

Book Reviews

Nitric Oxide: Brain and Immune System. Edited by S. Moncada, G. Nistico, and E. A. Higgs. Portland Press Limited, United Kingdom. 1993. ix + 293 pp. \$78.00.

Nitric oxide, a short-lasting reactive radical generated from arginine, plays an important role as a messenger in signal transduction pathways. Although first identified in the endothelium, it is also present in brain and other tissues and is involved in the interactions of brain and immune systems. This book is a compilation of all the papers presented in the First International Symposium on Nitric Oxide: Brain and Immune System, held in September 1992 in Paraelios, Calabria, Italy. It is a well-written book by pioneering investigators and experts and has 29 chapters covering various aspects of the role of nitric oxide in both physiological and pathophysiological conditions.

The first eight chapters deal with the biological relevance of nitric oxide and regulatory processes in the brain for the immune systems and thymus and neuroendocrine functions. These chapters emphasize the role of nitric oxide in the information flow between the brain and immune system. The next 13 chapters deal with involvement of nitric oxide in the CNS, neuronal signaling, neuronal degeneration, the cerebroprotective role of nitric oxide inhibitors, and interactions of cytokine and nitric oxide. Although there is some overlap, each presentation seems to be unique and provides useful insights. The next two chapters discuss the beneficial role of nitric oxide in host defense against pathogens as well as the role of macrophage in this process. Inflammation of tissues, particularly lung, is covered in the next two chapters, and involvement of nitric oxide in shock is described in the following two chapters. The last two chapters deal with immunity and anaphylactic reactions.

The book has valuable information and provides insights for active researchers such as biologists, pharmacologists, and clinicians interested in exploring the new areas of nitric oxide involvement. It has a good index, and the price is reasonable. It is recommended for individual researchers and institutional libraries.

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Organic Reactions. Volume 45. Edited by Leo A. Paquette et al. John Wiley & Sons, Inc., New York. 1994. vii + 671 pp. 16 × 23.5 cm. ISBN 0-471-03161-5. \$95.00.

This volume consists of reviews of two major classes of organic reactions. The first one covers the Nazarov cyclization, i.e., acid-catalyzed closure of divinyl ketones to 2-cyclopentenones (158 pages, by Karl A. Habermas, Scott E. Denmark, and Todd K. Jones). The second chapter reviews ketene cycloadditions, i.e., the reaction

of ketene with an unsaturated organic compound to give a cyclic product (488 pages, by John A. Hyatt and Peter W. Reynolds). Both chapters are presented in the traditional *Organic Reactions* style and format consisting of the following sections: introduction, mechanism and stereochemistry, scope and limitations, experimental procedures, tabular surveys, and references. The tabular surveys are exhaustive and list almost all known reactions of the type being reviewed. References likewise are comprehensive. Both chapters present experimental conditions that should enable the laboratory practitioner to carry out the reactions effectively. As in other volume of this series, this volume contains a list of chapter titles, an author index, and a chapter and topic index for all 45 volumes.

The reviews in this book are of the high quality typical of the *Organic Reaction* series. Organic chemists will find it a valuable reference and information source. Library access is recommended.

Staff

Polymers of Biological and Biomedical Significance. Edited by Shalaby W. Shalaby, Yoshito Ikada, Robert Langer, and Joel Williams. American Chemical Society, Washington, D.C. 1994. xii + 337 pp. 15.5 × 23 cm. ISBN 0-8412-2732-2. \$89.95.

This book was developed from a symposium of the American Chemical Society held in Washington, D.C., in August 1992. It is divided into four sections: (1) Topical Reviews, (2) Synthesis, Surface Activation, and Characterization of Biomaterials, (3) Biological Effects Related to Specific Physicochemical Factors, and (4) Synthetic Bioactive Chain Molecules and Polymers for Controlled Transport of Bioactive Agents.

The first section includes chapters on polymers in pharmaceutical products, tissue engineering using biodegradable polymers, interfacial biocompatibility, transdermal applications, and microcellular foams. The second includes surface biolization, fluorosiloxanes, poly(ether urethane amides), polyurethanes, surface phosphonylated polymers, poly(ethylene oxide) surface modification of polymers, ascorbic acid as an etchant, salt partitioning in polyelectrolyte gel, ring-opening polymerization of an orthocarbonate, dental resin systems, acrylic monomers, oxalate polymers, and fluorescent curing of dental resins. The third section has chapters on microspheres which activate leukocytes, poly(vinyl alcohol) hydrogels, phase transitions, pH-sensitive hydrogels, models of starch–plastic blend degradation, and collagen. The last section includes poly(methacrylic acid) as a carrier for vaccines, class affinity membranes, transfection of the human insulin gene in mice, and permeation through poly(L-lysine-*alt*-terephthalic acid) membranes.

The volume contains three indices; an author index, an affiliation index, and a subject index. Each chapter contains an extensive bibliography. Many of the authors are well-known leaders in their respective fields

and bring their extensive expertise to this work. The book will be particularly useful for those involved in reaction related to polymers for pharmaceutical and biomedical applications.

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Biotechnology and Bioactive Polymers. Edited by Charles G. Gebelein and Charles E. Carraher, Jr. Plenum Press, New York. 1994. ix + 342 pp. 17 × 25.5 cm. ISBN 0-306-44629-4. \$95.00.

This book is based on a symposium which was held during the Spring, 1992, meeting of the American Chemical Society. It is divided into four major sections, covering: (1) Polysaccharide Applications, (2) Polypeptides and Biodegradable Polymers, (3) Medical Diagnostic Applications, and (4) Controlled Research and Medicinal Applications.

The first section contains chapters on acetan, modified heparins, hylan gel, chitosan, chitin and chitosan, whey proteins, and lignin-based materials. The second section discusses actin and tubulin, cell adhesive properties of bioelastic materials, mussel adhesive protein, collagen-derived biomaterials, modulation of phosphocholine bilayers, interpenetrating polymer networks, environmental aspects of biodegradable polymers, and absorption of poly-L-lactide in rabbits. The third section covers nonaqueous polymeric systems, protein purification using pyridinium ligands, bacterial adsorption polymer for biosensors, and separation of thymidine oligomers using immobilized adenosine on silica gel. The final portion of the book includes chapters on antimicrobial polymers, polymeric β -lactam systems, biodegradable polymers for vaccine delivery, polymeric implants for arterial restenosis, polyICLC for AIDS, 5-fluorouracil release from dextran and xylan systems, 5-fluorouracil release from chitosan, polyphosphate and polyphosphonate ester nucleic acid analogs, 5-fluorouracil prodrugs, and antiinfective biomaterials.

The book has both a contributor and subject index. Each chapter contains a detailed bibliography. Researchers involved with the applications of polymers to pharmaceutical or biomedical applications will find this book to be of particular value.

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Amphetamine and Its Analogs. Edited by A. K. Cho and D. S. Segal. Academic Press, Inc., 525 B Street, Suite 1900, San Diego, CA. 1994. xxi + 503 pp. 16 × 23.5 cm. ISBN 0-12-173375-0. \$120.00.

The opening sentence of the preface indicates that the same general phenylisopropylamine structure is common to stimulants, hallucinogens, and other drugs. The preface concludes with the promise that different aspects of the chemistry, pharmacology, behavior, and

toxicology of a large group of compounds will be addressed. Because this structural moiety is so pervasive among pharmacologically active agents, this topic should be of broad appeal to many medicinal chemists. Unfortunately, although what is presented in the chapters that follow is current, fairly comprehensive, and written by established investigators, the book doesn't make good on its promise. For the most part, emphasis is placed on a trio of agents: amphetamine, methamphetamine, and the designer drug 3,4-(methylenedioxy)methamphetamine (MDMA). The opening chapter, on structure-activity relationships, is well-written and is one of the few that describes the promised "large group of compounds". Chapter 2, on metabolism, focuses on amphetamine and methamphetamine with a description of the metabolism of about another half-dozen agents. The remainder of the book is divided into several sections, each of which is further divided into three or more chapters. The section on Neuropsychopharmacology includes chapters on the Neurochemistry of Amphetamine, the Neurochemistry of Ring-substituted Amphetamine Analogs (devoted almost entirely to MDMA), the Behavioral Pharmacology of Ring-substituted Amphetamine Analogs (again, with emphasis on MDMA), the Neurochemistry of Halogenated Amphetamines, and Mechanisms of Abuse (devoted to amphetamine itself). The Toxicology section contains three chapters, one on Neurochemical Mechanisms of Toxicity (devoted mostly to methamphetamine), a second on the Functional Consequences of Neurotoxic Amphetamine Exposure, and a third on Amphetamine Neurotoxicity in the Brain. The Use and Abuse section is also composed of three chapters: Use and Abuse of Ring-substituted Amphetamines (half of which is devoted to MDMA), Amphetamine Psychosis: Clinical Variation of the Syndrome (devoted exclusively to amphetamine); and Use and Abuse of Amphetamines in Japan (with near total emphasis on methamphetamine, including a discussion of methamphetamine psychosis). The final topic, Epidemiology, includes chapters on Epidemiology of Amphetamine Use in the United States (emphasis on amphetamine and methamphetamine), Epidemiology of Amphetamine Abuse in Japan and its Social Implications (totally devoted to methamphetamine), and Prospects in Amphetamine Research (with a focus on amphetamine).

Most chapters are well-written and well-documented. But, one gets the distinct impression that each author is working from a different script when it comes to a definition of amphetamine analogs. The statements made in the Preface and, indeed, some of the chapter titles, are misleading. Whereas this book is a good overview of certain aspects of amphetamine and methamphetamine research, and although it provides useful information on MDMA, it fails to achieve its intended goal of examining a large group of compounds. In short, the problems rest with format or intent, not with content. A more appropriate title might have been "Amphetamine, Methamphetamine, and MDMA". Those interested in abuse problems associated with these three agents will undoubtedly find the book useful and of

value. Due to its narrow scope, however, it will likely lack appeal to the more general medicinal chemistry audience.

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Studies in Natural Products Chemistry. Volume 14. Stereoselective Synthesis (Part 1). Edited by Atta-ur-Rahman. Elsevier Science B. V., The Netherlands. 1994. xiv + 924 pp. 17 × 24.5 cm. ISBN 0-444-81780-8. \$442.75.

Twenty-two chapters by outstanding researchers are devoted to the description of some of the latest and most significant developments in the reactions and synthesis of antibiotics, sugars, and nucleotides, terpenes and steroids, and also alkaloids. Specific topics and authors are as follows: 1. Stereoselective syntheses of doxorubicin and related compounds, by D. M. S. Wheeler and M. M. Wheeler. 2. Total synthesis of nogalamycin congeners and their related compounds, by F. Matsuda and S. Terashima. 3. Synthesis of the tetramic acid antibiotics, by S. J. Shimshock and P. DeShong. 4. The syntheses of 3- and 4-deoxyhexoses, by D. Fattori and P. Vogel. 5. Recent developments in the synthesis of polysaccharides and stereospecificity of glycosylation reactions, by N. K. Kochetkov. 6. Levoglucosone: a versatile carbohydrate precursor, by Z. J. Witczak. 7. Chemical synthesis of branched oligoribonucleotides, by M. Sekine. 8. Oxidation products of guaiazulene and other azulenes, by Y. Matsubara, H. Yamamoto, and T. Nozoe. 9. Synthesis of hydroazulene sesquiterpenes, by L. H. D. Jenniskens, J. B. P. A. Wijnberg, and A. De Groot. 10. A chapter in thujone chemistry, by J. P. Kutney. 11. The total synthesis of eudes-11-en-4-ols, by R. P. W. Kesselmans, J. B. P. A. Wijnberg, and A. De Groot. 12. Asymmetric synthesis using chiral acetals, by H. Fujioka and Y. Kita. 13. Asymmetric synthesis of spiro compounds, by T. Imanishi and C. Iwata. 14. Asymmetric construction of versatile chiral building blocks, by Y. Hirai and T. Momose. 15. Cationic cyclopentannulation reactions, by M. A. Tius. 16. Chiral construction of quaternary carbons through addition-elimination process, by K. Fuji. 17. Synthesis using hydrogen abstraction reactions, by G. A. Kraus and M. D. Schwinden. 18. Taxodione synthetic studies, by A. K. Banerjee and M. C. Carrasco. 19. Synthetic studies on indole alkaloids, part 2, by M. Lounasmaa. 20. Stereoselectivity in the synthesis and biosynthesis of *Lupine* and *Nitraria* alkaloids, by M. J. Wanner and G. J. Koomen. 21. Synthetic approaches to vinblastine and vincristine, by Atta-ur-Rahman, Z. Iqbal, and H. Nasir.

One weakness of this book is that few specific instructions must have been issued to the individual authors toward achieving uniformity of format. Sometime the laboratory to which the authors of a chapter are associated is indicated on the front page, and sometimes not. The numbering for the structural diagrams is some-

times but not always given between brackets. The literature references are not cited in any uniform manner; instead each author follows his own inclinations as far as the order of volumes, page numbers, and year of publication are concerned.

A more serious criticism is that some manuscripts seem to have been accepted for publication with little or no attention to style or typographical presentation. A particularly telling example is the chapter dealing with the synthesis of polysaccharides and the stereospecificity of glycosylation reactions. The material was obviously translated from the Russian in a word for word manner, with a resulting wooden style. This fact, coupled with the poor printing, makes for difficult reading. These remarks obviously should not reflect in any way upon the professional caliber of the author, which is indeed very high. But when the hefty sum of \$442.75 is going to be charged for a book, it is incumbent upon the publishers to see to it that (a) each of the chapters is written in a felicitous style with correct grammar and syntax, (b) the typing uses a high-quality word processor with computer-generated diagrams, and (c) all the chapters use essentially the same format so as to achieve a certain degree of uniformity in the presentation.

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The RBI Handbook of Receptor Classification. Edited by John W. Keabian and John L. Neumeyer. Research Biochemicals International, Natick, MA. 1994. ix + 122 pp. 22.5 × 27.5 cm. ISBN 0-96405-548-0-9. \$25.00.

Amongst the books and manuals I always keep in my office, several are dog-eared catalogs received from commercial suppliers (RBI, Sigma, Bachem, NEN, and Amersham among others). These have consistently proven invaluable as quick and ready references for molecular weights, structures, solubilities, light sensitivities, and/or doses of experimental compounds. Not infrequently, they provide core references describing bioactivities and patent information. I'm delighted that someone has finally recognized the utility of these materials and consolidated at least a portion of that information into a scientifically-sound volume.

The *RBI Handbook of Receptor Classification* (co-sponsored by both Amersham Life Science and DuPont NEN Research Products) is a concisely-organized, clearly-presented compendium of information on receptors and compounds acting at those receptors. The handbook contains contributions from 37 authors, each of whom is arguably the leader in a particular area of receptor pharmacology. Given this, the volume more than achieves its goal of presenting "the insight of some of the world's leading neuroscientists and pharmacologists regarding the *gold standard* compounds for experimental investigation of the different receptor systems in the nervous system".

Alphabetically arranged (adenosine to tachykinin), the first 70 pages of the handbook cover 34 different families of CNS receptors. Each two-page summary (1) describes the currently accepted and alternative receptor nomenclature, (2) identifies selective agonists and antagonists, (3) provides information on second-messenger transduction pathways, (4) identifies radioligands useful to study each receptor, and (5) lists 6–30 inclusive and current references relevant to the particular family. Importantly, each chapter provides this information for every known subtype of receptor within a particular group. Where appropriate, explanatory footnotes are provided, and the authors and editors have taken great pain to assure that abbreviations and nomenclature are consistent throughout. The final sections of the volume (to page 122) are abbreviated product listings of the RBI, Amersham, and NEN catalogs.

Although it is difficult to deny this is partially an advertisement, I found the handbook to be a wonderful consolidation of information that would be useful to anyone working in the field of receptor biology. It would be of particular value to graduate students, those seeking core information outside of their field of expertise, and/or the receptor biologist less familiar with

details of receptor pharmacology. At a cost of \$25.00 (which most likely covers only publication costs), there is absolutely no reason not to place this volume in an honored position beside those dog-eared catalogs.

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Books of Interest

The Chemistry of Organic Arsenic, Antimony and Bismuth Compounds. Edited by Saul Patai. John Wiley & Sons, Inc., New York. 1994. xv + 962 pp. 16 × 23.5 cm. ISBN 0-471-93044-X. \$425.00.

Quality Assurance for Biopharmaceuticals. By Jean F. Huxsoll. John Wiley & Sons, Inc., New York. 1994. ix + 206 pp. 16 × 24 cm. ISBN 0-471-03656-0. \$59.50.

The International Pharmacopoeia, Third Edition. Volume 4. Tests, Methods, and General Requirements; Quality Specifications for Pharmaceutical Substances, Excipients, and Dosage Forms. World Health Organization, Switzerland. 1994. xv + 343 pp. 16 × 24 cm. ISBN 92-4-154462-7. \$76.50.

Principles and Methods of Toxicology, 3rd Edition. Edited by A. Wallace Hayes. Raven Press, New York. 1994. xx + 1468 pp. 22.5 × 28.5 cm. ISBN 0-7817-0131-7. \$125.00.