structure-activity relationships of compounds related to 1 will appear in a future publication.

(17) Prepared from 2,6-dichlorophenol by the general method of M. S. Newman and H. A. Karnes, *J. Org. Chem.*, 31, 3980 (1966).

(18) H. Degreef and L. Verhoeve, *Contact Dermatitis*, 1, 269 (1975); H. Schaefer and G. Stüttgen, *Arzneim.-Forsch.*, **26**, 432 (1976).

Book Reviews

Biological Activity and Chemical Structure. Pharmacochemistry Library. Volume 2. Edited by J. A. Keverling Buisman. Elsevier Scientific, Amsterdam. 1977. x + 314 pp. 17.5 × 25 cm. $44.60.

This is a compilation of papers presented and discussions held at the IUPAC-IUPHAR Symposium of the same name, held in Noordwijkerhout, The Netherlands, Aug 30-Sept 2, 1977, and is Volume 2 of the "Pharmacochemistry Library", a series to be devoted to quantitative structure-activity methods.

The stated purpose of the symposium was to "bring chemists and pharmacologists into close contact with each other in the field of quantitative structure-activity relationships of bioactive compounds". A variety of pharmacologic topics is addressed; however, some chapters are short and do not provide adequate coverage to the imposing title of the chapter. Some of the authors elected to follow a broad, philosophical approach to structure-activity research, which makes enjoyable reading, but transmits relatively little that is new and provides little new insight. Indeed, more authors than not have written largely retrospectively and have described work which is already in print or which they state to be "in press" elsewhere. Some of the chapters seemed to this reviewer to be only marginally consistent with the "QSAR" theme of the conference.

Four chapters dealing with hydrophobic bonding/interactions were scattered throughout the volume. Together, these seem to comprise a useful account of current thought on hydrophobic interactions in SAR. It would have seemed logical to group these chapters together, rather than dispersing them through the book.

The volume ends with a summary of "round table discussions" by selected participants in the conference. It is the prejudice of this reviewer that these types of discussions only extremely rarely read well when translated into print, regardless of how stimulating they were when they were heard by the auditors of the discussion.

Stimulating, interesting symposia do not always make equally valuable reading material. One must question the wisdom of what seems to be a trend of publishing in book form the verbatim accounts of all possible international (and, even, national and regional) symposia in medicinal chemistry and/or pharmacology. The high cost of this volume, coupled with the fact that it is bound in a delicate hard-cover paper binding which appears to be unequal to the challenge of hard or prolonged usage, may discourage many researchers from purchasing it.

The University of Iowa **Joseph G. Cannon**

Psychopharmacology: A Generation of Progress. Edited by M. A. Lipton, A. DiMascio, and K. F. Killam. Raven Press, New York, N.Y. 1978. xxviii + 1731 pp. $49.50.

This volume was developed by the American College of Neuropsychopharmacology (ACNP) to provide a comprehensive survey of progress in their field. It clearly summarizes the current understanding of the uses and modes of action of psychotropic drugs. This volume is enormous in both scope and size, with over 250 authors contributing to 149 chapters.

The first section of the book deals with ethical and methodological issues in basic and clinical psychopharmacology. Subsequent sections review the mechanisms of drug action on a basic, molecular level viewing the neuroanatomical, histochemical, and neurophysiological aspects of psychoactive drugs. Other sections present the biochemical pharmacology of all the putative CNS neurotransmitters and their receptors as well as the response of peptides and neuroendrocrine regulation to psychotropic agents. Behavioral pharmacology is dealt with in several sections which discuss drug experiments in both animal and human models where attention is directed toward an understanding of mental or emotional illness. Several chapters cover the pharmacology of memory and learning, neurological disorders, and electrophysiological indicators of drug action.

After discussion of the interface between basic studies and clinical observations, an examination is made of the methodological, design, and statistical features that are necessary for drug assessments in patient populations. A number of the chapters in this section deal with the metabolism and kinetics of drug activity in patients, with an aim to providing some scientific bases for understanding individual variations in drug response. The current thinking about the etiology and therapeutic approaches to anxiety, the affective disorders, and schizophrenia is covered as well as the special cases of pediatric and geriatric psychopharmacology.

The final sections of the volume present some of the unforeseen hazards associated with the advent of modern psychopharmacology—the adverse effects that these agents produce in individuals who ingest psychotropic drugs for therapeutic or recreational purposes and the problems produced for society and the individual by those who misuse or abuse the drugs. Reviews of the drugs of abuse provide a useful perspective of recent developments and future trends.

This volume provides pertinent background material for all who are interested in the study and use of psychotropic drugs. Despite the scope of the book the topics are well organized and clearly written. This book represents a sequel to the ACNP's "Psychopharmacology: A Review of Progress 1957-1967", edited by the late Daniel Efron. A comparison of the two volumes readily illustrates the quantum leaps of progress seen in the 20 years since modern neuropsychopharmacology has emerged as a discipline. While the cost of this book does not lend itself as an easy purchase, it is clearly the most complete and thorough review of the field that has been published.

Northeastern University **Jeffrey B. Blumberg**

Modern Pharmacology-Toxicology. Volume 11. Receptors in Pharmacology. Edited by John R. Smythies and Ronald J. Bradley. Marcel Dekker, New York and Basel. 1978. viii + 506 pp. 16 × 23.5 cm. $45.00.

This volume is the most recent in a pharmacology-oriented series. However, each edition is clearly independent of its predecessors.

"Receptors in Pharmacology" contains 11 chapters. Seven of these provide reviews of research progress on specific receptor systems (AcCh, β-adrenergic, opiate, progesterone, amino acid, etc.). The remaining four chapters are broadly applicable to receptor studies. The inclusion of the latter serves to unify the text and enhance its value beyond a mere collection of individually authored review articles.

The opening chapter, "Receptor Theory" by D. J. Triggle, sets an appropriate tone by defining the behavior expected from various models of receptor organization. It is clear that few receptors are available in isolated preparations of sufficient purity to judge the validity of one model vs. another. More importantly the state of purified receptors may not reflect relevant physiologic

coupling conditions. However, such models do offer a basis for comparison. It is interesting to note the analogous approaches used in the study of divergent receptors, especially since they are being probed at different levels of sophistication.

The final chapter, "Adenyl cyclase and Hormone Receptors" by L. Birnbaumer, focuses on nucleotide regulation of cyclase function. It is an excellent concluding discussion of an isolated, hormone-responsive receptor exhibiting allosteric behavior compatible with the models of the introductory chapter. Thus this text has a definite beginning, middle, and happy ending.

To be of optimal value, this text must be very current in a rapidly expanding field. In general, this is the case. Most chapters cite references through 1976. There is sufficient SAR discussion to perk the interest of medicinal chemists. Moreover, this volume would be an excellent choice as a text for a graduate level course. One negative note is the price—$45—which is likely to restrict student ownership.

Northeastern University **Richard C. Deth**

Analysis of Steroid Hormone Drugs. By S. Görög and G. Y. Szász. Elsevier, Amsterdam. 1978. 426 pp. 17 × 24 cm. $59.00.

It is welcome news when a scientist prominent in a given field is willing to write a monograph on his specialty, and it is doubly welcome when such a venture is successful. One of the foremost contributors to steroid analysis, S. Görög, and his coauthor, G. Szász, are therefore to be congratulated for having written an elegant and very useful monograph on the analysis of steroid drugs with emphasis on pharmaceutical and virtual exclusion of biological–clinical analysis.

In the book, 71 pp are devoted to basic chemical, pharmacological, and historical knowledge on steroids. It should be noted with approval that in all theoretical discussions, the authors do not start with "Adam and Eve" but come right to the point. The application of chromatography—partition, paper, thin-layer, gas, and high-pressure liquid—of such special importance to steroid analysis, is discussed in 101 pp. The section on HPLC covers all the fundamentals, but it was written at the onset of the steep slope of the exponential growth curve of this vital new technique.

The next 261 pp cover all other methods used in the qualitative and quantitative analysis of steroids. The detailed presentations on quantitative analysis are classified on the basis of functional groups. Thirty-one pages are devoted to the assay of pharmaceutical preparations including automation of assays. In the last six pages, analysis of the raw materials for the semisynthesis of steroid hormones is briefly discussed.

The book is very clearly written in excellent English for which credit should go to D. Durham, who revised the English manuscript. It is a pleasure to read the intelligent discussions of methods such as, for instance, the important tetrazolium reaction, blue and red. From checking the innumerable references, it can be deduced that the literature has been surveyed through 1975 which is commendable in a book of this scope. The print, including figures and tables, is very clear, but considering the price of the book, paper and binding could be of better quality.

The book is highly recommended to everybody engaged in steroid analysis, and it is hoped that it will be updated in future editions.

The Squibb Institute for Medical Research **K. Florey**

Non-catecholic Phenylethylamines. Part I. Phenylethylamine: Biological Mechanisms and Clinical Aspects. Edited by Aron D. Mosnaim and Marion E. Wolf. Marcel Dekker, New York, N.Y. 1978. xiii + 536 pp. 23.5 × 15.5 cm. $49.50.

Although phenylethylamine (PEA) was first shown to have pharmacologic effects on the mammalian central nervous system over 60 years ago, the importance of this compound to biological function has remained obscure until recently. The demonstration of its existence in human urine has resulted in a renewed interest in the role of PEA, as exemplified by the 22 chapters in this volume, each of which has been written from a unique perspective.

The book is somewhat arbitrarily divided into three sections. The first, which consists of 10 chapters, is concerned with the biochemistry of PEA. This section includes a discussion of the existence of multiple forms of monoamine oxidase and their role in the metabolism of PEA, the uptake of PEA by synaptosomes, release of PEA from brain slices, and the effect of PEA on the metabolism of other endogenous amines. The second section is comprised of 6 chapters which deal with the effect of PEA on the behavior of experimental animals, including evidence for the mechanism of its stimulatory effect and role in extrapyramidal function, its CNS pharmacology, and the effect on behavior of chronic treatment with PEA. The third section is concerned with the role of PEA in clinical medicine, including depression, Parkinson's disease, and disorders of metabolism such as phenylketonuria. In addition, there is a useful chapter which evaluates techniques used for the analysis of PEA.

Each chapter has a table of contents and a well-documented introduction, in addition to the basic material presented. The utility of this volume is further enhanced by an index of authors cited and a complete subject index. The volume is well edited and can serve as a valuable basic reference work for the novice as well as the experienced investigator with an interest in the biochemical, behavioral, and clinical significance of phenylethylamine.

The Ohio State University **Richard Fertel**

Zinc and Copper in Clinical Medicine. Edited by K. Michael Hambidge and Buford L. Nichols, Jr. Spectrum Publications, Jamaica, N.Y. 1978. x + 132 pp. 15 × 23 cm. $15.00.

This publication is based on the proceedings of the 17th Annual Meeting of the American College of Nutrition, held in Montreal in 1976. The topics selected for discussion, in this rapidly developing field, are concerned with the clinical manifestations of and treatment for deficiency states of zinc and copper. Among the deficiency states already recognized may be mentioned Wilson's disease, due to an inborn error of copper metabolism, and malabsorption syndromes, liver disease, and Sickle cell disease, due to zinc deficiency or disturbed zinc metabolism. There is growing concern that suboptimal zinc nutrition may be common in North America. The importance of zinc and copper in clinical medicine was not recognized prior to the 1960's.

The book consists of ten chapters, seven of which are on the general subject of zinc deficiency in man, and includes the biochemistry of zinc and its role in wound healing, the role of zinc in amino acid metabolism, interrelationship of zinc, saliva, and taste, zinc nutrition in pediatrics, alterations in zinc and vitamin A metabolism in alcoholic liver disease, and zinc and acrodermatitis enteropathica. One chapter is devoted to zinc and copper deficiencies during intravenous hyperalimentation, and two are taken up with the biochemistry and metabolism of copper and copper deficiency states. The multifunctional nature of ceruloplasmin is also brought out.

Considering that it is a multiauthor work on a clinical subject, the book is quite readable. The discussions present the underlying basic biochemistry wherever possible, so they are of value to basic researchers as well as clinicians. Some knowledge of the pathology of the disease states discussed is necessary, as well as a familiarity with the established functions of zinc and copper, but the medicinal chemist should find the book of interest. For the clinical chemist, it should be required reading.

Massachusetts College of Pharmacy **William O. Foye**