1.00; Tyr, 0.94; His, 1.12; Arg, 1.08; Sar, ~2.

Acknowledgment. This investigation was supported by the Alberta Heart Foundation and the Canadian Heart Foundation.

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Book Reviews

Sustained and Controlled Release Drug Delivery Systems. Volume 6. Drugs and the Pharmaceutical Sciences. Edited by Joseph R. Robinson. Marcel Dekker, New York. 1978. x + 713 pp. 16 × 23.5 cm. $59.75.

As stated by the editor, this volume was designed to "fulfill a perceived need to provide a comprehensive picture of the sustained release drug product area". To this end, the editor and the various authors have succeeded in bringing together a vast amount of literature and providing the reader with a comprehensive reference list.

A novice in this area will find that the first three chapters of the book bring them up to date in classical sustained release theory and approach. Those with some experience in sustained release drug development will find these chapters an excellent review. The section on biological drug properties, particularly as they relate to pharmacokinetic considerations in the design of sustained release drug delivery systems, is especially good. The presentation of the various physical strategies used in formulation is valuable, although theoretical aspects are somewhat watered down.

The discussion of the physical approach to sustained release drug development is continued in Chapter 4 with a particular emphasis on drug implants. Readers only peripherally involved with this topic may find the concepts and mathematics difficult. Although basically well written, the chapter is somewhat repetitious and also overlaps with some material presented in later chapters.

Chapter 5 deals with the evaluation of injury to the injection site and contains information essential to those involved in the formulation of parenteral drug products. The detail into which this chapter goes, however, might better have been left to a more comprehensive treatment of parenteral drug development.

The next chapter, which discusses the chemical approach to sustained released drug delivery, will be of particular interest to medicinal chemists. The chapter is excellent both with regard to material presented and literature surveyed.

Chapter 7 summarizes the philosophies of the biomedical engineers in developing what have come to be known as therapeutic systems (i.e., Ocusert®, Progestasert®, etc.). The material is interesting and is a necessary component of the book, but the manner of presentation provides little mechanistic insight. The two concluding chapters summarize, in a form not readily found elsewhere, the application of classical pharmacokinetics to sustained release drug disposition.

In summary, this book will be a valuable aid to anyone interested in understanding sustained and controlled release drug delivery systems. It is comprehensive, provides an outstanding literature survey, and is remarkably free of technical and typographical errors. The inclusion of separate author and drug indicies is also useful. Some repetition, particularly in the early chapters, may have made the book longer than required. This point becomes important primarily from the standpoint that had the book been shorter it might have been made more affordable.

The University of Kansas **Thomas F. Patton**

Advances in Experimental Medicine and Biology. Volume 98. Immunobiology of Proteins and Peptides. 1. Edited by M. Z. Atassi and A. B. Stavitsky. Plenum Press, New York. 1978. x + 513 pp. 25 × 18 cm. $45.00.

This book contain a series of articles which relate to (1) antigenic structure of proteins, (2) immunobiology of proteins and peptides, (3) immunobiology of protein conjugates, (4) immune responses to synthetic polymers and to proteins, and (5) structure of lymphocyte membranes. Current data from a series of independant investigators are included which relate the molecular structure of proteins and peptides to their activity in either the activation or inhibition of immune response mechanisms. Each series of papers is followed by a discussion paper which in every case extracts significant key points from the articles and suggests possible new directions for research. This book is especially useful for immunochemists involved in research and/or teaching.

Staff

Neurotransmitter Receptor Binding. Edited by H. Yamamura, S. Enna, and M. Kuhar. Raven Press, New York. 1978. ix + 195 pp. 16 × 24 cm. $17.00.

One of the more important recent developments in neurochemistry which has a direct and practical application to medicinal chemistry is the use of radioactively labeled agonists and antagonists to study neurotransmitter receptors. These receptor-binding techniques have vastly increased our knowledge of the biochemical characteristics of receptors and, in addition, provide a relatively simple and rapid means of screening for new drugs. A book outlining the basic theoretical and practical background to this subject is, thus, particularly welcome.

The volume begins with an excellent introductory overview by Snyder, who is one of the worlds leading exponents of this technique, and this is followed by a very clear presentation of the essential elements of the kinetics of small molecule–macromolecule interactions. The next two chapters by Burt and Bennett cover

the criteria for receptor identification and the methods in current use. These two chapters are invaluable for those readers requiring practical guidance in the use of these techniques. The current state of actual receptor isolation, as opposed to biochemical characterization, is dealt with succinctly by Lindstrom. This author also stresses the value of using antibodies in this type of work. Receptor labeling is not only confined to in vitro studies with tissue fractions; with drugs having a high specificity it is possible to carry out in vivo histochemical localization studies. This topic is clearly reviewed by Kuhar. There then follows a chapter outlining the use of these assays for the analysis of neurotransmitter and drug concentrations. The next chapter by Creese is probably the one of most interest to medicinal chemists, as it critically outlines the scope and limitations of receptor binding as a drug screening technique. The final chapter deals with miscellaneous other applications of these methods in developmental neurobiology and in studying various neuropsychiatric disorders.

In their preface, the editors state that their intention is that this book will act as a guide to enable neuroscientists at all levels to understand and successfully apply these techniques. This aim has been achieved and the book is warmly recommended.

University of Groningen **Alan S. Horn**

Handbook of Physiology. Section 1. The Nervous System. Volume 1. Cellular Biology of Neurons. Parts 1 and 2. Section Editors, John M. Brookhart and Vernon B. Mountcastle. Volume Editor, Eric R. Kandel. American Physiological Society, Bethesda, Md. 1977. Distributed by Williams & Wilkins, Baltimore, Md. xxviii + 1182 pp. 22.5 × 28.5 cm. $135.00.

"Cellular Biology of Neurons" is the most comprehensive and up-to-date survey of the functioning of nerve cells. This volume represents the first part in the revision of the American Physiological Society's original neurophysiology section of the *Handbook of Physiology* published 20 years ago. There are 29 chapters in the new two-book set covering a broad topical range, including neuron and glial morphology, excitation and conduction, junctional transmission, neuron–neuron interactions, neuron systems in the CNS, and neuronal circuits involved in invertebrate behavior. Each of the 42 contributors to this volume is a recognized authority in his (her) special perspective in neuroscience. The scope of this volume is overwhelmingly broad. However, the principles underlying newly developed approaches to studying nerve-cell functioning are emphasized throughout.

"Cellular Biology of Neurons" is not light reading. It is intended primarily for graduate students in neuroscience and for neuroscientists who want to keep abreast of developments in the many disciplinary approaches to studying nerve cell functioning. While few may study this volume from cover to cover, it would be an invaluable addition to the personal library of any neuroscientist.

Northeastern University **Norman R. Boisse**

Annual Review of Neuroscience. Volume 2. Edited by W. M. Cowan. Annual Review, Inc., Palo Alto, Calif. 1979. 555 pp. 16 × 23 cm. $17.00.

This is the second volume of the new "Annual Review" series of neuroscience. While there is no stated unifying theme to the topics chosen, several do receive particular emphasis. Several chapters deal with vision processes, e.g., "Visual Transduction" (by W. Hubbel and M. Bownds), "Retina Physiology" (by A. Kaneko), "Visual Pathways" (by R. Rodieck), "Visual Cortex" (by D. Van Essen), and "Vestibular Mechanisms" (by W. Precht). Various aspects of neurotransmitter function are covered in this volume, e.g., "Biochemistry of Neurotransmitter Release" (by R. Kelly and others), "Modulatory Action" (by I. Kupfermann), "Opioid Peptides" (by S. Snyder and S. Childers), and "Central Catecholamine Systems" (by R. Moore and F. Bloom). Two chapters review "Ion Channels in Development" (by N. Spitzer) and "Pharmacological Approaches for Studying the Structure of Sodium Channels" (by J. Schwartz). Three reviews cover their topics from a more clinical perspective: "The Biology of Affective Disorders" (by E. Sachar and M. Baron), "Development of Behavior in Human Infants" (by P. Wolff and R. Ferber), and "Slow Viral Infections" (by B. Brooks and others). "The Mechanisms of Axonal Transport" (by J. Schwartz) and "Steroid Actions in the CNS" (by B. McEwen) are also reviewed. It is gratifying to see an increased use of schematic diagrams to illustrate proposed mechanisms and theories as they are often helpful learning and teaching aids.

Northeastern University **Staff**

Encyclopedia of Chemical Technology. Third Edition. Volume 4. Edited by Kirk-Othmer. Wiley, New York. 1978. xxv + 930 pp. 18.5 × 26 cm. $120.00.

Volume 4 of the third edition contains comprehensive reviews of blood, coagulants and anticoagulants, to cardiovascular agents. The later subject, covered in 58 pages (293 references), includes a discussion of antihypertensive agents, cardiac glycocides, antiarrhythmic agents, antiatherosclerotic agents, antianginal agents, and peripheral vasodilators. These topics, as well as several topics of more peripheral interest to medicinal chemists, provide an excellent authoritative and up-to-date source of information in this latest edition of this encyclopedia.

Staff

Encyclopedia of Chemical Technology. Third Edition. Volume 5. Castor Oil to Chlorosulfuric Acid. Edited by Kirk-Othmer. Wiley, New York. 1979. xxv + 880 pp. 19 × 26 cm. $20.00.

Volume 5 of the Third Edition of the "Encyclopedia of Chemical Technology" has now appeared and includes articles from "Castor Oil to Chlorosulfuric Acid". A large section of this volume (101 pages) is devoted to a comprehensive and authoritative presentation of chemotherapeutic drugs, including anthelmintics, antimitotics, antimycotic and antirickettsial, antiprotozoal, and antiviral drugs. This series will serve as a most valuable source of current information to chemists and engineers, whether they are in industry or in academia. A separate index for Volumes 1 to 4 (A to Cardiovascular agents) is now also available.

Staff

Advances in Steroid Biochemistry and Pharmacology. Volume 6. Edited by M. H. Briggs and G. A. Christie. Academic Press, New York. 1977. xx + 174 pp. 15.5 × 23.5 cm. $18.50.

This series has provided a good selection of broad and specialized topics in the steroid field, e.g., "Sterols of Marine Invertebrates and Plants" (Volume 1); "Biochemical Effects of Oral Contraceptives" (Volume 5); "Steroid Hormones and Breast Cancer" (Volume 4). Volume 6 is more specialized and contains only four chapters: "Regulation of Kidney Growth by Androgens" (by C. D. Kockakian), "Catatoxic Steroids" (by P. Kourounakis, H. Seyle, and Y. Taché), "The Steroid-Binding β-Globulin of Human Plasma" (by W. Heyns), and the longest chapter (73 pages) "2-Hydroxyestrogens" (by H. P. Glebke, P. Ball, and R. Knuppen). The editors have also included an editorial review "Antifertility Substances in Plants".

References are cited through 1975. As in the previous volumes of the series, each chapter begins with an outline (with subsection page numbers). Each chapter also includes an extensive list of references—over 200 for the "Catatoxic Steroids" chapter alone. An author index, subject index, and cummulative index of titles appear at the end of the volume. These are all well done.

However, perhaps in an effort to keep the price low, relatively few drawings and flow charts of procedures or pathways are included. Since the series began, volumes have become noticably smaller. Topics of current interest to the steroid community have been left to other review series—e.g., on many aspects of steroid receptors, applications of affinity labeling to steroid receptor

studies, use of X-ray crystallography in steroid biochemistry and pharmacology, etc. Volume 6 is an important reference for researchers in the specialized areas reviewed. However, it is hoped that more topics of broad interest can be included in future volumes.

Oregon State University **Dwight S. Fullerton**

Quantitative Mass Spectrometry in Life Science. Volume II. Edited by A. P. De Leenheer, R. R. Roncucci, and C. Van Peteghem. Elsevier Scientific, Amsterdam, Oxford, and New York. 1978. x + 501 pp. 25 × 17 cm. $48.45.

This volume represents a compilation of the proceedings of the "International Symposium in Quantitative Mass Spectrometry" held at Ghent, Belgium, in June of 1978. As is usually the case with books of this type, it contains for the most part research articles which, in principle, belong in research journals. Instead they seem to appear quite frequently, as of late, in what are getting to be prohibitively expensive editions. This comment is not intended to detract from the quality of the publications in this issue or the concept of holding symposia of this type. However, some consideration could perhaps be given to having such proceedings published in conjunction with special issues of the specialty journals (e.g., *Biomedical Mass Spectrometry*, *Organic Mass Spectrometry*, etc.). It should thus be possible to make them available to participants, subscribers, and other interested parties at more reasonable prices. After all, this procedure is often observed with some of the major chromatography meetings and the respective journals. If, on the other hand, these proceedings are to be published in a book form, some effort should be made to provide at least a subject index so as to conform with the minimum standards of a scientific book publication.

The subject of this volume, "Quantitative Mass Spectrometry", is one of considerable significance in view of the sensitivity of the technique and the ever-increasing interest in trace detection. As indicated in the preface, the volume does indeed provide an up-to-date synopsis of analytical work in this area. The various communications (46 in all) cover applications of mass spectrometry in drug metabolism, clinical chemistry, biochemistry, toxicology, and environmental research. For the most part, their authors are recognized specialists in their fields, and the reader is thus provided with a very wide-ranging and objective view of problems and techniques of quantitation using mass spectrometry. Therefore, it can be fairly said that the contents of this volume will be of value to mass spectrometrists, analytical chemists, clinical chemists, pharmacologists, biochemists, toxicologists, and pharmaceutical chemists.

Northeastern University **Paul Vouros**

Critical Concerns in the Field of Drug Abuse. Joyce H. Lowinson, Conference Chairperson; Benny J. Primm and Shirley D. Coletti, Conference Co-Chairpersons; Arnold Schecter, Harold Alksne, and Edward Kaufman, Editorial Compilers. Marcel Dekker, New York and Basel. 1978. xxxiv + 1426 pp. 23 × 16 cm. $45.00.

This volume represents the "Proceedings of the Third National Drug Abuse Conference" which was held in New York in March 1976 and was attended by over 3500 individuals. The scope of the book is quite wide ranging despite the fact that the drugs of abuse which were focused on were the opiates and alcohol. Over 250 short papers were given such diverse subjects as "Public Policy", "Epidemiology", "Prevention", "Evaluation", "Treatment", "Social Issues", "Alcohol Abuse", "Polydrug Abuse", and "Research". It is the latter section comprising about 200 pages which will be of the greatest interest to medicinal chemists. There is a section on basic pharmacology, which deals mainly, but not exclusively, with opiates, a section on narcotic antagonists, and another on L-α-acetylmethadol (LAAM). Because of the vast number of papers, no author is permitted to treat his subject in depth, so that this book represents a broad overview of the state of the art as of March 1976. This reviewer is curious to know why it took over 2 years to get this volume published, since each manuscript was delivered in camera-ready form.

Because of the wide range of subjects covered and the high price of the volume, it is diffficult to recommend the purchase of the book by individual medicinal chemists. However, it should be available in the library of institutions which have even a modest interest in the field of drug abuse, particularly the opiates.

Rensselaer Polytechnic Institute **Sydney Archer**

Psychopharmacology in the Practice of Medicine. Edited by Murray E. Jarvik. Appleton-Century-Crofts, New York. 1977. xiii + 533 pp. 15.5 × 23.5 cm. $20.50.

This volume provides an overview of the pharmacology of psychotherapeutic drugs aimed for the family or primary care physician. Recognizing that psychopharmacological knowledge has proliferated at an exponential rate, Murray Jarvik has edited a text designed to bridge the often unmanageable gap between the newly acquired knowledge of the researcher and the application of this knowledge to clinical medicine by the physician. Accordingly, the bulk of this volume is devoted to descriptions of basic research findings with explicit or implied clinical usefulness (experimental psychopharmacology) or to descriptions of indications, contraindications, risks, and benefits of individual drugs or drug classes (clinical psychopharmacology). Jarvik has drawn upon the expertise of 36 contributors in developing this volume. Despite the continuous shift in point of view and style, Jarvik has managed to smooth out these edges by writing a commentary before each chapter, as well as an introduction and conclusion to the volume. Since major advances in clinical psychopharmacology are so inextricably linked to the findings of basic research, this volume should be of considerably interest to faculty, graduate students, and practitioners of clinical pharmacy.

Northeastern University **Norman R. Boisse**

Chemistry of 1,2,3-Triazines and 1,2,4-Triazines, Tetrazines and Pentazines. By H. Neuhoeffer and P. F. Wiley. (Chemistry of Heterocyclic Compounds. A. Weissberger and E. C. Taylor, Eds.). Wiley, New York. 1978. xxv + 1335 pp. 16 × 23.5 cm. $92.50.

The first "Chemistry of Heterocyclic Compounds" volume on the six-membered nitrogen heterocycles containing more than two nitrogens, excluding 1,3,5-triazines, was published in 1956 and covered the literature through Chemical Abstracts 1950. This update reviews the literature through those appearing in Chemical Abstracts in 1974.

Do not be alarmed by its size, with over 1300 pages of text and 2564 figures. As with most of the volumes in the Weissberger series, this is a useable and readable reference text. It is excellently written, authoritative, and well organized and should prove useful to chemists whether or not they are engaged in research on the ring systems discussed.

The order of the ring system presentation is that of the original volume, with the exception of the 1,2,4,5-tetrazine system which is now the first of the tetrazines discussed, a more proper place for the most researched of the tetrazines. Within each heterocyclic system, the chapters have been ordered based on the degree of saturation, the number and size of condensed ring systems, the substitution pattern, and finally the type of substituent. This logical organization of the discussion, together with the compound tables and a useable index, help to make this text a valuable addition to the reference section of any chemical library.

The book is remarkably free of typographical errors, several being the confusing cineol structure on page 751 and a mislabeling of structures **19** and **20** on page 1299. The 1,2,4,5-tetrazine chapters use reaction numbers which do not correspond to those used in the text. Also, I feel that the authors could have devoted more space to the "Use and Biochemical Aspects" chapters. That this review is appearing in the *Journal of Medicinal Chemistry* tends to highlight this weakness.

Sandoz, Inc. **Gregory B. Bennett**

QuaSAR: Quantitative Structure Activity Relationships of Analgesics, Narcotic Antagonists, and Hallucinogens. NIDA Research Monograph 22. Edited by G. Barnett, M. Trsic, and R. E. Willette. U.S. Government Printing Office, Washington, D.C. 1978. ix + 487 pp. $5.25.

This monograph presents the proceedings of a technical review meeting held by the National Institute of Drug Abuse in April of 1978. Like the meeting, the monograph is divided into four parts: I. Pharmacochemical Methods, six papers; II. Hansch Analysis and Other Empirical Methods, seven papers; III. Molecular Mechanics, eight papers; IV. Spectroscopic Methods, four papers. Each of the four sections of the monograph has a brief introduction in addition to the papers. The papers cover a broad spectrum of approaches to structure–activity studies of analgesics, narcotic antagonists, and hallucinogens.

The papers of the first section deal with investigations of opioid and hallucinogen receptor(s) with molecular probes. The relationship between absolute molecular configuration and psychotomimetric activity has been probed using the two optically active forms of MDMA [*N*-methyl-3,4-methylenedioxyphenylisopropylamine]. Structure–activity relationships of various mescaline-type psychotomimetrics were studied using several congeners of DOM [1-(2,5-dimethoxy-4-methylphenyl)-2-aminopropane] differing by substitution on the side chain; the effects of differing substitutions on the 4 position of phenylisopropylamines were also investigated. The histamine H_2-receptor's interaction with LSD was studied, and topological similarities of D-LSD with known H_2 antagonists were used to predict a new H_2 antagonist, a correct prediction. A discussion was presented of the relationship between the opioid and LSD receptor's topology and drug selectivity. The design and synthesis of rigid hallucinogen analogues for probing the hallucinogen receptor(s) were presented.

The papers of the second section demonstrate the utility of studying structure–activity relationships by varying substituent patterns and define some boundaries on expectations for the results of these types of studies. An overview of the methods used in quantitative drug structure–activity studies was presented, with critical evaluation. Correlations of 16 agents involved with serotonin and LSD binding sites against three physicochemical parameters (log *P*, molecular weight, and n_H) were developed. Thirty-seven phenethylamine β-adrenergic agonists and antagonists were analyzed using a pattern-recognition method. A relationship was established between the antinociceptive activity of 10 compounds and opiate receptor affinity and log *P*. The opiate receptor affinities of a set of 42 diverse narcotic drugs were correlated with physicochemical properties (log *P*, molecular weight, and molar refractivity) of portions of the drugs' structures. A review of the use of three models—conservative, dynamic, and mechanistic—for SAR studies of hallucinogens was given. Analgetic potency of two series of drugs [13 esters of 14-hydroxycodeinone and 9 *N*-alkylnormeperidine homologues] was correlated with log *P*, molecular weight, molar refraction, and steric constants.

The papers of the third section deal with the use of quantum mechanical and potential function calculations for SAR studies. The potency of a series of 2,4,5-ring substituted phenylisopropylamines was studied using PCILO, ab initio, and CNDO/2 methods and correlations with log *P* and electronic parameters. A review of the state of the art in applications of quantum mechanical methods to drug design was presented. Studies of narcotics and hallucinogens using physicochemical parameters and ab initio quantum mechanical calculations were presented. The application of quantum mechanical methods for the study of electronic and structural requirements for narcotic and analgesic activity of opiates was presented. A description was given of the extended isolated molecule method for the study of drug design. Studies of the affinity of tryptamine congeners for the LSD/serotonin receptor using quantum mechanical calculations were reported. The potential function method for calculating molecular geometries and energies was discussed with several examples drawn for antipsychotic drugs. Conformational analyses were performed for five lysergates in six solvents and related to hallucinogenic and antiserotonin activities.

The papers of the fourth section deal with the application of spectroscopic methods to SAR studies. A study was presented where ^{13}C NMR was used to investigate conformations in various solvents of narcotic agonists, especially α- and β-methadol hydrochloride and α- and β-acetylmethadol hydrochloride. The use of photoelectron spectroscopy for studying the electronic structures of hallucinogens and inactive analogues was reported. Narcotic agonists were studied by correlating antinociceptive activity with log *P* and by use of charge densities and ^{13}C NMR chemical shifts. The conformations of a set of methoxyphenethylamine analogues were studied using NMR spectroscopy.

The papers presented in this monograph cover the full diversity of approaches to SAR studies of analgesics, narcotic antagonists, and hallucinogens. It should serve as a valuable summary of the state of the art in this field and a valuable reference volume for these activities. The book was produced from typewritten manuscript; the quality of production is very good and the book is easily readable.

Pennsylvania State University **Peter C. Jurs**

Marine Natural Products. Chemical and Biological Perspectives. Volume I. Edited by Paul J. Scheuer. Academic Press, New York. 1978. x + 308 pp. 15 × 22.5 cm. $29.50.

In 1973 there appeared a book entitled "Chemistry of Marine Natural Products", by Paul J. Scheuer, which reviewed the early research results of a rejuvenated field of chemistry. In view of the rapid proliferation of research communications on the chemistry of natural substances of the sea, Dr. Scheuer has initiated the editing of a series of volumes devoted to this subject. In volume I, he has congregated Drs. J. Darias and J. D. Martin, L. Minale, R. E. Moore, F. J. Schmitz, and Y. Shimizu, who have contributed chapters on algal sesquiterpenoids, terpenoids from marine sponges, algal nonisoprenoids, uncommon marine steroids, and dinoflagellate toxins, respectively. These scholars have presented fine reviews, each in its own style, in areas of present serious scientific inquiry. Through the present book and, hopefully, future volumes, it should be possible for any advanced student in natural products chemistry to become exposed to the vitality of marine chemistry and its present state of the art. The book offers much material translatable into examination questions for courses in advanced organic chemistry.

Whereas the book was designated to serve both chemical and biological perspectives, only the former are stressed seriously, thus probably disappointing the members of the marine biology community. For a book of 308 pages, it encompasses surprisingly few errors. Those that are especially obvious include: the name of Roger Adams once again being shortened to Adam (page 16, line 31); CMR being converted erroneously into PMR (page 29, line 1); the wrong number of double bonds appearing in formulas 211 and 212 (page 71) and on the compounds leading to 317 and 318 (page 107); the notation "Scheme 23" missing from page 108; the cyclopentene substitution pattern being noted incorrectly on page 110 (lines 15 and 16); formulas 359 and 361 (page 113) having carbons and a double bond missing, respectively; formula 28 (page 134) having Cl represented incorrectly by C; "Grignard" on the 46 → 47 arrow (page 136) being confusing and the 57/58 → 59/60 → 61/62 conversions being left unexplained; formula 179 (page 159) being portrayed incorrectly and formula 208b (page 165) having a double bond missing; and "cadanen" (page 165) needing to read "cadanene". Nevertheless, these mistakes do not detract from a well-written text which should find its way onto the shelves of most natural products chemists. As is unfortunately true with most specialty texts, the book has a high price.

Rice University **Ernest Wenkert**

The Alkaloids. Volume XVII. By R. H. F. Manske and R. Rodrigo. Academic Press, New York, N.Y. 1979. xx + 611 pp. 16 × 23 cm. $55.00.

The first volume of "The Alkaloids" appeared in 1950 and since that time 17 volumes of this series of reviews have appeared and served as an invaluable source of information for chemists, particularly those involved in natural products research. It is with

great sadness and a sense of real loss that we record the untimely death of the series founding editor, Dr. R. H. F. Manske. The reviews which now appear in Volume XVII where commissioned by him and serve as a tribute to Dr. Manske's tireless efforts in behalf of chemistry. It is hoped that the appearance of subsequent volumes, maintaining the rigorous standards of excellence set by the late Dr. Manske, will serve as a lasting memorial to him and the work which he started.

Volume XVII contains a brief tribute and biographical sketch of Richard Helmuth Frederick Manske (1901–1977), contents of previous volumes, and five chapters by a internationally renowned group of natural products chemists. "The Structure and Synthesis of C_{19}-Diterpenoid Alkaloids" (by S. W. Pelletier and N. V. Mody, University of Georgia); "Quinoline Alkaloids Related to Anthranilic Acid" (by M. F. Grundon, New University of Ulster, North Ireland); "The *Aspidosperma* Alkaloids" (by G. A. Cordell, University of Illinois); "*Papaveraceae* Alkaloids II" (by F. Šantavý, Palacky University, Czechoslovakia); and "Monoterpene Alkaloid Glycosides" (by R. S. Kapil, Central Drug Research Institute, India, and R. T. Brown, The University, Manchester, England) are discussed and brought up to date, in most cases, from previous volumes in this series. A subject index is also included.

Staff

Isoquinoline Alkaloids Research: 1972–1977. By Maurice Shamma and Jerome L. Moniot. Plenum Press, New York and London. 1978. xxxiv + 425 pp. 15 × 23 cm. $29.50.

The organization of the present book is essentially the same as Shamma's monograph "The Isoquinoline Alkaloids", published in 1972. Each chapter begins with a discussion of structural elucidation and synthesis, a description of typical reactions then follows, and the chapter ends with the coverage of biogenesis, pharmacology, and spectroscopy. New chapters added to describe novel alkaloidal types discovered during this time period include various dimers, the 4,5-dioxoaporphines, the secoberbines, the 3-arylisoquinolines, 1,6-diazafluoranthenes, and the interesting tropoloisoquinoline imerubrine. Another new chapter discusses the chemistry of aristolochic acids and the aristolactams, obviously of isoquinoline derivation in spite of the fact that they do not contain a basic nitrogen function. On the other hand, the naphthalenoisoquinolines, represented by ancistrocladine and derivatives, which do not originate biogenetically from tyrosine, were omitted here.

This book is extremely valuable for everyone who is interested in the chemistry of isoquinoline alkaloids especially those working on the isolation of alkaloidal substances. Great care has been taken in the design of structures, and, whenever known, optically active alkaloids are shown with their correct absolute configuration. The individual reaction steps are indicated and reaction yields given. Infrared, ^{1}H NMR and UV spectra are included in each chapter, and ^{13}C NMR values are given when available. The topics on pharmacology and biogenesis were kept purposely short but give an adequate summary on the state of the art. The immense literature covered, citing more than 750 references, makes this book an essential text for all working in this field. Although it can be understood that the alkaloids belonging to the morphine, hasubanonine, erythrina, amaryllidaceae, tubulosine, and colchicine groups of alkaloids are not treated in this text, it might have been helpful if this would have been mentioned briefly and proper reference to their literature given. The term berbine is now generally accepted for tetrahydroprotoberberine and would constitute a welcomed shortening. It is also suggested that the names pavine and isopavine be replaced by the terms pavinan and isopavinan, in analogy to morphinan. The table on the proven and probable biogenetic loci for the formation of isoquinoline alkaloids, shown on the back of the cover in the earlier monograph, and, properly upgraded, would have made a nice backcover of this text as well. This book is good to have and a pleasure to read and to consult. It is hoped that the authors continue to update the literature on isoquinoline alkaloids and come back with another volume in 5 years from now.

National Institutes of Health **Arnold Brossi**

Alkaloid Biology and Metabolism in Plants. By George R. Waller and Edmund K. Nowacki. Plenum Press, New York and London. 1978. xvii + 294 pp. 16 × 23.5 cm. $22.50.

The medicinal chemist who has, not infrequently, modified the structures of alkaloids in an attempt to create more useful drugs will profit from this well-written account of current thinking in the realm of alkaloid production and metabolic transformation in plants. Captivated by the elegance of modern methods for the isolation, characterization, and synthesis of these fascinating compounds, one is apt to overlook the basic questions: *why* ("The Role of Alkaloids in Plants"), *where* ("Sites of Alkaloid Formation"), *when* ("Environmental Influences on Alkaloid Production"), and *how* they are produced ("Genetic Control of Alkaloid Production"). The first chapter summarizes the value of alkaloids in chemotaxonomic studies; the final, and largest, chapter should lay to rest the notion, if it is still held, that alkaloids are the end products of plant metabolism. The introduction contains some challenging suggestions for the future role of alkaloid research; all natural products chemists will feel better for having read it.

Northeastern University **Robert. F. Raffauf**

Iminium Salts in Organic Chemistry. Part 2. Edited by H. Böhme and H. G. Vieh. (Volume 9. Advances in Organic Chemistry: Methods and Results. Edited by E. C. Taylor). Wiley-Interscience, New York. 1979. xii + 838 pp. 15.5 × 23.5 cm. $68.50.

This volume is the second part of a two-part series on iminium salts. Included is a chapter by Bredereck on the background of carboxamide salt chemistry; seven chapters by Kantlehner on Vilsmeier–Haack adducts, a variety of metheniminium salts, and amidinium salts; a chapter by Simchen on ortho amides; a chapter by Yanagida, Okahara, and Komori on iminium and nitrilium salts in the dimerization of cyano compounds in acid; a chapter by Kost, Suminov, and Sheinkman on *N*-acylpyridinium salts; a chapter by Heimgartner, Hansen, and Schmid on 3,3 rearrangements of iminium salts; a chapter by Knabe on iminium salts in nature; and, finally, an epilogue by the editors. Each chapter is followed by a short addendum which includes 1976 and a few 1977 references.

The volume, coupled with Part I, is an excellent introduction to iminium salt chemistry. The editors and authors make no comment as to whether or not the work is encyclopedic in nature—it does not appear to be so and some useful references are omitted. As is often the case with multiauthored volumes, some uneveness exists. Some chapters are quite critical, while others contain essentially contradictory comments on the same page. On the whole, however, the book is well done and is a useful addition to the literature.

The series editor speaks of rapidity of publication, but only a relatively few 1977 references are included. A table of contents and an index to Part I would have been a useful addition to Part 2. The price makes the volume beyond the reach of the average chemist, but the volume definitely belongs in the library.

University of Missouri, Kansas City **Frank D. Popp**

Cardiovascular Effects of Mood-Altering Drugs. By B. Stimmel. Raven Press, New York. 1979. xi + 290 pp. 16 × 24 cm. $23.00.

This volume is a clinical treatise of psychotrophic drugs and their effects upon the cardiovascular system. The text is presented in a well-organized format which, together with the author's style, contribute to make this an enjoyable and easily read book. The first two chapters briefly review the history and current use of psychotrophic drugs and the basic pharmacologic concepts concerned with bioavailability and pharmacokinetics. However, the mechanism of drug action has purposefully been minimized by the author and the emphasis has been heavily placed upon the clinical manifestations of drug use.

Two chapters of this volume have been devoted to a highly comprehensive review of the effects of alcohol on the cardio-

vascular system. In the first chapter, special emphasis has been placed on the acute and chronic effects of alcohol on metabolism, hemodynamics, and the interactions of alcohol with other psychotropic drugs. The second chapter is a clinical survey of alcoholic cardiomyopathy, including vitamin deficiency and heavy metal induced disease. Hypnotics and sedatives are presented with regard to their pharmacology, hemodynamic effects, and treatment rationale. There is an excellent discussion of benzodiazepines and the use of these drugs for cardioversion and cardiac disease. In presenting the drugs used for affective disorders, the author provides a comprehensive discussion of the tricyclic antidepressants, including their pharmacology and mechanism of action, hemodynamic and cardiac effects, overdose reactions, and drug interactions. Short but timely reports are presented on the pharmacology and cardiovascular effects of marijuana and hallucinogenic agents. The narcotic analgesics are discussed briefly with regard to hemodynamics, and a discussion of the clinical effects of pentazocine on the cardiovascular system is interesting. The second chapter on narcotic analgesia deals with the complications of heroin addiction, but there is an overemphasis on the endocarditis occurring in response to pathological determinants. Timely discussions on the cardiovascular effects of amphetamines, methylphenidate, caffeine, and nicotine are informative, and the controversial effects of several stimulants are presented.

This book includes, except for a few exceptions, current references which are appropriate for a clinical evaluation of the effects of mood-altering drugs. Most chapters include a section on drug interactions, and several include overdose reactions and therapy. This book should prove to be a useful reference for clinicians and faculty who want a concise review of mood-altering drugs and their cardiovascular effects.

Medical College of Virginia **Suzanne G. Laychock**

Bioorganic Chemistry. Volume 3. Macro- and Multimolecular Systems. By E. E. van Tamelen. Academic Press, New York. 1977. xxi + 302 pp. 16 × 23.5 cm. $31.00.

This volume is a supplement to *Bioorganic Chemistry*, a rather recent journal aimed at the research areas in which synthetic and physical organic chemistry intersect with biochemistry. Subjects covered include a review of the roles of membrane lipids by Hans Brockerhoff. a very brief discussion of possible mechanisms involved in the emergence of the first cell by Sidney Fox, and a review of the interactions specificities of DNA with respect to polypeptides and proteins by Gabbay. Methods of carboxyl-terminal sequencing and end-group determination in peptides are reviewed by Loudon, Parham, and Miller and the interactions of selected antitumor antibiotics with nucleic acids by Lown. There is a review of thermal condensation polymers of amino acids by Melius and a review of the chemistry of aggregated molecules by Menger. "Recent Studies on Bioactive Compounds" is the not very helpful title of a review by Nakanishi covering several interesting but unrelated topics. Naider and Goodman discuss briefly the application of various spectroscopic methods to the conformational analysis of oligopeptides. Alexander Nussbaum reviews some of the more recent approaches to the synthesis of DNA fragments. Synthetic transformations of naturally occurring nucleosides and nucleoside antibiotics are discussed by Morris Robins and some chemical reactions of nucleic acids by Robert Shapiro. The book ends with a review of the stereochemistry of peptides maintaining unusual conformations by Claudio Toniolo.

Since the subject matter covered in this book is so very heterogeneous, it may be predicted that a great many Xerox machines in a great many departments will be used to copy (however, illegally) individual chapters, while the number of scientists reading the whole book carefully will be (however, lamentably) relatively small. The coverage of subject matter varies widely from chapter to chapter. For instance, the chapters by Brockerhoff and Gabbay discuss their subjects quite thoroughly, while the chapter by Fox just barely introduces the material. Several chapters provide a grab bag of subjects, none of which is discussed in satisfactory detail. All in all, it strikes this reviewer that the usefulness of this series could be increased if fewer subjects would be covered in more depth in each volume. However, this volume should be very helpful to organic chemists, medicinal chemists, and to biochemists in alerting them to some exciting research of mutual interest.

The book is well printed and well illustrated and is unusual in containing a useful index.

Tufts University School of Medicine **Henry G. Mautner**

Developments in Biochemistry. Volume 4. Chemistry and Biology of Pteridines. Edited by R. L. Kisliuk and G. M. Brown. Elsevier/North-Holland, New York. 1979. 713 pp. 15.5 × 26 cm. $40.00.

This book can be said to epitomise the current state of the art of a movement which began 27 years ago, when a small group of scientists interested in the chemistry and biology of pteridines met together in Paris in 1952 for the first pteridine symposium. The movement never looked back. Subsequent meetings were held in London in 1954, Stuttgart in 1962, Toba in 1969, and Konstanz in 1975, and the present volume contains the proceedings of the "Sixth International Symposium on the Chemistry and Biology of Pteridines", held at La Jolla, Calif., in September 1978. With 226 participants, and 128 communications, this meeting was the largest of the pteridine symposia to date and reflects the lively and ever-growing interest which is apparent in this field. A perusal of the proceedings of the symposium makes it clear what an interdisciplinary area of research this is. Papers on organic chemistry rub shoulders with papers on spectroscopy, biochemistry, enzymology, and chemotherapy, once again demonstrating how fruitful it can be when workers in different specialist areas collaborate. The book itself is a handsome volume, with stiff orange covers bearing a butterfly motif cleverly formed from two six-membered rings. It thus pays tribute to the very origins of pteridine chemistry, when 90 years ago, in 1889, Sir Frederic Gowland Hopkins first focused attention on a group of pigments formed naturally in butterfly wings. The contents of the book, however, show how far the field has developed since then. Most of the material presented here has not as yet appeared anywhere else in print, and it is essential reading for anyone even remotely interested in the general pteridine area. In a publication of this sort, timeliness is of the very essence. This book appeared complete with author and subject indexes almost within 3 months of the symposium, and the editors and publisher deserve congratulations for their achievement. The only tiny gripe that can be admitted is that, appearing as it did at the turn of the year, the book might perhaps have carried the date 1978 rather than 1979. Some authors may feel cheated of a 1978 publication date for their work. Even this small criticism, however, is in a sense a compliment. It implies what will almost certainly turn out to be true: that over the next few years this new book will prove to be one of the most important of reference works for those interested in the chemistry and biology of pteridines.

Trinity College, Dublin **Peter Boyle**

Versatility of Proteins. Edited by Choh Hao Li. Academic Press, New York. 1978. xiv + 465 pp. 16 × 23.5 cm. $22.00.

The above entitled book represents the proceedings of the 1978 International Symposium on Proteins held in Taipei. The book contains 26 papers categorized into four sections: "Techniques in Protein Chemistry", "Enzymes", "Protein–Protein Interactions", and "Regulatory Enzymes". In the first section, S. Undenfriend reviews the fluorescent methods for the isolation, characterization, and assay of amino acids, peptides, and proteins at the picomole level. K. A. Walsh describes in general terms some of his approaches for sequencing proteins using the Edman degradation. T. Wieland reviews the fundamentals of solution and solid-phase peptide synthetic methodology, followed by D. Yamashiro's paper on improved procedures for the solid-phase synthesis and purification of peptides. J. T. Yang reports on his recent studies on surfactant-induced conformations of poly(L-lysine), glucagon-19–29, β-endorphin, β-lipotropin, and sleep peptide. H. A. Scheraga reviews the combined experimental and theoretical approach which is used to elucidate protein folding. The section "Enzymes" starts with a chapter by E. H. Fisher on

a detailed study on the subunit structure and function of phosphorylase kinase. O. Hayaishi reviews briefly the mono-ADP ribosylation of proteins, first recognized by him in diphtheria toxin, and then describes his more recent work on the poly(ADP) ribosylation of proteins. K. Imahori describes his studies on the structure of colicin E-3. T. Murachi reviews his research on a chromatin-bound neutral protease and its inhibitor, which occur in the lysate of rat peritoneal macrophages. B. L. Vallee's paper is on the use of organic and inorganic probes to monitor the conformational and structural events coincident with catalysis in enzymes. "Mitochondrial-type" cytochromes *c* and the pyrazole-insensitive form of human liver alcohol dehydrogenase (π-ADH) are the subjects reviewed by M. Kamen and T. K. Li, respectively.

The section on "Protein–Protein Interactions", by M. Sela describes in detail his studies on synthetic antigens with peptide determinants of defined sequence. D. Givol reports on the structure and function of the antibody combining site, M. Laskowski on protein inhibition of serine proteinases, H. G. Wittman on ribosomes and protein biosynthesis, and T. P. King on ragweed pollen allergens. In the final section, C. H. Li has an excellent review on β-lipotropin, β-endorphin, and the biology of enkephalin analogues. H. J. Muller-Eberhard reviews the molecular dynamics and regulation of the complement (C) system. Fibrinogen is reviewed by R. F. Doolittle. The chemistry and pharmacology of phospholipase A_2 from snake venoms is reviewed by D. Eaker and C. Y. Lee. A synthesis of snake venom toxins by K. T. Wang is also included in this section.

In general, each of the above papers represents a review of the respective topic followed by the individual author's most recent research in that area. However, some of the papers contain from none to limited new information from the authors. Nonetheless, in view of the diversity of topics covered, the book is a useful source of information and references for each of the topics discussed.

Schering Corporation **A. Afonso**

Diuretic Agents. American Chemical Society Symposium. Number 83. Edited by Edward J. Cragoe, Jr. American Chemical Society, Washington, D.C. 1978. ix + 238 pp. 15 × 22.5 cm. $21.50.

This book represents a collection of papers presented at a symposium on "Diuretic Agents" sponsored by the ACS Division of Medicinal Chemistry at the 174th Meeting of the American Chemical Society in Chicago, Ill., on August 29, 1977.

The symposium proceedings are organized into 11 chapters with a table of contents and a subject index. The Chapters are: "Prostaglandins and Renal Function"; "Implications for the Activity of Diuretic Agents"; "Structure–Activity Relationships of Aminobenzoic Acid Diuretics and Related Compounds"; "4-(Sulfamoylphenyl)thiazolidin-4-ols, a Novel Class of Sulfonamide Compounds with Salidiuretic Activity"; "Sulfonamide Diuretics"; "Diuretic and Uricosuric Properties of Tienilic Acid (Tricrynafen) in Mice, Rats, and Anesthetized Beagle Dogs, Antihypertensive Activity in SH Rats and Structure–Activity Relationship"; "Ticrynafen, An Antihypertensive, Diuretic, Uricosuric Agent"; "2-Aminomethylphenols, A New Class of Saluretic Agents"; "1-Aralkyl-2-pyrazoline-5-ones, a New Class of Highly Potent Diuretics with High Ceiling Activity"; "Quincarbate, A Representative of a New Class of Diuretics, with 1,4,Dioxino[2,3-*g*]quinolone Structure"; "Etozolin, A Novel Diuretic"; and "The Evolution of the (aryloxy)acetic acid Diuretics".

According to the editor, "Since the main purpose of this monograph was to describe the recent advances in the medicinal chemistry of diuretics, the emphasis was placed on the fundamental contributions of the medicinal chemists, i.e., drug design and structure–activity relationships". Throughout the monograph, this objective was accomplished.

Chapter 1 on prostaglandins and the kallikrein–kinin system shows the importance of these systems in the design of new diuretic agents. The diagrams showing the prostaglandin–kinin interaction in the nephron and metabolism of arachidonic acid by the prostaglandin synthetase complex are descriptive and reinforce the narrative portion of this important area of research.

Chapters 2–4 deal with new and novel sulfonamide diuretics patterned after furosemide (Chapter 2), chlorothalidone (Chapter 3), and a general review and update on sulfonamide diuretics by L. H. Werner et al. (Chapter 4). These chapters provide insight into new diuretics and their chemical and pharmacological relationship to well-known sulfonamide diuretics.

Chapters 5 and 6 present the pharmacological-hypertensive, diuretic, and uricosuric activity in animals and humans of tienilic acid (Ticrynafen), a drug structurally related to ethacrynic acid. The authors of Chapter 5 state that tienilic acid is novel (along with an indanone derivative) by the fact that it increases uric acid secretion. Extensive use of figures and tables are employed to illustrate the pharmacological activity.

Chapters 7–10 are detailed reviews of new chemical classes of diuretics. Chapter 7 discusses 2-aminophenols, of which one called MK-447 shows promise. The authors' use of graphs and tables assists the reader in following the structure–activity studies of this class. Included in this chapter were synthetic methods, stereochemical considerations, and metabolic studies.

Chapter 8 reviews a new class of potent diuretics called 1-aralkyl-2-pyrazolin-5-ones. The authors of this chapter review the various drug design approaches and report the use of the Topliss scheme and other physicochemical studies employed in studying these potent, high ceiling diuretics.

Chapter 9 reports on another novel class of diuretics, namely, of the quincarbate 1,4-dioxino[2,3-*g*]quinolone class. They review the structure–activity relationships, physicochemical properties, pharmacology, and the results of human testing. Included are graphs and tables plus an excellent summary at the end of the chapter.

Chapter 10 provides a look at a very unusual molecular entity, etozolin, which is being used as a diuretic in Germany. The authors review the structural features compared to other diuretics by using a diagram comparing electronic and structural features. This chapter includes etozolin metabolism and pharmacokinetics, pharmacology, structure–activity relationships, and clinical studies.

Chapter 11 reviews and documents the evolution of the (aryloxy)acetic acid diuretics. O. W. Wolterdorf, Jr., S. J. DeSolms, and E. J. Cragoe, Jr., describe and illustrate these diuretics in a stimulating and logical manner. Researchers and teachers of medicinal chemistry will find this chapter stimulating, informative, and lucid reading.

This book will be a milestone in the field of diuretic agents. For graduate and undergraduate teachers of medicinal chemistry, it represents an excellent review of diuretic agents today. The theme of providing structural–activity relationships is common throughout the book and provides researchers and teachers alike with an excellent treatment of the present research status of diuretic agents. Another important aspect is that this collection of papers will stimulate research in the field of diuretics by generating new ideas. The book is therefore of great value to teachers and/or researchers in medicinal chemistry or anyone interested in diuretic agents.

University of Florida **Richard H. Hammer**

Toxicity of Heavy Metals in the Environment. Parts 1 and 2. By Frederick W. Oehme. Marcel Dekker, New York. 1978. Part 1: x + 515 pp. 18.5 × 26 cm. $45.00. Part 2: x + 970 pp. 18 × 26 cm. Swiss Francs 106.00.

The "Toxicity of Metals in the Environment", Parts 1 and 2, addresses the various aspects concerning the introduction, translocation, interaction, and detection of metals in the biosphere, as well as the biological responses metals produce. Strong emphasis has been placed on the effects of metals in domestic animals and, therefore, these books would be of interest to a veterinary audience. The books are a collection of papers by various contributors and, consequently, there is no uniform style or presentation among chapters. While some chapters are well written and cover the particular subject material in great detail, the scholarship of other chapters is superficial and often sadly out of date. There appears to be a disproportionate emphasis placed on some subjects, since Part 1 devotes one-third of its referenced chapters to the toxicity of lead and more than 80%

of Part 2 is concerned with the beneficial effects and quantitative analysis of metals. In the study of metal toxicity, I would consider subjects such as carcinogenesis, mutagenesis, behavioral effects, and treatment regimens quite relevant; however, there is virtually little current information presented on these issues.

The chapter entitled "Mechanisms of Heavy Metal Toxicity" in Part 1, written by Dr. Oehme, is not adequately referenced and contains a number of errors and omissions. It is unfortunate that the subject material in this chapter has 1965 as its most recent published reference. For example, the statement "Nearly all of the circulating inorganic lead is associated with the erythrocytes, chiefly in the membrane stroma"... is an outdated concept, since a number of published research articles have shown that only a small percentage (10%) of erythrocyte lead is associated with the erythrocyte membrane. Nonetheless, this error is again repeated in Chapter 7 as "Of the lead present in the circulation, over 90% is associated with the red cell membrane". This chapter further states, "Since much of the lead is attached to the red cell membrane one must also consider the hematocrit prior to comparison".

A great deal of useful and interesting information is found in many chapters, but I would suggest that readers use caution in using these books as references for scientific data and facts. Specific chapters, however, are worthy of mention and include: "Trace Elements in Plant Foodstuffs", "Beneficial Effects of Trace Metals", "Toxicology of Mineral Imbalance", "The Lesser Metals", "Pollution by Cadmium", and "The Itai-Itai Disease in Japan and Methyl Mercury Poisoning due to Environmental Contamination". Chapters are presented in bare typewritten format with no index in Part 1.

Since the objectives of these books were to "provide a review and discussion of the current information on comparative heavy metal toxicity and... a well-balanced fuel with which a specific effort can rapidly and accurately arrive at its objective", I feel these books have far from met their proposed goals.

Harvard University **Michael L. Kaplan**

Optical Resolution Procedures for Chemical Compounds. Volume 1. Amines and Related Compounds. By Paul Newman. Optical Resolution Information Center, Manhattan College, Riverdale, N.Y. 1979. iv + 616 pp. 22 × 28.5 cm. $31.50 + $2.50 for postage.

Search of the chemical literature for procedures for obtaining optically active compounds requires knowledge, instinct, and considerable luck to uncover a good method for resolving a new compound or the best method for resolving a known compound. The publication, "Optical Resolution Procedures for Chemical Compounds", Volume 1, "Amines and Related Compounds", will be a valuable source of essential information on resolving agents, specific procedures, and data on the optical rotatory power and purity of the enantiomers thus obtained. Three additional volumes are scheduled for publication on "Carboxylic Acids", Volume 2; "Alcohols, Aldehydes and Ketones", Volume 3; and "Organometallic Compounds, Inorganic Compounds, and Compounds Containing Hetero Atoms and Hydrocarbons", Volume 4. The author, Dr. Paul Newman, plans to publish supplements at periodic intervals.

The first volume on resolution of amines lists 119 resolving agents with melting points, D-line rotation data, and key references. The remainder of the book contains photocopies of optical resolution procedures for amines and an oxime along with some comments. The procedures were obtained from the chemical literature, private communications, or theses. The procedures are divided into resolutions utilizing standard methods (532 pages), those obtained by gas-liquid chromatography (9 tables), and those reported by liquid chromatography including high-pressure LC (8 pages citing 10 references). The total list of references for the resolution procedures has 1025 citations. The compounds are arranged by molecular formula, which is convenient for locating a specific compound but less convenient for locating a model system for a new compound.

The usual criticisms of errors and misprints may be omitted because of the photocopying of original articles from the literature. There may be some important omissions, but the coverage is good. Only one oxime resolution was described, although a number have been resolved, especially using amine functions. No other oxime or hydrazone resolutions are mentioned, although the title of Section 2 so states.

This book will be valuable as a source of resolution procedures and should be available to chemists working in any area of natural products or synthesis. A literature search should start with this new series of volumes. The author has provided the investigator with a useful amount of information.

North Texas State University/ Texas College of Osteopathic Medicine **Gloria G. Lyle**

The Living State and Cancer. By Albert Szent-Györgyi. Marcel Dekker. New York and Basel. 1978. v + 86 pp. 12.5 × 18.5 cm. $7.50.

In this booklet, Dr. Albert Szent-Györgyi describes in simple, easily readable terms the "bioelectronic" theory of cancer that he has been developing for decades. He also exposes his belief that one cannot understand the mechanisms of disease without understanding health.

The introductory chapter hypothesizes that the different biological reactions are the result of electron mobility in conductor proteins. Nature could have produced conduction in proteins by simply transferring electrons from their valence bond to other molecules by "charge transfer". Chapter 2 discusses the electronic structure of proteins and states that the protein molecules have to be in a state of high reactivity and conductivity to perform complex functions within the body. The "electronic desaturation" of protein molecules is the central feature and cohesive forces of the protein molecules depend on it. In cancer, the proteins have a low degree of desaturation and the cohesive forces are low, and these factors are responsible for metastasis. Chapter 3 discusses the role of methylglyoxal as an electron acceptor in the desaturation of proteins. In Chapter 4, the author introduces the concepts of the α and β states. At the earlier evolutionary stage of growth, the cells are in the α state, and they merely proliferate rather than performing their specific tasks as in the β state. Abnormal growth characterizing cancer cells is a reversion to the α state. Chapter 5 explains the term "permittivity" (which is closely related to dielectric constant) and discusses its importance in electronic distribution and charge transfer. Chapters 6 and 7 discuss Schiff base formation between methylglyoxal and the free NH_2 group of peptides and the role of ascorbic acid in color stabilization through a charge-transfer phenomena. Chapter 8 exposes the author's hypothesis that methylglyoxal is the foremost regulator of cell growth. He believes that glyoxalase enzymes, which destroy methylglyoxal, may be the main culprit in cancer growth. Szent-Györgyi contends that methylglyoxal attached to protein molecules makes them conductive, thereby facilitating charge transfer of electrons from molecule to molecule. He asserts that mercaptoglutathione is a promoter of growth and methylglyoxal inhibits cell division by inactivating the SH groups. Chapter 9 is an overview and summary of earlier chapters.

In summary, the book is dominated by Szent-Györgyi's imaginative and unorthodox hypothesis on a very basic level. There are no data indicating that it might have validity, and the experiments and the techniques described are not scientifically rigorous. However, it should be noted that the theory is exceedingly unconventional and a leap into the unknown, and no one has a definitive way of testing its validity. The book is stimulating reading to a wide variety of individuals of different backgrounds and assumes only a basic knowledge of science.

Department of Health, Education, and Welfare, U.S. Public Health Service **Ven. L. Narayanan**