Book Reviews

Biotechnology Intelligence Unit. Structure−Property Correlations in Drug Development. Edited by Han van de Waterbeemd. Academic Press, Inc., San Diego, CA. Academic Press Ltd., London, United Kingdom. R. G. Landes Co., Georgetown, TX. 1996. 210 pp. 18.5 × 26 cm. ISBN 0-12-711650-8. $69.95.

A table of contents, six chapters [Design of Bioactive Compounds (Waterbeemd), Molecular Properties (Kansy), Chemometric Methods Used in Drug Discovery (Waterbeemd), Structure Property Correlations in Molecular Design (Livingstone), Recent Developments in 3D-QSAR (Blankley), and Applications of Molecular Similarity/Dissimilarity in Drug Research (Lajiness)] referenced individually with titles into 1994−1995, and an index of subjects, figures, and tables characterize this concise treatise written by experts in the field. For the most part, all of these topics have been reviewed several times prior to the publication of this work, but this easy-to-read overview of drug discovery and development methodologies could be useful as a first source of information. This is recommended reading for graduate students and postdoctorals aspiring to become medicinal chemists and for seasoned investigators wanting a quick look at selected techniques of potential use in their work.

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The Practice of Medicinal Chemistry. Edited by Camille G. Wermuth. Academic Press, London. 1996. xvii + 968 pp. 17 × 25 cm. ISBN 0-12-744640-0. $89.00.

"One more book on medicinal chemistry, you will say to yourselves!" exclaims P. Potier in his forward to this volume. And in spite of the claim in the preface by editor Wermuth that it "fills a gap in the available bibliography", this treatise is very similar to Volume I of *Burger's* (5th ed., 1995) in title, structure, and scope. The book consists of 42 chapters: 13 written by the editor and the remainder by 43 predominantly academic contributors. It is divided into eight parts: General Aspects, Lead Compound Discovery, Analog Strategies, SAR and QSAR, Structural Medicinal Chemistry, Drug Metabolism and Prodrugs, Formulation, and Drug Development. Unlike the situation in *Foye's Principles of Medicinal Chemistry*, a discussion of individual drug classes in separate chapters is outside the scope of the present volume. However, numerous examples of the development of particular types of drugs, for example, ACE inhibitors, are given as part of the explanations of various drug discovery methods.

In general the editor-author and his contributors have succeeded admirably in producing a useful, authoritative discussion of the principles and practice of medicinal chemistry. Notwithstanding the difficulty of discussing these far-ranging areas in a space of less than 1000 pages, a broad expanse of information is presented in a clear manner, is well illustrated by many structural formulae and diagrams, and is extensively documented by literature citations. Chapters 20−27, dealing with structural medicinal chemistry, are particularly well done. There are occasional exceptions. The discussion of molecular biology in drug discovery (Chapter 10) inexplicably omits any mention whatever to site-directed mutagenesis, which has been a seminal technology in dissecting the binding epitopes and pharmacophores of receptors and hormones.

I particularly appreciated Bryan G. Reuben's review of "The Consumption and Production of Pharmaceuticals", in which he provides the medicinal chemist with a reasoned analysis of the coming difficulties in the application of cost rationing to healthcare worldwide—a process certain to have a profound impact on research in medicinal chemistry. Coming after W. Leigh Thompson's distressingly inflammatory statements ("Do you want your brain surgeon to be the cheapest available?") regarding the same topic in *Annual Reports in Medicinal Chemistry* (1995), Reuben offers no facile solutions to the dilemma but at least makes it possible for the reader to consider the matter calmly and dispassionately.

The volume has a useful index, is well produced, and is very reasonably priced—about one-half the cost of *Burger's* Volume 1. By contrast to *Foye's*, available at a similar price, it does not consider individual drug classes, but its treatment of the principles of medicinal chemistry is much more extensive. One can only hope that in subsequent editions the pronouncements of various savants quoted at the beginnings of the chapters are omitted entirely—some are apropos, but others are variously translations of translations (p 11), mistranslated (p 863), banal (p 367), or devoid of meaning (p 413). This book should be considered for acquisition both by individuals and by institutional libraries.

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Bioorganic Chemistry. A Chemical Approach to Enzyme Action. Third Edition. Hermann Dugas. Springer-Verlag, New York. 1996. xvii + 700 pp. 16 × 24 cm. ISBN 0-387-94494-X. $49.95.

This book is the latest of a series, Advanced Texts in Chemistry. The preface states that the series was initiated in response to a perceived need for up-to-date graduate level textbooks in rapidly advancing chemical areas. The stated aim of *Bioorganic Chemistry* is to

demonstrate how principles and tools of organic chemistry can be used to understand biological processes. The eight chapters in the book are Introduction to Bioorganic Chemistry, Bioorganic Chemistry of Amino Acids and Polypeptides, Phosphate Groups and Polynucleotides, Enzyme Chemistry, Enzyme Models, Metal Ions, Coenzyme Chemistry, and Molecular Devices. The volume is quite readable; the discussions are timely and contemporary, and chapters are well referenced, although location of all literature citations at the end of the volume is a bit less convenient than placing appropriate references at the end of each chapter. There is also a useful compilation of general references. The inclusion of an additional listing, The Top 100 Review Articles in Bioorganic Chemistry, seemed somewhat superfluous to this reviewer. The amount of material covered in each of the chapters, and the level of organic chemical, biochemical, and biological sophistication, is appropriate to learning by a graduate student constituency. The author has attained his stated objective, namely, that the volume be a true *textbook*; he has avoided the frequently encountered temptation to assemble a massive, intimidating tome replete with advanced and/or esoteric theoretical concepts and containing far more information and details than the student would desire or could be expected to assimilate or appreciate. One can visualize that this book would complement and supplement lecture material in a graduate course.

It was noted that the book contains some incorrect or questionable statements of fact which detract from its overall quality. The following examples may be cited. On p 8, it is stated that muscarine "inhibits the action of acetylcholine". On p 13, the comment is made that incidence of Parkinson's disease is higher in rural areas (is this indeed correct?), and this is attributed to the use of agricultural chemicals related structurally to the "designer drug" contaminant MPTP. This is an occasionally invoked hypothesis for which this reviewer has never seen proof or convincing evidence. On pp 11−12, the statement that the role of the iodine atoms in thyroxine is primarily to direct the stereochemistry of precursors in biosynthesis is only one (and possibly not the best) explanation for the chemical−biological role of these iodines. The section heading title (p 97) Painkiller Chemistry is a jargonish term which is inappropriate in a scholarly text. Moreover, the author's development of an evolutionary relationship of the structure of atropine to the chemical architecture of morphine-like analgesics, with unexplained inclusion of a conformational structure of acetylcholine, is misleading and infers closer relationships than most medicinal chemists would accept as valid or significant. The statement (p 99) that "Lomotil is devoid of the analgesic activity found in its conceptual precursors" is not strictly correct.

There are indications of faulty updating of the narrative in this latest edition of the book, as well as inadequacy of proofreading. On p 101, the statement "...Belleau (88) has recently pointed out..." refers to a publication of the late Prof. Belleau dating from 1982. On p 18, the statement "...*lost* of ordered water" presumably should read "loss". Farther on this same page: "...water molecules *goes* back...". Numerous other examples of grammatical carelessness and misused words were noted.

This reviewer has frequently complained of the propensity of some publishers to bind hard cover textbooks in paper bindings which cannot be expected to withstand the repeated handling, opening, closing, and lying open, to which all textbooks are subjected. This present volume can be added to the list of books which are likely to lose their covers within an all-too-brief time period.

Despite the expressed reservations, *Bioorganic Chemistry* is not a bad effort, and teachers and students in graduate-level programs in organic chemistry, medicinal chemistry, biochemistry, and pharmaceutics will likely find it quite useful.

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Books of Interest

Methods of Molecular Medicine. Molecular Diagnosis of Genetic Diseases. Edited by Rob Elles. The Humana Press, Totowa, NJ. 1996. xi + 356 pp. 16.5 × 23 cm. ISBN 0-89603-346-5. $69.50.

Crystalline Bacterial Cell Surface Proteins. By Uwe B. Sleytr, Paul Messner, Dietmar Pum, and Margit Sara. Academic Press/R. G. Landes, Georgetown, TX. 1996. 230 pp. 18.5 × 26 cm. ISBN 0-12-648470-8.

Handbook of Chemical and Biological Sensors. Edited by R. F. Taylor and J. S. Schultz. Institute of Physics Publishing, Philadelphia, PA. 1996. xii + 604 pp. 16.5 × 24 cm. ISBN 0-7503-0323-9. $229.00.

The Protein Protocols Handbook. Edited by John M. Walker. The Humana Press, Totowa, NJ. 1996. xviii + 809 pp. 19 × 25.5 cm. ISBN 0-89603-339-2. $89.50.

Cancer Pain Relief. Second Edition. With a Guide to opioid availability. World Health Organization, Geneva, Switzerland. 1996. vi + 63 pp. 15 × 21 cm. ISBN 92-4-154482. $15.30.

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