

Chapter 4 reviews in a systematic fashion the types of cytochrome P450-catalyzed carbon oxidations (sp^3 , sp^2 , and sp), while Chapter 5 treats flavin-containing monooxygenase-catalyzed oxidations of aliphatic and aromatic amines as well as related nitrogen-containing systems such as azaheterocycles, hydrazines, and azo derivatives. The material covered in Chapter 6 (Monooxygenase-Catalyzed N–C Cleavage) and Chapter 7 (Oxidation of Oxygen- and Sulfur-Containing Compounds) builds on the fundamentals introduced earlier and provides, through specific examples, a sound appreciation of the scope and diversity of the N-, O-, and S-dealkylation reactions as well as those direct heteroatom oxidations that lead to various oxides and related systems. Chapter 9 (Oxidations Catalyzed by Various Oxidases and Monooxygenases) and Chapter 10 (Reactions Catalyzed by Peroxidases) treat these complex topics in depth and with special attention to the fundamentals of redox biochemistry and how these fundamentals can be nicely illustrated by specific examples taken from both endogenous and xenobiotic substrates. Chapter 12 (Reductions Catalyzed by Cytochrome P450 and Other Oxidoreductases) reviews the enzyme-catalyzed reductions of carbon-, nitrogen-, and sulfur-containing systems as well as less commonly encountered inorganic and organometallic systems. Finally, Chapter 8 (Oxidative Dehalogenation and Dealkylation of Organometallics), Chapter 11 (Oxidation of Mercury, Silicon, Phosphorus, Arsenic, Selenium and Halogens), Chapter 13 (Various Enzymatic and Non-Enzymatic reactions), and Chapter 14 (Conclusion and Outlook) are special topic chapters to complete the coverage of the various classes of xenobiotic oxidation reactions and to set the stage for the future.

This book is beautifully structured, with the reader always in mind. The chapters are outlined in detail, and the index is thorough. The literature citations (which are extensive!) cover publications through 1993. Both the novice and sophisticated student of xenobiotic metabolism will benefit by careful study of this monograph. Those of us who work in the area of drug metabolism owe Professor Testa a vote of thanks for having brought together in a unified volume the diverse elements that constitute the bioorganic chemistry of metabolic redox reactions.

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The Logic of Chemical Synthesis. By E. J. Corey and Xue-Min Cheng. John Wiley & Sons, Inc., New York. 1995. 436 pp. 18 × 25 cm. ISBN 0-471-11594-0. \$24.95 (pbk).

This is the paperback edition of the now standard and widely read book on organic synthesis by Corey and Cheng originally published in 1989. The usefulness of this book has been in no way diminished with time, and the syntheses presented provide clear examples of the manner in which organic chemists approach the construction of complex molecules. As the original publica-

tion date was several years ago, the references are necessarily not up-to-date.

The approach that is taken in this book is the rational analysis of synthetic problems. The book is divided into three parts: (1) an outline of the concepts of retrosynthetic analysis, (2) a representative collection of total syntheses from the Corey group, and (3) a structural guide to the literature on natural products. Part 1 is a discussion of the now familiar concept of retrosynthesis, and the authors present the basis for this manner of thinking about complex syntheses, including the concepts of transforms and retrons. Part 2 is a detailed, thorough presentation (principally graphical) of many of the significant natural products that have been synthesized by Corey and co-workers over the past 35 years. These are divided into structural classes, including macrocycles, heterocycles, sesquiterpenoids, polycyclic isoprenoids, prostanoids, and leukotrienes. Part 3 is a compilation of significant total syntheses by many other workers over the last 40 years. Particularly useful is that, for a given natural product, literature citations are given for each investigator's work.

This book will be of widespread interest by those interested in the synthesis of complex natural and unnatural products. It can serve as both a reference work and a textbook. At such a bargain price, it should become a dog-eared item on the bookshelves of anyone interested in organic synthesis.

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Fundamentals of Enzyme Kinetics. Revised Edition. By Athel Cornish-Bowden. Portland Press, London. 1995. xiii + 343 pp. 17.5 cm × 24.5 cm. ISBN 1-85578-072-0. \$29.00.

This is a first revision of the volume originally published in 1979. Biochemistry, aided by molecular biology, has changed considerably during this time; however, the essentials remain the same. The material presented begins on a fundamental level with a discussion of reaction orders and rate constants (Chapter 1) and proceeds through to the complexities of multi-enzyme kinetics (Chapter 10) and estimations of rate constants (Chapter 12). Enzyme inhibition, multisubstrate reactions, and isotope effects are covered in a comprehensive and understandable fashion along the way. By necessity, most of the material builds upon itself, although single chapters can be read for review or reference once the concepts have been mastered.

The text is well organized and presents the early material in a historical context. This is valuable as it reminds the reader that no scientific insights occur in a vacuum. The many necessary derivations and equations are explained thoroughly and set off from the text leaving ample room for marginal notes. As would be expected from a thorough revision, the literature references have also been extensively updated.

Although this volume focuses on the underlying principles of enzyme kinetics, it is not constrained solely

to the theoretical level. Each chapter includes a problem section, many of which are drawn directly from the literature. Additionally, a section is devoted to examining the existence of artificial enzymes, RNA enzymes, and catalytic antibodies.

The book is a valuable resource for those approaching enzyme kinetics for the first time as well as for those wishing to renew their acquaintance with the subject.

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New Perspectives in Drug Design. Edited by P. M. Dean, G. Jolles, and C. G. Newton. Academic Press Inc., San Diego, CA. 1995. xiv + 321 pp. 15.5 × 23.5 cm. ISBN 0-12-208070-x. \$50.00.

This volume contains 14 chapters dealing with various aspects of drug design. It documents the proceedings of a 3-day meeting sponsored by a grant from the Rhône-Poulenc Rorer Foundation and held at Turnberry, Scotland, in April 1994. The presentations were made by invited leading academic researchers and by company staff. General discussions following the lectures are recorded as well.

The conference really had two major, separate themes as reflected in the chapters. The more traditional medicinal chemistry and drug design lectures include two useful, well-documented discussions of peptidomimetic research, one by Hirschmann *et al.* and one by Laoui and co-workers. An excellent presentation on E-selectin recognition and other carbohydrate-related topics is given by Wong. Bartlett *et al.* present an informative treatment of enzyme inhibitors, and Nicolau and Guy authoritatively consider taxol and taxoids.

The second theme is essentially computational and structural. Chapters in this area include a discussion of protein crystallography by Ringe and Petsko, modeling of the adenosine receptor by IJzerman *et al.*, and two very nice summaries of computer-based drug design, one by Kuntz *et al.* and one by Mason *et al.* Highly mathematical, and therefore less accessible to many medicinal chemists, are chapters on combinatoric studies by Dean *et al.*, free energy calculations by Mark *et al.*, conformational analysis by Leach, and chemometrics by Clementi *et al.*

It goes without saying that any conference in medicinal chemistry which does not involve the general industrial medicinal chemistry community will suffer from an incomplete scope—and this one is no exception. Moreover, as might be expected in the proceedings of a conference, some of the discussions are well documented whereas others are not—the nice discussion of protein crystallography in drug design by Ringe and Petsko, for example, contains only 13 references.

The book has an adequate index, but its appearance is marred by a very heavy, smudged typeface used for the section headings on nearly every page, smudgy reproductions of the structural formulae in a number of chapters, and some blurry color reproductions of slides shown in a separate section of color plates. It

contains some excellent discussions that will be useful to workers in specific areas. But its expense, considering its small size, limited scope, and sometimes brief documentation, makes it more appropriate for acquisition by large regional libraries than by small institutions and individuals.

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Biochemistry of Cell Membranes. A Compendium of Selected Topics. Edited by S. Papa and J. M. Tager. Birkhauser Verlag, Basel, Switzerland. 1995. viii + 365 pp. 16 × 24 cm. ISBN 3-7643-5056-3. \$149.00.

This book belongs to the *Molecular and Cell Biology* series. It consists of a series of 10–20-page up-to-date reviews on selected topics in the rapidly developing field of membrane biology. The most significant advances that have been made in recent years in understanding the structure, dynamics, and functions of cell membranes are highlighted in seven main sections, namely, Signal Transduction; Membrane Traffic: Proteins and Lipids; Bioenergetics: Energy Transfer and Membrane Transport; Cellular Ion Homeostasis; Growth Factors and Adhesion Molecules; Structural Analysis of Membrane Proteins; and Membrane and Disease. Each review is thoroughly referenced, and a subject index for the book is included.

This monograph should serve as a foundation for future research on the relationship between the structure of membrane proteins and their function, protein transport through membranes, and regulation of membrane flow in the vacuolar system. These and other topics, such as the transport of ions in relation to bioenergetics, signal transduction, and mitochondrial ATP synthase, will be of interest to many medicinal chemists. Institutional library access is recommended.

Staff

JM950842M

The Golden Helix. Inside Biotech Ventures. By Arthur Kornberg. University Science Books, Sausalito, CA. 1995. xi + 287 pp. 16 × 24 cm. ISBN 0-935702-32-6. \$28.50.

Advances in genetic engineering and related technologies over the past 25 years have led to a biotechnology industry with vast economic and social potential. At the end of 1993, there were 1272 biotechnology companies with 80 000 employees in the United States. Many of these ventures were pioneered by biologists and biochemists who invented the new technologies in their academic laboratories. One of these was the author, Arthur Kornberg, who was awarded the Nobel Prize in 1959 for his seminal research with enzymes and his laboratory synthesis of DNA. In 1980, he, along with Paul Berg, Charles Yanofsky, and Alejandro Zaffaroni, founded the DNAX Institute of Molecular and Cellular