Book Reviews

Neurochemistry. Fundamentals and Concepts. By Ferdinand Hucho. VCH Publishers, Deerfield Beach, FL. 1986. xv + 326 pp. 17 × 24 cm. ISBN 0-89573-225-4. $39.50.

Neurochemistry, or the chemistry of the nerve cell, is probably one of the most rapidly advancing areas of the life sciences. The present book was intended to be an English translation of a text written 6 years ago. So many new developments, e.g., recombinant DNA techniques, new concepts of signal transduction through membranes, and the characterization of several neurotransmitter receptors, have occurred so that this of necessity has become a new book. The author has succeeded admirably in achieving his objective of preparing a readable compilation of the highlights of neurochemistry. He has done this by describing through carefully selected examples nearly all aspects of the area. Topics covered range from a definition of neurochemistry to the individual stages of electrical and chemical synaptic transmission (with examples from many receptor classes) to elicitation of a physiological response to experimental models as tools. This will aid, particularly those new in the field, in understanding aspects of the human brain in health and disease.

Clearly, this is a complicated multidisciplinary area; however, the author has succeeded in his objective of preparing an up-to-date, fairly easily comprehended overview of this complex subject. The book should be of interest to all involved in brain research, i.e., not only medicinal chemists but also biochemists, biologists, physicists, pharmacologists, and medical students who want to familiarize themselves with the exciting topics of neurochemistry.

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Controlled Release of Biologically Active Agents. Richard Baker. Wiley, New York. 1987. xv + 279 pp. 16 × 22 cm. ISBN 0471-83724-5. $59.95.

The intent of the author is to review for the first time the entire subject of the controlled release of biologically active agents. Although the book is slightly dated, having been written in large part between 1981 and 1983, the author has succeeded in producing an excellent introductory text on the subject, which will be of great value to pharmacologists, pharmaceutical development chemists and dosage form developers, and agricultural chemists.

The author devotes a chapter to each of the major types of controlled release devices currently available. These include diffusion-controlled systems, biodegradable systems, and osmotic and mechanical devices. There are introductory chapters on the history and advantages of controlled release and on the principles of membrane diffusion. Later chapters describe the materials used in controlled release devices, device preparation and evaluation, applications of the devices, and the future of controlled release. Each of the device-specific chapters is organized similarly, with a strong mathematical treatment of the kinetics of delivery from the device, examples from the literature to demonstrate various types of devices and their delivery parameters, and a discussion of the strengths and weaknesses of each device. In general, the examples are taken from the pharmaceutical industry, although the delivery of pesticides and fertilizers is also discussed. Each chapter has a comprehensive bibliography, and there is a complete subject index to the book, as well.

The author's choice to include all device preparation and evaluation in one chapter leaves a void in each of the device-specific chapters, since although the theoretical and practical backgrouns of specific devices are covered in these chapters, one learns nothing about fabricating or testing these devices until the latter portion of the book. However, this is not a major failing, and the book serves as an excellent introduction to the subject of controlled release, particularly for those just entering the field.

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Advances in Drug Research. Volume 15. Edited by Bernard Testa. Academic, New York. 1986. x + 245 pp. 15 × 22.5 cm. ISBN 0-12-013315-6. $54.00.

The 15th volume in this series continues the type of presentation outlined by Dr. Testa when he assumed editorship (Vol. 13), namely, the presentation of subjects of broad, general interest as well as more typical reviews devoted to specific therapeutic classes. He offers an entertaining justification for this in a preface containing philosophical quotes from the *Tao Te Ching*.

The opening chapter is a general discussion of toxication mechanisms in drug metabolism by H.-G. Neumann. It is an excellent conceptual view of metabolic activation, presenting the roles of electrophiles, free radicals, and reactive oxygen and redox cycling. The subject of DNA binding as an end-point, of much importance in cancer research, is taken up and a substantial number of examples of noncorrelation of DNA binding with biological effects is presented. The role of metabolically produced radicals in toxic effects, particularly those involving oxygen, is presented in concise fashion. This is a topic of rapidly growing importance to many areas of medicinal chemical research.

The following two chapters of general interest are on elements for the rational design of peptide drugs, by J.-L. Fauchère, and tissue and receptor selectivity, by T. P. Kenakin. Neither of these topics has been adequately treated previously, and they bring together a variety of scattered elements from the literature. The topic of tissue selectivity provides an approach for drug selectivity and an explanation for some self-cancelling drugs.

The fourth chapter provides a review on inhibition of prostaglandin, thromboxane, and leukotriene biosynthesis by J. A. Salmon. This is a brief (55 pp) but valuable treatment, including biosynthetic and metabolic aspects of these compounds, the role of arachidonic acid metabolites in disease, and the inhibition of phospholipase, cyclooxygenase, and lipoxygenase. The future place of thromboxane synthase inhibitors is also discussed, as well as that of prostacyclin synthase.

The concluding chapter by R. T. Coutts, G. B. Baker, and F. M. Pasutto on foodstuffs as sources of psychoactive amines and their precursors presents much useful information on the contents of bioactive amines in various foods and their clinical significance. The analytical technology developed for this area of research is discussed.

This volume continues the excellence of treatment of the previous volumes of this series, and the various chapters should hold much interest not only for medicinal chemists, but pharmacologists, toxicologists, and nutritionists as well. Each chapter is thoroughly referenced and there is a subject index. The editor and contributing authors are to be commended for concise and balanced treatments of topics of much present concern.

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Radionuclide Tracers. By M. F. L'Annunziata. Academic, New York. 1987. xvii + 505 pp. 15 × 23 cm. ISBN 0-12-436252-4. $96.00.

Radionuclides have been essential for providing key advances in such diverse fields as agriculture, chemistry, entomology, microbiology, and medicine. To successfully exploit the use of radionuclides, their accurate detection and measurement have

been critical. The purpose of this text was to provide both students and researchers in many fields with a useful teaching and reference work detailing the modern methods to detect and measure radionuclides. The author, himself a user of radionuclides, has certainly succeeded in this regard.

The book is divided into eight chapters, and the first two address the issues of ionizing radiation and its interaction with matter, and nuclear decay rates. A familiarity with these fundamental topics is useful for an appreciation of material in succeeding chapters including gas and liquid ionization counting, solid-state detectors, liquid scintillation counting, Cherenkov counting, and solid scintillation counting. Perhaps the most interesting chapter for this reviewer was the concluding section on radionuclide imaging. Exceptionally practical and well written, it is a useful guide to all aspects of autoradiography as well as medical radionuclide imaging. Appendices and an Index conclude the book.

Proceeding in a logical fashion from theory to practical methods and instrumentation, the author provides numerous references to the literature as late as 1985. Tables and figures are carefully constructed, and selected photographs highlight the radionuclide imaging chapter. I found no typographical errors. In summary, this well-written volume should serve as a valuable textbook and resource to many users of radionuclides.

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SAR: Side Effects and Drug Design. By Eric J. Lien. Marcel Dekker, New York. 1987. x + 368 pp. 15 × 23 cm. ISBN 0-8247-7686-0. $99.75.

The author describes this book as a combination of his own research in drug quantitative structure–activity relationships (QSAR), his graduate course on this topic, and a new effort to link drug side effects with structure and properties. All of these facets of medicinal chemical research are intended to be presented to graduate students and upper-class students in various health sciences disciplines. This ambitious goal has proven to be only partially successful within the confines of one book.

The first chapter on theories of drug action is a very short historical review of the principle contributions to date. The second chapter, even shorter, describes some of the approaches to improved drug effects by molecular modification. Much more could be said on this topic or it could have been integrated into succeeding chapters.

Chapter three on QSAR comprises one-third of the book. It begins with a discussion of biological activity, dose–response phenomena, and a review of the influence of molecular structure on physical properties. Next, in the same chapter, the use of certain physical properties to model drug action is presented, the chapter concluding with applications in selected pharmacological categories. The author has omitted any discussion of the use of structure-based parameters in QSAR analyses, concentrating exclusively on physical properties. This entire chapter is a partial overview of QSAR and has value in support of an introduction to students new to the QSAR methods.

Chapter 4 is a brief highlighting of the subject of ribonucleotide reductase inhibitors. Chapter 5 is a compilation of side effects based on both pharmacological classes and the tissue or organ affected. This has some reference value. The book concludes with a 30-page table of dipole moments run in different solvents and different temperatures. The value of this compilation is questionable in view of the very high cost of the book.

The publishers and editors have allowed double spacing of text, over-large structures, and excessive use of tables to swell the book to a very expensive size. The book should have value in a library supporting a graduate course on QSAR methodology.

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New Anticonvulsant Drugs. Current Problems In Epilepsy 4. Edited by B. S. Meldrum and R. J. Porter. John Libbey, London. 1986. 341 pp. 17 × 25 cm. ISBN 0-86196-063-7. $53.00.

Edited by two of the world's leading authorities in the area of anticonvulsant therapy, this volume is divided into four sections: objectives and strategy in the search for novel antiepileptic drugs; drugs undergoing clinical evaluation; drugs with novel structures undergoing preclinical evaluation; and reference anticonvulsant drugs.

The first section, with two chapters each from the editors, presents a historical perspective of the area followed by chapters on the pharmacology of epilepsy and the preclinical and clinical evaluation of new compounds. This section, which is of exceptional lucidity and presents a quality of writing that is rare in the scientific literature, sets the stage for the remainder of the volume which describes in various degrees of detail the pharmacology, and where appropriate, clinical profiles, of 30 compounds. While one might wonder what makes some structures "novel" as compared to others and can certainly critique the inconsistencies in the structural formats used—the presentations of MK 801 and eterobarb make even this biochemist cringe (all scientific publishers should have ChemDraw to alleviate such problems)—the coverage makes the volume an invaluable reference source for anyone working in this area. In addition, because of the introductory section, the volume is of value as a, if not *the*, general reference source for anyone interested in anticonvulsants.

If the publisher could attract editors of the calibre of Porter and Meldrum in other areas of drug research while at the same time reducing the cost of such volumes and increasing their frequency of publication, any such series would be an indispensible addition, not only to central libraries but also to those of the individual. In the interim, all concerned, including the authors, are to be commended on a high-quality and valuable addition to the scientific literature.

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