fully to other contamination problems and other areas of interest.

(1) D. V. Herbst, *J. Pharm. Sci.*, **66**, 1646 (1977).
(2) H. Bundgaard, *Arch. Pharm. Chem. Sci. Ed.*, **3**, 74 (1975).

Doris V. Herbst

National Center for
Antibiotics Analysis
Food and Drug Administration
Washington, DC 20204

Received November 8, 1979.
Accepted for publication February 6, 1980.

BOOKS

REVIEWS

Drug Design, Vol. VIII. Edited by E. J. ARIENS. Academic, 111 Fifth Ave., New York, NY 10003. 1979. 420 pp. 15 × 23 cm. $42.00.

This book is the eighth member of a continuing set, which collectively comprises Volume 11 of the series of monographs entitled "Medicinal Chemistry." Dr. Ariens has produced another valuable book. As stated in the preface of this volume, the term "drug" is to be interpreted in the widest sense. Indeed, this volume includes such diverse agents as synthetic sweeteners, ionophores, and potential environmental pollutants.

In the first chapter, Martin discusses "Advances in the Methodology of Quantitative Drug Design." This chapter is a systematic survey of the approaches available for finding the substituent group giving optimum activity from a lead compound either by batch or stepwise selection of new derivatives. The parameters for describing electronic, steric, and, particularly, lipophilic effects of substituents are considered. Considerable attention is devoted to theoretical models for the distribution of drugs into different compartments depending on their physicochemical properties. Finally, the information that can be obtained by regression and discriminate analyses is discussed. The most valuable aspect of the chapter probably is the many caveats concerning the limitations and pitfalls of quantitative structure–activity relationship methods.

In the second chapter, Kirschner and Kowalski deal with the "Application of Pattern Recognition to Drug Design." The first portion covers the general methodology of pattern recognition, and the second portion covers applications to drugs. Although development of this powerful mathematical tool has been initiated, much more work is needed.

In Chapter 3, the design of drug delivery systems that will release a constant amount of drug over a long period is discussed by Chandrasekaran, Theeuwes, and Yum. This chapter primarily describes the features and theory behind three currently available systems; OROS Theophyllin for oral use, a transdermal scopolamine system, and the Alzet osmotic minipump. Chapter 4 is an excellent discussion of the use of receptor binding data for the design of steroid hormones by Raynaud, Ojasoo, Bouton, and Philibert. The general techniques of receptor isolation and displacement of bound, radiolabeled ligands for various hormonal activities are presented. Then, the specific structure–activity relationships for receptor binding of estrogens, progestins, androgens, and mineralcorticoid and glucocorticoid hormones are considered. The relationship between receptor binding and *in vivo* activity is discussed last.

The fifth chapter, authored by Crosby, DuBois, and Wingard, covers synthetic sweeteners. There is an interesting discussion of the theory of taste and the known structure–activity relationships for sweet substances; however, too much basic material on molecular interactions, Hansch treatment, *etc.*, is included that is covered elsewhere in the series and detracts from this chapter. Chapter 6, "Prospective Assessment of Environmental Effects of Chemicals," by Hueck-van der Plas and Hueck is concerned with the test systems that can be used to predict the environmental impact of chemicals. This chapter probably will be of more interest to researchers dealing with agricultural chemicals rather than to those concerned with drugs for human use.

The final chapter is fascinating; it describes the "Design of Selective Ion Binding Macrocyclic Compounds and Their Biological Applications" and was authored by Izatt, Lamb, Eatough, Christensen, and Rytting. The factors affecting the selective-ion complexation by crown ethers and derivatives are discussed in detail.

This volume generally is well written and free from typographical errors. Every medicinal chemist should find something of interest.

Reviewed by James F. Stubbins
Department of Pharmaceutical Chemistry
Medical College of Virginia
Virginia Commonwealth University
Richmond, VA 23298

Foreign Compound Metabolism in Mammals, Vol. 5. A Review of the Literature Published During 1976 and 1977. Senior Reporter, D. E. HATHWAY. The Chemical Society, Burlington House, London W1V OBN, England. 1979. 567 pp. 13 × 22 cm. Price $70.00. (Available from the American Chemical Society, 1155 16th St., N.W., Washington, DC 20036.)

This volume is an organized condensation of almost 3000 major metabolism–pharmacokinetics papers published in 1976 and 1977. The first half of the volume consists of five subject-oriented chapters, which are followed by eight product-oriented chapters.

Chapter 1, Drug Kinetics by P. G. Wellington, is the longest chapter (86 pages) and has the highest density of references (758 total references for a mean of 8.6 references/page). This chapter has 20 well-selected sections and deals with prostaglandins, ethanol, inorganic ions, and diagnostic agents in addition to a wide variety of drug classes. Chapter 2, Enzymic Mechanisms of Oxidation, Reduction, and Hydrolysis by P. Bentley and F. Oesch, interestingly covers the assigned terrain. Many readers will appreciate the subsection on epoxide hydratase for its inclusion of topics such as control and induction and occurrence in extrahepatic tissues.

P. C. Hirom and P. Millburn cover Enzymic Mechanisms of Conjugation (Chapter 3) in a fairly lively fashion. They briefly discuss new conjugation reactions and amino acid conjugations, and they animate their treatment of "the usual suspects" by reporting the tissue distribution of the enzymes responsible for conjugations with glucuronic acid, sulfate, and glutathione. In Chapter 4, J. D. Baty deals selectively and well with Species, Strain, and Sex Differences in Metabolism. Beside discussing comparative catabolic and conjugation reactions, Baty focuses on comparative differences in biliary excretion. The final subject-oriented chapter, Mechanisms of Chemical Carcinogenesis by D. E. Hathway, has this reviewer's enthusiastic endorsement for its interesting, valuable, and topical content. Its 54 pages utilize 358 well-chosen references that are integrated superbly.

The first product-oriented chapter has a more pharmacological orientation than do the others. This chapter, the Effect of Drugs on the Central Nervous System by B. E. Leonard, integrates mechanisms of action with biotransformations. C. Rhodes divides his report on Cardiovascular Drugs into sections dealing with thrombosis, hypertension, and cardiac disorders and summarizes some particularly interesting interspecies differences in biotransformation pathways of numerous drugs. L. G. Dring and P. Millburn address the metabolism of Sympathomimetic Amines and Bronchodilators and underscore many differences between *in vivo* and *in vitro* biotransformation routes.