

## Book Reviews

**Annual Reports in Medicinal Chemistry. Volume 16.** Editor in Chief, Hans-Jurgen Hess. Academic Press, New York. 1981. xi + 364 pp. 17 × 25 cm. \$25.00.

In addition to the traditional chapters updating research progress in the major therapeutic categories and special topics reviewed periodically, Volume 16 contains several chapters that discuss in greater depth recent scientific advances that seem to offer particular promise for new drug development. Chapters on benzodiazepine receptors, renal vasodilators, calcium antagonists, and arachidonate lipoxygenase fall in this category. A chapter on parasite biochemistry complements the traditional chapter on antiparasitic agents, and a new chapter is a comprehensive review of veterinary drugs. Also timely is a chapter on monoclonal antibodies, an area of wide current interest. A cumulative keyword index of chapter titles has been added to this volume, to supplement the cumulative titles index, first introduced in Volume 14.

Sections and Chapters in this volume are as follows. Section I, "CNS Agents": Chapter 1, "Antidepressants"; 2, "Antipsychotic Agents and Dopamine Agonists"; 3, "Benzodiazepine Receptors"; 4, "Anti-anxiety Agents, Anticonvulsants and Sedative-Hypnotics"; 5, "Analgesics (Peripheral and Central), Endogenous Opioids and Their Receptors"; 6, "Memory and Learning". Section II, "Pharmacodynamic Agents": Chapter 7, "Pulmonary and Antiallergy Drugs"; 8, "Antihypertensive Agents"; 9, "Agents for the Treatment of Peptic Ulcer Disease"; 10, "Cardiotonic Agents for the Treatment of Heart Failure"; 11, "Renal Blood Flow and Dopaminergic Agonists". Section III, "Chemotherapeutic Agents": Chapter 12, "Antibacterial Agents"; 13, "Human Antiparasitic Agents"; 14, "Antineoplastic Agents"; 15, "Antiviral Agents"; 16, "Veterinary Drugs". Section IV, "Metabolic Diseases and Endocrine Function": Chapter 17, "Diabetes Mellitus"; 18, "New Agents for the Treatment of Inflammation and Arthritis"; 19, "Peptides of the Hypothalamus"; 20, "Arachidonate Lipoxygenase". Section V, "Topics in Biology": Chapter 21, "The Human Interferons"; 22, "Monoclonal Antibodies"; 23, "Calcium Antagonists"; 24, "Recent Advances in Parasite Biochemistry". Section VI, "Topics in Chemistry and Drug Design": Chapter 25, "Computer-Directed Organic Synthetic Analysis"; 26, "Recent Progress in Design of Suicide Enzyme Inhibitors"; 27, "Sequencing and Synthesis of Nucleic Acids"; 28, "Recent Developments in Peptide Synthesis"; 29, "Drug Metabolism".

This volume, like its predecessors, is well written, thoroughly covers the topics, and is liberally illustrated with organic structural formulas, which are so useful to medicinal chemists in relating drug types to molecular structures. Since a direct photoreproductive process is used, the volume is a monument to careful editing and proofreading by the several editors in the chain of command. This series is a must for every scientist interested in structure-activity relationships, medicinal chemistry, and related research, and the current volume, reasonably priced, is no exception.

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**Drug Receptors and Their Effectors.** Edited by Nigel J. M. Birdsall. Macmillan, London. 1981. ix + 182 pp. 16 × 24 cm. ISBN: 0-333-29327-4. £ 30.

This book is a compilation of presentations (14 chapters) of a symposium held March 31 and April 1, 1980. It is the eleventh of a series of such volumes published by the Biological Council Co-ordinating Committee for Symposia on Drug Action. The objective of the volume is to present a general overview of our current understanding of drug-receptor interactions. Specific questions addressed are: (1) What is the nature of the effector

in a given receptor system? (2) What are the differences between binding interactions of agonists and antagonists with a receptor? (3) What is the nature of conformational change induced by agonists? (4) How is the agonist induced change related to activation of the effector?

To approach these questions, particular attention is directed toward our understanding and new studies on acetylcholine, opiate, and hormone receptors. The role of ion channels, the adenylate cyclase system, phospholipid methylation in receptor-mediated transmission of biological signals through membranes, phosphatidylinositol metabolism and calcium gating in a receptor system, and the biosynthesis and turnover of receptors are described in some detail.

In addressing the various general aspects of drug receptors and their effectors, a variety of new and old methodologies of value in such studies are described. For example, in Chapter 14, "Biosynthesis and Turnover of Nicotinic Acetylcholine Receptors", a "density shift methodology" was utilized. It is properly pointed out that this technique may be employed to study other receptor molecules. In the opinion of this reviewer, it is the collection and description of these methodologies that provide the most useful information in the volume. In the summary it is pointed out that the volume records some of the astonishing growth of our understanding of receptors and their effectors, as well as many unanswered questions, that have surfaced during recent years. This is an accurate statement. Unfortunately, in the nearly 2 years following this symposium, growth in this field has quickened even more, particularly with the solubilization, isolation, at least partial characterization, etc. of receptors. As a result, a volume such as this, even though only 2 years old, is practically outdated.

This book has been carefully edited; it contains comprehensive author and subject indexes. In my opinion, it will be of value to specialists in the field of receptorology. It also serves a useful function as an introduction to the methodologies employed to study receptors and their effectors; however, I do not believe it will occupy a prominent place on the shelves of most medicinal chemists.

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**Neurotransmitter Receptor Series. Volume 1. Adrenoceptors and Catecholamine Action. Part A.** Edited by George Kunos. Wiley, New York. 1981. vii + 343 pp. 17 × 24 cm. \$50.00.

This book is composed of ten chapters authored by physiologists, pharmacologists and biochemists who concisely described different approaches to the understanding details of adrenoceptors. In the first chapter, Morton and Halliday provide a general review of the development and principles used in the classification of adrenergic receptors, followed by an in-depth discussion of the type and mechanism of stimulation of adrenoceptors in smooth muscle by epinephrine and related catecholamines. Chapters 2 and 3 provide discussions of the development of cardiovascular system and  $\beta$ -adrenoceptors within this system and the role of adrenoceptors in ganglia, respectively. The effects in ganglia by adrenergic drugs are well quantitated by electrophysiological techniques. Chapters 4 to 6 are on  $\alpha$ -adrenoceptors, while chapters 7 and 8 concentrate on  $\beta$ -adrenoceptors. In chapter 9 the relationship of adrenergic receptors to  $(\text{Na}^+, \text{K}^+)\text{ATPase}$  is discussed, while Chapter 10 provides an interesting coverage of the effects of thyroid hormones on sympathetic stimulation in various systems.

The topics reviewed in this book are of substantial current interest and well referenced. As with multiauthored texts, there are some inconsistencies; e.g., on page 7 there is an indication that irreversible  $\beta$ -antagonists are not well established, but later in

the book a section (p 228) is primarily on the use of an irreversible  $\beta$ -blocking agent. It is interesting that this  $\beta$ -blocker that works by an irreversible mechanism does not depress the maximum effect of agonist at the concentrations they used. There is some inconsistency in that some chapters illustrate the structures of compounds while others just name the substances used. The chapter on structure-activity relationships of inhibitors of  $\alpha$ -adrenoceptors is of particular interest to medicinal chemists because of some of the conclusions that are drawn relating the structure of some of the antagonists to the topography of  $\alpha$ -adrenoceptors. The chapter (8) by Homcy and Haber provide some basic material on receptor theory and determining binding constants that could have possibly been introduced earlier in the book and would be helpful for not only  $\beta$ -adrenoceptor but also  $\alpha$ -adrenoceptor studies covered earlier in the book.

The chapters in the book are well written, easy to read, provide some diversity on the subject of adrenoceptors, and, in some instances, point out new research possibilities. This book should be of particular interest to pharmacologists and those interested in the adrenergic component of the autonomic nervous system.

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**Inorganic Reaction Chemistry. Volume 2. Reactions of the Elements and Their Compounds. Part B. Osmium to Zirconium.** By D. T. Burns, A. Townshend, and A. H. Carter. Ellis Horwood Ltd, Chichester, England. 1981. Distributed in the U.S.A. by Wiley, New York. 300-580 pp. 15.5 × 23.5 cm. \$87.95.

This book concludes a two-volume series of "Inorganic Reaction Chemistry", the first volume of which (by D. T. Burns, A. Townshend, and A. G. Catchpole) was concerned with "Systematic Chemical Separation". Two of these authors have now published, together with A. H. Carter, a second volume on "Reactions of the Elements and Their Compounds". This volume consists of two separate parts: Part A, "Alkali Metals to Nitrogen", and the now published Part B, "Osmium to Zirconium".

In 60 chapters on individual elements or groups of elements, the reader will find a brief description of the most stable and common oxidation states, of the physical characteristics of each element, and of its chemical reactivity; in particular, standard methods to convert an element to a soluble compound are referred to in the introductory section of each chapter.

The authors then list a number of typical reactions which a representative compound of the respective element will undergo in aqueous solution upon addition of precipitating, chelating, oxidizing or reducing reagents. Several dozen of such reactions—apparently checked out by the authors—are usually described in a rather brief manner; one or several of these reactions are formulated into qualitative tests for the element in question. A short segment on dry tests, such as borax bead or charcoal block tests, concludes each chapter. The list of references for each chapter usually includes several historical papers originating from the last century or from the early part of this century; a few references are usually quite recent (up to 1980), and the remainder are distributed over the last 5 or 6 decennia. The shortest of these chapters (on xenon) contains 2 pages and 14 references, the longest (on sulfur) has 37 pages and 168 references. Here, and in 10 other chapters, individual reactions are given for distinct chemical species of an element, such as sulfanes, sulfides, sulfur, its halogen compounds, sulfite, sulfate, thionates, and others.

The volume concludes with three appendices on "Organic Reagents", on "General References", and on "Solubility Products".

In comparing this book with the existing literature in this area, it is apparent that for many of the elements covered there are of course vastly more detailed analytical monographs available, to which one would have to resort in most practical cases. The highly condensed digest offered in "Reactions of the Elements and Their Compounds" might be of help if one wants to gain a first overview of possible identification and separation reactions for a given analytical problem. In this regard, however, one would wish for more extensive references to reliable differentiations from

and possible interferences by other elements or species present in combination with the investigated one.

One could also imagine this volume to be useful in a course in analytical chemistry, taught in such a way as to make the participants familiar with typical reactions of the individual elements, rather than with just the use of analytical instrumentation. For this purpose, however, one would need more extensive connective comments, relating the many individual observations with each other and with relevant data on chemical bonding trends in the periodic table.

For these reasons, the authors' laudable effort—to collect many of the largely forgotten, classical test reactions and of the widely scattered, modern identification reactions by specific organic reagents into a comprehensive yet still readable text—appears to fall short of these two possible goals, which are, however, hard if not impossible to achieve in this age of automated multielement analyzers. Despite these shortcomings, many a practicing or teaching chemist might find the authors' descriptions sympathetic and helpful in stimulating new approaches to his tasks in research and education.

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**Inorganic Biochemistry. Volume 2.** Edited by H. A. O. Hill. The Royal Society of Chemistry, London. 1981. xiv + 347 pp. 14.5 × 22 cm. ISBN: 0-85186-555-0. \$100.00.

This volume fills the unique niche of the "Specialist Periodical Reports" of the Royal Society. The reviews cover general "biocoordination" chemistry, metal transport, electron transport, zinc enzymes, trace nutrition, and inorganic compounds in medicine, including a thorough treatment of inorganic radiopharmaceuticals. As with all the specialist reports, this volume serves both to keep the experts apprised of any tidbits they may have missed, but may also serve as a readable and thorough introduction to the literature for neophytes. I found the chapters on "Inorganic Elements in Medicine" and on "Zinc Metalloenzymes" to be particularly useful: they present minireviews of the areas, rather than a simple laundry list of published abstracts. In all, the book is invaluable for central libraries, and despite its stiff price, should be considered by those individuals who must remain on top of all developments in the fields reviewed.

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**Polypeptides and Protein Structure.** By Alan G. Walton. Elsevier, New York. 1981. x + 393 pp. 18 × 26 cm. ISBN: 0-044-00407-6. \$37.50.

This volume was written for students enrolled in a course on the chemistry and structure of polypeptides and proteins. Beyond doubt it fills a need because the number of students interested in the physical sciences substantially increased in recent years, and it became difficult to recommend a suitable textbook for those who wish to become acquainted with protein structure. Dr. Walton's book will assist them in their studies.

The volume is divided in four sections related to (I) fundamental parameters, (II) experimental methods, (III) thermodynamic and hydrodynamic properties of proteins, and (IV) protein systems. With the exception of the first section in which also some chemistry is discussed, the areas covered are physical rather than chemical. In the individual chapters dealing with experimental methods such as X-ray diffraction, electron diffraction and electron microscopy, infrared spectroscopy, Raman spectra, electronic spectra, ORD and CD spectra, fluorescence spectroscopy, and NMR, a brief introduction of the principles precedes the presentation of the actual methods, and the chapters are concluded with examples of contemporary problems. Thus, the material will appear meaningful for the young readers who seek relevance in their studies. The same intentions can be discerned in the section on the physical properties of proteins. In this part of the book a substantial chapter on proteins in solution is the

work of Dr. A. M. Jamieson. The concluding section contains a detailed discussion of collagen, a chapter on muscle proteins, and one on the proteins of the blood. These topics were selected with considerable skill and should increase the interest of the student in the course.

Least successful is the introductory part, which is also marred by errors, such as identical structures for glutamic acid and aspartic acid, by an additional hydrogen in the imidazole of histidine, by stating that there are 21 amino acids in mammalian (?) proteins. If residues formed by posttranslational changes are included in the count, then the number of residues is more than 21. By conventional considerations, the amino acid constituents of proteins (and not only those of mammals) are 20, not more and not less. It is similarly erroneous to designate the pyroglutamyl residue with Glx, since this symbol is used in positions which are occupied either by Gln or Glu. The discussion of sequence determination by Edman degradation introduces more mysteries than solutions and this is true also for the cleavage of chains at methionine residues with cyanogen bromide. It is somewhat unfortunate that in one of the examples of NMR spectra the structure of malformin is one which appeared in earlier literature but was revised several years ago.

The volume ends with a subject index, but has no index of authors. On the other hand, a short list of recommended readings at the end of each chapter helps the students to find their way into the voluminous literature. The volume is nicely printed and lavishly illustrated (although credit was given to other authors for more than 100 figures and tables). In spite of some details against which objections were raised, the book is well organized, composed with clarity, and should well serve the purpose for which it was written.

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**Protein-Protein Interactions.** Edited by C. Frieden and L. W. Nichol. Wiley, New York. 1981. xi + 403 pp. 17 × 23 cm. \$49.95.

Homogeneous and heterogeneous protein-protein interactions form the basis for some of the most fundamental aspects of protein chemistry. A thorough understanding of the theoretical basis for the experimental methods employed in studying these interactions and the physical and chemical phenomena involved in associating protein systems is essential for advanced studies in physical biochemistry. With the importance of these principles in mind, Professors Carl Frieden and Lawrence Nichol have brought together a truly significant work which presents an up-to-date compilation of the principles and experimental methods involved in the study of interacting protein systems. Each chapter is written by a recognized authority in his respective field, and significantly, the sections do not just summarize the literature but include the most recent work by each author. Virtually all chapters contain references from 1979 or 1980, and the extensive lists form an invaluable source for further study.

The first two chapters, describing types of interacting systems, oligomeric protein structures, and protein structural organization, are the real introduction for the book. In Chapter 2, for example ("Protein-Protein Interactions and Protein Structures", by L. Banaszak et al.), the truly instructive portion is not the body of the chapter, which mostly recounts the types of hierarchical organization of proteins familiar to all biochemists, but rather the appendix, which details the energetic forces and physical basis for protein-protein interactions.

The remaining chapters describe methods for studying interacting systems and methods specific for enzymes and rodlike assemblies (Chapters 7 and 8). Mass migration (e.g., gel filtration and sedimentation velocity) and equilibrium (light scattering, osmotic pressure, and sedimentation equilibrium) methods are detailed in Chapters 3 and 5. It is characteristic of the entire book that experimental procedures are only superficially treated, and both D. J. Winzor (mass migration) and P. D. Jeffrey (equilibrium) emphasize the theoretical considerations that are derived from the thermodynamics of an equilibrating system of interacting macromolecules. Thus, much of what is included is not done with

the idea to instruct the reader in how-to-do studies of protein-protein interaction but rather to give the researcher a sound theoretical understanding of the methods described.

Even more theoretical is Cox and Dale's chapter on simulation of transport (migration) phenomena in interacting systems. Though quite turgid, and not meant at all for the casual reader, this chapter gives a concise yet completely understandable summary of both Cox's distorted-grid simulation and finite element simulation. Less clear, unfortunately, is how these methods can be applied to real experimental conditions; an example or two would have been very instructive.

Gordon Hammes' chapter on fluorescence methods follows a logical progression from definitions, to theory, polarization, resonance energy transfer, and concludes with several clearly described examples of fluorescence applications in interacting systems. In short, this is a very well-written, satisfying section. Methods with enzymes (by Frieden) again emphasizes the theoretical in contrast to his 1971 review in Annual Review of Biochemistry which described numerous systems without an extensive discussion of theory. Indeed, most of the theory is newer material (1974-1979). A helpful subsection summarizes those techniques (initial velocity, variation of enzyme concentrations, substrate-dependent velocity, etc.) that are applicable in the study of interacting enzyme systems. Serge Timasheff gives a short yet lucid discussion of the assembly of rodlike structures. The concluding chapter by Nichol and Winzor is concerned with the binding of small molecules to proteins and subsequent effects on protein-protein interactions.

In summary, this unique compilation is an important contribution to the biochemical literature. It is not a book meant for the beginning student or those only superficially involved with protein research but is an invaluable volume for the serious protein and physical biochemist.

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**The Peptides. Analysis, Synthesis, Biology. Volume 4. Modern Techniques of Conformational, Structural, and Configurational Analysis.** Edited by E. Gross and J. Meienhofer. Academic Press, New York. 1981. xix + 309 pp. 15 × 23 cm.

This is the fourth volume in an open-ended series on the chemistry and biology of peptides. The focus in this particular volume, in contrast to the earlier three, is on several important physical and analytical aspects of the chemistry of peptides. The first chapter (I. L. Karle) deals with the application of X-ray analysis in the determination of three-dimensional structure of crystalline peptides. A number of biologically important cyclic peptides are discussed in detail in this chapter, including chlamydocin, bouvardin,  $\beta$ -amanitin, cyclosporin A, and valinomycin. Chapter 2 (J. Gunning and T. Blundell) extends the discussion of X-ray analysis to larger peptide hormones, particularly insulin and glucagon. The third, and most comprehensive, chapter (V. Toome and M. Weigele) is an in-depth presentation of the theory and practice of absolute stereochemical configuration assignment by ORD and CD. Since these chiroptical methods commonly require that the compound in question be converted first into a chromophoric derivative, the chapter includes a thorough review of the types of derivatives that can be employed for this purpose. Illustrative ORD and CD spectra are given, the rules for configurational assignments based on Cotton effects are explained, and temperature, solvent, and salt effects are discussed. This is an especially enlightening chapter, and is probably by itself worth the price of the book. Chapter 4 (S. Stein) describes the ultramicroanalysis of peptides and proteins by HPLC and the use of fluorescent reagents, such as fluorescamine, for pre- and postcolumn derivatization. Specific applications involving the opioid peptides (endorphins and enkephalins) are cited to illustrate the remarkable sensitivity of this assay technique. Chapter 5 (J. R. Benson, P. C. Louie, and R. A. Bradshaw) and Chapter 6 (R. A. Laursen) deal in a rather general way with amino acid analysis and solid-phase sequencing of peptides and proteins. Of particular

interest here are some recent advances that have been made in the methodology of peptide immobilization on microporous glass.

The general format and quality of this book conform in all respects to those of earlier volumes in the series. However, it should be noted that the reviewer's copy unfortunately came with about 25 missing pages, including all the references in Chapter 5! These pages, comprising almost 10% of the printed text, apparently were left somewhere on the bindery floor. Purchasers of this otherwise excellent book will want to make sure their copy is complete.

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**Annals of the New York Academy of Sciences. Volume 359. Modulation of Cellular Interactions by Vitamin A and Derivatives (Retinoids).** Edited by Luigi M. De Luca and Stanley S. Shapiro. New York Academy of Sciences, New York. 1981. x + 430 pp. 15 × 23 cm. \$83.00.

Retinoids have been shown to modulate the growth and influence the regulatory processes of a variety of different cell types from various animal species. Because of these properties, retinoids may have potential use in the prevention and therapy of certain forms of cancer. The mechanism by which retinoids exert their regulatory effects, however, has as yet not been elucidated. It has been hypothesized that these compounds may act by binding to specific cellular binding proteins, which could translocate them to the cell nucleus to alter gene expression, or that they may act by being donors of sugar moieties in glycosyl transfer reactions, which could modify cellular glycoproteins involved in membrane function. Support for both of these hypotheses is given in this volume, which contains a series of papers and poster topics that were presented at a conference on retinoid basic research sponsored by the New York Academy of Sciences in March, 1980. The articles, which are by some of the most prominent scientists in the retinoid area, present an overview of the current status of knowledge on the mode of action of these compounds at the biochemical and cellular level. After an introduction that presents the historical background and future potential for retinoids, research topics are subdivided into four main areas: (1) *in vitro* and *in vivo* metabolism studies; (2) binding proteins and their functions; (3) the effects of retinoids on such cellular functions as proliferation, differentiation, neoplastic transformation, adhesion, and sister chromatid exchange, and the relationship between retinoids and epidermal growth factor, protein kinase, and tumor promoters; and (4) biochemical models of retinoid action, including the effects of retinoids on polyamine and DNA synthesis, ornithine decarboxylase inhibition, and glycosylation of glycoproteins. The inclusion of experimental methods and references enhances the usefulness of this volume.

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**The Lymphokines: Biochemistry & Biological Activity.** Edited by John W. Hadden and William E. Stewart II. Humana Press, Inc., Clifton, NJ. 1981. xv + 437 pp. 16 × 24 cm. \$59.50.

The cellular components of the immune system have been shown to consist of varied cell types which include categories of thymus derived or T-cells, bone marrow derived bursa equivalent or B-cells, non T or B lymphoid cells, and cells of the phagocytic series. While immune functions for these cells continue to be extensively studied, the biochemical characterization of their numerous soluble mediators also remains the object of intense investigation.

*The Lymphokines* is an excellent review of the most studied soluble mediators. The book contains 19 self-contained, organized and well-referenced chapters, each written by prominent investigators. The book reviews key data on mediators involved in the development of the immune system, such as the various colony stimulating and thymus factors, and on antigen specific and nonspecific mediators, such as the macrophage controlling factors,

helper and suppressor factors, the interferons, transfer factors, and the prostaglandins.

The editors very successfully highlight the significance of the various factors and accurately imply that the immune system functions by a precise and controlled network of soluble mediators not unlike the endocrine system. It is suggested that further work on the isolation and enhanced production of these factors, perhaps through hybridoma technology, will eventually lead to the control of diseases and regulatory defects of the immune system.

The book is highly recommended as a primary reference for those both seeking a better understanding of the lymphokines and for those interested in their further investigation.

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**Pharmacology of 1,3-Indandiones.** Edited by W. Th. Nauta and R. F. Rekker. Elsevier Scientific, Amsterdam. 1981. xvii + 346 pp. 18 × 25 cm. \$72.70.

The volume represents a compilation/review of published information on 1,3-indandiones, as would be expected to be of interest to medicinal chemists. Some eight contributors are listed in the front of the book, but neither individual chapters nor sections specify authors. The Introduction states that the scope of the literature on 1,3-indandiones is such that the survey cannot be exhaustive, and this statement is repeated in the text. The "most important data" from the Russian literature have been included, and this material was apparently abstracted from a group of nine monographs and proceedings, cited in the introductory section of the volume.

There are four chapters in the book. *Chapter 1* is a 78-page narrative of the synthesis and chemical properties of indandiones, including 540 literature citations. *Chapter 2* covers physicochemical aspects: detailed discussion of infrared (qualitative and quantitative aspects), ultraviolet, and nuclear magnetic resonance spectroscopy; acidity and tautomerism phenomena; and electrochemical (polarographic) aspects, all extensively referenced. *Chapter 3* covers biological activities. Included are a lengthy discussion of anticoagulant actions, apparently the most common and most prominent pharmacological property of 1,3-indandiones, preceded by a brief outline of the biochemistry of coagulation and followed by discussion of mechanism(s) of vitamin K antagonism. Next are compilations of the relatively few indandiones which have been shown to display antiinflammatory, antiallergy, uricosuric, and/or diuretic actions. Each of these sections is preceded by a brief exposition of the physiology/biochemical aspects of the pertinent disease. It is this reviewer's opinion that these modest discussions are unnecessary for researchers active in the specific field and are inadequate for the enlightenment of the reader who has little or no knowledge of that field. Subsequent sections of this chapter address biocidal properties (largely an extension of the anticoagulant effects), growth regulating activities, and "biochemical properties": effects reported in the literature of indandiones on some biochemical mechanisms. *Chapter 4* covers quantitative structure-activity relationships and begins with some little historical background and review of the basic strategy of QSAR. It then proceeds to what seems to be chiefly a review of the volume Editors' (W.Th.N. and R.F.N.) published work on QSAR of indandiones. A 14-page Appendix describes aspects of multiple regression analysis and the Free-Wilson model. This reviewer is not convinced that material of this type is an appropriate adjunct to the volume.

The book is printed by a photoreproduction process, and it seems to contain few typographical errors. The volume may have appeal and may be of value to a worker in the field of 1,3-indandiones, but this extremely specialized topic is not of wide chemical or biological interest. It is the (perhaps) biased opinion of this reviewer that the published, cited biological/pharmacological effects of indandiones scarcely merit the depth of detail provided in this volume. The authors/editors have not made a compelling argument that indandione derivatives are ripe for therapeutic exploitation. The average medicinal/organic chemist

or pharmacologist will find little use for this volume.

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**Psychotropic Drugs: Plasma Concentration and Clinical Response.** Edited by Graham D. Burrows and Trevor R. Norman. Marcel Dekker, New York. 1981. xvi + 528 pp. 16 × 23.5 cm. \$68.00.

There are wide individual differences in the rates of metabolism of psychotropic drugs. Indeed, three patients receiving identical doses of a given drug may show considerable variation in their response patterns. One can have an adequate quantity of drug reach the brain, while another, because of fast metabolism, can have an insufficient amount of drug reaching the brain to produce a therapeutic benefit. The third, due perhaps to unusually slow metabolism, can have an accumulation of high levels of drugs throughout the body which produce multiple side effects. "Psychotropic Drugs: Plasma Concentration and Clinical Response" presents review papers by many experts in the field of the clinical pharmacology of the major psychotropic drugs. Among the topics included are methods for their determination in plasma, their pharmacokinetics, the correlation of plasma levels with clinical efficacy or side effects, findings on drug absorption, binding, distribution, excretion, and metabolism, as well as other aspects of their clinical pharmacology. It presents the state-of-the-art of our knowledge and the implications for practice. Clinical pharmacology in psychiatry is a young field, and as such, textbooks in general have not adequately surveyed this area in a systematic manner. This collection of definitive review articles of the clinical pharmacology of psychotropic drugs should, therefore, prove most useful to the researcher in the area. The contributions are uniformly of excellent quality. They provide a comprehensive summary at a research level of technical information concerning the clinical pharmacology of a particular drug. Some of the articles include information which is not really available elsewhere. Clearly, this is a book which all clinical pharmacologists working in this area should have. Since the book's focus is on pharmacokinetics, it is, in general, not relevant to pharmacodynamic drug design. It is of interest only to individuals seeking specialized knowledge in the clinical pharmacology of psychotropic drugs. However, from the viewpoint of one particular aspect of the medicinal chemistry of drug design, the building of certain desirable pharmacokinetic properties in a new drug, researchers will find convenient reviews here. Individuals designing protocols to investigate the clinical pharmacology of a new psychotropic drug will also find this a useful review.

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**Polymer Science and Technology. Volume 14. Biomedical and Dental Applications of Polymers.** Edited by C. G. Gebelein and F. F. Koblitz. Plenum Press, New York. 1981. xii + 492 pp. 17 × 25.5 cm. ISBN: 0-306-40632-2. \$59.50.

This book is a collection of the papers presented at a symposium at the National Meeting of the American Chemical Society in Houston, Texas, March 23-28, 1980. It is separated into four major sections: "General Biomaterial Applications of Polymers", "Cardiovascular Applications of Polymers", "Applications of Polymers in Medication", and "Dental Materials Applications of Polymers". There are 35 chapters. Some of the chapters review a particular field, but most present current research results.

The editors have attempted the Herculean task of converting an assemblage of broad-ranging oral presentations encompassing a variety of disciplines and approaches of varying quality into a cohesive, well-organized review and survey of the current state of the art. The book contains a large number of interesting and significant papers and should be of considerable value to investigators in these fields. The editors have done a good job of organizing into one volume such a diverse group of interdisci-

plinary papers involving chemistry, material science, medicine and/or dentistry, mechanics, and design engineering. However, it is certainly not a comprehensive treatise or even a well-balanced introduction to the subjects encompassing biomedical and dental applications of polymers.

Each section begins with an introductory review and survey, followed by a series of papers loosely related to the section subject. Occasionally, papers are misfits or overlap others, but most of them are informative and well prepared. Most papers include an unusually large number (frequently 30 to 50) of current references, and there is a useful subject index at the end.

The first section on general biomaterial applications includes a number of papers on polymers for artificial body functions (lungs, skin, collagen bonding, etc.) and a paper on pathological problems of implants. The second section is concerned with the application of polymers in heart assist devices, total artificial hearts, and blood vessel replacement. The overriding consideration in this section is the compatibility of these systems with the blood. The next section on applications in medication focuses on making drug therapy more specific with a longer period of activity while reducing side effects. Three different approaches are considered: (1) mechanical or diffusion controlled pumps, (2) controlled release polymeric systems, and (3) polymeric drugs. This section emphasizes polymeric drugs, a specific interest of one of the editors, but there is only minimal coverage of controlled release polymeric systems and pumps and related devices.

The final section on dental materials applications contains 14 chapters organized to be a compact survey of dental polymer science. It focusses on polymers used in tooth restoration, dentures, adhesives, and impressions. This section deals with much more narrowly defined subject matter but has very little connection with the three previous sections. It would have been more appropriate to have been included in a separate volume.

In conclusion this book should be a worthwhile addition to the library of anyone working in this field, but it should be recognized that it has the normal limitations of any compilation of nonreviewed papers given at a broad-ranging symposium.

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**Food Science Series. Volume 7. Flavor Research: Recent Advances.** Edited by Roy Teranishi, Robert A. Flath, and Hiroshi Sugisawa. Marcel Dekker, New York. 1981. x + 381 pp. 15.5 × 23.5 cm. ISBN: 0-8247-6568-0. \$59.50 (20% higher outside the U.S. and Canada).

This book deals with the fundamentals of isolation, separation, and chemical and sensory characterization of flavors. It emphasizes the prominent role of gas chromatography, mass spectrometry, and GC-MS in flavor and aroma research and relates these techniques directly to problems in flavor research. It is a unique book that guides readers through the latest advances in methodology of flavor work and explains the correlation of chemical structure to sensory properties. The results of flavor research, including accomplishments in establishing the flavor chemistry of vegetables and fruits; meats; tea, coffee, and other beverages; dairy and soy products; and taste and flavor enhancers, are fully explored. The inclusive bibliography enables researchers to search the literature for solutions to problems not covered in the text.

Chemists, food scientists, and students involved in flavor research will benefit from this book's up-to-date information. Medical scientists and biologists involved in working with trace complex compounds can apply the techniques described in this book to their own work.

Staff

#### Books of Interest

**Progress in Enzyme and Ion-Selective Electrodes.** Edited by D. W. Lubbers, H. Acker, R. P. Buck, G. Eisenman, M. Kessler, and W. Simon. Springer-Verlag, Berlin. 1981. 16.5 × 24 cm. XII + 239 pp. ca. \$34.30.

**Clinical Pharmacology of Prostacyclin.** Edited by Peter J.

- Lewis and John O'Grady. Raven Press, New York. 1981. 16.5 × 24 cm. xvi + 258 pp. \$29.50.
- Reactive Intermediates: A Serial Publication. Volume 2.** Edited by Maitland Jones, Jr., and Robert A. Moss. Wiley, Somerset, NJ. 1981. 16 × 23.5 cm. ix + 396 pp. \$52.50.
- Advances in Behavioral Pharmacology. Volume 3.** Edited by Travis Thompson, P. B. Dews, and William A. McKim. Academic Press, New York. 1981. 16 × 23.5 cm. xv + 217 pp. \$31.00.
- Legionnaires' Disease. Infectious Diseases and Antimicrobial Agents Series. Volume 1.** By Gary L. Lattimer and Richard A. Ormsbee. Marcel Dekker, New York. 1981. 16 × 23.5 cm. vi + 250 pp. \$23.50.
- Progress in Pesticide Biochemistry. Volume 1.** Edited by D. H. Hutson and T. R. Roberts. Wiley, Somerset, NJ. 1981. 16 × 23 cm. xi + 346 pp. \$66.00.
- Liquid Chromatography of Polymers and Related Materials III. Chromatographic Science Series. Volume 19.** Edited by Jack Cazes. Marcel Dekker, New York. 1981. 16 × 23 cm. viii + 299 pp. \$37.50.
- Demographic Trends and Drug Abuse, 1980-1995. NIDA Research Monograph. Number 35.** By Louis G. Richards. U.S. Department of Health and Human Services, National Institute of Drug Abuse, Rockville, MD. 1981. 23 × 14.5 cm. x + 102 pp. \$4.00.
- The Pesticide Chemist and Modern Toxicology. ACS Symposium Series. Number 160.** By S. Kris Bandal, Gino J. Marco, Leon Goldberg, and Marguerite L. Leng. American Chemical Society, Washington, DC. 1981. x + 582 pp. 16 × 23.5 cm. \$38.00.
- Membrane Structure and Function. Volume 4.** By E. Edward Bittar. Wiley, New York. 1981. vii + 246 pp. 16 × 23.5 cm. \$37.50.
- Catecholamines and Stress: Recent Advances.** By Earl Usdin, Richard Kvetnansky, and Irwin J. Konin. Elsevier/North-Holland, New York. 1981. xxv + 618 pp. 17 × 25 cm. \$65.00.
- Narcotic Antagonists: Naltrexone Pharmacology and Sustained-Release Preparations. NIDA Research Monograph. Number 28.** Edited by Robert E. Willette and Gene Barnett. Department of Health and Human Services, National Institute of Drug Abuse, Rockville, MD. 1981. 14.5 × 23 cm. viii + 276 pp. \$21.50.
- Reviews in Biochemical Toxicology. Volume III.** Edited by Ernest Hodgson, John R. Bent, and Richard M. Philpot. Elsevier/North-Holland, New York. 1981. ix + 368 pp. 17 × 25.5 cm. \$60.00.
- Supplements to the 2nd Edition of Rodd's Chemistry of Carbon Compounds. Volume III. Aromatic Compounds. Parts B and C.** Edited by M. F. Ansell. Elsevier/North-Holland, New York. xviii + 358 pp. 16 × 23 cm. \$78.75.
- New Approaches to Treatment of Chronic Pain: A Review of Multidisciplinary Pain Clinics and Pain Centers. NIDA Research Monograph. Number 36.** Edited by Lorenz K. Y. Ng. U.S. Department of Health and Human Services, National Institute of Drug Abuse, Rockville, MD. 1981. 14.5 × 23 cm. xii + 198 pp. \$17.00.
- Pesticide Analysis.** Edited by K. G. Das. Marcel Dekker, New York. 1981. 23.5 × 16 cm. xvi + 488 pp. \$49.50.