oxy-8-methyl-9,10-dihydro-3-phenanthryl)methyl]dimethyl-[(phenylthio)methyl]ammonium bromide (**2d**)[5a] and **3d**, 3-methoxy-2-(methoxycarbonyl)-9,10-dihydrophenanthrene (**4a**)[5b] was converted to **4d** (68% overall): ^{1}H NMR ($CDCl_3$) δ 7.70–6.90 (m, 11 H, aromatic), 4.48 (s, 2 H, $R_3N^+CH_2SPh$), 4.15 (s, 2 H, $ArCH_2N^+R_3$), 3.83 (s, 3 H, OCH_3), 2.60 (s, 4 H, $ArCH_2CH_2Ar$); IR ($CHCl_3$) ν_{max} 3000, 1580, 1480, 1025 cm^{-1}.

Anal. Calcd for $C_{25}H_{28}BrNOS$: C, 63.82; H, 6.00; N, 2.98. Found: C, 63.43; H, 5.95; N, 3.10.

In Vitro Antimicrobial Activity. Minimum inhibitory concentrations (MIC μg/mL) were determined by the agar dilution/streak method following previously established procedures.[7]

In Vitro Antitumor Activity. The agents were tested for their toxicity to B16 (mouse melanoma) cells[10] and L-1210 (ATCC 219, mouse lymphocytic leukemia) cells[11] in culture as follows: A population of 1×10^4 cells in 0.5 mL of Dulbecco-modified Eagles medium (DMEM) containing 5% bovine serum was added to each well of a 24-place cluster dish (Costar, Cambridge, MA). The cultures were incubated at 37 °C for 48 h under 5% CO_2, 95% humidified air. The test substances, dissolved at 10 mg mL^{-1} in 95% ethyl alcohol, were added to fresh culture medium to 2× the intended test concentration. To each well of the cluster dish was added 0.5 mL of the appropriate "2×" medium so as to constitute 1 mL of medium per well having the desired concentration of test agent. The cultures were incubated for an additional 48 h, and then the number of cells per well was determined by using either a hemocytometer or a Coulter Particle Counter (Coulter Electronics, Inc., Hialeah, FL).

The L1210 cells do not adhere to the culture dish and can be separated from one another by aspirating the culture through the tip of a pipette. Thus dispersed, the cells were suspended in a total volume of 10 mL with a balanced salts solution (Isoton, Coulter Diagnostics, Hialeah, FL) and counted. The B-16 cells do attach to the plastic culture surface. The medium was removed from these cultures, and 0.2 mL of 0.01% crystalline porcine trypsin, 0.1% EDTA in divalent cation-free phosphate-buffered saline was added to each well. After 5 min at 37 °C, the culture plates were chilled on ice and 0.8 mL of phosphate buffered saline was added to each well. The number of cells in the suspensions was then determined. The number of cells per well was plotted as a function of the concentration of the test agent, and the dose that reduces the cell count to 50% of the untreated controls was determined and is reported as the IC_{50}.

Acknowledgment. This work was assisted financially by the Searle Scholars Program, The National Institutes of Health (CA 33668/42056, AI 13155, and ES 02046). We thank Sharon M. Rinzel of Eli Lilly and Co. for performing the in vitro CCRF-CEM assays and Dr. Homer Pearce for his assistance.

Registry No. **1a**, 62023-90-9; **1b**, 66447-86-7; **2a**, 85531-86-8; **2b**, 85559-36-0; **2c**, 85559-37-1; **2d**, 91551-17-6; **2f**, 69496-44-2; **2g**, 91551-21-2; **2h**, 97860-88-3; **3a**, 85531-84-6; **3b**, 97860-89-4; **3c**, 97860-90-7; **3d**, 97860-91-8; **3e**, 97877-58-2; **3f**, 97860-92-9; **3g**, 97860-93-0; **3h**, 97860-94-1; **3i**, 97860-98-5; **4a**, 85531-82-4; **4b**, 97860-95-2; **4c**, 97860-96-3; **4d**, 97860-97-4; **4i**, 97860-99-6; **5**, 69496-31-7; **6a**, 85531-85-7; **6b**, 85531-79-9.

Supplementary Material Available: Experimental details for the preparation of **4b** and **4c** and a table detailing additional in vitro antimicrobial activity of 9,10-dihydrophenanthrenes and related structures (9 compounds) examined (4 pages). Ordering information is given on any current masthead page.

Book Reviews

Modern Aging Research. Volume 5. Senile Dementia: Outlook for the Future. Edited by Jean Wertheimer and Maurice Marois. Alan R. Liss, Inc., New York. 1984. xxvii + 532 pp. 16 × 23.5 cm. ISBN 0-8451-2305-X. $68.00.

This book is the fifth in a series on Modern Aging Research. It represents the proceedings of an international conference entitled: "Senile Dementia in the Course of the Next Two Decades", which was held in Lausanne, Switzerland, May 2–4, 1983.

The editors have assembled a variety of authorities in the field of Alzheimer's disease and senile dementia, and the book reflects the broad spectrum of topics which were covered at this conference. Chapters have been subsumed under specific headings: Cerebral Biochemistry and Senile Dementia; Critical Evaluation of Senile Dementia Research; Aging of Nerve Tissue and Lesions of Alzheimer's Disease; Socio-medical Organization and Senile Dementia; Clinical Aspects of Alzheimer's Disease; Therapeutic Possibilities; Epidemiology of Senile Dementia; and Socio-political Problems of Senile Dementia. The book also includes a Forward; the Opening Address by each of the co-editors of this book; an Introduction by Dr. David Danon; and an Overview of the Conference by Sir Martin Roth. A total of 45 presentations are included in the book, representing contributors from all over the world.

This book could serve as a useful resource to individuals interested in having a general understanding of current issues of concern in the area of aging, dementia, and Alzheimer's disease. Because of the large variety of issues addressed, however, the book is not comprehensive in any one particular area. Rather, more general information and overviews have been included. Several pertinent topics were not even included in the book, such as an evaluation of drugs which are currently being used in the treatment of Alzheimer's disease and a description of animal models which might be useful for the study of aging, dementia, and Alzheimer's disease. Obviously, it was not feasible in the context of a 3-day symposium to cover all aspects of this subject in a comprehensive manner.

Since this book is an assemblance of individual manuscripts which were prepared in camera-ready format, the style throughout is not uniform. Also, a number of grammatical and spelling mistakes are evident, reflecting the consequences of attempting to hastily put together and publish the proceedings of a symposium. This is also reflected in differences in spelling of abbreviations of the same term in different chapters of the book (for example, choline acetyltransferase spelled as CAT or ChAT). While most chapters are in English, several have been included in French. Obviously, a compromise had to be reached in the interest of rapid publication of the conference's proceedings, in an attempt to provide "new" information to readers interested in the subject matter.

In summary, therefore, because of its broad and general approach, this book would not be of use to medicinal chemists interested in evaluating current knowledge in the field, as a stimulus for the development of research projects that they could undertake in the area of Alzheimer's disease and senile dementia. It would, however, as indicated above, serve as an excellent resource to provide a glimpse into the issues which currently are being discussed vis-a-vis this entire topic of investigation. As such, "Senile Dementia: Outlook for the Future" is a useful introduction to senile dementia, and does provide a good number of current references.

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Advances in Drug Research. Volume 13. Edited by Bernard Testa. Academic Press, New York. 1984. ix + 347 pp. 16 × 23.5 cm. ISBN 0-12-013313-x. $59.00.

A new volume of *Advances in Drug Research* has been published, with Bernard Testa as the new editor. Twelve volumes were published previously, edited by N. J. Harper and Alma B. Simmonds. After several years of dormancy, the series has now restarted.

In his preface, Dr. Testa indicates that in the future the series will focus on fields of general significance for drug research at the expense of reviews on specific classes of drugs. This new policy is obvious already in the present volume where three out of five extensive contributions are general articles.

The first chapter of the book is written by Dr. Testa himself. It is an unusual and very stimulating article: an outline of a research philosophy, a structure of drug research, and also a presentation of the relevant fields of science that influence drug action. For the specialist the chapter is a reminder of the complexity of drug research, and for the graduate student the chapter should have top priority on the reading list.

The selection of topics for the rest of the book might reflect the research interest of the editor. Three of the four chapters deal with topics related to drug metabolism and drug distribution. H.-P. Tillement et al. have summarized some recent advances in the studies of plasma binding of drugs; M. Mesnil, B. Testa, and P. Jenner have written an extensive chapter on drug metabolism by cerebral enzymes, and N. Bodor has summarized the present knowledge on soft drugs and site-specific chemical delivery systems as an approach to control and direct drug metabolism by drug design. These three chapters summarize information of great value. The authors are true specialists in their fields, and their way of combining seemingly unrelated data from separate fields may give new insights and serve as "eye openers".

The chapter by van Zwieten and Timmermans on α-adrenoreceptors is more drug specific than the others. It is focused on the receptors and their location, function, and mechanism. The medicinal chemistry on the agonists and antagonists is not covered apart from a collection of formulas.

The new volume in the series *Advances in Drug Research* is a book that can be read by medicinal chemists, pharmacologists, and others involved in drug research. The general articles cover topics applicable to all classes of drugs. If this volume could serve as a model for the future, this series would have much to offer in coming years.

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Blood Platelet Function and Medicinal Chemistry. Edited by Andrew Lasslo. Elsevier Science Publishing Co., New York. 1984. 18.5 × 26 cm. ISBN 0-444-00790-3. $52.75.

This book should appeal to both basic and clinical investigators who are endeavoring to understand platelet function and how to manipulate platelets, the smallest of the formed bodies of the blood, for the best health benefit. All of the authors are long-standing experts in the platelet field. An important feature of the book is the concerted effort of the authors to relate specific disturbances in platelet function to clinical problems of bleeding or thrombosis in acquired and hereditary diseases affecting blood and vascular systems. As with any rapidly evolving field, by the time a book has been through the publication mill, new discoveries have appeared and contributed to the science under discussion. However an authoritative presentation of basic ideas along with main-line research strategies remain invaluable, especially at this time when the growth in publication of papers on platelets shows no signs of slowing. This multiauthored volume places particular emphasis on relating the structural physiology of platelets and their perturbations by medicinal agents to specific chemical and physicochemical properties. The editor, Andrew Lasslo, Ph.D., and his associates have been in the vanguard of investigators trying to improve understanding of the molecular configuration or chemical groups on selected medicinal agents that specifically induce changes in platelet function. Such knowledge is expected to permit fine tuning of molecules to achieve specific responses from platelets. This should hasten development of more effective drugs for modification in a predictable way certain of the platelet functions.

The book consists of six chapters that are easily readable, elegantly illustrated by electron micrographs, tables, and diagrams, as well as thoroughly referenced. Several chapters provide informative accounts on calcium triggers of specific platelet activities, regulatory roles for phospholipid and arachidonic acid metabolites such as endoperoxides, thromboxane A2, and prostacyclin, and effects/causes of hereditary and acquired abnormalities of platelet function. Interactions with injured vascular surfaces, prosthetic devices, and other biomaterials are appropriately detailed. The important defense and metabolic roles of endothelial cells are emphasized. As a whole, this book is highly informative and thought provoking. It is worthy of acquiring for the personal as well as the institutional library.

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The Bioorganic Chemistry of Enzymatic Catalysis. By Myron L. Bender, Raymond J. Bergeron, and Makoto Komiyama. Wiley-Interscience, New York, 1984. xiii + 312 pp. 16.5 × 24 cm. ISBN 0471-05991-9. $39.00.

This authoritative book provides an overview of organic and bioorganic reactions that involve some type of catalysis in the broadest sense and thereby must have some relevance to enzymatic catalysis. Thus, we have chapters on catalysis by protons, fields (salt and solvent effects), hydroxide ions, nucleophiles, electrophilies, coenzymes, and metals. Other chapters combine these aspects covering, e.g., catalysis by acids–bases, intramolecular effects, and complexation. The book is clearly a must for anyone interested in this subject, but there is little attention given to enzymatic catalysis per se, the references are not generous, and the coverage sometimes is cursory. For example, the topic of triphasic catalysis is only described as "three separate phases, each containing a unique reagent or catalyst. The technique has been shown to be potentially useful in a wide variety of reactions."

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Spin Labeling in Pharmacology. Edited by J. L. Holtzman. Academic Press, New York. 1984. vi + 229 pp. 16 × 23.5 cm. ISBN 0-12-354050-X. $49.50.

This is the first book to deal with the application of spin-label spectroscopy to pharmacological research. It is well written and highly readable. The editor and authors are to be congratulated for the plan and arrangement of the book. Chapter 1 (Keana) presents an up-to-date review on the synthesis and chemistry of nitroxide spin labels. A vast array of nitroxide free radicals that are potentially important for the development of new spin labels of pharmacological interest is discussed. The author is clearly an excellent communicator of the subject. Chapter 2 (Mason) contains a general discussion on spin-trapping techniques and some applications in identifying free-radical metabolites of pharmacologically related compounds. The efficacy of spin-trapping techniques for studying drug metabolism is analyzed. Chapter 3 (Chignell) offers a brief survey on the scope of spin-label spectroscopy for probing structure and function of enzymes. The chapter emphasizes available methodologies. The literature covered in this chapter is through 1981. Chapter 4 (Trudell) provides a short account of current status of spin-label spectroscopy for studying drug–membrane interactions. New spin-label techniques for measuring pH and electrostatic gradients across membranes are introduced as potential tools for studying drug–membrane interactions. Chapter 5 (Rauckman, Rosen and Griffeth) covers on enzymatic reactions of spin labels. Many authors' unpublished results are included. This chapter is particularly timely in view of the recent interest in the development

of nitroxide paramagnetic contrast agents for whole-body NMR imaging. One minor criticism of this chapter is that enzymatic reactions of nitroxide spin labels in mitochondria were not discussed. Chapter 6 (Holtzman) deals with protein binding of drugs and is perhaps the most fascinating and pharmacologically relevant chapter of the book. The advantages and limitations of spin-label methods for drug assay are extensively discussed. This chapter is truly excellent, being both informative and detailed yet easy to follow. In short, this book should be welcomed by spin-label specialists as well as workers in pharmacology and related fields interested in having a concise overview of the subject.

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Leukotriene Syntheses: A New Class of Biologically Active Compounds Including SRS-A. By Feodor Scheinmann and John Ackroyd. Raven Press, New York, 1983. vii + 100 pp. 18.5 × 26.5 cm. ISBN 0-89004-897-5. $24.00.

This slim volume is a compilation of methods for the synthesis of the products of the 5-lipoxygenase system. The book covers the literature on the Leukotrienes, mono and di-HETE's, and related materials through about the middle of 1982. It is complete, although not critical, including more than 67 reaction schemes with reagents and conditions listed for most of the steps. There are a total of 80 references. The first chapter is a perfunctory presentation of the historical background, structure determination, and biosynthesis of SRS. There is no mention of the tri-HETE's, prostaglandins, or thromboxanes. The following chapters are logically divided starting with the synthesis of unsaturated fatty acids and their derivatives. Chapter 3 covers the synthesis of LTA_4 and the peptide-conjugated eicosanoids LTC_4, LTD_4, LTE_4, and their isomers, and Chapter 4 covers that of LTB_4 and the other di-HETE's. The final two chapters cover synthetic approaches to fatty acid based SRS-A antagonists and leucotriene derivatives such as the sulfones. Synthesis of the heterocyclic antagonists is not covered although their biological activity is mentioned.

The index, which covers about six pages, is generally good and includes frequent references to key starting materials. Typographical errors are few and minor, e.g., Reagent i, Scheme 59. Occasionally, reference to the corresponding reaction scheme is left out of the text, e.g., Scheme 66. Cross references in the text would have been helpful. For example, the reader would appreciate knowing that 5,6-methano-LTA_4 and the "carba-analog of LTA_4" are the same compound named differently by the authors of the original papers.

The book is indicated for those interested in an older, detailed review of the elegant synthetic chemistry of the leucotrienes and related fatty acid natural products. Updated, it would provide an excellent basis for an advanced undergraduate or beginning graduate student level course in modern natural product synthesis. It is not suitable for a medicinal chemist who is also interested in biosynthetic, biochemical, or pharmacological relationships within the 5-lipoxygenase area. The price may be high for a textbook but reasonable for reference use.

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Pharmaceutical Chemistry of Adrenergic and Cholinergic Drugs. György Szász. CRC Press, Inc., Boca Raton, FL. 1985. 142 pp. 18 × 26 cm. ISBN 0-8493-5158-8. $50.00.

This slim volume discusses in a total of four chapters the pharmaceutical chemistry of cholinergic and adrenergic agonists and antagonists. The pharmaceutically important properties are defined as biologic and metabolic behavior, stability, dosage forms, and analytical methods. It is conceivable that a truly comprehensive and critical compilation of such properties would be of value, at least as a reference source. The present volume does not fall into this category. It appears to be a collection of brief discussions, none of them comprehensive, of structure–activity relationships, spectroscopic properties, HPLC analytical techniques, synthetic chemistry, reaction mechanisms, etc. None are discussed in adequate detail, and there is the occasional mystifying figure such as that of the kidney on page 8 that contributes nothing. The book cannot be recommended to any purchaser, private or institutional.

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Advances in Heterocyclic Chemistry. Volume 37. Edited by Alan R. Katritzky. Academic Press, Orlando, FL. 1984. ix + 368 pp. 16 × 23.5 cm. ISBN 0-12-020637-4. $85.00.

This is the 37th volume of the well-established series *Advances in Heterocyclic Chemistry*. Through the years this series has dealt with virtually every area of heterocyclic chemistry and has become an indispensible part of any chemistry research library.

This volume consists of five chapters.

Wilhelm Flitsch and Gurnos Jones provide the first comprehensive review of "The Chemistry of Pyrrolizines". Until recent years this system has been studied only occasionally, and thus although a comprehensive review about 90% of the references are from the last 20 years. The synthesis of pyrrolizines is covered in a systematic fashion followed by discussion of both physical and chemical properties.

G. S. Shirkwaiker and M. V. Bhatt present a chapter on the "Chemistry of Arene Oxides" that should be of particular interest to many readers of this journal. This chapter updates the area from the many reviews that appeared in the 1970s. Both the chemistry and some biochemistry are discussed.

Joseph Toomey reviews the "Synthesis of Pyridines by Electrochemical Methods". This is a comprehensive review of electrochemical citations of pyridine compounds of industrial interest and is keyed to the functionality of the starting pyridine.

The first comprehensive treatment of Δ^2-1,2,3-triazoline chemistry is presented by Pankaja Kadaba, Branko Stanovnik, and M. Tišler, while Pankaja Kadaba also presents a short review on the related Δ^3- and Δ^4-1,2,3-triazolines. These two chapters provide an excellent survey of this field.

Finally, the volume concludes with the very useful "Cumulative Index of Titles" that serves as a convenient reference to subjects previously reviewed in the series.

The volume continues the high quality of the series and is well edited and relatively free of printing errors. Over 90% of the references are from 1964 or later, and at least 5% are to work reported in 1982–1983. Unfortunately, one cannot complete a review without commenting on cost—Volume 30 had 40 more pages for $8.50 less cost!

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Folates and Pterins. Volume 2. Chemistry and Biochemistry of Pterins. Edited by R. L. Blakley and S. J. Benkovic. Wiley, New York. 1985. xiii + 441 pp. 16 × 23.5 cm. ISBN 0-471-89121-5. $89.50.

The most frequently cited compendium in the area of folates and pteridines is R. L. Blakley's *The Biochemistry of Folic Acid and Related Pteridines* (Elsevier, New York, 1969), an admirably documented assembly of useful information. R. L. Blakley and S. J. Benkovic are currently editing a three-volume series covering the same area titled *Folates and Pterins*: Volume 1, *Chemistry and Biochemistry of Folates* (Wiley, New York, 1984); Volume 2, *Chemistry and Biochemistry of Pterins* (reviewed here); Volume 3, *Clinical Aspects* (forthcoming). Pterins are defined as 2-amino-4-oxopteridines which are "unconjugated", meaning that they have simpler side chains than the (*p*-aminobenzoyl)glutamate side chain of folate. Pterins are widely distributed in nature as coenzymes (H_4biopterin and molybdenum cofactor) and as pigments. There are eight chapters. The first four cover (1) dis-

tribution (J. C. Nixon), (2) chemistry (W. Pfleiderer), (3) biosynthesis (G. M. Brown), and (4) catabolism (H. Rembold); the following three deal with the coenzyme function of H_4biopterin in (5) phenylalanine hydroxylase (R. Shiman), (6) tyrosine hydroxylase (S. Kaufman and E. Kaufman), and (7) tryptophan hydroxylase (D. M. Kuhn and W. Lovenberg), which are enzymes on the biosynthetic pathway of catecholamine neurohormones and serotonin. Chapter 8 deals with molybdenum cofactor, a pterin required for the activity of xanthine oxidase and and nitrate reductase (J. L. Johnson and K. V. Rajagopalan). Discussion of dihydropterin reductase, which catalyzes the reduction of H_2biopterin formed in the hydroxylase reactions back to H_4biopterin, is included in Chapter 5.

Overall this is a worthy update of the pterin material in Blakley's book and will serve as a valuable reference source for many years, but it does not rise to the level of excellence of the earlier book because it is unevenly organized and information is not as easily accessible. The index is incomplete. A typical example is Table 2.8, "Physical Data for 5,6,7,8-Tetrahydropterin and Its Analogues", which lists pK_a values, UV absorption maxima, and absorption coefficients for 18 compounds. Of these, 16 are not indexed. In addition, an author index covering all the references cited, which was included in Blakley's earlier book, is omitted in the present work. In the chapters on amino acid hydroxylases an inordinate amount of space is devoted to properties of these enzymes peripheral to the role of pterins such as amino acid composition (pp 184, 234, 269) and the induction of enzymes by drugs (pp 327, 376). In Chapter 3 on the biosynthesis of pterins, discussion of the regulatory role of GTP cyclohydrolase, the first committed enzyme in the pterin biosynthetic pathway, is omitted. Work on this important topic pertaining to animal systems is reviewed by Nichol and by Blau and Niederwieser in *Biological and Clinical Aspects of Pteridines* (Volume 3, W. Pfleiderer, H. Wachter and H. Ch. Curtius, Eds., de Gruyter, New York, 1984).

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Beilstein Handbook of Organic Chemistry. 4th Edition. 5th Supplementary Series, Volume 17/1. Springer Verlag, Berlin, Heidelberg, New York, Tokyo. 1984. lxxxvii + 858 pp. 18 × 25 cm. ISBN 0-387-13418-2. $560.

This volume marks the beginning of the publication of the 5th Supplementary Series [E V] of the 4th Edition of Beilstein. This new volume retains the authoritative importance of its predecessors and has the added utility to a vast number of chemists that the language of publication is English. The compounds summarized are heterocyclic compounds having one oxygen atom, and the literature covered is between 1960 and 1979, a critically important period for currently active research workers in the field. There are valuable beginning sections listing prefixes and stereochemical descriptors, which will serve as important reference sources for those needing to improve their knowledge of current practice in nomenclature.

This volume clearly demonstrates that Beilstein has adapted very successfully to the needs of the present time and that continuing investment in the series is just as vital for libraries as it has always been in the past.

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Annual Review of Neuroscience. Volume 8. Edited by W. M. Cowan, E. M. Shooter, C. F. Stevens, and R. F. Thompson. Annual Reviews Inc., Palo Alto, CA. 1985. vi + 603 pp. 16 × 23 cm. ISBN 0-8243-2408-0. $27.00, U.S.A.; $30.00, all other countries.

The *1985 Annual Review of Neuroscience* contains 18 articles reflecting a number of reasonably diverse areas of current interest in the field of neuroscience. All the articles are authoritatively written and are of the high quality that one has come to expect from the *Annual Review* series. While the choice of topics may be considered broad and somewhat eclectic (Konishi's elegant article on Birdsong is an excellent synthesis of behavior—specifically neuroethology—neuroanatomy and history and well worth reading) and as such informative, these are somewhat limited in scope with a heavy emphasis on integrative function. There are five chapters(!) on various aspects of visual function and two on invertebrate neuropeptides, the latter of which tend to overlap in reference to the aplysia.

Molecular aspects of nervous system function are encompassed in a chapter on monoclonal antibodies, two on cell lineage, one on protein mobility in excitable membranes, and those by Snyder on adenosine and Tallman and Gallager on GABA-benzodiazepine interactions. The absence of any chapters on clinical aspects of nervous system function represents a major shortcoming and may limit the usefulness of this particular volume to the reader primarily interested in CNS pharmacology, however broad his or her breadth of interests.

Although the price of this volume and its unusually high production standards (a single typo on p 202) make it an excellent value, the nature of the topics selected for coverage (and emphasis) makes this a book that readers of this journal might find more useful to browse through in the library than add to their personal collections.

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Drug Analysis by Gas Chromatography. D. B. Jack. Academic Press, Orlando, FL. 1984. xii + 176 pp. 16 × 23.5 cm. ISBN 0-12-378250-3. $49.50.

A volume titled *Drug Analysis by Gas Chromatography* and published in 1984 may surprise researchers since gas chromatographic techniques have been available for so many years. The author indicates in the preface that his efforts are directed toward bridging the gap between elementary textbooks and the research literature. It may be more correct to say that the book has elements of both. While coverage of the literature is satisfactory (journal coverage extends through January, 1984, and includes many older, useful references), and while the author presupposes a familiarity of his readers with the basic techniques of gas chromatography, there is also a pedagogical "feel" to the book. This orientation is enhanced by descriptions of work performed in the author's laboratory that the reviewers found to be insightful and entertaining.

The volume has eight chapters: "Characterization of Stationary Phase and Drug"; "Derivatization"; "The Control of Purity and Stability of Pharmaceuticals"; "Analysis of Excipients, Preservatives, and Related Compounds in Pharmaceutical Preparations"; "The Determination of Therapeutically Active Substances in Pharmaceutical Preparations"; "Measurement of Drugs in Body Fluids"; "Measurement of Metabolites"; "Drug Screening". The book closes with an Envoi, a reproduction of the article "Enlightenment" (pertaining to gas chromatographic analyses specifically and analytical chemistry in general) by G. Machata.

The introductory chapter contains discussions primarily of column supports and stationary phases available to the chromatographer, yet does not deal extensively with the new capillary column technology. Remaining chapters give many specific examples relevant to that chapter's material, as well as a review of literature for a wide variety of drug substances. The book is also peppered with a variety of practical insights sadly absent from similar treatments. For example, the chapter on derivatization also includes discussions of the kinetics of derivative formation and those reaction conditions necessary to favor formation of derivatives. Chapter 6, which contains material with analysis of drugs in body fluids, begins with a discussion of the problems considered in the choice of body fluid and those encountered in the prechromatographic extraction steps. General rules for method development are suggested, and the chapter ends with a section on quality control.

In summary, this book is clear and concise and includes a wide selection of reference material and practical examples. It makes for enjoyable reading and should be considered for the bookshelf of anyone for whom gas chromatographic analysis of drug sub-

stances is more than a transient activity.

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Macrolide Antibiotics. Chemistry, Biology and Practice. Edited by Satoshi Omura. Academic Press, Orlando, FL. 1984. xiv + 635 pp. 16 × 23.5 cm. ISBN 0-12-526450-X. $89.50.

This book on macrolide antibiotics is an excellent reference text for the microbiologist and chemist in antibiotic and medicinal chemistry research as well as for professors of medicinal chemistry and microbiology. Clinical investigators in the field of infectious disease, veterinarians, and animal nutritionists will also find much of interest in this volume. Professor Satoshi Omura, Kitasato Institute, draws on his long experience with macrolide antibiotics to edit a well-documented book by himself and other very knowledgeable contributors. The book is divided into two parts. Part I, entitled "Macrolide Antibiotics", contains eight chapters concerned with the compounds included in the R. B. Woodward designation of "macrolide" as antibiotics containing a 12-, 14-, or 16-membered lactone ring with numerous ring substitutions including one to three sugars. Part II, entitled "Polyene Macrolides and Other Macrolide-Like Antibiotics", covers the "nonclassical" macrolides in six chapters.

The "Macrolide Antibiotic" chapters are entitled (1) "Production and Antimicrobial Activity of Macrolides", (2) "Structure and Stereochemistry of Macrolides", (3) "Chemical Modification and Structure-Activity Relationship of Macrolides", (4) "Total Synthesis of Macrolides", (5) "Biochemistry, Regulation and Genetics of Macrolide Production", (6) "Mode of Action and Resistance Mechanisms of Macrolides", (7) "Macrolides in Clinical Practice", and (8) "Macrolides in Veterinary Practice". The chapters thoroughly cover members of this important class from the basic studies to their utilization in human and veterinary medicine and animal nutrition. These "classical" macrolides—including erythromycin, tylosin, spiramycin, oleandomycin, and leucomycins—are considered to be as important in antibiotic therapy as the β-lactams or aminoglycosides.

Part II covers a more diversified group of macrocyclic lactones. The polyene macrolides, an important class of antifungal antibiotics, are well described in Chapters 9–12, which include production, structure, activity, biosynthesis, regulation, genetics, mode of action, resistance mechanisms, and clinical practice. Although a large number of polyene macrolides have been reported, only a few have been introduced into clinical practice. Chapter 12 by C. P. Schaffner is particularly useful in understanding the adverse effects encountered as well as the efficacy in the parenteral administration of amphotericin B. The uses of polyene macrolides for treating benign prostatic hyperplasia and hypercholesterolemia are interesting applications for these antifungal agents.

In Chapter 13, S. Omura discusses a wide variety of macrolide-like antibiotics produced by actinomycetes and fungi. These compounds range from the 9-membered dilactone antimycin A to the 48-membered polyol lactone monazomycin. This chapter gives a good insight into the difference types of of lactones produced by microorganisms and the activities associated with these compounds.

Chapter 14, entitled "The Avermectin Family of Macrolide-Like Antibiotics" by M. H. Fisher and H. Mrozik, presents the discovery and isolation of the avermectins and milbemycins, structure determination, stability, biosynthesis, chemical modifications, synthesis, structure–activity relationships, biological activity, neurobiology, metabolism, and safety. The avermectins are active against two major classes of parasites: nematodes (roundworms) and arthropods (insects, ticks, lice, mites). As they are active orally at a very low dose against nematodes in animals and may become the anthelmintic agent of choice, the information in this chapter is important to the medicinal chemist, parasitologist, and veterinarian to help understand this new class of antiparasitic agents.

Since this book is the only inclusive reference text available on macrolide antibiotics and contains complete, relevant information, it is a highly recommended purchase for individual, classroom, and library use.

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Drugs in Central Nervous System Disorders. Clinical Pharmacology/2. Edited by David C. Horwell. Marcel Dekker, Inc., New York and Basel. 1985. x + 354 pp. 16 × 23.5 cm. ISBN 0-8247-7185-0. $65.00, U.S. and Canada; $78.00, all other countries.

This volume, edited by a medicinal chemist working in the pharmaceutical industry with chapters contributed by a distinguished group of authors from both the pharmaceutical industry and academia, provides an up-to-date, interdisciplinary, comprehensive overview of the major drugs used in the treatment of central nervous system (CNS) disorders. This treatise discusses the efficacy, major side effects, dosage, mode of action, preferred routes of administration, and the special features that affect their pharmacodynamic, pharmacokinetic, and metabolic fates. References are generally up to date, including many from the literature up to 1983.

The five chapters are devoted to major therapeutic areas concerning diseases of the CNS, with the last chapter (P. J. Bisset) being devoted to a survey of the ethnic uses of the more important plants with CNS activity and to an outline of the chemical and pharmacological justification for these uses as revealed by current scientific research. A comprehensive index is also provided.

Chapter 1 (R. C. A. Frederickson and M. D. Hynes, III) discusses the development of centrally acting analgesics from the early work on chemical modification of opiate drugs to the discovery of the enkephalins. Chapter 2 (D. C. Horwell) describes the major drugs used in the treatment of depression and mania. Particular attention has been focussed on the tricyclic antidepressants and the second-generation drugs with an alleged antidepressant/antianxiety profile of activity. Chapter 3 (K. W. Gee and H. I. Yamamura) discusses the development of the antiepileptics, antianxiety agents, and sedative hypnotics in a concise 25 pages. Approximately one-third of the pages in this volume is devoted to a very thorough and up-to-date discussion of the neuroleptic agents by P. Jenner and C. D. Marden in Chapter 4. Since the discovery of the antipsychotic effects of chlorpromazine in the early 1950s, emphasis in research in the 1960s has concentrated on the mode of action of such drugs, particularly their ability to block central dopamine receptors, and ways to reduce their undesirable properties. Chapter 5 (J. A. Clemmens) concentrates on the drugs that regulate the hypothalamic–pituitary axis. The dopamine agonists are of interest in this area in that they have been used in three different therapeutic areas: Parkinson's disease, acromegaly, hyperprolactinaemia. Chapter 6, as mentioned above, is devoted to drugs derived from ethno origins.

This book will serve as an excellent introduction and reference document for a wide multidisciplinary readership interested in the drugs that are used in the treatment of disorders of the CNS. Medicinal chemists will wish to consult this book when planning directions for future investigations.

Staff

Books of Interest

Nutritional Bioavailability of Calcium. ACS Symposium Series No. 275. Edited by Constance Kies. American Chemical Society, Washington, DC. 1985. vii + 200 pp. 15.5 × 23.5 cm. ISBN 0-8412-0907-3. $37.95 U.S. and Canada; $45.95, export.

Proceedings of the First International Symposium on Neutron Capture Therapy. October 12–14, 1983. Edited by Ralph G. Fairchild and Gordon L. Brownell. National

Technical Information Service for Brookhaven National Laboratory, Springfield, VA. 1985. vii + 400 pp. 21.5 × 28 cm. PB85-109726. Xerox copy from microfiche (paper copy), $31.50; microfiche, $4.50.