Book Reviews

Lipid Metabolism in Mammals. Volume 2. Edited by Fred Snyder. Plenum Press, New York and London. 1977. xviii + 390 pp. 16 × 23.5 cm. $42.50.

Volume 2 of "Lipid Metabolism in Mammals" is the third volume in "Monographs in Lipid Research" with Dave Kritchevsky serving as series editor. As with Volume 1, dealing with lipid metabolism in mammals, the subject matter is divided into chapters defined by various cells, tissues, organs, or organ systems and thus extends the contents of Volume 1 by reviewing lipid metabolism in lung (M. F. Frosolono of Albert Einstein), kidney (J.-S. Tou of Tulane and C. G. Huggins of South Alabama), gonadal tissue (J. G. Coniglio of Vanderbilt), mammary glands (R. R. Dills of the University of Reading), eye (R. M. Broekhuyse and F. J. M. Daemen of the University of Nijmegen), skeletal muscle (K. Waku of Tokyo Medical and Dental University), skin (M. R. Grigor of the University of Otago), calcified tissues (T. R. Dirksen of the Medical College of Georgia), cancer cells [T.-C. Lee and F. Snyder of Oak Ridge Associated Universities (ORAU)], harderian gland (C. O. Rock of ORAU), cultured cells (J. M. Bailey of George Washington Medical School), and membranes during growth and development (C. A. Pasternak of St. Georges Hospital Medical School).

All chapters have complete title references and, when applicable, refer to previously published reviews in the area. The book has a good subject index and its chapters contain a wealth of rather well-organized biochemical information in the previously listed tissues and organs dealing with fatty acids, complex lipids, prostaglandins, enzyme systems, incorporation of radioactive precursors, lipid quantities and types, etc. This work is recommended reading for biomedical investigators working in lipid metabolism and related areas, although personal ownership may be excluded by its cost. General lack of structural formulas renders this book relatively more difficult to read than if they had been included unless one is familiar with lipid nomenclature.

The Ohio State University **Donald T. Witiak**

Quantitative Drug Design: A Critical Introduction. By Yvonne Connolly Martin. Marcel Dekker, New York, N.Y. 1978. x + 425 pp. 15.5 × 23 cm. $38.50.

This is an extremely readable, largely nonmathematical description of numerical methods used in drug design. The intent of the book, as stated in the introductory chapter, is "... to teach the reader how to apply modern drug design methods. It is a how-to-do-it book." It is successful in this respect in relation to the noncomputer (simplex) and multiple regression (Free–Wilson and Hansch) methods and provides useful guidance for the application of more sophisticated techniques (nonlinear regression, factor analysis, and discriminant analysis).

The initial chapters (Chapters 1–6) present definitions and interpretations for physically based extrathermodynamic parameters, for various types of biological assays, and for alternative models (multiple regression vs. nonlinear regression). A detailed discussion of partition coefficients is given specifically in relation to their measurement and properties. Chapters 7–9 describe the statistics and rules of application for multiple regression. The utility of nonlinear methods is discussed, but the statistics and rules of application for these techniques are treated only briefly. Chapter 10 provides a cursory account of some of the more advanced techniques available (factor analysis, discriminant analysis, cluster analysis, and pattern recognition). Emphasis is placed on introducing the potential utility of factor analysis in drug design. Chapter 11 discusses the available noncomputer methods (Topliss trees, Fibonacci search, and simplex method). A unique feature of the book is Chapter 12 which gives a historical accounting of quantitative structure–activity studies on four separate drug design programs at Abbott Laboratories. The problems and pitfalls of the methods are well represented by these real-life situations. Chapter 13 provides another case study using the Free–Wilson method as a basis. Chapter 14 briefly treats some of the newer, experimentally based approaches used in designing enzyme inhibitors (active-site-directed irreversible inhibitors, k_{cat} or suicide inhibitors, and transition-state analogues). A short description of the potential utility of conformational methods in light of such experiments is also given. A useful appendix, listing substituent constants from the Pomona College Medicinal Chemistry Parameter Files, should facilitate additional applications.

In general, the book is well organized and the references, which are intended to be key rather than exhaustive citations, are very well chosen. No computer programs are provided, it evidently being the author's view that such programs are generally available (some sources are provided in an appendix). Unfortunately, it was not specified that it is the user's responsibility to be aware of the deficiencies inherent in any program package.

If there is an overwhelming criticism of this book, it most certainly is in relation to the price. The book constitutes a reproduction of a typed manuscript, usually a cost-saving expedient. The price seems more in line with a book that has been type-set and printed on glossy paper. No doubt the excessive price will hinder the adoption of this book by many researchers, and especially by students.

Setting aside the monetary concern, I can recommend this book highly to the novice as well as to the serious worker in quantitative drug design.

Temple University **Arthur Cammarata**

Hormonal Proteins and Peptides. Volume V. Lipotropin and Related Peptides. Edited by Choh Hao Li. Academic Press, New York, N.Y. 1978. xv + 202 pp. 16 × 23.5 cm. $22.50.

Volume V of this series about proteins and peptides with hormonal activities focuses on a group of peptides in which a great deal of interest has developed recently because of the discovery of neurobiological properties associated with them.

In his review of the chemistry of the melanotropins (α- and β-MSH) C. H. Li traces the shift in biological interest that has occurred as these peptides have been shown to affect behavior. Their ability to control color changes in lower vertebrates has long been known. The presence of two active-core peptide sequences of α-MSH, which are independently capable of triggering the receptor responsible for melanin dispersion, is nicely presented with studies of peptide fragments. Li also presents and tabulates the current status of species variability of α-MSH, and in a discussion of synthetic fragments and analogues he sets the stage for future studies of structure–function relationships of central nervous system activities.

The 1975 report by Hughes of the isolation of morphine-like enkephalin peptides from mammalian brain acted as a strong stimulus of peptide research. Li, in his chapter on β-endorphin, shows how this potent analgetic peptide provides the link between the enkephalins and the lipid mobilizing pituitary peptide, β-lipotropin. A companion chapter by Chretien and Lis presents a more detailed description of the isolation, structural determination, and biological activities of the lipotropins.

Then, in a well-written chapter on the neurophysins, Pickering and Jones present a thought-provoking balance of fact and speculation concerning these carrier peptides for oxytocin and vasopressin. They present data supporting the possible involvement of the neurophysins as constituents of prohormones to oxytocin and vasopressin in addition to their accepted role as specific transport peptides during axonal movement of the hormones from the hypothalamus to the neural lobe of the pituitary. This chapter clearly shows the importance of the

neurophysins as well-defined models for studies of binding interactions of the neurohypophyseal hormones.

Then, in the final chapter of this volume, Porath presents a biographical sketch of Arne Tiselius. A historical view of the Institute of Biochemistry at Uppsala is presented, and its role in the development of separation methods important to peptide research is discussed. Personal recollections of the circumstances that led to the development of Sephadex and molecular sieve chromatography and of immobilized enzymes are particularly interesting.

This series continues to provide excellent perspective on the history, current status, and future directions of peptide hormone research.

University of California, San Francisco **Eugene C. Jorgensen**

Amino Acids, Peptides and Proteins. Volume 9. Specialist Periodical Reports. By R. C. Sheppard, Senior Reporter. The Chemical Society, Burlington House, London. 1978. xxi + 560 pp. 13.5 × 22.5 cm. $62.00.

This volume continues to maintain the high standards of its predecessors in chronicling the ever expanding field of amino acid, peptide, and protein chemistry and channeling the yearly torrent of new papers into some kind of dignified flow. With the aid of 32 expert reporters, Editor R. C. Sheppard has once again managed to review about 4500 papers and arrange a monumental amount of information into easy to read summary form. Major chapter headings include amino acids (G. C. Barrett), sequence analysis (L. Ryden and I. D. Walker), chemical modification (G. Winter and A. Dell), X-ray studies (H. Muirhead), conformation and solution interactions (R. H. Pain), peptide synthesis (E. Atherton and R. C. Sheppard), atypical peptides (B. W. Bycroft), structure–activity correlations (various contributors), and metal complexation (R. W. Hay and D. R. Williams). There are numerous tables and an author index but, unfortunately, no subject index.

Staff Review

Advances in Cyclic Nucleotide Research. Volume 9. Edited by W. J. George and L. J. Ignarro. Raven Press, New York, N.Y. 1978. xxix + 799 pp. 16 × 24 cm. $58.00.

This ninth volume of "Advances in Cyclic Nucleotide Research" contains papers based on invited lectures and poster presentations at the Third International Conference on Cyclic AMP held in New Orleans in 1977. These papers provide an overview of the most current research endeavors, methodology, results, and insights in cyclic nucleotide research. The reviews offer recent findings concerning possible causal relationships between the cyclic nucleotides and a variety of cellular processes. A comprehensive characterization of the α- and β-adrenergic receptor is complemented by an overview of the responsiveness of adenylate cyclase to hormones and calcium. Also reported are several studies concerning guanylate cyclase. In another vein, the regulation of cellular phosphorylation is recognized as the single most important mechanism by which cyclic nucleotides may exert control on cellular events. To this point, the compartmentalization, structure, and activation of cyclic nucleotide dependent protein kinases are reviewed. These phosphorylation events are shown to be associated with such events as smooth muscle and cardiac muscle contraction, enzyme induction, and cell proliferation. Several chapters are devoted to exploring the mechanisms by which cyclic nucleotides are hydrolyzed by phosphodiesterase. Special emphasis is given to possible roles of cAMP and cGMP in controlling muscle contraction, central nervous system function, carbohydrate metabolism, and protein synthesis.

Perhaps it should be expected that a book with 50 chapters and 189 contributing authors might have some variation in quality. However, while many of the best chapters offer both review material and current data and then summarize the importance of the accumulated findings in a larger theoretical context, several of the sections are little more than short papers such as would be most appropriate as a standard journal article. Nonetheless, the cyclic nucleotides have provided the biomedical sciences with an unusually effective unifying theme, bringing together as they have entire areas of research previously thought unrelated, and greatly facilitated the application of insights from one area to another. As such, this volume, for those who can afford its high price, is likely to serve as a reference resource for years to come.

Northeastern University **Jeffrey B. Blumberg**

The DNA Molecule. Structure and Properties. Original Papers, Analyses, and Problems. By D. Freifelder. W. H. Freeman, San Francisco, Calif. 1977. x + 499 pp. 22 × 28.5 cm. $20.00 cloth, $12.00 paperback.

This book is a well-organized compilation of the significant original papers on the elucidation of the structure and properties of the DNA molecule by an expert in the field. The author has provided excellent brief narratives to each chapter (called sections) which serve to summarize the impact of, and place into perspective, the reprinted papers that follow in chronological order. The sequence of sections is well chosen: Section I, DNA: The Genetic Material (The History of the Identification of DNA as the Genetic Substance); Section II, The Double Helix (The Elucidation of the Three-Dimensional Structure of DNA); Section III, The DNA of an Individual Phage or Bacterium as a Single Molecule (Methods of Isolating DNA); Section IV, The Large Size of DNA Molecules (Measurement of the Molecular Weight of DNA); Section V, Separation of the DNA Strands (DNA Denaturation); Section VI, Factors Determining the Stability of DNA (Hydrophobic Forces in the DNA Molecule); Section VII, Substructure of the Double Helix (Variants of the Basic DNA Model: Fine Points of Structure); Section VIII, Naturally Occurring Single-Stranded DNA (The Phage ϕX174 Experiments); Section IX, Circular and Supercoiled DNA Molecules (The Discovery of Circular DNA); and Section X, Epilogue (What Do We Know?).

The author states that the book's objective is to serve undergraduate courses in molecular biology and suggests it as a supplement to related, more rigorous courses at a higher level of study. To this end each section contains questions which draw from facts within the reprints or require further thought beyond the reprinted data. Additionally, each section (not to mention the reprinted articles) is well referenced, which serves to take this book beyond a routine textbook level and into the realm of a reference book.

As we read in "The Double Helix", the story behind the development of understanding the DNA structure is a very intriguing one involving human emotions, scientific controversy, and intellectual genius. The present book by Professor Freifelder conveys the same situation. Therefore, this book should be part of the library of anyone commencing, as well as pursuing, a career in molecular biology, molecular genetics, nucleic acids, or any of the myriad of tangentially related areas. The latter will find the well-presented appendixes very helpful. The book contains the historical beauty, scientific value, and reminder that controversies, unexpected results, false leads, collaboration, corroboration, and hunches are all part of the scenario in unraveling any problem as complex as the structure and properties of DNA.

University of South Florida **Stewart W. Schneller**

Biochemistry of Steroids and Other Isopentenoids. By William R. Nes and Margaret Lee McKean. University Park Press, Baltimore, Md. 1977. viii + 690 pp. 16 × 23.5 cm. $39.50.

The book is an extensive and well-written summary of the present status of the studies of the biochemistry of isopentenoids, with special emphasis on steroids and triterpenes. Other isopentenoids are less extensively reviewed. The literature is covered up to 1975.

The book is divided into 11 chapters. A historical introduction, which contains brief synopses of the 14 scientists who received Nobel prizes for their work on polyisopentenoids, is given in Chapter 1. In Chapter 2, the question of structure and nomenclature is discussed and the authors outline their concepts for the systematization of the nomenclature. The analytical

procedures employed in polyisopentenoid investigations are summarized in Chapter 3.

A major portion of the book is devoted to the biosynthesis of polyisopentenoids, which is reveiwed in Chapters 4–9. These chapters contain an exhaustive, in-depth summary of information up to 1975 on the bioorganic aspects of the biosynthesis and metabolism of polyisopentenoids.

The distribution of sterols in different organisms and their possible physiological role is the subject of Chapter 10. Problems of function of steroids are touched upon in Chapter 11. This chapter should be viewed as an introduction rather than an in-depth review of the topics of physiology, function and role of steroid hormones, bile acids, cardenolides, etc.

The authors present many of their ideas and suggestions for future studies. Topics are discussed from different points of view, providing a great deal of in-depth information. The expert and the uninitiated in the field will find a wealth of information and guidance on matters of bioorganic and biological problems of polyisopentenoids.

Investigators whose careers coincided with the almost explosive developments of the field of polyisopentenoids, which occurred in the last 30 or so years, will read the book with great enjoyment. One gets the feeling that the book was a "labor of love" in which Drs. Nes and McKean have invested a lot of thoughts and efforts.

Although many investigators will disagree with certain concepts proposed by the authors, there is no doubt that the volume is an excellent, useful book which should be within reach of every scientist involved in the study of isopentenoids.

The Worcester Foundation for Experimental Biology **Eliahu Caspi**

Biochemical Aspects of Prostaglandins and Thromboxanes. Edited by Norman Kharasch and Josef Fried. Academic Press, New York, N.Y. 1977. xxii + 245 pp. 16 × 24 cm. $14.00.

This volume represents the proceedings of the Intra-Science Symposium on Biochemistry of Prostaglandins and Thromboxanes held in Santa Monica, Calif., in Dec 1976. The contents include the text of 14 plenary lectures presented at the conference by the leaders in the field of prostaglandin research. In addition to these 14 papers, the volume includes a preface in which the editors highlight the work presented, a list of participants, and a 3-page subject index.

Three of the chapters discuss the biosynthesis of prostaglandins. There are also three chapters which have an emphasis on synthetic chemistry. These chapters discuss the synthesis of 11-deoxyprostaglandins, the thromboxanes, and 13-dehydroprostaglandins. One chapter reviews the structure proof of prostaglandin I_2. The remaining chapters discuss the role of prostaglandins, thromboxanes, and prostacyclin in biological processes. Included in this last group is a chapter on endoperoxides and thromboxanes, as bioregulators, by Bengt Samuelsson, the 1976 Intra-Science Medalist. The chapters contain references into the 1976 literature. Two of the chapters list article titles in the references.

In summation, this book highlights well the status of research in the area of prostaglandins, thromboxanes, and prostacyclin as of Dec 1976. It is a timely review that should be consulted by anyone entering the field.

Diamond Shamrock Corporation **Larry J. Powers**

Enzymatic Mechanisms in Pharmacodynamics. By Victor Voicu and Radu Olinescu. Abacus Press, Tunbridge Wells, Kent, England. 1977. 305 pp. 16 × 24 cm. $37.50.

This book was originally published in Romanian by Editura Stiintifica (Bucharest) in 1976 and is now available in English through ISBS Inc., Forest Grove, OR 97116. The English edition under review is claimed to be a revised, updated translation; however, the most recent references included are from the 1974 literature. The overall quality of this edition, which was printed in Romania, is rather poor. My copy arrived with the dust jacket badly torn and the binding on the verge of separation. The pages are printed on a kind of pulp paper that is semitransparent such that the printing on the reverse side of the page is partially visible. There are occasional ink blemishes and misaligned type that are also minor distractions. Although a detailed table of contents is provided, there is no index.

The book contains nine chapters, five by Olinescu (Pharmacokinetic Aspects, The Metabolism of Drugs, Biochemical Mechanisms Involved in the Action of Neuropsychotropic Compounds, Biochemical Mechanisms in Radioprotection and Radiosensitization, Pharmacogenetics) and four by Voicu (The Cholinergic System, The Adrenergic System, Pharmacological Interrelations of the Cyclic AMP System (cAMP), Prostaglandins and their Pharmacological Effects). Although a number of important drug and hormone classes are included, there are obviously some important omissions (steroid and polypeptide hormones, analgetics, chemotherapeutic agents, etc.). The book jacket suggests that the volume is "suitable for physicians, students, and research workers in medicine and biochemistry". But it is difficult to see why this particular selection of topics contained in a single volume should have any special appeal. It has neither the breadth of a more complete survey such as Burger's "Medicinal Chemistry" nor the depth of specialized books and monographs devoted to one or more of the individual chapter headings.

A more serious criticism of this book concerns the quality of translation and technical editing. Although, in general, the text is readable, there are frequent lapses in correct English and enough garbled explanations to annoy the knowledgeable reader and mislead those less familiar with the topic. Minor deviations from normal English usage such as oxidated, metabolization, and therapeutical are easy to decipher as are misspellings such as triptophane, metoxy, ethylic alcohol, and cynamic acid. The incorrect spelling of generic drug names, however, proves more confusing: for example, guanetidine (guanethidine), guanicidine (guancydine), betanidine (bethanidine), and pargillin (pargyline). Describing the NIH shift as an "obligate shunt" is perhaps nothing more than a poor choice of words, but how should one interpret the following sentence? "Aromatic hydroxylases include a wide range of exogenous compounds producing phenols, catechols, dihydrodiols, etc." Finally, the most annoying errors, and really the most serious ones, occur in the structural formulas. The frequency of mistakes is high. In one figure that contained ten structures, seven errors were found. In another, phenylalanine was labeled as tyrosine and phenylethylamine was called tryptamine.

In view of the many deficiencies already described, I would not recommend purchase of this book in its present form.

Smith Kline & French Laboratories **Kenneth G. Holden**

Advances in Biochemical Psychopharmacology. Volume 18. The Endorphins. Edited by E. Costa and M. Trabucchi. Raven Press, New York, N.Y. 1978. xviii + 379 pp. 16.5 × 24.2 cm. $28.00.

This book on the endorphins is a collection of 32 edited papers which were prepared for a symposium held in Italy in Aug 1977. The format is entirely appropriate for a field developing with such rapidity that valid textbook-like critical comment is rendered difficult if not impossible at this early stage. The list of contributors reads like a Who's Who in the field. The book is the first to survey the many facets of endorphin metabolism and function. Chapters consider the development of the concepts of opiate receptors and their ligands, the biochemistry of the endorphins, their cellular distribution within specific neural pathways, interactions between endorphins, catecholamine metabolism and the control of pituitary hormone release, interactions between endorphinergic neurons and those containing other neurotransmitters, the localization of opiate receptors and their differential ligand affinity in various brain regions, the comparative effects of morphine and endorphins, the possible behavioral effects of the endorphins and their involvement in psychiatric disorders, and their possible role in acupuncture-induced analgesia.

The book begins with an interesting historical review of neuropeptide research and sets the mood of the symposium when it observes that present concepts of neurophysiology, neurology, and neuropsychiatry were established without any knowledge of

the endorphins, and now that we are aware of them, "future developments may well be revolutionary". However, as the symposium proceeds, it becomes abundantly clear that the systems awaiting elucidation are soberingly complex. Regarding the role of endorphins in pain, Terenius observes that "apparently pain modulating mechanisms other than endorphin mechanisms may exist. Blockade of one system ... may not reach an easily observable extent because of compensating action of other systems". Similar considerations appear to apply in the field of psychiatric disorders. Several papers give strong hints of potential utility through control of endorphin mechanisms but at this stage little is clear-cut. In simpler models it can be shown that hypothalamic endorphins participate in control of prolactin release and that acupuncture analgesia is mediated through endorphins.

The field is well worth the continuing attention of the medicinal chemist. The implications of selective control of pituitary hormone release are vast. This volume provides a convenient collection of important papers and will provide the reader with a good introduction to a burgeoning area of research.

Bristol Laboratories **Irwin J. Pachter**

Interactions Between Putative Neurotransmitters in the Brain. Monographs of the Mario Negri Institute for Pharmacological Research. Edited by S. Garattini, J. F. Pujol, and R. Samanin. Raven Press, New York, N.Y. 1978. xv + 415 pp. 16 × 24 cm. $27.50.

The importance of multiple neurotransmitter relationships in the central nervous system is emphasized in "Interactions Between Putative Neurotransmitters in the Brain", one of a series of monographs from the Mario Negri Institute for Pharmacology, Milan. The text is divided into three major sections and focuses on interactions between the following: dopaminergic and cholinergic neurons, GABA and other neurotransmitters, and catecholamines and serotonin.

A basic overview of the anatomical, biochemical, and pharmacological evidence for a DA–AcCh interaction in the striatum is presented by Ladinsky and coauthors in Chapter 1, and this relationship is expanded further by Racagni et al. to include the presence and additional influence of GABAergic neurons in the nigrostriatal system. The interactions of cholinergic neurons with other neurotransmitter systems, including serotonergic, are discussed both at the presynaptic as well as postsynaptic levels. In addition to the familiar striatal interactions, Mantovani and Pepeu present evidence supporting a relationship between DA and AcCh-containing neurons in the central cortex.

Current knowledge on GABA constitutes the second and most extensive section (14 chapters) of the book, which begins with a presentation by Costa of the neuropharmacology of GABA. This is followed by an extensive discussion of anatomical, neurochemical, and immunocytochemical approaches to the study of GABAergic neurotransmission. Evidence supporting the interactions of GABA with DA and substance P is cited, and current implications on the role of GABA in hormonal regulation are discussed. In addition to neuroanatomical and biochemical studies, this section also includes two chapters on behavioral aspects of neurotransmitter interactions, including agression and locomotor activity.

The last section of the text is devoted to interactions between catecholaminergic and serotonergic systems. The first four chapters present neuroanatomical techniques and resultant evidence for 5-HT monoamine interactions in the locus ceruleus and raphe nuclei, followed by biochemical evidence for serotonergic control of the locus ceruleus. Biochemical and pharmacological evidence for serotonergic–dopaminergic and serotonergic–cholinergic interactions are also discussed.

This text, which elucidates current knowledge in the field of neurotransmitter relationships, is a worthwhile reference not only for the basic neuroscientist but also for the clinician. Knowledge of the interactions among neurotransmitters is of major importance for our understanding of the regulatory mechanisms involved in maintaining "normal" central nervous system functioning.

Louisiana State University Medical Center **Lynn Wecker**

Progress in Medicinal Chemistry. Volume 14. Edited by G. P. Ellis and G. B. West. North-Holland Publishing Co., Amsterdam-New York-Oxford. 1977. x + 308 pp. 21.5 × 15.5 cm. $49.00.

There are six reviews in this volume, two on membranes and epithelia, two on antibiotics (antifungal polyenes and β-lactams), and one each on the role of biogenic amines in the actions of potent analgetics and the physiological and nutritional significance of flavonoids on the action of ascorbic acid. All six chapters are pertinent to medicinal science and will illuminate mechanisms of action and options in drug design. Even those topics which have been reviewed elsewhere recently offer medicinal chemists the opportunity to read up on the subject in terms and vocabularies familiar to them. Six of the ten contributors are from Cardiff, Wales, and must have been drafted for this volume by their colleague, G. P. Ellis, one of the editors. One author is from Cambridge, one is from Purdue University, and two are from Debrecen, Hungary. To the medicinally interested reader, they all speak the same language.

In accord with traditional treatment, the first of the two chapters on membranes by A. W. Cuthbert describes channels in model membranes and the best studied chemicals that slip through these pores or shape them. Active transport centers on lipid-soluble ions as they are found in ionophores. Emphasis is placed on Na transport through voltage-dependent Na channels in the epithelia. G. J. Moody and J. D. R. Thomas explain general electrodes and interference elimination to the electrochemically naive as well as the experienced reader and teach measurement methods in serum, plasma, blood, and nonblood biological fluids. They then present important applications of ion migration to dental health (saliva, plaque, dentrifices, enamel, bone), anesthetics, and enzyme systems. These areas are somewhat off the mainstream of medicinal researches, and these chapters will do much to catalyze interest in these important and growing fields.

The chapters on polyene (S. M. Hammond) and β-lactam antibiotics (E. T. Gunda and J. Cs. Jaszberenyi) provide welcome and all-embracing reviews of researches that have peaked in the past years and need detached contemplation. All aspects of these agents are treated, their history, chemistry, biosynthesis, mode of action, interaction with other agents, molecular modification, and clinical uses. There are 587 and 308 references, respectively, that will save future investigators much effort in the library.

The chapter on the effects of biogenic agents (AcCh, catecholamines, 5-HT, histamine) on potent (opiate) analgetics by R. D. E. Sewell and P. S. J. Spencer offers information on the autonomic connections of potent analgetics. The endorphins are not even mentioned and neither are opioid receptors. The 307 references cover some recent work but are mostly of historic interest. The review of flavonoids by R. E. Hughes and H. K. Wilson discusses the old suspicions that ascorbic acid requires flavonoids for proper functioning and brings the reader up-to-date on the state of these ideas. It will be of interest in view of the ongoing debate about the role of vitamin C in several disputed therapeutic applications where megadoses are required. The conclusions drawn by this chapter are conservative but stimulating.

University of Virginia **Alfred Burger**

Books of Interest

Application of Biochemical Systems in Organic Chemistry. Parts I and II. By J. Bryan Jones, Charles J. Sih, and D. Perlham. Wiley, New York, N.Y. 1976. Part I: xii + 505 + I 16 pp, $30.50. Part II: xii + 560 + I 16 pp, $33.50. Set $58.00.

Organic Syntheses. Volume 57. By Carl R. Johnson. Wiley, New York, N.Y. 1977. xii + 135 pp. 15.5 × 23.5 cm. $12.95.

Essays in Neurochemistry and Neuropharmacology. Volume 3. By M. B. H. Youdim, D. F. Sharman, and J. R. Lagnado. Wiley, New York, N.Y. 1978. 228 pp. 15.5 × 23.5 cm. $26.50.

Prolactin 1977. Volume 5. Annual Research Reviews. By D. F. Horrobin. Eden Press, Montreal. 1977. 213 pp. 15 × 21.5 cm. $20.00.

Oxytocin. Volume 1. Annual Research Reviews. By John S. Roberts. Eden Press, Montreal. 1977. 82 pp. 15 × 21.5 cm. $12.00.

Hormones and Aggression. Volume 1. Annual Research Reviews. By Paul F. Brian. Eden Press, Montreal. 126 pp. 14.5 × 21.5 cm. $14.00.

Renin. Volume 2. Annual Research Reviews. By Suzanne Oparil and Richard Katholi. Eden Press, Montreal. 1977. 332 pp. 15 × 21.5 cm. $24.00.

Drug Abuse: Modern Trends, Issues, and Perspectives. By Arnold Schecter, Harold Alksne, Edward Kaufmann, Vernon Shorty, Alberta Henderson, and Joyce H. Lowinson. Marcel Dekker, New York, N.Y. 1978. xxix + 1219 pp. 15.5 × 23.5 cm. $45.00.

Perspectives in Endocrine Psychobiology. By F. Brambilla, P. K. Bridges, E. Endröczi, and G. Heuser. Wiley, New York, N.Y. 1978. 590 pp. 17 × 24 cm. $39.95.

Progress in Chemical Fibrinolysis and Thrombolysis. Volume 3. By John F. Davidson, R. Martin Rowan, Meyer M. Samama, and Pierre C. Desnoyers. Raven Press, New York, N.Y. 1978. xv + 613 pp. 16.5 × 24 cm. $45.00.

Topics in Bioelectrochemistry and Bioenergetics. Volume 2. By G. Milazzo. Wiley, New York, N.Y. 1978. xiv + 204 pp. 16 × 24 cm. $22.00.

Introduction to General Toxicology (Revised Printing). By E. J. Ariëns, A. M. Simonis, and J. Offermeier. Academic Press, New York, N.Y. 1978. vii + 252 pp. 16 × 23.5 cm. $17.50.

Perspectives in Toxicology. By Alan W. Bernheimer. Wiley, New York, N.Y. 1977. xi + 204 pp. 18 × 26 cm. $22.00.

Frontiers in Neuroendocrinology. Volume 5. By William F. Ganong and Luciano Martini. Raven Press, New York, N.Y. 1978. x + 399 pp. 16.5 × 24 cm. $24.50.

Brain Energy Metabolism. By B. K. Siesjö. Wiley, New York, N.Y. 1978. xii + 607 pp. 15.5 × 23.5 cm. $31.50.

Recent Advances in Cancer Treatment. Volume 3. By H. J. Tagnon and M. J. Staquet. Raven Press, New York, N.Y. 1977. xv + 360 pp. 16.5 × 24 cm. $26.00.

Development in Opiate Research. Volume 14. Modern Pharma-Toxicology. By Albert Herz. Marcel Dekker, New York, N.Y. 1978. ix + 432 pp. 15.5 × 23.5 cm. $35.00.

Anti-Diuretic Hormone. Volume 2. By Mary L. Forsling. Eden Medical Research, Inc., St. Albans, Vt. 1977. 205 pp. 15 × 22.5 cm. $20.00.

Essentials of Drug Product Quality. By M. M. Abdel-Monem and James G. Henkel. C. V. Mosby Co., St. Louis, Mo. 1978. xii + 274 pp. 21 × 26 cm. $14.95.

Medical Pharmacology. Ninth Edition. By Andres Goth. C. V. Mosby Co., St. Louis, Mo. 1978. x + 766 pp. 18.5 × 26 cm. $19.95.

Introduction to Drug Analysis. By Robert Raffauf and Victor Warner. F. A. Davis Co., Philadelphia, Pa. 1978. x + 181 pp. 17.5 × 25.5 cm. $12.00.

Biochemical Mechanisms of Paraquat Toxicity. By Anne P. Autor. Academic Press, New York, N.Y. 1978. x + 240 pp. 15.5 × 23.5 cm. $12.50.