of inducers and inhibitors of these enzymatic systems and the mechanisms of actions involved are treated in the next chapter. The third chapter of this section deals with the physiological factors influencing drug metabolism, including species, strain, sex, and age. The final chapter of the section, and the book, is devoted to a comparison of the biochemical aspects of extrahepatic drug metabolism.

This book deals with "drug metabolism" in the sense of biotransformation, not in the sense of the overall fate, of drugs. Commendably, it has not been diluted with pharmacokinetics, methodology, or extensive physiology. The authors selected, organized and wrote the material in such a manner that the text is entirely readable and instructive, yet valuable for reference. The many references are grouped so that pertinent ones usually are no more than five pages, and never more than 20 pages, away. The subject and author indexes should be useful. This book fills a need in the field for a definitive text relating the chemical and biochemical aspects of drug metabolism.

This reviewer highly recommends the book to anyone engaged in drug metabolism activities; it should be particularly valuable to those entering the field and to those whose experience has been primarily with *in vivo* systems. Unfortunately, its rather high price may prevent many from having a personal copy.

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Clinical Chemistry. Principles and Procedures. 4th Ed. By JOSEPH S. ANNINO and ROGER W. GIESE. Little, Brown, 34 Beacon St., Boston, MA 02106, 1976. 412 pp. 16 × 24 cm. Price $15.00.

The fourth edition of this book reflects the rapid growth in the field of clinical chemistry. Part I, which details fundamental information on basic analytical techniques, includes chapters on automation, separation techniques, and radioimmunoassay for the first time. In addition, quality control and spectrophotometry have been expanded and a section on atomic absorption has been added to the chapter dealing with emission spectrophotometry. The overall treatment in Part I is very basic and quite brief; however, most of the important techniques are appropriately referenced.

The majority of this book (Part II) is devoted to descriptions of analytical methods for most of the tests performed in a modern clinical chemistry laboratory. The authors attempted to limit the material presented to one or two established methods for each test, and specific automated procedures are omitted entirely. In addition to the experimental details, most chapters contain a brief discussion of the principle of the method as well as limitations and clinical significance of the results. A concise survey of other current methods with references is also included. One notable weakness is the expanded section on drugs and poisons. It is still quite short and details procedures that are useful in toxicology but not sensitive enough for therapeutic monitoring.

This book is generally well written and appears to be most useful as an inexpensive, concise reference source for the nonclinical chemist who requires access to the principles and details of a variety of clinical chemistry procedures.

Reviewed by Jordan L. Cohen
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Pharmacokinetics of Psychoactive Drugs: Blood Levels and Clinical Response. Edited by LOUIS A. GOTTSCHALK and SIDNEY MERLIS. Wiley, 605 Third Ave., New York, NY 10016, 1976. 255 pp. 16 × 23.5 cm. Price $20.00.

At the annual meeting of the American College of Neuropsychopharmacology held in December 1974 in Puerto Rico, a series of papers was presented at the first study group dealing with pharmacokinetics and clinical response. This book represents an organized compilation of those papers.

The book contains 16 chapters divided into two main sections: Methodological Problems and Approaches (six chapters, 114 pp) and Pharmacological–Clinical Response (10 chapters, 136 pp). A major contribution of the book is the emphasis on the critical evaluation of measurement techniques, analytical as well as behavioral. Particularly noteworthy are Chapters 4 and 6. Chapter 4 includes a limited quality control study (five laboratories) of the determination of chlorpromazine and three metabolites, and Chapter 6 involves comparisons of three types of psychological measurement procedures. The second section of the book illustrates well the challenges of establishing relationships between blood level and clinical response with predictive capabilities.

The references at the end of each chapter are generally adequate. Since the book is the result of contributions at a scientific meeting, the reader should expect a certain amount of discontinuity in content and style. However, the book illustrates the state of the art in this highly interdisciplinary field of research and represents the first attempt to draw attention to several problem areas.

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Alicyclic Chemistry. Vol. 4. Edited by W. PARKER *et al.* The Chemical Society, Burlington House, London W1V OBN, England, 1976. 511 pp. 14 × 22 cm. Price $75.75.

The present volume is organized identically to Volume 2 [reviewed in *J. Pharm. Sci.*, **64**, 2032 (1975)], which dealt with the literature of alicyclic chemistry published during 1972. Four large chapters cover three- and four-membered rings, five- and six-membered rings (and related fused systems), medium- and large-ring compounds, and bridged carbocyclics. Each chapter is extensively subdivided and deals with ring characteristics of the systems, methods of synthesis, and reactions. The format is the same as in the earlier volumes. The general comments made by this reviewer about Volume 2 are equally applicable here.

As in all areas of chemistry (all science), the sheer quantity of information available each year continues to grow exponentially. For example, the number of publications dealing with three- and four-membered rings alone increased by 35% in 1974 over the previous year.

Each chapter in this book is prepared by different authors (reporters), with W. Parker serving as the senior reporter for this and previous volumes. Finally, I think it is fair to state that the price of this volume (obtainable through the American Chemical Society) is simply exorbitant. The price in England is considerably less (£27.50). This price differential is hard to understand.

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Drug Treatment. Principles and Practice of Clinical Pharmacology and Therapeutics. Edited by GRAEME S. AVERY. Publishing Sciences Group, 162 Great Neck Rd., Acton, MA 01720, 1976. 1048 pp. 18.5 × 27 cm. Price $25.00.

This text is composed of 28 chapters authored by 53 contributors from around the world. It is arranged in three sections: clinical pharmacology, therapeutics, and a section of five appendixes containing mostly tables of data on physiochemical and pharmacokinetic properties of drugs, adverse reactions to drugs, drug interactions, selection of systemic antibacterial agents, and a guide to dosage in renal failure.

Each chapter begins with a synopsis of important principles which itemizes generalities that should be understood and retained as residual information even after the smaller nitty-gritty facts in each chapter fade from one's mind.

The specific aim of the book is to aid the clinician in selecting a drug

and dose schedule by making it clear that one should first pay strict attention to the patient's particular disease conditions because these invariably affect the responses of the agents chosen. In this regard, it must be stated that no other text to date has done as good a job as this one. It truly succeeds as a bridge between classic pharmacology texts and those limited to therapeutics and medicine.

Through a close reading of any chapter, one is made aware of clinical pharmacology as it should be delineated; *i.e.*, as an area of concentration that deals with the understanding of the action of current drugs in patients with diseases, rather than simply the evaluation of new entities as they are synthesized and brought to the clinic for initial trials.

The handling of the reference material for books, tables, and figures is accomplished in such a way that if one is interested it can be found, but the descriptive material is not continuously interrupted with names, sources, and dates.

This work is recommended for anyone involved with the applied aspects of pharmacology including physicians, pharmacologists, pharmacists, and allied health professionals. It will make an excellent contribution to the literature and certainly fills a void that has developed as pharmacology and therapeutics have emerged as the foundations for a thorough understanding of the clinical implications of drug usage.

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Terpenoids and Steroids, Vol. 6. Edited by K. H. OVERTON *et al.* The Chemical Society, Burlington House, London W1V OBN, England, 1976. 363 pp. 15 × 22 cm. Price £20.50. (Available from Special Issues Sales, American Chemical Society, 1155 Sixteenth Street, N.W., Washington, DC 20036.)

This is the sixth volume on terpenoids and steroids in a valuable series first published 5 years ago. The aim of each series of Specialist Periodical Reports is to provide a systematic, comprehensive, and critical review of progress in the major areas of chemical research. The various series, which now total 35, are being published annually or bienially on such topics as Environmental Chemistry; Biosynthesis; Foreign Compound Metabolism in Mammals; The Alkaloids; Carbohydrate Chemistry; Amino-acids, Peptides, and Proteins; and Photochemistry.

This volume does not contain a subject index but is organized in a systematic manner which facilitates finding any information being sought. The six pages in the Table of Contents outline this volume in detail. The chapters are divided into many sections, which are identified in boldface type in the text as well as in the Table of Contents. These sections are further divided into subsections. Chapter titles are found at the top of every second page of the text. The author index of 3500 names is helpful to those following the research of a given individual.

This review is illustrated with drawings of 2100 chemical structures. It is documented with 1850 references, most of which are listed at the bottom of the first page of each chapter where cited.

Part I, which covers the terpenoids, is divided into chapters including Monoterpenoids, Sesquiterpenoids, Diterpenoids, Triterpenoids, Carotenoids and Polyterpenoids, and Biosynthesis of Terpenoids and Steroids. Part II, which covers steroids, is divided into two large chapters entitled Steroid Properties and Reactions, and Steroid Synthesis. No compilation of references to review articles on subjects related to terpenoids or steroids is included in this volume as in previous volumes.

The chapter on Steroid Properties and Reactions is divided into sections based upon more common functional groups, a section on Compounds of Nitrogen and Sulfur, and sections on such important subjects as Photochemical Reactions, Molecular Rearrangements, and Functionalization of Non-activated Positions. The chapter on Steroid Synthesis is divided into the following sections: Total Synthesis, Halogenosteroids, Oestranes, Androstanes, Pregnanes, Seco-steroids, Cholestane and Analogues, Steroidal Insect and Plant Hormones, Steroidal Alkaloids, Sapogenins, Cardenolides, and Bufadienolides.

The editor and 11 reporters who prepared this volume are to be commended for maintaining the high standards set by the previous volumes in this series. Everyone interested in the chemistry of terpenoids and/or steroids should have access to this volume and others in the series. They are great timesavers and sources of new ideas. I highly recommend this series.

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Progress in Toxicology. Special Topics. Vol. 2. By GERHARD ZBINDEN. Springer-Verlag, 175 Fifth Ave., New York, NY 10010, 1976. 117 pp. 18 × 26 cm. Price $7.40.

The cuisine of Zbinden's second book on special topics in toxicology is based on experience, sound reasoning, good common sense, a pinch of humor, and clear expression of realistic idealism. Is toxicology really too serious a matter to be left to the toxicologists? Read the book and answer the question yourself. Then read "How Safe is Safe?," available from the National Academy of Sciences. In a rather brief but informative manner, Zbinden covers in 93 pages (not including references and index) some of the most important problems confronting toxicology and related sciences but in a rather unusual manner. For example, he relates his son's experience with a gum ball machine, indicating that his son may put in two nickels and get nothing but doesn't give up until he finds out why or gets his two nickels back! "Why then does a negative response to a drug not elicit from us a similar anger?" More attention is paid to side-effects than negative medication responses. Zbinden then goes on to demonstrate the role of urinary pH as a factor in accelerated drug excretion and negative medication responses.

He discusses percutaneous drug permeation, hyperglycemia, the glutathione story, a new disease (pseudolupus), drug-induced lipidosis, the magnitude of drug combinations, drug interactions, and the growing problem (?) of health hazards from colors. In his discussion of food, drug, and cosmetic colors, he points out that the number of colors permitted in foods varies from country to country; *i.e.*, Australia permits seven synthetic and six natural dyes, and the United Kingdom permits 22 and 23, respectively. All other countries are somewhere inbetween. In this section, Zbinden also deletes expletives!

I personally enjoy reading anything that Zbinden writes (in English!) and don't hesitate to recommend this book to all concerned with toxicity, toxicology, and human health. I hope that Zbinden continues to write because what he says affords sound advice for those dealing with the naive.

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