fractions containing the less polar product were evaporated to dryness, and the residue was crystallized from a mixture of petroleum ether, bp 60–80 °C, and toluene to give 5.05 g of less polar **3**, mp 124–126 °C.

The more polar product was collected in a like manner as a foamy solid: yield 6.7 g; mp 56–66 °C.

To a suspension of the less polar camphanic ester **3** (1.0 g) in methanol (7.5 mL) was added aqueous sodium hydroxide (75 mg in 3 mL of water), and the mixture was stirred at room temperature for 30 min. The reaction mixture was diluted with water (50 mL) and extracted with ether (5 × 25 mL). The combined ether extracts were washed successively with 25-mL portions of 2 N HCl, water, and brine and were dried ($MgSO_4$). The solvent was evaporated, and the residue was crystallized from a mixture of petroleum ether, bp 60–80 °C, and toluene to give **4**: yield 480 mg (70%); mp 95–97 °C; [α] +2.42° (*c* 0.987, MeOH). Anal. C, H, N.

The more polar diastereomer **3** was treated in a like manner to yield **5** (32%): mp 94–96 °C; [α] −3.06° (*c* 1.01, MeOH). Anal. C, H, N.

Alcohol **4** was oxidized to sulfone **6** with *m*-chloroperoxybenzoic acid in CH_2Cl_2 as described earlier.[2] Sulfone **6** was obtained in 56% yield: mp 179–180 °C; [α] +81.22° (*c* 1.20, MeOH). Anal. C, H, N.

Similarly, **5** yielded **7** (74%): mp 179–180 °C; [α] −80.04° (*c* 1.02, MeOH). Anal. C, H, N.

B. Asymmetric Synthesis. 3(*S*)-(Bromomethyl)-3(*S*)-methyl-1,4-dioxo-3,4,6,7,8,8a(*S*)-hexahydro-1*H*-pyrrolo[2,1-*c*][1,4]oxazine (12). A DMF solution of NBS (2.9 g in 20 mL of DMF) was added to a stirred solution of (*S*)-*N*-methacrylolyproline (3.0 g) in DMF (20 mL) under argon at room temperature. The reaction mixture was stirred for 20 h and then evaporated to dryness. The residue was diluted with water (100 mL) and extracted twice with ethyl acetate (75 mL each time). The combined ethyl acetate extracts were dried over $MgSO_4$ and evaporated to dryness. The residue was crystallized from ethyl acetate to give **12**: yield 2.1 g (49%); mp 157–159 °C; [α] −126.5° (*c* 1.19, $CHCl_3$). Anal. C, H, N.

(*S*)-(−)-3-Bromo-2-hydroxy-2-methylpropanoic Acid (11). A mixture of **12** (4.28 g) in concentrated HCl (35 mL) was heated under reflux for 8 h. The cooled reaction mixture was diluted with brine (70 mL) and extracted with ethyl acetate (3 × 30 mL). The combined ethyl acetate extracts were washed with saturated $NaHCO_3$ solution (3 × 30 mL). The $NaHCO_3$ extracts were acidified (HCl) and extracted with EtOAc (3 × 30 mL). The EtOAc extracts were dried ($MgSO_4$) and evaporated to dryness. The residue was crystallized from toluene: yield 2.18 g (73%); mp 109–113 °C; [α] −11.78° (*c* 1.16, MeOH). Anal. C, H, N.

(*S*)-(+)-3-Bromo-4′-cyano-2-hydroxy-2-methyl-3′-(trifluoromethyl)propionanilide (13). Thionyl chloride was added to a stirred solution of **11** (1.0 g) in *N*,*N*-dimethylacetamide (20 mL) maintained at −5 °C. The resulting mixture was stirred at −5 °C for 30 min, and a solution of 4-cyano-3-(trifluoromethyl)aniline (0.92 g) in *N*,*N*-dimethylacetamide (3 mL) was added rapidly. The reaction mixture was stirred at −5 to 0 °C for 3 h and was allowed to warm to room temperature. The *N*,*N*-dimethylacetamide was distilled off, and the residue was diluted with sodium bicarbonate solution and then extracted with ether (3 × 50 mL). The ether extracts were dried ($MgSO_4$) and evaporated to dryness to give an oil, which crystallized on standing. The solid was crystallized from a mixture of petroleum ether, bp 60–80 °C, and toluene to give **13**: 1.05 g (60%); mp 106–107 °C; [α] +50.73° (*c* 1.1, MeOH). Anal. C, H, N.

(*S*)-(+)-4′-Cyano-3-[(4-fluorophenyl)thio]-2-hydroxy-2-methyl-3′-(trifluoromethyl)propionanilide (4a). A solution of **13** (400 mg) in THF (5 mL) was added to a suspension of the sodium salt of 4-fluorothiophenol [prepared from a 60% sodium hydride dispersion in oil (60 mg)] and 4-fluorothiophenol (195 mg) in THF (15 mL). The mixture was stirred under argon for 20 h. Water (20 mL) was added carefully, and the mixture was extracted with ethyl acetate (3 × 25 mL). The combined EtOAc extracts were dried ($MgSO_4$) and evaporated to dryness, and the residue was crystallized from a toluene–petroleum ether, bp 60–80 °C, mixture (1:1) to give **4a**: 220 mg; mp 94.5–96.5 °C; [α] +2.32° (MeOH). Anal. C, H, N.

(*S*)-(+)-4′-Cyano-3-[(4-fluorophenyl)sulfonyl]-2-hydroxy-2-methyl-3′-(trifluoromethyl)propionanilide (6a). Compound **4a** was oxidized to sulfone **6**, with *m*-chloroperoxybenzoic acid in CH_2Cl_2 as described previously.[2] The sulfone melted at 178–179 °C, [α] +81.47° (*c* 0.84, MeOH). Anal. C, H, N.

Pharmacology. Antiandrogen Activity in Intact Rats. Groups of five male rats (170–190 g) were dosed orally with the test compound, ball-milled in 0.5% polysorbate, once daily for 4 days at various doses. Animals were killed 24 h after the last dose, and the seminal vesicles were dissected, blotted, and weighed. Each test had a control group that received 0.5% polysorbate alone. The percent inhibition was calculated with use of a cumulative castrate control group as the 100% effect. The ED_{50} values were calculated from the dose–response curves.

Acknowledgment. We thank Dr. B. J. A. Furr, B. Valcaccia, B. Deegan, and C. Lunning for providing the biological data.

Book Reviews

Trends in Medicinal Chemistry. Edited by E. Mutschler and E. Winterfeldt, VCH Publishers, New York, NY. 1987. ix + 634 pp. 17 × 24 cm. ISBN 0-89573-616-0. $99.50.

This book is a collection of the inaugural, plenary, and main lectures presented at the IXth International Symposium on Medicinal Chemistry which was held in West Berlin in September 1986. As stated in the preface, it represents an excellent overview of current and future trends in medicinal chemistry. Following the inaugural lecture by K. H. Büchel on "Achievements, Problems and Future Aspects of Drug Research", four plenary lectures on "New Trends and Developments in Synthesis of Biologically Active Compounds" (E. Winterfeldt), "Drug–Receptor Interactions: A Dual Perspective" (D. J. Triggle), "Cell Cultures in Pharmacobiological Research" (M. Lazdunski and colleagues), and "Strategies in Drug Design" (J. K. Seydel) are presented. All of these lectures are well written, thoroughly covered and referenced with recent citations, and will clearly appeal to a broad range of medicinal chemists.

Following the initial presentations, this volume is divided into five main areas dedicated to "General Methodological Approaches", "Instrumental Techniques Useful for Medicinal Chemistry", "Progress in Organic Synthesis Useful for Drug Development", "How to Prevent Toxicity?", and "New Trends in Receptor Research". Each one of these areas is addressed by two to four presentations on more specific descriptions of more specialized topics in the area. Each subject is treated by well-known authorities in the field. Again each field is addressed in clearly understood, well-written presentations that certainly will appeal to almost all medicinal chemists.

The remaining approximately half of the volume is directed toward 10 "Specialized Topics", namely: "Agents Influencing Learning and Memory", "Drugs Acting at the Dopamine Receptors", "New Trends in Central Analgesics", "Adenosine Receptor Agonists and Antagonists", "New Cardiovascular Agents", "New Antiulcer Agents", "Antimicrobial and Antiviral Agents with New Mechanism of Action", "Immunomodulating

Agents", "New Aspects in Cancer Chemotherapy", and lastly, "Topics of Current Interest". Each of these topics is addressed in one or more presentations. The editors have carefully selected the presentations to very clearly address the "state of art" and future trends by the foremost experts in the fields.

In my opinion the editors have achieved an extraordinary successful endeavor in not only their organization and choice of topics but also in soliciting the cooperation of the authors and publisher in facilitating publication of the book in an exceptionally short time following the symposium. Actually, this volume arrived in my hands in less than 9 months following the meeting, and this is truly remarkable. As a consequence of the tight publication schedule, a few papers could not be published and only the abstracts appear, but this detracts very little from the exceptionally carefully prepared, organized, and indexed (subject and author) volume. Another remarkable feature of this book, and tribute to the editors, is that although it has been printed from "camera-ready" paper, the print and general format is extraordinarily consistent. The organization is also exceptional so that any overlap between topics seems quite natural and without redundance.

I believe that this book is one that will have appeal to virtually all medicinal chemists, as well as to biochemists, pharmacologists, and almost all scientists concerned with the development of new therapeutic modalities. I value this book in my own library and believe that most medicinal chemists and biological scientists will have a similar opinion. Clearly, it is a "must" for all biological libraries.

Staff

Diagnostic Enzymology. By David Hawcroft. Wiley, New York. 1987. xxi + 280 pp. 15.2 × 22.8 cm. ISBN 0-471-91399-5 (pbk). $21.95.

This book represents the latest addition to the series in Analytical Chemistry by Open Learning. As with the other volumes in this series, its intent is to provide a mechanism for self-learning and for the practical application of analytical tools within the title discipline. Thus, the current volume, *Diagnostic Enzymology*, focuses on clinical applications of enzymatic methodologies.

This first half of the book describes fundamental features of enzyme catalysis and methods of enzymatic analysis. Elementary discussions on reaction energetics, enzyme inhibition and specificity, and protein stability are followed by theoretical and practical considerations in the determination of enzyme activities. Spectroscopic methods of enzyme analysis are used throughout the text to exemplify important enzymatic principles. A minimal discussion is afforded to other commonly employed analytical techniques such as chemical, radiochemical, physical, and electrical procedures.

The clinical applications of enzyme analyses are emphasized in the second half of the text. Major sections are committed to common problems with assay samples, concerns with the reliability of an assay, and the validation of data. To relate the previously described methodologies into an applicable context, the author presents a discussion as to the use of enzyme assays in the diagnosis of biological disorders and the monitoring of treatment toward recovery. Three detailed examples are used to illustrate these analytical applications.

Comprehension of the subject matter is encouraged by frequent queries challenging the reader to an active participation. Self assessment questions, with answers at the end of the text, provide an additional means for the student to examine his understanding of the critical principles discussed; appropriate references are provided for those who would want to supplant this beginning text. This volume, which is well organized and easy to read, represents a good introduction for individuals desiring to obtain an elementary understanding of the application of enzymatic analysis to clinical diagnostics.

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GABA and Endocrine Function. Edited by Giorgio Racagni and Alfred O. Donoso. Raven Press, New York, New York. 1986. xviii + 302 pp. 15 × 23.5 cm. ISBN 0-88167-250-5. $55.00.

The book represents Volume 42 in the Advances in Biochemical Psychopharmacology series. It contains the proceedings of the International Symposium on GABA in Endocrine Function held in Buenos Aires, Argentina, November 14–16, 1985. The objective of the book is to provide the reader with an integrated review of the present knowledge of the inhibitory neurotransmitter, γ-aminobutyric acid. Toward this goal, 94 contributors have presented chapters in the following sections: anatomy, biochemistry and behavior of GABA, neuroendocrine actions, and GABA in peripheral glands and reproductive tissues. Clearly, the ubiquitous occurrence of this neutral amino acid in the brain of mammals is demonstrated by a variety of techniques. Several chapters are directed toward recently developed drugs that affect GABA metabolism, the understanding of drugs affecting this amino acid in specific areas of the brain, and its involvement in the regulation of behavior. The role of GABA as a neuroendocrine transmitter, in pituitary function, and in reproductive tissues is given major emphasis.

In a book, such as this, which describes research in diverse, oftentimes very specialized areas, it is difficult to retain a high degree of continuity. Also, the use of "camera-ready" materials for preparation of the book detracts from its uniformity. Nonetheless, the editors have done an admirable job of trying to bring the broad range of GABA-related topics together in an organized fashion. The book will be of interest to those specializing in research on this amino acid and especially its involvement in endocrine function.

Staff

Contemporary Classics in the Social and Behavioral Sciences. Compiled by Neil J. Smelser. iSi Press, Philadelphia, PA. 1987. xxiv + 361 pp. 16 × 23 cm. ISBN 0-89495-069-X. $39.95.

For those not familiar with "Current Contents", a "Citation Classic" is a "highly cited publication" as identified by "Science Citation Index", "Social Sciences Citation Index", or "Arts & Humanities Citation Index". In a "Citation Classic" the author of such a recognized highly cited publication writes an abstract and commentary about the article with an emphasis on the human side, i.e., how the research started, details of the progress of the work, and why the work was highly cited.

Contemporary Classics in the Social and Behavioral Sciences is the seventh volume to appear in this series; it is comprised of about 300 commentaries published in "Current Contents, Social & Behavioral Sciences" from 1979 to 1984. The classics included in this book are taken from 13 specific areas related to the social and behavioral sciences, namely: "Measurement", "Statistics, Design, and General Methodology", Biological Bases of Behavior", "Perception, Audition, and Cognition", "Behaviorism and New-Behaviorism", "Cognitive Processes", "Development, Personality and Disturbance", "Social Psychology", "Psychotherapy", "Sociology", "Economics", "Law and Political Science", and "Miscellaneous". It is concluded by a comprehensive index of authors, subjects, and institutions.

The personal accounts of the background to publications widely recognized by the author's peers provide stimulating casual reading that should aid in the understanding of the development of ideas, the evolution of research, and the dissemination of results and conclusions in the behavioral and social sciences. It is recommended for almost all scientific and also nonscientific libraries.

Staff

Pyridine Nucleotide Coenzymes. Chemical, Biochemical and Medical Aspects. Edited by David Dolphin, Olga Avramović, and Rozanne Poulson. Wiley, New York. 1987. Part A xvi + 759 pp. 17 × 24 cm. ISBN 0-471-01125-8. $99.95. Part B xv + 776 pp. 17 × 24 cm. ISBN 0-471-01126-6. $99.95.

This volume follows Volume I on Vitamin B_6 of the series Coenzymes and Cofactors; Volume III on Glutathione is in

preparation. The editors called upon an international panel of experts to write the 32 chapters. The *Series Preface* is a short history of dietary supplements from *A Treatise of the Scurvy* of 1753 to the 20th century discovery that pyridine nucleotides are coenzymes. The *Preface* is a short history of the pyridine nucleotides. This is followed, most appropriately, by a dedication to the late N. O. Kaplan, who authored the first chapter on the History of the Pyridine Nucleotides. This chapter is an intensely autobiographical account, and gives the reader a perception of standing beside Otto Warburg and other towering figures of the early 20th century as the foundations of biochemistry were established. The second short chapter on nomenclature by Waldo Cohn completes the introductory segments. Several subsequent chapters begin with historical introductions, which could have been deleted by the editors. Thus, there are numerous instances where the same topic is included in several chapters which lead to a high frequency of citation of the same papers. The other chapters in Part A deal with the Relationship Between Biosynthesis and Evolution (G. A. M. King), Crystal Structure (H. Eklund and C-I Brändén), Spectroscopy (V. Rizzo, A. Pande, and P. L. Luisi), Fluorescence and Phosphorescence (A. J. W. G. Visser), NMR (N. J. Oppenheimer), Mass Spectrometry (H-R. Schulten and H. M. Schiebel), Mechanism of Action (F. H. Westheimer), Chemical Stability and Reactivity (N. J. Oppenheimer), Stereochemistry of Fatty Acid Biosynthesis (A. Kawaguchi and Y. Seyama), Kinetics (P. F. Cook and B. L. Bertagnolli), Analogs (C. Woenckhaus and R. Jeck), Models (B. M. Anderson and N. O. Kaplan), Spin-Labeled Derivatives (W. E. Trommer). Part B contains Biosynthesis and Salvage Pathways (A. G. Moat and J. W. Foster), Intracellular Degradation and Turnover (A. M. Ferro and B. M. Olivera), Metabolic Control (R. L. Veech), Derivatives (C. Bernofsky), Optical Techniques (R. Roskoski, Jr.), Radioimmunoassays (R. Bredehorst and H. Hilz), Amperometric Assay (M. Aizawa and Y. Ikariyama), Immobilized Coenzymes (M-O. Månsson and K. Mosbach), Redox Reactions (A. Ohno and K. Ushio), Sulfur Metabolism (R. H. Schirmer and G. E. Schulz), Fatty acid Synthesis (Y. Seyama and A. Kawaguchi), Transhydrogenases (J. Rydström, B. Persson, and E. Carlenor), Complex Transformations (P. A. Frey), Glycohydrolases (S. R. Price and P. H. Pekala), Nonredox Reactions (K. Ueda), Nutritional Aspects (H. E. Sauberlich), and Medical Aspects (A. Fessler).

Effective use is made of stereo drawings to show conformations of the coenzymes and the binding domains of several enzymes (a stereo viewer is not provided). The discussion of the actual magnitude of the extinction coefficients, which are so widely used in biochemical laboratories, is found not only in the chapter on Optical Spectroscopy but more extensively in the later chapter on Derivatives. Anyone who has used a value for the differential extinction coefficient (designated as a_{mM} instead of the more commonly used absorption coefficient ϵ) at 340 nm different from 6.31 (p 110 of Part B) should read this discussion. In the very next chapter, this value is given as 6.27 mM^{-1} cm^{-1}, with no mention of the discussion in the previous chapter. F. W. Westheimer's critical evaluation of the controversy over the stereospecificity of the pyridine nucleotide dehydrogenases requires careful study by any serious student of this subject.

The bibliography for each chapter varies from fully adequate to exhaustive and is up to date to at least 1984 and in some cases to 1985. Very extensive tabulations with references in many chapters provide an overview as well as access to the original literature. In the chapter on Radioimmunoassay, actual laboratory protocols are provided. All this enhances the usefulness of the books while providing a balanced and timely overview of this subject. The many anecdotes provide entertaining reading.

A shortcoming is that the editors have, for the most part, not included cross-references among chapters in the book dealing with the same subject or extensions thereof. Thus, poly-ADP-ribosylation is described in Kaplan's historical chapter, is discussed by Ferro and Olivera in Part B under Intracellular Degradation and Turnover, and again and in greater detail by Ueda under Nonredox Reactions (509 references!). In two appendices to Ferro and Olivera's chapter, there is discussion of a possible role of ADP-ribosylation in signal transduction and an attempt to formulate an explanation for the molecular basis of the "three D's" of pellagra, i.e., diarrhea, dermatitis, and dementia. This three-page detective story is so well done that this reviewer will not compromise the reader's enjoyment of the original by summarizing it here. It would have been helpful to have the references include the titles of the publications. The author index was evidently prepared by computer and not checked further. This reviewer was amused to find his own postdoctoral mentor, D. W. Woolley, listed as Woolley, D. W. and Woolley, D. W. J. On the whole, this is a well-produced book which will retain its usefulness for many years.

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How to Find Chemical Information. A Guide for Practicing Chemists, Educators, and Students. By Robert E. Maizell. Wiley, New York. 1987. xvii + 402 pp. 16 × 24 cm. ISBN 0-471-86767-5. $44.95.

This is a completely updated and enlarged second edition of the original book published in 1979. It is a remarkably comprehensive but specific catalog of sources of chemical information and a useful guide to procedures for utilizing these sources. The printed materials and computer data bases which make up these sources are produced or made available by scientific and technical societies, government agencies, private vendors, libraries, and private publishers.

Since the last edition, the number of computer data bases readily accessible to users of chemical information has grown substantially. The advantages and limitations of these sources, as well as the facilities, skills, and techniques for accessing these data bases, are discussed.

The author has devoted particular attention to sources of information for users with interests in specialized areas of chemistry or in related subjects such as patents, chemical safety, toxicity, and chemical marketing and economics.

Chemistry students, teachers in chemistry departments, and practicing chemists should be familiar with the basic information presented in this book. In this reviewer's opinion, this book might serve particularly well as a special course text for senior undergraduate chemistry majors or first year graduate students, or, alternatively, as special assigned reading for such students. It is unfortunate that more science writers and environmentalists do not utilize books such as this one to establish lines of communication with accurate and authoritative sources of chemical information.

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Hazardous Chemicals Desk Reference. By N. Irving Sax and Richard J. Lewis, Sr. Van Nostrand Reinhold Company, New York, NY. 1987. xi + 1084 pp. 17 × 25 cm. ISBN 0-442-28208-7. $69.95.

This book is a moderate sized reference that will be of value to many who work with and evaluate the hazards of chemicals. The first section of the book is devoted to "Safe Storage and Handling of Chemicals", "Respirators", "Selection of Chemical Protective Clothing", "Fire Protection", and "First Aid in the Workplace". These subjects are well treated and provide valuable safety information especially for those beginning their careers in the chemistry laboratory; however, very similar material is probably available in the safety manuals provided by most organizations that utilize such facilities.

The second section provides immediate access to vital information on over 4700 of the most hazardous chemicals and other agents used in industry, manufacturing, laboratories, and the workplace. For each, chemical information is provided about the short-term as well as the chronic hazards caused by exposure to, or improper handling of, the dangerous material. For each of the entries, there is provided a "Toxic and Hazard Review" (THR) paragraph, a 1 to 3 hazard rating (HR), CAS (Chemical Abstracts Service), NIOSH (National Institute for Occupational Safety and Health), and DOT (U.S. Department of Transportation) number, synonyms, and current standards for exposure limits. The final 215 pages of the book are comprised of an "Alphabetical Synonym

Cross-Reference" and a "CAS Number Cross-Reference".

This book is clearly of interest to all safety officers responsible for the proper handling of chemicals as well as to industrial hygienists and poison control personnel. The first five chapters represent vital reading for all who work with chemicals and first responders to accidents and spills. In the absence of adequate safety manuals in chemical laboratories, this book is highly recommended. In any event, the book represents a very valuable addition to all chemical libraries.

Staff

Drug Discovery and Development. Edited by Michael Williams and Jeffrey B. Malick. Humana, Clifton, New Jersey. 1987. xvii + 447 pp. 16 × 24 cm. ISBN 0-89603-108-X. $69.50.

This book is a very factual account of the process of drug discovery and development. Frequently drugs are identified as a result of a need, oftentimes mandated by a marketing department in a pharmaceutical company. In other instances, drugs are discovered in a very rational, intellectually satisfying fashion. Many other novel drugs are the consequence of serendipity on the part of any discipline within the drug discovery team from medicinal chemist to clinician. In this volume is presented a clear analysis of the chain of events involved in the various approaches to drug development. After an "Overview" by the editors, the book is divided into three main sections, namely "Compound Discovery", "Toxicological Evaluation and Clinical Aspects", and "Therapeutic Entities—From Discovery to Human Use". In these three principal sections are explored various aspects of drug discovery, such as drug design, computer-based approaches, development of individual drug classes, chemical and biological perspectives at the tissue, receptor, enzyme and immunological levels, toxicological evaluation of drugs, drug delivery systems, clinical evaluation and therapeutic entities, such as the H_2 receptor antagonists, atypical psychotropic agents, and calcium channel antagonists.

I believe this book presents a very accurate picture of the drug discovery and development process—present and future. It should be of interest to medicinal chemists, as well as to all involved in the discovery and development of new drugs. In addition, it adequately addresses the academic side of pharmaceutical research, providing a valuable introduction to studies of various scientific disciplines.

Staff

Annual Reports in Medicinal Chemistry. Volume 22. Edited by Denis M. Bailey. Academic, New York. 1987. xiii + 384 pp. 17.5 × 25 cm. ISBN 0-12-040522-9 (alk. paper). $46.00.

As in previous volumes of this series the book is divided into seven main sections, namely "CNS Agents", "Pharmacodynamic Agents", "Chemotherapeutic Agents", "Endocrinology, Immunology and Metabolic Disorders", "Topics in Biology", "Topics in Chemistry and Drug Design", and "Special Topics". Each section is divided into several chapters which describe, usually in 10 pages including references, the advances in the particular subject being described during the past year or since the topic was last covered. Some topics, e.g., antipsychotics, antidepressants, anxiolytics, sedative-hypnotics, antihypertensives, pulmonary agents, antiallergics, antimicrobials, antineoplastics, antiinflammatory agents, and other traditional areas of interest to medicinal chemists are again comprehensively reviewed in this volume. In recent years, however, perhaps because of the broader scopes of interest in medicinal chemistry, many topics are reviewed only sporadically or for the first time. In the present volume some notable new contributions that fall into this class deal with excitatory amino acids, migraine research, agents for congestive heart failure, modulators of thromboxane synthetase, antifungals, osteoporosis, osteoarthritis, phospholipase A_2, tumor necrosis factor, interleukin-1, mediators of pain and inflammation, free radical involvement in reperfusion injury, as well as the entire section of "Topics in Chemistry and Drug Design". In this section the topics covered are "Approaches toward the Design of Sequence-Specific Drugs for DNA", "Molecular Modeling as an Aid to Drug Design and Discovery", "Molecular Cloning for the Nicotinic Acetylcholine Receptor: New Opportunities in Drug Design?", "Progress toward the Rational Study of Enzyme Structure-Function Relationships", and "Prodrugs and Site-Specific Chemical Delivery Systems". In the "Special Topics" section the very informative 15-page chapter "To Market, To Market—1986" details the new chemical entities for human therapeutic use introduced into the world marketplace during 1986. It was a banner year with 25% more new launches than in 1984 and 1985 combined. A very informative 22-page chapter on patents concludes the volume.

As usual, the present volume has been published as expeditiously as possible and presents the latest research in medicinal chemistry. These annual reports represent the best overview of current medicinal chemistry that is possible within the page-limit constraints of the book. The Editor-in-Chief, Section Editors, and all of the contributing scientists are to be congratulated in maintaining the high standards of this series. Clearly, this volume again describes in a well-organized fashion reviews of current subjects. At least some of the topics will certainly be of interest to all involved in medicinal chemistry.

Staff

Cellular and Molecular Basis of Cholinergic Function. Edited by M. J. Dowdall and J. N. Hawthorne. VCH Publishers/Ellis Howard, New York. 1987. xv + 941 pp. 17 × 24 cm. ISBN 0-89573-582-2. $216.00

This book derives from a meeting of cholinologists in Buxton, Derbyshire, England in May 1986. It is the sixth of these international meetings each of which has generated its own symposium volume and the resulting series generally called "Cholinergic Mechanisms" has proved popular, useful, and frequently quoted. The present volume is divided into three principal parts. The first part is concerned with "cholinoceptorology" (the response of cholinoceptive cells to acetylcholine), the second with neurons that secrete this neurotransmitter, and the last to cholinergic transmission in its entirety with a focus on the process in disease states. This final section deals with specific toxins and drugs, aging, and abnormalities such as Alzheimer's disease. Each of the three major parts is preceded by introductory comments by the editors, where the general topic is introduced historically and outlined briefly. Each part of the book is comprised of chapters that deal with very specific aspects of the particular topic being treated in depth.

The book, which is adequately indexed, will be a valuable source of information for scientists with an intimate interest in cholinergic function. To these specialists it will be an invaluable guide because most of the papers describe very specific aspects of cholinergic research. These scientists will want their own copy. For other medicinal chemists, library access will suffice.

Staff

New Cardiovascular Drugs 1987. Edited by Alexander Scriabine. Raven, New York. 1987. xi + 271 pp. 16 × 24 cm. ISBN 0-88167-308-0. $69.00.

The fifth volume of an annual series, this edition of the *New Cardiovascular Drugs* covers six therapeutic areas, including antihypertensives, peripheral vasodilators, cardiac stimulants, cerebral antihypoxic drugs, renal vasodilators, and nasal decongestants. Each chapter describes in detail the pharmacology (both preclinical and clinical) of the individual agent included. The use of appropriate standards in many of the chapters helps greatly in the understanding and interpretation of the data presented. Described in less detail are the chemistry, pharmacokinetics and metabolism, and toxicology of the compounds. All the drugs discussed are presently in clinical trials in the United States. Some of the agents, including ketanserin and idebenone, are already marketed outside the United States. As in previous volumes, all the chapters are written by representatives from the sponsoring companies.

Chemistry and toxicology sections remain a welcome addition to this volume since these disciplines are frequently neglected

in discussions of new agents. The extensive lists of current references included in each chapter (e.g., 298 references in the chapter on ketanserin) offer valuable information as well. The discussion of atypical cardiovascular drugs, such as the nasal decongestant Abbott-57219, is also welcome. Chapters on drugs still at the preclinical stage would have added even greater novelty to the series.

The chapters are well written and in a format that allows for easy transition from one chapter to another. The book will remain a valuable reference for those interested in drugs soon to become part of the available therapy for cardiovascular diseases.

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New Methodologies in Studies of Protein Configuration. Edited by Tai Te Wu. Van Nostrand Reinhold, New York. 1985. xii + 193 pp. 15 × 23.5 cm. ISBN 0-442-29212-0. $47.50.

This monograph represents the second in the Van Nostrand Reinhold Advanced Cell Biology Monographs Series. The intent of the authors is to present the current status of different methodologies employed in the analysis of protein configuration. The contents include six chapters, each dealing with a method or facet of protein configuration. These include (1) proton magnetic resonance, (2) electron microscopy, (3) neutron diffraction, (4) computational methods applied to protein backbones, (5) computational methods applied to amino acid side chain configurations, and (6) the oscillating mirror in three-dimensional displays of protein configuration. In each chapter the authors have taken one or more case studies and utilized these analyses to highlight the methodology. One, for example, in the first chapter deals with hemoglobin and the study of various site specifically modified hemoglobins by ^{1}H NMR spectroscopy. The discussions are generally quite fluid and provide enough theoretical knowledge to comprehend the topics encountered without encumbering the reader. This book does present a good overview of some of the major methods for protein configuration study, their limitations, and areas for further development; however, the topics discussed do not adequately address the interdependence and interplay of these methods. This is often the case in the multi-authored format. The majority of citations are pre-1985 consistent with this book's publication date. The index is surprisingly sparse (one page) and could easily be expanded.

This book would best be utilized by those researchers who desire a broad overview of the area and more specifically one of the areas covered in this text. While the information and background provided are not rich in detail, they do provide a starting point for those more interested. This book can only be recommended for libraries as its value as a reference is better served by the original research reports.

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Nitroazoles. The C-Nitro Derivatives of Five-membered N- and N,O-Heterocycles. By Joseph H. Boyer. VCH Publishers, Inc., Deerfield Beach, FL. 1987. xv + 368 pp. 16 × 24 cm. ISBN 0-89573-148-7. $79.95.

This is the first volume of a series on Organic Nitro Chemistry edited by Dr. Henry Feuer. This volume describes the monocyclic and polycyclic five-membered N- and N,O-heterocycles with one, two, three, or four nitrogens with a nitro group attached to one of the rings. There are five chapters devoted to nitro derivatives of (1) pyrroles, (2) imidazoles, (3) pyrazoles, (4) triazoles and tetrazoles, and (5) isoxazoles, oxazoles, and oxadiazoles. The chapters describe preparations, reactions, physical properties, and biological properties of each ring system. The references cover the literature through *Chem. Abstr.* **1983** but the bibliography at the end of each chapter includes the literature from *Chem. Abstr.* **1983**, *99* through **1984**, *100*.

The nitroheterocycles do not receive much attention in the various compilations of heterocycles and for this reason the series was conceived and this first volume was written. Dr. Boyer has provided a concise but complete summary of this area.

The titles of the five chapters are misleading for the chapter on pyrrole also includes nitroindoles, nitroazaindoles, and other fused ring pyrroles. This is also true of the other chapters for they include the benzo derivatives of the other ring systems as well. Thus the volume is more inclusive than the chapter titles suggest.

The preparations include direct nitration of the preformed ring system, ring closure reactions, and interconversion of functional groups attached to the ring system. The reactions of the nitro derivatives include interconversion of functional groups and ring substitution reactions. Some special reactions such as alkylations of nitroimidazoles with sugar derivatives to give glycosides are described. For all the systems there is an extensive discussion of the reduction reactions of the nitro groups. Because of the unusual electronic properties of the ring systems, in addition, the stepwise reduction through radical anions is described.

The spectroscopic properties of each ring system provide valuable information for correlations. The effect of structure on chemical shifts of ring protons and alkyl substituents provides a basis for use of NMR spectra for identification. The ^{13}C NMR spectral data are also discussed for most ring systems. The infrared spectral data for the nitro vibrations and the ring vibrations are shown to be characteristic of the structure of the nitro compounds. The effect of the position of the nitro group on the ultraviolet absorption spectrum is discussed for each of the ring systems. There are varying details of other spectral data including mass, photoelectron, X-ray, and electron spin resonance given in each chapter as well. These discussions give a literature survey in enough detail to provide a basis for structural studies.

The discussion of the biological activity of the nitro derivatives receives limited attention; however, the references offer an introduction to this topic. This could suggest an analogy for predicting the medicinal potential for a specific ring system.

The volume includes a mass of information essential to anyone working in the field of nitroheterocyclics and will be of great value to any nitrogen heterocyclic chemist. The physical data and biological information make this volume an important reference in these fields as well. This series will be a must for any good reference library.

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CRC Handbook of Chemistry and Physics. 68th Edition. Edited by Robert C. Weast, Melvin Astle, and William H. Beyer. CRC, Boca Raton, FL. 1987. 19 × 26 cm. xvii + 2416 pp. ISBN 0-8493-0468-7. $69.95.

The 68th edition of this classic single-volume collection of data is of interest to chemists and physicists. It has been revised, updated, and published almost continuously over the past 73 years, with the exception of certain years during World Wars I and II. It is so well known to chemists, physicists, and allied scientists that a comprehensive description is unnecessary. As in previous editions, this premier reference work is comprised of comprehensive data divided into six main sections, namely "Mathematical Tables", "The Elements and Inorganic Compounds", "Organic Compounds", "General Chemical", "General Physical Constants", and "Miscellaneous". It has been compiled by the Editor-in-Chief, two Associate Editors, a 12-membered Physics Editorial Board, and 131 Collaborators and Contributors. As usual some data have been removed and others added, revised, or updated in the present Handbook. Among the new data are "Solubility of Air and Nitrogen in Water", "Solubility of Oxygen in Electrolytes", and "SI Units for Radioprotection and Measurements". Many extensive tables, e.g., "Electron Affinities", "Strength of Chemical Bonds", "Density of Liquid Elements", "Surface Tension for Liquid Elements", and a "Summary Table of Particle Properties", have been updated. As a consequence of the great power and accessibility of modern calculators and computers, deletion of some mathematical tables has increased over recent years.

This Handbook, or a recent edition, is the "bible" of chemical and physical data and is a must for every chemistry and physics laboratory.

Staff

Cardiovascular Drug Therapy. Edited by Stephen Hunyor. Williams & Wilkins and Associates PTY Limited, Sydney. 1987. vii + 309 pp. 16 × 24 cm. ISBN 0 86433005 7. $60.00.

This book contains 33 chapters on cardiovascular topics as diverse as antibiotic prophylaxis of rheumatic fever to the management of cardiac arrhythmias. The chapters vary in length from 6 to 13 pages. Although the title of the book includes the term "drug", there are several timely chapters on non-drug treatments such as "Hypertension: Non-pharmacological Control" and "Balloon Dilatation of Coronary Arteries (PCTA): Adjunctive Therapy or Alternative to Coronary Artery Surgery?" Each chapter contains a summary, introduction, and current recommended readings. There are no references per se.

The brevity of each chapter limits the thoroughness of the covered material and thus this book is not recommended for somebody looking for an in-depth examination for the treatment of a specific cardiovascular disease. What this book does give is an excellent overview on the treatments of virtually every major cardiovascular disease. The clinical picture along with the rationale of the discussed therapy are included in each chapter, which aids the reader in the understanding of the disease. The information in each chapter is current and often drugs not yet approved in the United States are discussed. For example, the competitive inhibitors of HMG CoA reductase are discussed in the chapter on hyperlipidemia and several α-adrenergic blocking agents such as trimazosin and doxazosin are discussed in the chapter on α-adrenergic antagonist vasodilators.

The book is well written with few, if any, typographical errors. Since many of the chapters are written by Australians, there are occasional places where the nomenclature is different from that used in the United States. For example, hypercholesterolemia in this book is described as a plasma cholesterol greater than 6.5 mmol/L whereas, in the United States, this is routinely described as mg/dL. This book will serve as a valuable reference to those professionals in need of an overview on the treatment of a wide spectrum of cardiovascular diseases.

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Human Monoclonal Antibodies: Current Techniques and Future Perspectives. Edited by J. Brown. IRL, Oxford, England. 1987. x + 100 pp. 15 × 23 cm. ISBN 1-85221-024-9 (soft bound). $37.00.

This book presents the proceedings of the First Inverisk Research International Symposium on Biotechnology: "Monoclonal Antibodies in the Treatment of Human Disease"; it was held in Edinburgh, U.K., November 10–12, 1986. The 11 papers presented in this book deal with basic research in human monoclonal antibody production, as well as industrial production and regulatory issues associated with the licensing of these novel products. Since the first description of monoclonal antibodies in 1976, scientists have aimed toward the development of their therapeutic applications, e.g., in cancer, transplant rejections, and viral infections. Initial myoclonal antibodies were derived from murine sources. In this book is described the search for equivalent myoclonals derived from human lymphocytes.

This short book will be of interest to specialized scientists and clinicians in academia, as well as those in the pharmaceutical and biotechnology areas. Despite the struggle and obstacles involved in the development of human myoclonals, some of which are now licensed for use in humans, this book may be a useful addition to the libraries of these specialized researchers.

Staff

Topics and Perspectives in Adenosine Research. Edited by E. Gerlach and B. F. Becker. Springer-Verlag, New York. 1987. xiv + 634 pp. 17 × 24 cm. ISBN 3-540-17364-0. $131.90.

This book contains manuscripts of all papers presented at the 3rd International Symposium on Adenosine held in Munich, Germany in June, 1986. Complete discussions that followed each of the presentations are included.

The 54 presentations are divided into six sections, i.e., "Adenosine and Nucleoside Transporter", "Adenosine Formation, Metabolism and Transport", "Functions of Adenosine in Cells, Organs and Blood", "Adenosine in the Heart and Vascular System", "Adenosine and the Nervous System", and "Adenosine in Humans". About 160 scientists, many of them recognized experts in their field, have contributed to the final presentation of this symposium.

In the first section, attention is focused on current concepts relating to adenosine receptor subpopulations and their nucleoside transporters and transport inhibitors, as well as the "Drug Interactions with Nucleoside Transport Systems". The second section addresses the regulation, function, and kinetics of adenosine formation. Section III focuses on the role of adenosine upon various cells (fat, epithelial, vascular endothelial, neutrophil, and blood, etc.) and organs (e.g., skeletal). The fourth section addresses the role of adenosine on the cardiovascular system (e.g., isolated heart cells, negative chronotropic effects, atrioventricular node, and blood flow, as well as antiadrenergic actions, etc.). Section V is aimed at the role of adenosine in the nervous system and ranges from its function in the central nervous system, to calcium influences, to nerve conduction, to the significance of the role of adenosine in the regulation of breathing. The final section addresses the responses to adenosine in humans, specifically cardiovascular and pulmonary, as well as the human response to adenosine deaminase deficiency as it relates to the physiological function of adenosine in humans.

Although the book represents the proceedings of a symposium, it is typeset, which contributes to its uniformity. In addition, the editors have complied an excellent "Subject Index". The book has been compiled in an extremely timely manner. Although it may not be of general interest to all medicinal chemists, it represents a very valuable addition to the library of all disciplines concerned with the physiological role of adenosine and its subtype receptors. It is a must for those concerned with adenosine receptor modulation as a target for the derivation of new therapeutic modalities dependent upon adenosine receptor(s) modulation.

Staff