pharmacokinetics and mechanisms of actions of drugs. . . ."

The type is clear and readable. The books have glossy paper covered boards, are easy to open, and lie flat, as are typical of Marcel Dekker volumes.

Despite the nuisances and repetitiveness noted, the set is highly recommended.

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The Chemistry of Antitumor Antibiotics, Vol. 1. By WILLIAM A. REMERS. Wiley–Interscience, One Wiley Drive, Somerset, NJ 08873. 1979. 289 pp. 15 × 22.5 cm.

A lack of fundamental knowledge concerning many aspects of the biological sciences still restricts most oncologists to dealing with the treatment rather than the causes of cancer. Nevertheless, encouraging results have been attained with many drugs in the treatment of certain neoplastic diseases such as acute lymphocytic leukemia, Burkitt's lymphoma, choriocarcinoma, Hodgkin's disease, squamous cell cancer, and Wilm's tumor, Many of these remissions were achieved by the use of antitumor antibiotics.

Antibiotics are unique in their extreme diversity of chemical structures and in the fact that the "rational approach" followed so enthusiastically in the design of other classes of antineoplastic agents has played only a minor role in the discovery of their striking effects. As a result, information gained by assessing the antitumor activity of these antibiotics may be more objective than studies of more conventional drug classes. There can be little doubt that the information will contribute significantly to the future design of better antineoplastic agents and will provide a guide to the proper selection of agents for use in combination chemotherapy.

Since the discovery in 1952 that actinomycin D (dactinomycin) shows activity against experimental tumors, antibiotics have gained firm ground as a unique class of agents for the management of cancer. As a result, numerous studies on this subject mushroomed, and publications were scattered in every possible chemical, biological, pharmacological, and medical journal. Although some reviews and chapters were published occasionally on certain antitumor antibiotics, this book is the first of its type in which pertinent information in this area has been assembled in a comprehensive yet precise and clear manner. Dr. Remers' effort should be appreciated by investigators working in this field. His achievement is particularly admired by those who have tried to compile similar information, even on a smaller scale.

Volume 1 of this book is divided into five chapters: the actinomycins, the anthracyclines, the aureolic acid group, the bleomycins and phleomycins, and the mitomycins and porfiromycins. At least one member of each of these categories has recognition in cancer chemotherapy [*e.g.*, actinomycin D, adriamycin (doxorubicin), mithramycin, bleomycin B_2, and mitomycin C, respectively]. Each chapter has a concise, general introduction and is divided further into specific discussions including the discovery, isolation, and characterization, structural elucidation, possible mode of action, chemical synthesis and biosynthesis, and structure–activity relationships. Three of these five chapters also include the chemical transformations among related antibiotics.

Since many antibiotics discussed in this book tend to form chelates or complexes with certain metal ions, the author has emphasized repeatedly a significant point which, if not noticed, would cause confusion and misinterpretation by other investigators. This point is that physical properties such as optical rotation often are influenced by traces of metals and other impurities that are difficult to separate or remove from the pure compound. This case is especially true with antibiotics of the aureolic acid group in which samples with the same chemical structure were assigned as different antibiotics based on the observed discrepancy in specific rotation values.

This reviewer agrees with the author's comment that in a field where anticancer activity is the primary goal of synthesis and structural modification, it is surprising that not enough data have been published on the inhibition of experimental tumors. Judging from the many elegant total or partial syntheses recorded in this book, I cannot help but wonder whether the lengthy ones under the name of an alternate synthesis or a novel approach are of value to other investigators. Indeed, the aim of a chemical synthesis is to identify the structural assignment, to devise a practical method for more plentiful procurement of a specific antibiotic, or to facilitate analog synthesis. With the current limited funding in research, perhaps now is the best time for every dedicated investigator to reassess the true value and implication of his or her own work.

The order of tetracyclic rings in the anthracycline antibiotics (Chapter 2) given in this book was from the aromatic ring (ring A) toward the alicyclic ring (ring D) in which the glycoside is attached. However, on p. 88 and p. 102, ring A was designated as the alicyclic ring. In the literature, the conflicting order of rings A → D or D ← A has been assigned and has aroused unnecessary confusion. Since the original Italian investigators [Arcamone *et al.*, *Gazz. Chim. Ital.*, **100**, 949 (1970)] designated the alicyclic ring on the aglycone portion as ring A, perhaps such assignment should be honored rather than the general order of assignment in this book. The author also may wish to change the cell line of He La to HeLa in forthcoming books.

This reviewer also would like to add one piece of interesting information concerning the phleomycin antibiotics. Although it is known that the low therapeutic indexes of phleomycins hamper their use as antibacterial or antitumor agents, the addition of certain thioethers of purine or related heterocyclic compounds as potentiators ("amplifiers") permits the use of phleomycins at much lower levels, thereby raising their therapeutic indexes to potentially useful levels [Grigg *et al.*, *J. Bacteriol.*, **107**, 599 (1971); and Brown *et al.*, *Austr. J. Chem.*, **31**, 397 (1978) and the references cited therein].

All in all, this is a well-written and valuable book. Readers can follow easily the historical development of important antibiotics and recognize the work that has been accomplished as well as areas that still need to be studied. This book should be of interest to chemists, biochemists, toxicologists, pharmacologists, and clinicians who are interested in research.

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The Alkaloids: The Fundamental Chemistry—A Biogenetic Approach. (Studies in Organic Chemistry Series, Vol. 7). By D. R. DALTON. 270 Madison Ave., New York, NY 10016. 1979. x + 789 pp. 18 × 26 cm. Price $49.50 (A special price of $29.50 is available in the United States and Canada on orders of five or more copies).

The alkaloids represent the largest and most diverse group of plant-derived natural products, with well over 10,000 known members of the class involving 300 different ring systems. In view of their importance, including their significance in pharmacy and medicine, it is surprising that few textbooks on alkaloids have appeared in recent years. Thus, apart from reviews in "The Alkaloids" series, the Chemical Society Specialist Periodical Reports of the same name, and specialized reviews such as the one by Shamma and Moniot on isoquinoline alkaloids, no comprehensive general treatment of the alkaloids has appeared since that edited by Pelletier almost a decade ago. The publication of the book that is the subject of this review is thus a timely event and one that will be welcomed by all researchers involved in the alkaloid field.

The book is an outgrowth of a course taught by the author at Temple University, and this is the origin of its greatest strength and its greatest weakness. The strength of the book is that it provides for the first time, in one place, a unified account of the biosynthesis and chemistry of the alkaloids. It is organized along biosynthetic lines rather than along the traditional lines of previous works. Thus, instead of chapters on subjects such as the ipecac (ipecacuanha) alkaloids or the cinchona alkaloids, there are chapters on alkaloids derived from ornithine, lysine, nicotinic acid, tyrosine, and tryptophan and on alkaloids derived by introduction of nitrogen into a terpenoid skeleton. Although the traditional classification, largely by plant of origin, does group alkaloids of similar type, our present understanding of alkaloid biosynthesis makes the approach adopted in this book logical and desirable. Furthermore, the discussion of the biosynthesis and the chemistry of each alkaloid is integrated within each chapter rather than having the biosynthesis discussed in a separate chapter. This feature allows the reader to appreciate the synthetic approaches to the alkaloids more readily, particularly those that are modeled on an actual or presumed biosynthetic pathway.

The major weakness of the book as a standard reference on the alka-

loids is that is is not thoroughly referenced. It only has 480 references, fewer than 20 of which are from 1975 or later. In contrast, the earlier and somewhat shorter work by Pelletier, which dealt largely with alkaloid chemistry, boasted 1750 references. In the present work, the lack of references is made up to some extent by references to review articles at the end of each chapter, but these reviews are, of course, of even earlier vintage than the book itself. The book thus is not a good source for the latest information in alkaloid research, particularly in such rapidly developing fields as indole alkaloid biosynthesis. In addition, it also is not comprehensive; several classes of alkaloids are not discussed at all.

The book sets out to be a textbook, however, and it is within this framework that it should be judged. As the author modestly states in the epilogue, "The major objective . . . is to provide the beginning student with an appreciation of order in structure type and biogenetic reasoning. Hopefully, some chemistry was also learned." Any person who takes the time to work through this book is certain to achieve these objectives and much more. The discussion of both biosynthesis and chemistry is lucid and concise, and the structural diagrams are excellent in quality and abundant in quantity. The only minor improvements that could be suggested would be for the initial diagrams to carry the numbering system for that structural type and for more diagrams to be oriented so that the reader does not have to turn the book around to see them.

In conclusion, the author has written an excellent textbook on the alkaloids, and it can be recommended as the book of choice for any scientist wishing to become acquainted with this fascinating area of natural products. Persons needing detailed and up-to-date information in a specific area will have to supplement this book with material from review articles and the recent literature.

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The Pharmaceutical Codex, 11th Ed. The Pharmaceutical Press, One Lambeth High St., London SE1 7JN, England. 1979. 1101 pp. 17 × 25 cm. Price £27.

The 11th edition of "The British Pharmaceutical Codex," now called "The Pharmaceutical Codex," contains over 1400 entries in a single alphabetical sequence. Over 900 monographs on synthetic drug substances and natural products used in medicine are included. A typical drug substance monograph features the full chemical name, structural and molecular formulas, molecular weights, synonyms and trade names, physical characteristics such as solubility and specific rotation, stability and storage information, identification tests, metabolism, actions and uses, and preparations. Entries for drug classes also are included.

Diseases and minor ailments are discussed with respect to the cause and nature of the disorder, its major signs and symptoms, and its treatment with reference to the use of drugs. Entries on analytical techniques such as IR and UV spectrophotometry are included.

The first appendix describes the analytical reagents mentioned in the text. The second appendix gives reduced facsimile reproductions of IR spectra for more than 300 drug substances to aid in their identification. A comprehensive index with over 10,000 entries concludes the book.

This book is a useful reference for those concerned with the manufacture, formulation, distribution, dispensing, and quality control of drugs and medicines for human or veterinary use.

Staff Review

NOTICES

Surface of Normal and Malignant Cells. Edited by RICHARD O. HYNES. Wiley, One Wiley Drive, Somerset, NJ 08873. 1979. 471 pp. 15 × 23 cm. Price $65.00.

Cell Substrates: Their Use in the Production of Vaccines and Other Biologicals. Edited by JOHN C. PETRICCIANI, HOPE E. HOPPS, and PAUL J. CHAPPLE. Plenum, 227 W. 17th St., New York, NY 10011. 1979. 220 pp. 16 × 25 cm. Price $29.50.

Reviews of Physiology, Biochemistry and Pharmacology, Vol. 86. Contributors, P. THORÉN, R. J. HOGG, J. P. KOKKO, and P. SCHEID. Springer-Verlag New York Inc., 44 Hartz Way, Secaucus, NJ 07094. 1979. 206 pp. 16 × 24 cm. Price $48.40.

Standard Operating Procedures in Toxicology. Edited by G. E. PAGET and R. THOMSON. University Park Press, 233 E. Redwood St., Baltimore, MD 21202. 1979. 650 pp. 21 × 30 cm. Price $39.50.

Common Medicines: An Introduction for Consumers. By DAVID J. GEORGE. W. H. Freeman, 660 Market St., San Francisco, CA 94104. 1979. 197 pp. 21 × 28 cm. Price $6.00.

Bailey's Industrial Oil and Fat Products, 4th Ed., Vol. 1. Edited by DANIEL SWERN. Wiley, One Wiley Drive, Somerset, NJ 08873. 1979. 841 pp. 15 × 23 cm. Price $45.95.

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Human Toxicology. Edited by AUBIN HEYNDRICKX. European Press, Ghent, Belgium. 1978. 221 pp. 17 × 24 cm.

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The Alkaloids, Vol. 9. A Specialist Periodical Report. Senior Reporter, M. F. GRUNDON. The Chemical Society. 1979. 273 pp. 14 × 22 cm. Price $70.00. (Available from the American Chemical Society, 1155 16th St., N.W., Washington, DC 20036.)

Inorganic Biochemistry, Vol. 1. A Specialist Periodical Report. Senior Reporter, H. A. O. HILL. The Chemical Society. 1979. 441 pp. 14 × 22 cm. Price $61.50. (Available from the American Chemical Society, 1155 16th St., N.W., Washington, DC 20036.)

Plant Metabolism. By GERHARD RICHTER. University Park Press, 233 E. Redwood St., Baltimore, MD 21202. 1978. 475 pp. 12 × 19 cm. Price $22.75.

Workshop on Ursodeoxycholic Acid. Edited by R. H. DOWLING, A. F. HOFMANN, and L. BARBARA. University Park Press, 233 E. Redwood St., Baltimore, MD 21202. 1979. 88 pp. 15 × 24 cm. Price $9.95.

Nucleosides As Biological Probes. By ROBERT J. SUHADOLNIK. Wiley, One Wiley Drive, Somerset, NJ 08873. 1979. 346 pp. 14 × 23 cm. Price $37.50.

Modern Organic Elemental Analysis. By T. S. MA and ROBERT C. RITTNER. Dekker, 270 Madison Ave., New York, NY 10016. 1979. 518 pp. 15 × 23 cm. Price $45.00.

Arachidonic Acid Metabolism in Inflammation and Thrombosis. Edited by K. BRUNE and M. BAGGIOLINI. Birkhäuser Boston Inc., 380 Green St., P.O. Box 2007, Cambridge, MA 02139. 1979. 301 pp. 17 × 24 cm. Price $38.00.

Against Ourselves: Disorders from Improvements under the Organic Limitedness of Man. By D. G. GARAN. Philosophical Library, 15 E. 40th St., New York, NY 10016. 1979. 310 pp. 14 × 22 cm. Price $9.75.