

System's data base, is easy to use and provides the reader with fast access to the text's subject matter.

Finally, it will be apparent to readers of "Clinical Pharmacy Sourcebook" who are familiar with the literature of pharmacy that the articles included in this reference were published between 1971 and 1975. It is unfortunate, however, that the dates of original publication for each article are not included in the text—if only to provide a perspective to the chronology of the development of different programs, concepts, and philosophies. Nevertheless, "Clinical Pharmacy Sourcebook" represents a convenient compilation of the literature of clinically oriented pharmacy and would be a valuable addition to the libraries of all health care professionals interested in providing improved service(s) to their patients.

Staff Review

Liquid Scintillation Counting. By K. D. NEAME and C. A. HOMEWOOD. Halsted, 605 Third Ave., New York, NY 10016, 1974. 180 pp. 16 × 24 cm. Price \$13.75.

"Liquid Scintillation Counting" could be considered as a "McGuffey Reader" for this radiation detection technique. The book describes the elementary principles of liquid scintillation counter operation and presents information helpful in resolving fundamental practical considerations of proper operation. The authors have written a book that should be required reading for the beginning user of liquid scintillation counters.

After presenting information on radioactivity in general, the authors discuss the liquid scintillation counter, counting efficiency and quenching, and the selection and quantity of tracers to use in experimentation. With the basics covered, they then take up topics of a more applied nature. They discuss preparation of samples for counting, determination of counting efficiency for making quench correction, and double-isotope analysis. Such subjects as errors from various sources and what the user should be concerned about in correcting or evaluating them are considered. The authors omit discussion of errors that are common to all methods of analysis but cover in detail several errors peculiar to the nature of radioactivity and to its measurement by liquid counting.

The book could be considered by educators as a text in courses that teach principles of nuclear detection and the liquid scintillation method.

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A Flexible Design for Health Professions Education. Edited by RICHARD M. JACOBS. Wiley, 605 Third Ave., New York, NY 10016, 1976. 260 pp. 16 × 23.5 cm.

"Flexible Design" is essential reading for anyone involved in the field of health education, particularly for those who are involved in, or are getting ready to embark on, "experiments" in new instructional techniques and/or curriculum design.

The chapters, which represent the thinking of 23 outstanding educators from the disciplines of medicine, dentistry, pharmacy, nursing, and allied health, are based on material originally presented at an invitational conference (by the same title) held in Iowa City in April 1975.

The editor's introduction succinctly states the book's purpose: "Recent trends in education, health care, and society in general have stimulated serious efforts to find alternatives to the traditional approaches to the health professions education." The volume examines how societal expectations and individual aspirations might be more effectively fulfilled outside the context of the "traditional, highly regimented and stereotyped health professions education programs"—through educational flexibility.

The 20 chapters are grouped into five parts: Basic Educational Considerations and Instructional Strategies; An Overview of Individualized Instructional Practices in the Major Health Professions, (included is the paper on "Flexible Approaches to Pharmacy Education" by L. C. Weaver and H. R. Manassee, Jr.); Planning, Implementation, and Evaluation;

Case Studies; Cost of Flexibility; and Broader Dimensions of Flexibility.

The flexibility to which the work is addressed involves a personalized approach to education: individualized curricular content, individualized modes of instruction, flexible scheduling of instruction, and flexible admissions.

Several notable experiments in health professions education are elaborated upon. The authors provide excellent insights into such areas as outreach programs, individual and elective study, hospital programs, different modes of instruction, multitrack systems, independent study programs, computer-aided instruction, use of simulation, social costs, and flexible tuition.

Douglas R. Whitney's chapter on the Placement, Monitoring, and Evaluation System (PME) is important for the distinction it makes between flexible and traditional instruction in view of the demands that the flexible approach places on the system. PME is a decision-making network that collects data; a management system to hold and control data; and an output system to produce reports, documents, and summaries for use in decision making.

Alvin L. Morris, in his chapter on "Implementation," raises important questions and presents a broader perspective on the subject. He argues that: "While flexible education introduces varieties of time and methods to bring all students to the same end point, traditional education does just the opposite.

There is something disturbing about the idea of all students being the same at the end of an educational experience. Conversely, it can be argued that the identification of a wide range of achievements and achievers through traditional education has served both the students and their professions well." Dr. Morris cautions that: "Educators must be willing to reconcile their views and aspirations with those of the 'real world' where the products of the educational process must ultimately function."

"A Flexible Design for Health Professions Education" presents a balanced and timely discussion about the traditional and experimental approaches being used to educate health professionals.

Staff Review

Radiopharmacy. Edited by MANUEL TUBIS and WALTER WOLF. Wiley, 605 Third Ave., New York, NY 10016, 1976. 911 pp. 16 × 24 cm. Price \$44.50.

This book is very pertinent and timely considering the current expansion of radiopharmacy in the curricula of schools of pharmacy both at the undergraduate and graduate levels. The editors themselves have been key figures in the development of radiopharmacy and its establishment in pharmacy education. They are eminent researchers in their own right and have assembled a highly knowledgeable group of contributors to aid them in their presentation of the subject matter. The problems of multiple-author books and variability in style and presentation occur to some extent in this text. For example, the author of Chapter 1 decided that *in vitro* tests would not be considered in the scope of the book from his vantage point, while the editors considered it pertinent and devoted Chapter 26 to a discussion of competitive binding assay procedures. This reviewer considers that the radiopharmacist does need to have an appreciation of such procedures since they will clearly become more important both clinically and industrially.

The structure of the text is orderly in the presentation of material. It is composed of six basic sections dealing with history, physics and instrumentation, biology, chemistry, radiopharmaceutics, and nuclear medicine. The organization is certainly desirable, providing the student with the background material in these various scientific areas that impinge directly on the practice of radiopharmacy. Additionally, there is an important section on regulations and legal aspects in the handling and dispensing of radiopharmaceuticals. Obviously, such information is of importance to the potential practitioner.

There is also a chapter on radionuclides in space biology and medicine by two very knowledgeable individuals. Such material will certainly gain importance with time, but presently its general application is limited and of a highly specialized nature.

In conclusion, this is a most worthwhile and highly informative text and one that will undoubtedly be widely used by those in academia for teaching purposes and by those who wish to familiarize themselves with the exciting opportunities presented by radiopharmacy. Clearly,

this book also will be well used by those engaged in research in which radionuclides are a very important factor.

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The Alkaloids. Vol. 6. Edited by M. F. GRUNDON *et al.* The Chemical Society, Burlington House, London W1V0BN, England, 1976. x + 310 pp. 13.5 × 21.5 cm. Price £19.50.

M. F. Grundon has succeeded J. E. Saxton as senior reporter for the sixth volume of this excellent series on alkaloids. This comprehensive review of the literature published between July 1974 and June 1975 follows the format established by the previous volumes.

Chapter 1 deals with biosynthesis, which continues to be an area of considerable interest. In addition to the work on various alkaloids, many biosynthetic studies are reported on secondary microbial metabolites, including gliotoxin, mycelianamide, demethyltomaymycin, actinomycin, the cytochalasins, mitomycin, rifamycin, penicillins, and prodigiosins.

The ensuing 13 chapters cover the major types of alkaloids grouped by chemical structure: pyrrolidine, piperidine, and pyridine; tropane; pyrrolizidine; indolizidine; quinolizidine; quinoline, quinazoline, and acridone; β -phenethylamine and isoquinoline; aporphinoids; indole; *Lycopodium*; diterpenoid; steroidal alkaloids of the *Apocynaceae*, *Buxaceae*, *Asclepidaceae*, and *Salamandra-Phyllobates* groups; and *Solanum* and *Veratrum* steroidal alkaloids. Included in these chapters are discussions on the isolation of new alkaloids, structure determinations, chemical synthesis, miscellaneous general chemical studies, analytical methods, and pharmacological studies, depending on the literature available concerning a particular group of alkaloids during the period reviewed.

The centers of greatest activity remain the indole and isoquinoline alkaloids. Miscellaneous alkaloids, such as the imidazole, peptide, and purine alkaloids, have not been included, with the explanation that they will be covered in Volume 7.

Like its predecessors, Volume 6 is well organized. Each chapter is thorough, yet with the conciseness necessary for such a review. That such a review is available so promptly after the time period covered is a tribute to its contributors. While it is somewhat expensive, this volume is recommended very highly for those who wish to keep up-to-date in the field of alkaloid chemistry.

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Microbiology-1975. Edited by DAVID SCHLESSINGER. American Society for Microbiology, 1913 I St., N.W., Washington, DC 20006, 1975. vii + 521 pp. 17 × 25 cm. Price \$16.00.

This book is a compilation of contributed articles of ASM-sponsored meetings in 1975. The title is misleading, since the book does not deal with topics that follow classical treatment of taxonomic, cultural, and biochemical aspects of microorganisms. The book addresses itself to subject matter areas of methodological and conceptual importance, intended to assist the investigator in the diagnosis and treatment of human diseases. These are provided in the form of "extensive exposures rather than an intensive high-level research." On this premise, a title such as "Recent Advances in Clinical Microbiology" or "Modern Approaches to Clinical Microbiology" or "Selected Topics of Current Interest in Clinical Microbiology" would have been more appropriate.

The book is divided into five sections, each of which is preceded by a short introductory note. Section I, Rapid Diagnostic Techniques in Clinical Microbiology, defines the extent to which new microbiological techniques that give rapid and/or automated results can be applied to clinical microbiology. It provides 14 contributed articles in 97 pages.

Section II, Pathogenic Mechanisms in Bacterial Diseases, discusses current concepts in pathogenesis of microorganisms that cause diseases

in humans. It provides 43 contributed articles in 325 pages (about half of the book).

Section III, Mycotoxins, reveals basic interactions and biochemical aspects of mycotoxins in disease processes. It provides five contributed articles in 53 pages.

Section IV, New Vaccines, deals with most recent development and application of specific vaccines and immune serum globulins to the treatment of infections caused by "troublesome" organisms including *Haemophilus influenzae*, *Neisseria meningitidis*, and *Pseudomonas aeruginosa*. It provides four contributed articles in 17 pages.

Section V, Cell Differentiation and Communication, provides perspectives of morphogenesis in very simple organisms as they pertain to basic problems in developmental biology. It provides 11 contributed articles in 95 pages.

The contributed articles are well written and organized. Many of them show strong interactions between basic and applied concepts of microbiology. With few exceptions, *e.g.*, Considerations in Computer Data Entry by Paul D. Ellner (p. 73) and Polyvalent Vaccine and Human Globulin for Controlling *Pseudomonas aeruginosa* Infections by Mike W. Fisher (p. 416), leading references to original research articles are provided. Each article, however, includes a review, summary, and projections "or future work in the specific area.

The book should find an interested audience among graduate students and microbiologists as well as health professionals in related disciplines at universities, hospital laboratories, and industry who may want to follow up on specific subjects.

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Marihuana. Chemistry, Biochemistry and Cellular Effects.

Edited by GABRIEL G. NAHAS, WILLIAM D. M. PATON, and JUHANA E. IDÄNPÄÄN-HEIKKILÄ. Springer-Verlag, 175 Fifth Ave., New York, NY 10010, 1976. 556 pp. 16 × 24.5 cm. Price \$19.80.

This volume contains the proceedings of a Satellite Symposium on Marihuana held at Matinkylä, Finland, before the Sixth International Congress of Pharmacology in Helsinki, Finland, in the summer of 1975. The conference was held primarily to pursue scientifically the areas of marihuana toxicology developed in 1974 spring hearings before the Senate Internal Security Subcommittee of the Committee on the Judiciary (Eastland Subcommittee). Many of the original government witnesses appeared again (Nahas, Morishima, Stenchever, Heath, and Leuchtenberger), but the meeting really was much broader, attracting 43 papers and more than 126 participants and contributors.

The areas covered include marihuana chemistry, the detection and identification of cannabinoids and their metabolites, kinetics and biotransformation, biochemical and cellular effects in isolated cell systems, neurotransmitter effects, and biochemical effects on organ development. The two largest groups of papers were devoted to the chemistry of detection and metabolism and inhibitory effects in isolated cell systems. Many new hydroxylated side-chain metabolites were reported for the first time (Agurell). Parts of the Greek chronic marihuana smoking study in humans were presented, but the majority of papers dealt with animals as subjects. Unfortunately, the discussion that is much needed to help evaluate these research publications is missing. A subject index is included to aid in rapid location of items of interest. Color plates are used in two hematology papers but not for all pathology.

Dr. W. D. M. Paton's concluding state-of-the-cannabis-art summary is recommended. He successfully perceives the limitations of the neurochemical basis for explaining marihuana action, the need for *in vivo* corroboration of isolated cell system work, and the elegant chemical and biochemical studies that undergird the field.

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