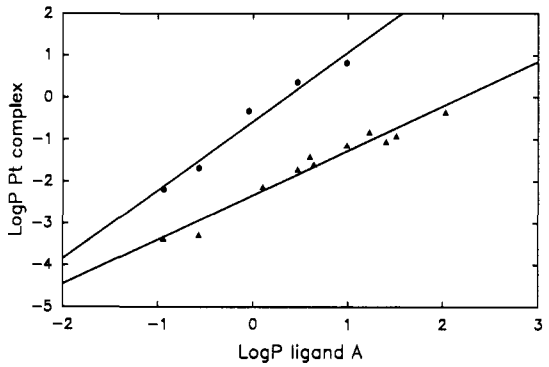

Figure 1. Experimental partition coefficients of *cis*-$[PtA_2X_2]$, X = Cl (●) and X = NO_3 (▲), as a function of the partition coefficient of the nonleaving group A. Partition coefficients of isopropylamine and the cyclic amines were calculated according to Rekker,[10] and the values for methylamine and the pyridine derivatives were observed experimentally.[11]

surement of partition. Therefore these time-dependent changes may involve a chemical reaction such as solvolysis in octanol which would raise the total platinum concentration in the organic solvent. In order to eliminate this effect, we extrapolated the initial concentration in each phase and used these values to calculate partition coefficients.

The values for the nitrato compounds in Table I are the initial partition coefficients which were extrapolated from the linear part of the curves for log P vs time. Results did not vary with concentration from 2×10^{-5} to 5×10^{-4} M.

log P of *cis*-$[PtA_2X_2]$ was plotted as a function of the partition coefficient of a single uncomplexed ligand, A, (Figure 1). The equations for X = Cl, $\log P_{\text{Pt complex}} = 1.64$ (±0.14) $\log P_{\text{ligand A}} - 0.60$ (±0.10) $n = 5$, $r = 0.989$, $s = 0.191$, and for X = H_2O, $\log P_{\text{Pt complex}} = 1.06$ (±0.07) $\log P_{\text{ligand A}} - 2.34$ (±0.08) $n = 11$, $r = 0.979$, $s = 0.197$, permit the calculation of log P for new Pt complexes *cis*-$[PtA_2X_2]$ from the partition coefficients of the ligand A. The intercepts theoretically represent the log P values for the $[>PtCl_2]$ and $[>Pt(H_2O)_2]^{2+}$ moieties.

The partition coefficients of the dichloro compounds were 1 or 2 orders of magnitude greater than the corresponding charged diaqua complexes. For a given leaving group, X, the partition coefficient of the complex increased with the hydophobicity of the nonleaving group, A. Many charged compounds (*cis*-$[PtA_2(H_2O)_2]^{2+}$; $2NO_3^-$, A = Bu^cNH_2, Pe^cNH_2, Hx^cNH_2, Hp^cNH_2, and the pyridine derivatives) were more lipophilic than the neutral parent compound *cis*-$[Pt(NH_3)_2Cl_2]$.

Surprisingly, the slopes of the curves in Figure 1 are less than 2 which is predicted from the additivity of log P[3-5,9] for the two A ligands. These results indicate that the log P values of the free ligand do not equal their contribution to the hydrophobicity of the platinum complex; the electron-withdrawing properties of transition metals might be expected to modify the lipophilicity of the nonleaving group, A. In addition the slope for the dichloro and diaqua compounds are significantly different which demonstrates a potential influence of the labile ligand, X, on the fragment hydrophobicity of the nonleaving group.

We propose that log P values for dichloro and diaqua platinum complexes of the type *cis*-$[PtA_2X_2]$ and *cis*-$[PtA_2(H_2O)_2]^{2+}$ may be estimated from the partition coefficient of the free nonleaving group, A, by using Figure 1. Accurate determination of the hydrophobic fragment constants of organic compounds complexed to platinum will require further work.

It is worth noting that several charged compounds which were more lipophilic than uncharged *cis*-$[Pt(NH_3)_2Cl_2]$, for example *cis*-$[PtA_2(H_2O)_2]^{2+}$ (A = Bu^cNH_2, Pe^cNH_2, Hx^cNH_2, Hp^cNH_2) showed antitumor activity against P388 leukemia (Table I). The increased lipophilicity due to the presence of the cyclic amine ligand may facilitate transport across the cellular membrane. On the other hand, pyridine derivatives with comparable hydrophobicity were not antitumoral (Table I), indicating that reactivity or steric parameters also play a role in the antitumor activity of these compounds.

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Book Reviews

Heterocyclic Compounds. Volume 48. Pyrroles. Part 1. The Synthesis and the Physical Chemical Aspects of the Pyrrole Ring. By D. J. Chadwick, G. P. Bean, A. H. Jackson, M. Artico, H. J. Anderson, C. E. Loader, A. Gossauer, P. Nesvadba, N. Dennis, and M. P. Sammes. R. A. Jones, Editor. Wiley, New York. 1990. xvii + 742 pp. 16 × 24 cm. ISBN 0-471-62753-4. $295.00.

The crucial importance of the pyrrole ring in biological systems has been responsible for its extensive study since the discovery of pyrrole by Runge in 1834. In this the first volume of the series dealing with pyrroles the authors carry on the excellent tradition set by previous volumes. The format, being easily recognized from earlier works, lends itself to the rapid location of information and makes it an essential addition to chemical reference libraries both in industry and academia.

One of the advantages of a modern day treatise of a class of compounds is that it may include information made available relatively recently through the advent of sophisticated techniques of computation and spectroscopy. Thus chapter 1 deals with the physical and theoretical aspects of 1*H*-pyrroles, laying an excellent foundation for the rest of the book.

Much of the early synthetic work in the pyrrole area was directed toward porphyrins and polypyrroles. The scope of these investigations broadened with the discovery of the antibiotic pyrrolonitrin and the search for other pyrroles of therapeutic interest. Chapter 2 systematically examines available routes to 1*H*-pyrroles, classifying them according to the carbon–carbon bonds formed during ring construction.

Chapter 3 is concerned with the reactivity of the 1*H*-pyrrole ring system and after a brief introduction is subdivided according to the transformation involved. Finally in chapter 4 the chemistry of 2*H*- and 3*H*-pyrroles is reviewed according to the same framework as their 1*H*-counterparts but in a single chapter. Liberal use of tables throughout the text helps one to locate data and references for specific compounds. The text is well supported by nearly 3000 references to the original literature through 1988,

making this an invaluable, albeit rather expensive, sourcebook.

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Mechanisms of Protease Action. By László Polgar. CRC Press, Inc., Boca Raton, FL. 1989. 223 pp. 18.5 × 26 cm. ISBN 0-8493-6901-0. $145.00.

This book is divided into six chapters which systematically review much of what is known about the way peptide bonds are hydrolyzed by proteolytic enzymes. Chapters are devoted to the mechanisms by which amides and esters are hydrolyzed, general aspects of proteolytic enzymes, and each of the four classes of proteases. The individual chapters dealing with each class of enzyme are subdivided to include a list of enzymes employing a particular mechanism, structure of the active site of the enzyme, mention of the more commonly available inhibitors (particularly those which occur naturally), and a discussion of research relevant to the various mechanisms proposed for the action of the enzyme. At the end of the book several useful pages are devoted to differences and similarities between the various mechanisms by which proteases act. Useful sections which review nomenclature of peptides and proteases are also included.

The book is well written and systematically covers information available in the literature until early 1987. As may be expected, most of the work dealing with mechanisms of hydrolysis of peptide bonds derives from the 1960s. Figures in the book appear to be either hand-drawn or reproduced from the original articles. The variable typefaces may occasionally jar the reader.

The serine proteases receive the most thorough treatment. Research on the cysteine proteases is also excellent while work on the aspartic proteases, where much recent work has been done with renin and HIV-1 protease, is decidedly weaker. The currently favored mechanism for the action of the aspartyl proteases developed by the Davies group is, for example, given short shrift.

Particularly useful aspects of the book are the thorough coverage of protease enzymology of the 1960s and 1970s and of research done in the now somewhat fragmented Eastern Block.

The weakest area in this reviewer's opinion, is the lack of discussion of how the information in the book can be used to guide the development of protease inhibitors as drugs. Research by the Squibb group on the development of captopril, for example, contains minor errors and is limited to a paragraph. Indeed, discussion of clinically relevant enzymes is almost totally lacking, a bias which reflects the work of many enzymologists before the advent of protease inhibitors with therapeutic potential.

The book is too expensive for students and written in a narrative form that makes it difficult to use as a reference. It is probably most useful for chemistry department libraries and to professional organic chemists interested in beginning research in the area of proteases. A paperback edition costing an order of magnitude less, reviewing the latest developments in the area, and having better graphics should be a real winner.

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Design of Enzyme Inhibitors as Drugs. Edited by Merton Sendler and H. John Smith. Oxford Science Publications, Oxford. 1989. xviii + 810 pp. 16 × 24 cm. ISBN 0-19-261537-8. $175.00.

In the preface to this book, the editors state that their aim is to provide comprehensive, one-volume coverage of the "main target enzymes and their known inhibitors" and to "demonstrate how the drug designer uses all available information to develop a specific therapeutic agent".

There are 22 major chapters in the book, several of which are further subdivided into related subsections. An introductory chapter written by the coeditors briefly reviews the concepts and rationale underlying the use enzyme inhibitors as drugs. The five subsections of chapter 2 present overviews of transition-state analogues, active-site-directed irreversible inhibitors, mechanism-based inactivators, the use of molecular graphics in computer-aided inhibitor design (in very general terms), and QSAR studies of enzyme inhibition. Since each subsection has a different author, the amount of detail is quite variable. The remaining 20 chapters of the book focus on specific target enzymes, including the renin–angiotensin system, β-lactamase, enkephalinase, amine oxidases, pyridoxal enzymes, cholinesterases, dihydrofolate reductases, enzymes of purine, pyrimidine, steroid and bacterial cell wall metabolism, proteinases, adenylate cyclase and phosphopdiesterase, and carbonic anhydrase. Most of the chapters have extensive bibliographies which constitute valuable keys to the relevant literature.

Perhaps the main value of this book lies in the fact that it contains in a single volume useful information and helpful bibliographies for a very wide range of potential target enzymes. The editors are to be commended for their broad vision in this regard. On the other hand, a serious drawback is the fact that a number of the chapters and bibliographies are already quite outdated. There are very few references to work reported in the late 1980s; apparently this reflects a long lag time between preparation of many of the chapters and publication of the volume. On balance, however, this volume represents a valuable resource to individuals engaged in design of novel enzyme inhibitors as therapeutic agents.

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Trends in Drug Research. Volume 13. Edited by V. Claassen. Elsevier, Amsterdam. 1990. vii + 429 pp. 17.5 × 23 cm. ISBN 0-444-88614-1. $143.50.

This is a report of the Proceedings of the Seventh Noordwijkerhout-Camerino Symposium held at Noordwijkerhout, The Netherlands in September 1989, and it is a part of the *Pharmacochemistry Library* series edited by H. Timmerman. The book consists of 27 short chapters (full texts of "almost all" of the main lectures) plus a concluding, more philosophical presentation, "Lessons from the Clinic" by Paul Janssen. Topic areas included Cardiovasculars; Receptors; Peptides; Molecular Toxicology and Drug Design; Drug Transport Kinetics; and Bioorganic Synthesis.

This reviewer has frequently deplored publicly the proliferation of books which are reproductions of talks given at meetings and symposia and contain relatively little material of a quality to justify the high price of the book. Not every scientific congress merits immortalization between hard covers.

However, these comments are not applicable to the present volume. The organizers of the Noordwijkerhout Meeting have chosen their subjects and presenters well. The short chapters (which are uniformly well-written) cover a remarkably broad range of chemical, pharmacological, and biochemical topics of importance in contemporary medicinal chemistry, and the volume merits the title, *Trends in Drug Research*. Many of the chapters provide much food for thought for the medicinal chemist who is seeking leads for future drug design endeavors. Individual chapters are of value, not only for the researcher active in the specific area, but also for the more casual reader who wishes to gain some sense of current developments and likely future directions. Among the contributions that this reviewer found especially stimulating are "Receptor—Membrane Interactions" by M. D. Hollenberg, "Pharmacology and Function of Melatonin Receptors" by Margarita Dubocovich, "Therapeutic Possibilities with 5-HT_3 Receptor Antagonists" by M. B. Tyers, B. Costall and R. J. Naylor, "Molecular Mechanisms in Toxicology and Drug Design" by N. P. E. Vermeulen and colleagues, and "Advantages and Limitations of Applied Biocatalysis" by E. M. Meijer and colleagues. Citation of these chapters reflects the personal prejudice of this reviewer; others will surely find other offerings in the volume of high primary interest.

Printing utilized a photoreproduction process; type fonts differ from chapter to chapter. Proofreading by the authors appears to be good; diagrams and structures are well-drawn and are clearly reproduced. Each chapter contains a bibliography; many of these contain references from 1989. The volume itself is indexed. The paper binding seems to be only moderately sturdy.

This book is recommended for profitable and enjoyable reading by medicinal chemists, pharmacologists, and others involved in drug research.

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Molecular Recognition: Chemical and Biochemical Problems. Edited by S. M. Roberts. The Royal Society of Chemistry, UK. 1989. xi + 285 pp. 15 × 21 cm. ISBN 0-85186-796-0. $76.00.

This volume contains the proceedings of an international symposium on molecular recognition held in 1989. There are 20 chapters which provide a wide-range of applications that fall within the umbrella of the term molecular recognition. Four chapters focus upon lead-optimization studies in which the receptor geometry is not available. The chapter by Diana and co-workers describing the optimization of ligands to the human rhinovirus-14 capsid protein gives useful methods for lead optimizations.

Three chapters focus on the use of NMR and/or X-ray crystallography to characterize ligand–receptor interactions. The chapter by Hol and co-workers details how crystallography and computer-aided molecular design can be integrated in drug-design research. At least three chapters deal with the use of molecular dynamics as a tool to simulate molecular recognition in enzyme–inhibitor systems. Kollman presents free energy perturbation theory, as applied to protein–ligand systems, within the context of molecular recognition.

There are several chapters on topics covering diverse and tangential aspects of molecular recognition. Most of these chapters are interesting, but make it difficult to define a theme for this volume. The chapter by Still and colleagues on host–guest complexes and the paper by Hamilton and co-workers on the design of artificial receptors are particularly interesting and thought provoking.

Overall, this is an interesting collection of relevant and well-written papers. However, it is not the type of monograph from which a reader can extract general principles and common themes in molecular recognition.

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Adenosine and Adenosine Receptors. Edited by Michael Williams. Humana Press, Clifton, NJ. 1990. xii + 516 pp. 16 × 23.5 cm. ISBN 0-89603-163-2. $89.50.

This is the seventh volume in *The Receptors* series. In this volume is highlighted the extraordinary progress made during the past decade in understanding the roles of adenosine and related purines in tissue function. Although adenosine was first recognized to produce profound hypotension and bradycardia and to affect kidney function in mammals over 60 years ago, it was not until 1989 that this purine nucleoside was approved for therapeutic use. Recent research has focused on adenosine receptor subtypes and for selective agonists and antagonists. The development of radioligand-binding assays has been instrumental in advancing research in this important area. As a result of these studies adenosine and purinergic systems have been established to be integrally involved in the function of almost every body system.

In this volume leading authorities in adenosine research review this important field in 13 chapters. These address historical perspectives, radioligand-binding assays, signal-transduction mechanisms, electrophysiological aspects, structure–activity relationships of adenosine A_1 and A_2 receptors, adenosine release, markers of adenosine metabolism and transport in central purinergic systems, adenosine in cardiovascular, renal, respiratory, and CNS function, adenosine and host defense modulation, and lastly a short, but stimulating, chapter concerning future vistas. Each chapter is thoroughly referenced and a very adequate index is included.

Adenosine and Adenosine Receptors will be of interest to most medicinal chemists. It will be an indispensable resource for all researchers of this critical class of receptors.

Staff

Advances in Magnetic Resonance: Volume 13. The Waugh Symposium. Edited by W. S. Warren. Academic Press Inc., New York. 1990. xiv + 277 pp. 15.5 × 23.5 cm. ISBN 0-12-025518-8. $74.00.

During the third week of January 1989 a conference entitled "High-Resolution NMR in Solids" was held at M.I.T. in honor of John Waugh's 60th birthday. The goal was to discuss recent advances in this field of spectroscopy which he started 20 years ago and in which he has remained a key player. The book is volume 13 of the respected series *Advances in Magnetic Resonance* started by Waugh himself. This is an extraordinary edition based on some of the presentations from invited speakers. It focuses on advanced applications of techniques which are well established and it will be followed by volume 14 which will focus on theoretical work and cover less well established techniques. The book is made up of 11 chapters and is a testimony to the wide range of applications which solid-state NMR has found in many disciplines including physics, chemistry, biochemistry, and materials science.

In the first chapter by Pennington and co-workers, ^{63}Cu and ^{65}Cu single-crystal NMR is used to study the properties of some high-temperature copper-containing superconductors. The experiments give very useful information on the charge and magnetic states of the Cu atoms in these very complex materials. There are two chapters on ^{2}H NMR, a method which over the past decade has found wide application in biochemical systems. One chapter by R. L. Vold and co-workers dealing with the molecular dynamics of alkane/urea inclusion complexes, demonstrates the usefulness of the method for studying molecular interactions. In the other chapter J. H. Davis discusses three examples from his own work and outlines some novel applications. The chapter includes studies of cholesterol–phospholipid phase equilibria, the dynamics of synthetic peptides in membranes, and the structure and dynamics of the cyclic peptide grammicidin. A major component of the book deals with magic-angle spinning (MAS) methods through which the broad lines obtained from a static solid sample are converted into a narrow center band and sidebands. The MAS experiment has become a powerful analytical tool and is used extensively to obtain structural information on macromolecules. A chapter by Gullion and Shaefer describes a variety of 1-D and 2-D MAS experiments aimed at measuring weak dipolar couplings. Such measurements can give structural information as for example the ^{13}C–^{15}N internuclear distances in biopolymers. Other MAS-related chapters include one by Spies and co-workers which describes the use of 2-D MAS experiments for studying molecular order and dynamics in polymers. A chapter by Griffin and co-workers outlines a variety of experiments developed for optimizing the measurement of small chemical shift anisotropies. The measurements can give useful information on the stereochemistry of biopolymers and their interactions with ligands. Such applications of MAS are given in two separate chapters, one by Harbison and co-workers, where ^{13}C and ^{31}P NMR are used to elucidate structural questions in DNA samples, and the other by Ellis and co-workers, where the use of ^{113}Cd NMR to study the active site of Cd^{2+}-substituted carboxypeptidase A_α is described. MAS can also be used for the imaging of solids as is described in a chapter by Veeman and Ory.

Other solid-state NMR topics covered in the book include a chapter by Johnson and He where electrophoretic NMR is described. The method is especially useful for studying transport properties such as diffusion and mobility in ionic mixtures and emulsions. Finally, there is a chapter by Kanert, Kolem, and Gunther describing the method of site-selective excitation to measure relaxation properties in titanium tellurium and selenium for the purpose of studying very slow atomic motions.

This book maintains the high quality which characterizes this series and is recommended. It is definitely not a "conference proceedings" in the usual sense. All of the contributed manuscripts were reviewed at least once. The chapters are generally well-written. Each of them briefly reviews the topic and also includes original data. Readers who are familiar with solid-state NMR will find the book useful as a synopsis of ongoing work. Those less familiar with the techniques will be able to get a wide-angle view into the world of solid-state NMR and perhaps find useful applications in their respective fields of research. The price of the book is acceptable.

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Cage Hydrocarbons. Edited by George A. Olah. John Wiley & Sons, Inc., New York. 1990. xv + 432 pp. 15 × 24 cm. ISBN 0471-62292-3. $69.95.

This book is the outcome of a March 1988 research sumposium at the Loker Hydrocarbon Research Institute of the University of Southern California in dedication to Paul v. R. Schleyer on the 30th anniversary of his discovery of the fundamentally simple preparation of adamantane, which initiated the modern age of cage hydrocarbon chemistry. In addition to the symposium presentations other contributions have been included to give an overview of cage hydrocarbons. Following an introductory chapter by Professor Schleyer, "My Thirty Years in Hydrocarbon Cages: From Adamantane to Dodecahedrane", subsequent sections address catalytic routes to adamantane and its homologues, the superacid route to 1-adamantyl cation, carbocations and electrophilic reactions of cage hydrocarbons, fragmentation and transannular cyclization routes to cage hydrocarbons, bridgehead reactivity in solvolysis reactions, stabilization of cage compounds through steric hindrance by *tert*-butyl groups, homologues of barrelene, bullvalene, and benzene, the [*n*]peristylane–polyhedrane connection, and the pagodane route to dodecahedrane. Comprehensive author and subject indexes are included.

Overall, the synthesis, chemistry, and physical properties of cage hydrocarbons are very comprehensively treated in this volume. Although the topic of this book is fundamentally that of organic chemistry, medicinal chemists will probably find a wealth of ideas for which to incorporate these structures into novel compounds with potential therapeutic utility.

Staff

Drug Discovery. A Casebook and Analysis. By Robert A. Maxwell and Shohreh B. Eckhardt. Humana Press, Clifton, NJ. 1990. xxv + 438 pp. 16 × 23.5 cm. ISBN 0-89603-180-2. $79.50.

The discovery of novel drugs for unchartered therapeutic purposes is the most trying task for scientists who devote their lives to advances in medicine. At the entrance to the pyramid of participating sciences one finds biochemists, medicinal chemists, and experimental biologists who share the springboard from which they explore the usually uncertain premises on which to build a program for drug development. In recent decades they have learned to speak each others' language and to contemplate the problems of their work in common terms. At the top of the pyramid are the clinicians, including clinical pharmacologists, whose main concern is the application, efficacy, and selectivity of a new drug and its limitations in patients. These clinicians are often unaware of how these pills and tablets have originated and have found their way to their offices. The present volume tries to bridge this gap. It will be read most advantageously by clinicians who want to understand the intellectual and practical origins of new drugs. Medicinal chemists will find occasional hints that much tiresome molecular modification was needed to single out candidate agents. Nowhere is there a discussion how this was achieved.

There are 32 subchapters under seven major headings: cardiovascular and renal group including renal transplantation, psychiatry and neurology, rheumatology (This group also contains methotrexate and cyclophosphamide!), anesthesiology, and pulmonary and gastrointestinal groups of drugs. In each case the innovative therapeutic agent is presented with the scientific work that led up to it. This work and the comments of events that produced the drug cover mostly clinical aspects. In many instances an early prototype drug has been chosen for discussion, even though that agent no longer represents the drug of choice because of side effects. Developments subsequent to the discovery of the first prototype are then given too little attention.

A statistical analysis of drug discovery concludes the book. This includes a defense of the arrangement according to major groups, an estimate of the contribution of industrial, university, governmental and private institutional research, the national origin of drugs, and discussions of the role of serendipity, planned approaches, and screening. Administrators of therapeutic research will find this section of value.

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International Review of Neurobiology. Volume 31. Edited by John R. Smythies and Ronald J. Bradley. Academic Press, Inc., San Diego, CA. 1989. vii + 458 pp. 15.5 × 23.5 cm. ISBN 0-12-366831-x. $89.00.

This volume continues the in-depth review of a variety of topics in the field of neurobiology. In the first part the clinical and basic implications of animal models of parkinsonism using selective neurotoxins are described. Subsequent sections deal with the regulation of choline acetyltransferase; the neurobiology of zinc and zinc-containing neurons; dopamine receptor subtypes and arousal; regulation of brain atrial natriuretic peptide and angiotensin receptors; schizophrenia, affective psychoses, and other disorders treated with neuroleptic drugs relative to the enigma of tardive dyskinesia; and nerve blood flow and oxygen delivery in normal, diabetic, and ischemic neuropathy. Each topic is reviewed by expert scientists actively involved in research in the area. A comprehensive list of references follows each review. In addition a very adequate index to the volume as well as an outline of the contents of recent volumes (21–30) is included.

The neurobiological reviews in this volume will prove useful to those engaged in research in the specific areas covered. It will also be informative to those who wish an introduction to these specialized topics.

Staff

Advances in Prostaglandin, Thromboxane, and Leukotriene Research. Volume 20. Trends in Eicosanoid Biology. Edited by Bengt Sammuelsson, Sven-Erik Dahlén, Jürgen Fritsch, and Per Hedqvist. Raven Press, New York. xii + 264 pp. 16 × 24 cm. ISBN 0-88167-710-8. $55.00.

This volume of *Advances in Prostaglandin, Thromboxane, and Leukotriene Research, Trends in Eicosanoid Biology* is based on a series of lectures given at the symposium entitled *Trends in Eicosanoid Biology* held in Interlaken, Switzerland in September 1989. Researchers familiar with the eicosanoid area will find 31 up-to-date research summaries and minireviews from the more prominent investigators. Like recent volumes in this series, the emphasis of this volume has focused on leukotriene research, with nearly half (13) of the articles detailing this area. The remaining papers are divided between cyclooxygenase products (seven), hydroxy fatty acids (three), and arachidonic acid/phospholipase A_2 (five). For the most part, these papers are adequately referenced with an average of 26 citations.

The quality of this volume, like previous volumes in this series, is enhanced by the frequent use of detailed figures, graphs, and schemes to focus the readers attention. These include several compilation tables which pull together data from a number of sources to present the reader with an easily digested summary, such as the articles on both prostaglandin and leukotriene receptor classification.

This series continues to be an important reference for anyone in the eicosanoid field. As such, a more detailed index would be helpful. An additional suggestion for future volumes would be to include an appendix which includes the structure (and reference if possible) of pharmacological agents (referred to by code number only) used in the text. This should not require much additional time or space, but would be particularly useful for those who are newcomers to the field.

This volume is recommended to anyone involved in eicosanoid research and should be a part of all academic and pharmaceutical libraries.

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Prediction of Protein Structure and the Principles of Protein Conformation. Edited by Gerald D. Fasman. Plenum Press, New York, 1989. xiii + 798 pp. 17 × 26 cm. ISBN 0-306-43131-9. $95.00.

As stated by the editor in the preface to this volume, "The prediction of the conformation of proteins has developed from an intellectual exercise into a serious practical endeavor that has great promise to yield new stable enzymes, products of pharmacological significance, and catalysts of great potential". In keeping with this thought, this book has been assembled at the present time in order to offer a look at recent advances in and contemporary thinking on the time-honored problem of predicting the three-dimensional conformation of a protein based on knowledge of its primary amino acid sequence. The volume consists of 20 chapters written by principle contributors to the field which discuss the state of the art of protein molecular modeling following both energy minimization and heuristic approaches. The chapters are in general quite readable, well-illustrated and are liberally referenced with up-to-date citations.

Of particular note are two extensive chapters discussing the principles and patterns of protein conformation (authored by J. S. Richardson and D. C. Richardson) and the development of the prediction of protein structure (authored by G. D. Fasman). In addition the volume contains several chapters each covering specific aspects of protein energetics, algorithms for the prediction and packing of secondary structure in proteins, prediction of protein structural class based on amino acid composition, hydrophobicity profiles and moments, tertiary structure prediction, and the structure prediction of membrane proteins. Also noteworthy are five appendixes included in the chapter by Fasman which provide lists of literature reviews on this subject matter, computer programs available either at three national resource centers or commercially, and national resource data bases.

This book offers a comprehensive and timely evaluation of the methods available for the prediction of protein structure and conformation which should be made available in all institutional libraries and should be a valued addition to the personal libraries of active participants in the field.

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Books of Interest

The Beilstein Online Data Base. Implementation, Content, and Retrieval. ACS Symposium Series 436. Edited by Stephen R. Heller. American Chemical Society, Washington, DC. 1990. vii + 168 pp. 16 × 23.5 cm. ISBN 0-8412-1862-5. $34.95.

Chemical Carcinogenesis and Mutagenesis. 1. Handbook of Experimental Pharmacology. Volume 94/I. Edited by C. S. Cooper and P. L. Grover. Springer-Verlag, New York. 1990. xxviii + 604 pp. 17 × 25 cm. ISBN 0-387-51182-2. $321.30.