absorption rate on the extent of the first-pass effect should be clinically insignificant.

This contention is also supported by a study that showed that although food could significantly reduce the absorption rate and peak blood levels of acetaminophen in humans, it had no significant effect on total bioavailability, as indicated by similar areas under blood concentration curves of acetaminophen (10). From this finding, it is also reasonable to suggest that differences in the contribution of the first-pass effect for rectally and orally administered acetaminophen would not be of clinical significance.

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Received May 19, 1975.
Accepted for publication July 23, 1975.

BOOKS

REVIEWS

Drug Metabolism Reviews, Vol. 2. Edited by F. J. DICARLO. Dekker, New York, NY 10016, 1974. 308 pp. 16 × 24 cm. Price $25.50.

Drug Metabolism Reviews is presently published as an annual volume in two issues. The publisher also reissues it as a single hardbound volume. Hopefully, this removes the need for errata.

Because it originates from a periodical, this book has no master theme except that, paradoxically, while its existence cannot necessarily prove the existence of drug metabolism as a discipline its contents will help operationally define the nature and extent of the discipline; it is a series of monographs of specific interest. The value of such a collection of reviews can really be estimated only by an individual who needs the facts and/or theories presented in a review or who needs an entry into the literature of a research area. There is, then, a very definite place for such a book as *Drug Metabolism Reviews;* it does a good job of meeting a well-defined need. It should not be expected to be of uniformly general interest.

Some monographs are of more general interest in that they cover general drug metabolic interrelationships or mechanisms illustrated by specific examples. There are four such reviews. Comparative Aspects of Mixed Function Oxidation by Lung and Liver of Rabbits (Gram), Intermediates in Drug Metabolism Reactions (Hucker), The Influence of Stereochemical Factors on Drug Disposition (Jenner and Testa), and The Nature and Distribution of Enzymes Catalyzing the Conjugation of Glutathione with Foreign Compounds (Chasseaud).

Other monographs deal with a specific compound or compounds of a given structural or therapeutic class. There are four such in this book; The Role of Ascorbic Acid in Drug Metabolism (Zannoni and Lynch), The Metabolism of Biological Alkylating Agents (Jones), Metabolism and Biochemical Pharmacology of Guanethidine and Related Compounds (Lukas), and Recent Views on the Mechanisms of Nitrate Ester Metabolism (Litchfield). There is one review on methodology, another important area; Automated Assay of Drugs in Body Fluids (Rhodes and Hone). Each of these reviews contains at least some degree of critical evaluation of the subject matter. The editor is to be congratulated for avoiding the presentation of a series of annotated bibliographies.

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Clinical Pharmacokinetics: A Symposium. Edited by GERHARD LEVY. American Pharmaceutical Association, Academy of Pharmaceutical Sciences, 2215 Constitution Ave., N.W., Washington, DC 20037, 1974. 180 pp. 15 × 23 cm. Price $5.00.

Clinical pharmacokinetics represents the embodiment of sophisticated advances in Clinical Pharmacology and Pharmacokinetics with the promise of rational drug therapy. It allows for quantitative precision in defining and evaluating a predictable and reproducible clinical response. The book "Clinical Pharmacokinetics: A Symposium" provides a compilation of manuscripts by acknowledged investigators in the field of pharmacokinetics. Although it contains a potpourri of contributions rather than being a tightly organized and coordinated series of presentations, it represents a useful overview and starting point in the organization and implementation of a clinical pharmacokinetics program.

The chapters dealing with the organization of a clinical pharmacokinetics laboratory are somewhat personalized. However, contrasting these two chapters emphasizes the point that the organization and design of such a laboratory depends, to a large extent, on the interactions established with the other disciplines of the clinical team. Defining this orientation must precede the development of the laboratory. This can vary from an analytically oriented laboratory which monitors drug levels as a service function, to the research laboratory where pharmacokinetic and pharmacodynamic interrelationships are defined.

One essential aspect of a clinical pharmacokinetics program which is not sufficiently emphasized in the book is the develop-

ment of analytical procedures. One chapter deals with the radioimmunoassay for digoxin. The successful growth and vitality of a clinical pharmacokinetics program depend on the investigators' ability to measure drug levels in biological specimens. Therefore, innovators of diversified analytical methodology must be an integral part of such a group.

Several of the chapters deal with the pharmacokinetic control of the clinical therapy of different drugs or drug classes. These chapters provide the greatest insight into the contributions that clinical pharmacokinetics can provide for rational drug therapy. Although dealing with specific drugs, the chapters contain much in the way of providing the basis for other investigators to monitor drug levels and/or design studies for other drugs which should be monitored as outlined in the final chapter.

Two chapters deal with the use of a clinical pharmacokinetics laboratory for bioavailability assessment and discuss the design and evaluation of bioavailability studies. Another chapter discusses the role of the clinical pharmacist as an interface with the physician. However, the book lacks input from the clinical pharmacologist involved in such studies.

Overall, the book represents a useful contribution which provides a valuable insight into the potential of clinical pharmacokinetics in rational drug therapy.

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Principles of Medicinal Chemistry. Edited by WILLIAM O. FOYE. Lea & Febiger, Philadelphia, Pa., 1974. 857 pp. 19 × 27 cm. Price $29.50.

This text, as the editor notes in the preface, is aimed primarily at undergraduate students, and it has been written by 38 teachers and researchers in medicinal chemistry. The book demonstrates that extensive literature has been taken into consideration in developing an account of the various classes of drugs and types of drug action. The reviewer agrees with the editor that the major objective of introducing the appropriate fundamental chemical principles to beginning students is to provide the basis for the understanding of drug action. Moreover, the reviewer feels that the understanding of chemical principles of drug action is essential to the study of therapeutics, biopharmaceutics, and clinical pharmacy; hence this book should be useful not only to students in medicinal chemistry, but also to students in pharmacology, clinical pharmacy, and pharmaceutics.

Foye excellently edited a total of 37 chapters as a review of the vast area of medicinal chemistry. The first six chapters cover general topics which are usually found in contemporary medicinal chemistry and pharmacology textbooks: historical milestones in the development of drug therapy; physicochemical properties and bioactivity; modern approaches to rational drug design; the relationship between stereochemistry and pharmacological properties; drug metabolism; and drug–receptor interactions. These preliminary chapters provide an effective introduction to the rest of the book and to the fields of medicinal chemistry and pharmacology.

The treatment of the major classes of medicinal agents begins with those affecting the central nervous system—an effective approach to the study of the chemistry of drug action relating to neuropharmacology. Subsequently, agents acting on the peripheral nervous system are surveyed. Cardiovascular drugs, anticoagulants, coagulants, plasma expanders, and diuretics are included in three chapters by the same author, thus providing continuity that makes for easy reading. Anti-allergenic agents are well covered with emphasis on the relevant biochemical principles and discussion of the major structural classes.

The medicinal chemistry of steroid endocrinology is introduced with sections on cholesterol metabolism and antilipidemic agents. For more effective utilization by undergraduates, it seems that the chapter (24) on amino acids, peptides, and proteins should precede or immediately follow the consideration of steroid hormones to relate the hypothalamic and pituitary peptides to their effects on steroid hormone production; then, the chapter on insulin and other agents affecting carbohydrate metabolism would follow logically with the thyroid agents.

The field of chemotherapy is covered (nine chapters) as an overview emphasizing modern concepts of metabolite antagonism, antibiotics, and the various classes of chemotherapeutics. As the author notes, the chapter titled, "Antibiotics," discusses only those antibiotics used in the treatment of infections caused by Gram-positive and by Gram-negative bacteria, whereas respective chapters deal with antimycobacterial, antifungal, antineoplastic, and antiprotozoan antibiotics.

Most principal chemotherapeutic agents are structurally characterized and their biochemical actions are related to therapeutic significance.

Finally, miscellaneous medicinals affecting the respiratory system (*e.g.*, nasal decongestants, antitussives, *etc.*,) and diagnostic agents are presented in two chapters.

Perhaps other educators agree with the reviewer that for undergraduate teaching a combination of texts (*e.g.*, Foye's; Burger's *Medicinal Chemistry;* and Wilson, Gisvold, and Doerge's *Textbook of Organic Medicinal and Pharmaceutical Chemistry*) together with appropriate journal articles serve the best purpose in presenting a well-balanced complementation of lecture material in medicinal chemistry, thus providing students with a good introduction to the literature *via* selected bibliographies. In this capacity, Foye's text will be a contribution to the pharmaceutical sciences and pharmaceutical education in general. This book can also serve as a useful review for pharmaceutical scientists who feel a need for updating in elementary medicinal chemistry. Furthermore, pharmacy and medical practitioners will find this text important for refamiliarization with the chemical basis of modern drug therapy.

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