

Pain, Analgesia, and Addiction: The Pharmacologic Treatment of Pain. By BARRY STIMMEL. Raven Press, 1140 Avenue of the Americas, New York, NY 10036. 1983. 312 pp. 16 × 24 cm. Price \$45.00.

This is an interesting volume presenting a multifaceted discussion of pain and its pharmacological management. The book appears to be written primarily with a pedagogic perspective and intent, presenting a rather broad survey of factors involved in the phenomenon of pain and of drugs used for relief of pain. It seems most useful for someone who is interested in pain and wishes to learn more about its various aspects, rather than for one who already has some expertise in the study or treatment of pain.

This book is organized into three distinct sections. The first deals with fundamental components of pain and analgesia, including the description and discussion of the anatomical pathways, neurochemical species, and psychological factors believed to be involved, as well as discussion of drug tolerance, dependence, and withdrawal. The second section deals with the clinical pharmacology of drugs used to relieve pain. Included in this are discussions of some unconventional agents such as stimulants, antidepressants, antipsychotic drugs, sedative-hypnotic-antianxiety agents, and marijuana. The discussions of pharmacological properties of the drug classes are broad, including description of effects on a number of organ systems, biodisposition, adverse effects, and drug interactions, rather than being confined to matters relating to pain and analgesia. This approach seems to diffuse the focus of the book somewhat, but may make it more useful for the clinician considering the use of these agents in a patient or encountering a patient already taking them. The third section offers a discussion of practical management of pain. It addresses such issues as the differences in management of acute *versus* chronic pain, management in "problem" populations such as the elderly, patients with malignancy, and drug-dependent patients, and the problem of iatrogenic drug dependence.

Included with each chapter is an ample list of references, but for some chapters more recent references are noticeably lacking. It also seems that the pharmacology section would have benefitted from more basic science references, especially some dealing with cellular actions and mechanisms of drugs, which would contribute to a better understanding of drug effects.

One strength of the volume, in spite of the preceding statement, is its combination and integration of basic and clinical sciences. The first section is done best in this regard. Another strength is the breadth of topics covered, including some not usually considered in texts dealing with pain or analgesic drugs. The author also applies his practical experience in discussion of the topics, which probably enhances the usefulness of the book for less experienced practitioners. The opinions of the author are expressed rather strongly in some of the "practical" sections of the book, and this expression could be viewed as being both a strength and weakness of the work. Weaknesses of the volume include a rather large number of typographical errors and some factual errors. While these are rather trivial relative to the content of the book as a whole, they are still somewhat bothersome. Other weaknesses, referred to earlier, include lack of currency in discussion of some topics and a paucity of basic science data in some discussions.

In summary, this volume deals with pain, analgesia, and related phenomena in considerable breadth and in sufficient depth to make it a useful source of information for both health scientists and clinicians who are interested in basic concepts concerning the nature of pain and analgesia and in the practical treatment of pain.

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Antibiotics: Assessment of Antimicrobial Activity and Resistance. (Society for Applied Bacteriology, Technical Series No. 18.) Edited by A. DENVER RUSSELL and LOUIS B. QUENSEL. Academic Press, Inc., 111 Fifth Avenue, New York, NY 10003. 1983. 384 pp. 15 × 23 cm. Price \$48.00 (£29.00).

This volume, the 18th in the Society for Applied Bacteriology technical series, includes 23 lectures with contributions from 50 microbiologists presented at a Demonstration Meeting of the Society held at the Welsh School of Pharmacy, University of Science and Technology, Cardiff, in September 1981.

The invaluable medicinal properties of antibiotics are universally recognized, but the ability of many organisms to develop resistance to certain of these antibiotics is sometimes underestimated or ignored. One of the greatest challenges in drug development is the continued need to discover and develop new chemotherapeutic agents to which microorganisms are initially, and continue to be, highly sensitive. This volume discusses many of the details of microbial sensitivity and resistance to antibiotics.

An introductory chapter in the book briefly describes the various types of antibiotics, their mode(s) of action, and methods of assay for these compounds. Other topics considered include: sensitivity testing; effects of media composition on MIC values of antibiotics; sensitivity determination by the measurement of conductance; the effects of cell envelope composition on antibiotic activity; the use of ionophoric antibiotics as experiment tools in microbiology; the extraction, purification, detection, and identification of β -lactamases; methods for determining the stability of β -lactam antibiotics to β -lactamase extracts; the biochemical evaluation of β -lactamase inhibitors; detection methods for bacterial penicillin-binding proteins; means of detecting aminoglycoside-modifying strains of bacteria; assay methods for aminoglycosides; methods of studying plasmid-determined tetracycline resistance; methods of studying bacterial folate metabolism inhibition; *in vitro* methods for determining transferable resistance to antibiotics; phage typing and plasmid characterization in studying the epidemiology of multiresistant *Salmonella typhimurium*; measurement of combined antibiotic action; use of a biophotometer in determining the effects of antibiotics; use of high-voltage electrophoresis in the identification of antibiotics; testing antibiotics for sterility; and the detection of antibiotic residues in milk and animal tissues.

The volume contains both theoretical and practical information on a variety of analytical techniques, and many valuable tables, figures, and schemes are included. The articles presented are well referenced and are current up to 1982. This is an excellent publication which contains an enormous amount of information and is highly recommended as a reference book. The price, along with its incomplete coverage of all aspects of antibiotics, would limit its usefulness as a textbook.

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The Alkaloids: Chemistry and Pharmacology. Vol. 21. Edited by ARNOLD BROSSI. Academic Press, Inc., 111 Fifth Avenue, New York, NY 10003. 1983. 368 pp. 16 × 23.5 cm. Price \$49.50.

This new volume in *The Alkaloids* series, the first to be edited by Arnold Brossi, is truly an exciting book. There is a sense of urgency and intensity about it which is hard to miss. It includes seven chapters, and in three of these the authors involved have deemed it necessary to add (at the end of their respective chapters) an addendum to bring the material presented completely up-to-date. In another chapter, a last minute change was made to round off the material presented.

In every instance, emphasis has been placed not only on occurrence, structural elucidation, and synthesis, but also on the most recent pharmacological results. One is thus led to realize that the justification for endeavors in natural products chemistry lies in the intrinsic interest and challenge of the chemical subject matter, as well as in the biological activity of natural products, particularly alkaloids.

Another characteristic of this volume of *The Alkaloids* is that the term "alkaloid" has been interpreted in broad terms, so that cyclic nitrogenous compounds produced by plants, micro-organisms, sponges, amphibians, and mammals are all discussed in detail.

Each of the presentations for the seven chapters is authoritative, precise, thorough, and above all permeated with enthusiasm. The authors who brought about this impressive *tour de force* in their chapters are: K. Gerzon and G. H. Svoboda: "Acridone Alkaloids"; J. Bergman: "Quinazolinocarboline Alkaloids"; T. Arai and A. Kubo: "Isoquinolinequinones"; J.-C. Cai and C. R. Hutchinson: "Camptothecin"; B. Witkop and E. Gossinger: "Amphibian Alkaloids"; J. Lundstrom: "Simple Isoquinolines"; and M. A. Collins: "Mammalian Alkaloids."

Incidentally, one of the twelve authors is supposed to be retired and has only a private address. Yet, he has shared in the writing of an excellent chapter.

The choice of Dr. Brossi as editor of *The Alkaloids* is particularly felicitous since he brings to his position an extensive and impressive background in natural products chemistry as well as pharmacology.

To minimize costs, the publishers have seen fit to let each group of authors draw their own chemical diagrams. This has worked out very satisfactorily, since the structures are well drawn and clearly laid out. The result is that this book of almost 400 pages, with a very large number of tables, charts and structures, is offered for a relatively modest \$49.50. Not a bad deal!

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Compartmental Models and Their Application. By KEITH GODFREY. Academic Press Inc., 24-28 Oval Road, London NW1 7Dx, England, 1983. 293 pp. 15.5 × 23.5 Price \$50.00 (£32.00).

The use of compartmental models to describe the disposition of drugs *in vivo* is a widely practiced art in the pharmaceutical sciences. These models very often provide a reasonable phenomenological description of the complex set of events and processes that determine the pharmacokinetics of a drug in mammalian systems. Less often, they also provide a means to interpret or discern what mechanisms are responsible for the observed performance. It is surprising, then, that the current texts on pharmacokinetics do not address the properties and problems associated with the models themselves. Godfrey's text attempts to do just that.

This book provides a comprehensive overview of compartmental models. The subjects can be roughly divided into three general areas (not corresponding to the individual chapters): the performance of linear systems; the problem of identifiability and parameter estimation; and the properties of more complex systems which display nonlinear, time variant, and stochastic behavior. The general layout includes a mathematical description of the various systems, comments concerning their performances, and many examples to illustrate applications. Two cautions must be voiced. First, while proofs have been eliminated, the vocabulary and notation are that of an applied mathematics-engineering approach. This, however, should not be a problem since the author carefully provides good descriptions throughout the text. Second, this is definitely not a pharmacokinetics text. While many of the examples are taken from that area, the emphasis is on the mathematical system and not on the phenomena being modeled. In this respect, the author provides a welcome service to the pharmacokinetics community.

In the first four chapters many linear compartmental systems are presented. The descriptions are straightforward and present an excellent overview. The various models are shown mathematically, their performances are illustrated by numerous calculations and graphical illustrations, and literature examples of actual applications are provided. The third section on nonlinear and time variant systems is similarly well described, to a depth not found elsewhere. The second section on identifiability and parameter estimation is by far the most important contribution of this book. Here, Dr. Godfrey provides an excellent analysis of whether particular models actually can be used to describe real data. Often we decide that a particular model effectively represents a set of data. Is the model unique? In most cases the answer is a resounding no. That fact is amply demonstrated by the use of Laplacian analysis as well as consideration of numerical problems. My only complaint is that the author does not go far enough; the emphasis is on the estimation of microconstants, not on integrated parameter estimation. The problem of correlation between parameters is barely considered; no mention of reparameterization is provided. Yet, this is a minor fault compared with the large assortment of warnings provided.

In summary, this book is an excellent reference document concerning the power and problems of lumped parameter systems composed of first-order differential equations. It is probably the best book on that subject available. The appropriateness of these models is up to us.

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Formaldehyde: Toxicology—Epidemiology—Mechanisms. Edited by JOHN J. CLARY, JAMES E. GIBSON, and RICHARD S. WARITZ. Marcel Dekker, 270 Madison Avenue, New York, NY 10016. 1983. 296 pp. 15 × 23 cm. Price \$45.00 (20% higher outside the U.S. and Canada).

The Chemical Industry Institute of Toxicology (CIIT), Research Triangle Park, NC, sponsored conferences on formaldehyde toxicity in November 1980 and, with funding from the Formaldehyde Institute, on November 3, 1982. The papers and discussions of the latter conference are presented in this book.

There are eleven chapters by 26 contributors, of which half are from CIIT. Chapter titles are as follows: "Occupational Exposure to Formaldehyde—Recent NIOSH Involvement," "Mathematical Cancer Risk Assessment for Formaldehyde," "Case Control Study of Cancer Deaths in DuPont Workers with Potential Exposure to Formaldehyde," "Mortality of Ontario Undertakers: A First Report," "Skin Initiation/Promotion Study with Formaldehyde in Sencar Mice," "Skin Initiation/Promotion Study with Formaldehyde in CD-1 Mice," "Mutagenic Effects of Formaldehyde in Bacterial and Human Cells," "Formaldehyde and the Nasal Mucociliary Apparatus," "Reaction of Formaldehyde in the Rat Nasal Mucosa," "The Effect of Formaldehyde Exposure in Cytotoxicity and Cell Proliferation," and "Mechanisms of Formaldehyde Toxicity and Risk Evaluation."

In general these topics are well written, and the summaries of the discussions that follow the actual presentations are of interest. Literature is cited up to the time of publication including 1983 references and citations to manuscripts in press.

In summary of the information presented at this second CIIT conference—it is now well accepted that airborne formaldehyde leads to cancer in rats and mice, that formaldehyde has the potential to cause genetic toxicity, and that formaldehyde will bind to DNA *in vitro*. Clarification, however, is still required regarding the importance of binding *in vitro*, especially as related to detoxification pathways and repair mechanisms. Of prime importance was the need for the results of additional epidemiological studies. While this volume is of restricted interest in the pharmaceutical sciences, it should be of value to those in contact with formaldehyde and its products as well as to toxicologists.

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Methods in Industrial Microbiology. By B. SIKYTA. John Wiley & Sons, Inc. One Wiley Drive, Somerset, NJ 08873. 1983. 349 pp. 16 × 24 cm. Price \$79.95.

This short textbook is aimed primarily at the microbiologist who is seeking a very broad and simplified introduction to industrial fermentation processes. The chapter headings: "Introduction," "Culture Equipment," "Sterilization of Media and Air," "Aeration and Mixing," "Substrates for Microbial Processes," "Kinetics of Microbial Processes," "Genetics of Industrial Microorganisms," "Development of Microbial Processes," "Measurement and Control of Microbial Processes," and "Isolation of Microbial Products" indicate that the author has attempted to condense a broad spectrum of biotechnology in a limited space. As a result, the subject matter is treated too superficially to make this a truly valuable reference source (*e.g.*, mass transfer scale-up in two and one-half pages).

The potentially useful aspects of this book might be the listing of the composition of various natural substances (*e.g.* cornsteep liquor) for material balance purposes and, possibly, the reference sources for their historical significance. Otherwise, the book should be of value to the layman interested in a broad view of the fermentation industry.

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