Book Reviews

USAN and the USP Dictionary of Drug Names, 27th ed. Edited by W. M. Heller and C. A. Fleeger. United States Pharmacopoeial Convention, Rockville, Maryland, 1989, IBSN 0-913595-40-3, 761 pp., $78.50.

Few are unaware of this standard reference work issued annually; however, it may be of value to remind ourselves of the usefulness of such a basic source. In addition to 2687 United States Adopted Drug Names, it contains the cumulative list of orphan drug and biological designations published in the *Federal Register* of February 16, 1989; 5300 international nonproprietory names (INN); over 5700 brand names; 3286 investigational drug code designations; 1526 official names of the drug substances from the USP XXII-NFXVII; 2750 structural formulas; and many more former and current drug names. Availability of this dictionary is a must for everyone writing, editing, or reading the pharmaceutical literature. It should be in the libraries wherever pharmaceutical scientists work and perhaps, in the electronic age, be available on disk as another component of one's word processor program.

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Annual Review of Pharmacology and Toxicology, Volume 29. Edited by R. George, R. Okun, and A. K. Cho. Annual Reviews, Palo Alto, California, 1989, ISBN 0-8243-0429-2, vi + 543 pp., $34.00.

Once again, in keeping up with its great tradition, the latest volume in this outstanding series provides an extraordinary coverage of a wide range of topics where significant advances in pharmacology and toxicology have been made in recent years. The present volume contains 22 reviews varying in the length (from 8 to 40 pages) and depth of their coverage. All of the reviews are concisely written by researchers who have published extensively in the subject area, with references current through 1988. The editors are to be commended for the selection of such fascinating topics that are certain to whet the appetite of all its readers.

The volume begins with a prefatory chapter which pays tribute to Dr. Bernard B. Brodie, an organic chemist who distinguished himself as a biochemical pharmacologist for his role in the rise of clinical pharmacology. This very appropriate chapter may intrigue other organic chemists to follow in his footsteps. Following this chapter the reader will find excellent reviews dealing with subjects of substantial current interest. Particularly outstanding coverage can be found in the chapters dealing with neurotransmitter receptors and phosphoinositide turnover, chemical coding of neurons and plurichemical transmission, leukotriene receptor antagonists as potential therapeutic agents, peripheral-type benzodiazepine receptors, and the transfer factor: past, present, and future. All of these chapters are thoroughly researched, well organized, and thoughtfully presented with pertinent references and a concise conclusion, thus providing the reader with a sense of future direction in the subject areas.

Similarly, the following chapters are well written, with pertinent references: bioactivation of chemical teratogenesis, the thromboxane, prostaglandin, and leukotriene receptors, the pharmacological treatment of dyslipidemia, characterization of human microsomal cytochrome P-450 enzymes, the excitatory amino acid receptors, and the modulation of glutamate receptors. However, most of these topics have been extensively reviewed elsewhere.

Perhaps the most disappointing chapters are those on the percutaneous absorption of drugs and on the rational design of antiviral agents. The former is superficial and outdated. The reader will certainly be disappointed if he expects to find any coverage on transdermal absorption via skin patches. The latter is misleading and limited in scope. The authors only described their own work dealing with X-ray crystallography and mentioned computational chemistry as it relates to the design of new antiviral agents. Although these are important techniques that should be used in conjunction with drug design, they are not the only rational approach to drug design. The review has ignored the rationale for the design of current clinically useful antiviral agents such as acyclovir, carbovir and azidothymidine, and many other antiviral agents.

All other chapters deal with relatively new topics that have not been reviewed before. These topics include the biochemical pharmacology of atrial peptides, method for evaluating chemical genotoxicity, thrombolytic therapy in acute myocardial infarction, tissue kallikreins and kinins in hypertensive and diabetic diseases, animal models for the study of drugs in ischemic stroke, and the toxicology of complex mixtures of indoor air pollutants. The information provided in these reviews are excellent and thought-provoking and will provide the reader with scintillating new research ideas.

Overall, I found this volume to be useful to anyone involved in teaching and research in the pharmaceutical sciences, and for this reason, it should certainly be included in the libraries of all pharmacy and medical schools and pharmaceutical industries.

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Computer-Aided Drug Design, Methods and Applications. Edited by Thomas J. Perun and C. L. Propst. Marcel Dekker, New York, 1989, ISBN 0-8247-8037-X, xii + 493 pp., $99.75.

This book consists of five chapters in the *Methods* section and six chapters in the *Applications* section. The introductory chapter describes the drug discovery process and

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how modern computational and spectroscopic tools can facilitate drug discovery. This introductory chapter should provide an excellent perspective for computational scientists beginning work in the biochemical sciences.

Three of the chapters in the *Methods* section deviate from the main theme of the book's title, as they deal with experimental tools for drug design that are not usually considered part of the computer-assisted techniques. The inclusion of these chapters on experimental methods is, however, a distinct strength of this book. Future breakthroughs in understanding drug action at the molecular level will likely occur as a result of complementary spectroscopic and computational studies. The experimental chapters of the book represent, collectively, one of the first attempts to establish this interface. The chapter on X-ray crystallography by Abraham focuses upon his work on hemoglobin binding agents. The chapters by Fesik on NMR spectroscopy and enzyme kinetics by Rich and Northrop are comprehensive and provide the reader with clear and concise implications of these topics to drug design.

The remaining two chapters in the *Methods* section dealing with computer graphics and with molecular mechanics and dynamics are "journeyman" in nature. They are well-written descriptions of the respective topics but offer little new information. O'Donnell focuses on his CAMD/GRAMPS package, while considerable portions of the Burt, Mackay, and Hagler review have already been published in similar reviews by Hagler and his colleagues. Still, these reviews are useful to new researchers in the field and as general references.

The *Applications* section of the book focuses mainly on the design of peptides, with each chapter largely describing the research of the respective authors. As such, this section of the book does not convey a representative sampling of computer-aided drug design applications. The chapter by Kuyper on dihydrofolate reductase inhibitors does not involve peptides, but is limited to his work at Wellcome Research Laboratories on inhibitor design based upon knowledge of enzyme geometry. The chapter by Smith on antiviral drug design is perhaps the most comprehensive in the book and is recommended reading.

The reviews in this book deal largely with computer-aided drug design when geometric information of the receptor is available or sought by experiment. There is little information in the *Methods* or *Applications* section on computer-aided drug design when the geometry of the receptor is unknown, which constitutes the large majority of "real-world" drug design problems.

I recommend this book as a general reference for drug design, as a resource in peptide design, and for reviewing design strategies when receptor geometry is available.

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