

College of Pharmacy **Dwight S. Fullerton**
Oregon State University
Corvallis, Oregon 97331

Medicinal Chemistry. A Series of Monographs. Volume 19. Quantitative Structure–Activity Relationships of Drugs. Edited by John G. Topliss. Academic Press. New York. 1983. xii + 519 pp. 16 × 23.5 cm. ISBN 0-12-695150-0. $69.00.

This book reviews the importance of quantitative structure–activity relationships (QSAR) in modern drug development and how it is used to optimize the biological activity in a series of compounds and also to gain knowledge of the biological mechanisms. If such a review is to critically scrutinize a research area, the editor must be able to assign authors that have a deep knowledge and practical experience within the particular field. John Topliss has been successful in this matter; he has been able to collect contributions from the most successful scientists in the field. Besides, 13 out of the 16 contributors are practicing in the pharmaceutical and agricultural industry, which ensures that the content of the book is concentrated upon the methods that have proven themselves to be helpful tools in practical work.

The first chapter in the volume contains a short review of the QSAR methods applied in the following chapters. The reference list is detailed and might have gained in clearness by being concentrated to a minimum of leading citations. The main part of the book contains reviews over the application of QSAR to problems within a selection of therapeutic fields during the last 15 years. Among the fields described are those where spectacular success have been achieved, like the development of antiulcer agents and β-blockers. The authors show how QSAR contributes to the design of highly active candidate drugs as well as to the understanding of the interaction between the studied compounds and the biological system. One chapter is devoted to chemicals affecting insects and mites. This specific area benefits also from knowledge about quantitative relationships between biological activity and chemical structures. Another chapter deals with quantitative relationships between chemical structure and biological effects, like absorption, distribution, and metabolism. The editor has contributed the last chapter, which is an excellent commentary to the content of the entire book. I will recommend the readers to use it as a preface to the book.

Generally, this review strongly emphasizes the quantitative relationship between chemical structure and different kinds of biological activities, although there are parts where the lack of really good such relationships are substituted by qualitative discussions. Those parts could have been shortened but they also indicate to the reader that there are a number of situations where quantitative relationships are not readily obtained. Some of these situations are further evaluated by molecular modeling techniques. This points out that the content of the book is much oriented toward the finding of rational explanations to the observed phenomena.

Despite the qualified authors, a few examples of chance correlations, over-fitted equations, and equations containing mainly indicator variables are presented without comments. The presentation of data in the form of plots are few and far between, although a number of examples would have gained in clearness by a graphical presentation.

An attractive feature is that all the chapters end with a section where the authors emphasize the most important conclusions that can be drawn from the facts presented in the chapter. Unlike most reviews that I have read, some of the chapters in this book bring forward critical comments. The chapter written by Dick Cramer deserves special attention for its intentions to critically review the material from the authors own experiences in practical drug design. The chapter describing antitumor agents also deserves appraisal for its clear and precise presentation.

The reference lists are extensive and fully up to date, but the numbering of the citations are not related to the order in which they appear within the text. This is a minor but irritating imperfection that could have been avoided.

Department of Chemistry **Peder Berntsson**
AB Hässle
Molndal, Sweden

The Merck Index. Tenth Edition. Edited by Martha Windholz. Merck & Co., Rahway, New Jersey. 1983. xv + 2052 pp. 18 × 25.5 cm. ISBN 911910-27-1. $28.50.

"The Merck Index", now in its 94th year of publication, needs no introduction to chemists the world over. Written and edited by several generations of Merck chemists, this one-volume encyclopedia of chemicals, drugs, and biological substances has established itself as an internationaly recognized reference work, a source of authoritative information, and an essential laboratory companion. This 10th edition makes accessible the considerable new knowledge that has accumulated in the 7 years since the

publication of the 9th edition. The editors and Merck & Co. are to be complemented for making available precise, reliable, and up-to-date information at a bargain price.

Staff

Chemical Technology Review. Number 220. Manufacturing Processes for New Pharmaceuticals. By Marshall Sittig. Noyes Publications: Park Ridge, New Jersey. 1983. xx + 612 pp. 16.5 × 24 cm. ISBN 0-8155-0952-9. $84.00.

This book gives details or processes for the manufacture of some 500 new pharmaceuticals now (1983) before the FDA for approval, the required information being obtained from the appropriate patent literature. These new drugs have attained generic name status but in most cases have not yet been assigned trade names.

Emphasis is on the practical synthesis of these 500 pharmaceuticals, as outlined in the patent literature cited. The arrangement within the text is encyclopedic, that is, alphabetical.

Information provided under each entry includes drug function, chemical name, common names (if any), structural formula, manufacturer's code numbers and trade names (where assigned), manufacturing method, and references.

The table of contents is organized in such a way as to serve as a generic name index and provides easy access to the information contained in the book. At the end of the book is an index of companies holding patents for these drugs. The introduction lists the general "overall" references used in the preparation of the book.

Staff

The Total Synthesis of Natural Products. Volume 5. Edited by John ApSimon. Wiley-Interscience, New York. 1983. 550 pp. 16 × 23.5 cm. $60.00.

The first four volumes in this series, initiated by John ApSimon in 1973, have broadly covered the field of natural products synthesis. This volume, the work of Clayton Heathcock and his co-workers at Berkeley, now returns to update the second volume and is wholly dedicated to syntheses of sesquiterpenes during the last decade of (1970–1979). This short period represents an incredible flowering of the art of organic synthesis. Volume 2 covered some 300 papers over nearly half a century; this update reviews 550 papers detailing syntheses of over 260 different sesquiterpenes! The medicinal chemists, however, will find few compounds of medicinal interest, for only about 20 of these merit any mention of physiological activity.

The many target terpenes are sensibly grouped according to the number of carbon rings: acyclic, monocyclic, bicyclic, and tri- and tetracarbocyclic, with the major bicyclic group further subdivided as fused, spiro, and bridged and organized by ring sizes, with the largest section being a whole chapter on the four main hydronaphthalene skeletons. The sesquiterpene alkaloids are separated in a short last chapter. The text is strictly devoted to descriptions of the sequential reactions used in each synthesis, at about a half to a full page for each. More than simple abstracts of the original, however, these descriptions contain succinct, even pungent, valuable comments on the choices, stereochemistry, critical yields, isomer separations, and unusual reactions used. Where more than one synthesis exists for a given target, each is summarized as to the number of steps and overall yield for comparison. In four instances of favorite targets (occidentalol, vetivone and acorone variants, and dendrobine) these comparisons are assembled into tables. The key feature of the book, however, is that each synthesis is beautifully encapsulated in a flow chart of all the reactions used, with the reagents indicated on the arrows. There are 422 such schemes, models of clarity that afford an immediate grasp of the overall synthesis in each case. The variety of synthetic conceptions and interesting reactions displayed in this collection is an impressive tribute to the skill and ingenuity of the synthetic chemists and provides a wealth of interesting and useful chemistry. It is a pity that this tribute does not include an index of the primary authors.

In the introduction the authors note that a comparison of different strategies to multiply synthesized targets is discussed in the text. However, a reader interested in discerning the basic synthetic design conceptions in these comparisons will be disappointed by a kind of superficial brevity in these discussions, largely limited to comparing steps and overall yields. Indeed, even the four useful tables of this sort that are given might have been expanded to include at least a half dozen other related target families. Curiously, the text on several occasions says that the authors of a synthesis "discovered" a route; surely they "invented" it, and we might value some perspective on their thinking.

Overall, the quality of the presentation is excellent and is very uniform throughout. Indeed, none of the seven chapters is specifically identified with any one or more of the five authors, all of whom apparently worked together in a common format to produce a superb monograph.

Brandeis University **James B. Hendrickson**
Waltham, Massachusetts 02254