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BOOKS

REVIEWS

Essentials of Toxicology, 3rd Ed. By TED A. LOOMIS. Lea & Febiger, 600 Washington Square, Philadelphia, PA 19106. 1978. 245 pp. 15 × 24 cm. Price $12.50.

The newest edition of this basic toxicology text differs little from the previous edition in both form and content. The type is slightly larger and thus easier to read. Many chapters have few, if any, alterations. Some of the additional or revised material to be found includes: updated statistics on poisoning and mortality from chemical exposure; an amplified section on the influence of the microsomal P-450 enzyme system on chemical toxicity; a table of genetically based alterations which account for individual variations in response to drugs and chemicals; a section differentiating the concepts of biological half-life of a compound *versus* "half-life for toxicity," using as an example fatty deposition in liver after exposure to ethanol; and a brief description of behavioral toxicity studies in animals.

A table on page 60 lists formaldehyde as the toxic metabolite of methanol, although recently published data indicated that formate, and not formaldehyde, is responsible for ocular toxicity in monkeys and presumably in humans.

Each chapter is adequately referenced to provide the interested student with sources of more detailed information. This book cannot be compared to other texts such as Casarett and Doull's "Toxicology, The Basic Science of Poisons" (Macmillan) or portions of Goldstein, Aronow, and Kalman's "Principles of Drug Action" (Wiley), both of which deal more extensively with toxicologic subject matter. However, "Essentials of Toxicology" provides a well-organized introductory approach to toxicology and can serve a useful purpose in an orientation course to this highly diversified science.

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Blood Drugs and Other Analytical Challenges (in Methodological Surveys in Biochemistry), Vol. 7. Edited by E. REID. Ellis Horwood Ltd., Market Cross House, 1 Cooper Street, Chichester, Sussex, England (U.S. distributor: Halstead Press, a division of John Wiley & Sons, 605 Third Avenue, New York, NY 10016). 1978. 355 pp. 14.8 × 22.6 cm. Price $47.50.

This volume (Volume 7) compliments its predecessor (Volume 5) and is based on the papers presented at Bioanalytical Forum held at the University of Surrey in 1977. The book provides practical information of value to the bioanalytical researcher and attempts to present methodological rationale rather than mere recipes. The first four chapters are subdivided into sections, and the fifth chapter represents the notes, comments, and discussion in the form of questions and answers on the preceding four chapters.

The first chapter, "The Framework," sets out the general philosophy for development of analytical methods, discusses quality control and sources of errors in assays, and presents an overview on analytical method evaluation. The second chapter describes aspects of gas chromatography (GLC) with problems associated with capillary and packed columns and detectors (AFID and ECD). Their applications in drug analysis as well as derivatization procedures are discussed also.

In the third chapter, mass spectrometric methods for drug and endogenous compound analyses in biological fluids are presented, with suitable examples, together with considerations concerning accuracy and precision. Discussions of more recent approaches in this field such as negative-ion mass spectrometry and HPLC—mass spectrometry are particularly valuable.

The fourth chapter discusses the applications of HPLC to drug analysis. Interesting and useful discussions with relevant examples are provided on ion-pair HPLC of acid and basic drugs, metabolites, and endogenous compounds. Various aspects of HPLC such as electrochemical detection, sample handling, chemical derivatization including fluorescence labeling, and prechromatographic methods in biomedical trace analysis are presented with useful comments and suitable examples.

The analytical case histories on the assays of bendrofluzide, biperidin, and labetalol and its metabolites are interesting and informative. The notes and comments in the fifth chapter along with analytical case histories of drugs including metoclopramide, procetofenic acid, tienlilic acid, practolol, amitriptyline, nortriptyline and benzodiazepines make particularly enjoyable reading for the analyst.

In summary, the reviewer found this book to be a well-balanced blend of the theoretical and practical aspects of present techniques and their potential applications of trace drug analysis in biological fluids.

The book is effective in its scope, variety of experiments, and presentation style. It is well planned, emphasizes the rationale of developing successful analytical methods for drug analysis by chromatographic techniques, and should be useful to analytical chemists working with biological fluids.

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Lange's Handbook of Chemistry, Twelfth Edition. Edited by JOHN A. DEAN. McGraw-Hill, New York, NY 10020. 1978. 1470 pp. 15 × 23 cm. Price $28.50.

This new edition of *Lange's Handbook of Chemistry* is a valuable updating of a classic one-volume reference.

A major improvement on the previous edition is the revised section on thermodynamics. The new section reflects currently recommended values for heats of formation and Gibbs energies of formation, entropies, heat capacities at five different temperatures, and heats of melting, vaporization, and sublimation for 2400 inorganic and 1500 organic compounds.

New to this edition are structure-correlation tables for PMR and IR spectroscopy, ionization potentials of molecular and radical species, potentials of reference electrodes for water–organic solvent mixtures, and a wavenumber/wavelength conversion table.

In the original edition of this handbook, Dr. N. A. Lange described his effort "to select material to meet the needs of chemists who cannot command the unlimited time available to the research specialist, or who lack the facilities of a large technical library . . . (or who) may find this volume of value as a time-saver because of the many tables of numerical data which have been especially computed for this purpose." The present edition contains clear, comprehensive tables entirely consistent with the original editor's purpose. The compilations of commonly used information in mathematics, atomic and molecular structure, inorganic chemistry, analytical chemistry, electrochemistry, organic chemistry, and spectroscopy are complemented by succinct, well-written summaries of basic theory in each area.

This excellent, relatively inexpensive volume would be a useful addition to the library of anyone involved in pharmaceutical research.

Staff Review

Progress in Drug Research, Vol. 22. Edited by ERNST JUCKER. Birkhauser Verlag, P.O. Box 34, CH-4010, Basel, Switzerland. 1978. 412 pp. 16 × 24 cm. Price Fr. 168.

This volume of "Progress in Drug Research" contains eight chapters of diverse character and subject matter. However, all are expert accounts of recent progress or current activity in a particular area of drug research.

The first contribution, "Aspects of Social Pharmacology," discusses this emerging discipline. Social pharmacology is described as drawing on disciplines (*e.g.*, sociology and economics) outside pharmacology in order to better evaluate the effects of drugs as they are usually employed, *i.e.*, after controlled clinical studies. The second contribution, "Fundamental Structures in Drug Research II," is a companion piece to Part I, which appeared in Vol. 19 of "Progress in Drug Research." The basic approach is one of showing how the structures of members of a therapeutic group evolve from a lead or prototypical compound. Included in Part II are antimicrobials, antiprotozoals, anthelmintics, antibiotics, antivirals, antineoplastics, steroidal and peptidal hormones, prostaglandins, and vitamins. This work can be useful in several ways, one of which is as an efficient summary or outline of structural types associated with particular pharmacological activity.

Chapter three, "Antifungal Agents," is a good treatment of the clinically useful antifungal agents. For each agent, there is a summary of pertinent chemistry and thorough reviews of mechanism(s) of action, mechanism(s) of resistance, and assessments of current clinical utility. Chapter four, "Analgesics and Their Antagonists: Recent Developments," covers the literature since 1970 in a thorough and well-written review of synthesis and structure-activity relationships among opium alkaloids and synthetic analgesics. A good account of the opioid peptides is included also.

The fifth contribution, "The Benzodiazepine Story," recounts interesting personal research experiences of Leo H. Sternbach in the development of this field of medicinal agents. Additionally, this chapter is a good overview of the development of, and the present directions of research in, benzodiazepines and related compounds. Chapter six, "Antiviral Agents," carefully reviews recent advances. The agents are grouped by chemical type where feasible. Chemical modifications and antiviral activities for each group are given.

The seventh contribution, "Klinisch-Pharmakologische Kriterien in der Bewertung Eines Neuen Antibiotikums. Grundlagen and Methodische Gesichtspunkte," describes problems encountered and procedures involved in the clinical evaluation of new drug entities. A good general treatment of the factors involved in antibiotics evaluation is presented. The concluding chapter, "Drug Research and Human Sleep," is a concise account of the state of the art in the study of the drug effects on sleep in human subjects. Included are discussions of factors to be considered in accurately measuring drug effects on sleep and the problem of determining the significance of these effects.

The present volume offers a high quality and varied bill of fare. Each contribution is current and is authoritatively written. Volume 22 upholds the series' reputation as one of the classic and indispensable reference works for any college of pharmacy library.

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Animal Health Products: Design and Evaluation. DONALD C. MONKHOUSE. American Pharmaceutical Association, 2215 Constitution Ave., N.W., Washington, DC 20037. 152 pp. 15 × 23 cm, soft cover, $14.00 ($9.00 APhA Member Rate).

The increasing likelihood of a global food shortage is drawing more attention to the area of animal health products, particularly those designed to improve agricultural productivity. *Animal Health Products: Design and Evaluation* is the first booklength compilation of concepts and ideas related to research in this field and will doubtless serve as a reference text for teaching and for defining future research. As such, it is an important and readable contribution to an area largely neglected in pharmaceutical journals and texts and rarely addressed by the curricula of schools of pharmacy.

The APhA Annual Meeting symposium from which this volume evolved was designed to acquaint scientists working primarily in human therapeutics with the rapidly expanding area of veterinary research. The growing importance of pharmaceutical support for animal husbandry is one reason this volume should be of interest to scientists in this and in related fields. Another reason is that the growth of government regulatory requirements for animal products—which are generally stiffer than those for human products—is increasing the need for cooperative work between scientists in various areas, particularly in toxicology and metabolic studies.

A final attraction is the pure intellectual challenge of this area of pharmacy. As Dr. Lloyd H. Conover wrote in the "overview" Chapter:

> *"The dip-bath constitutes the greatest challenge I know to the art and science of pharmacy. Dip-baths are water-filled vats in which cattle or sheep take periodic involuntary 'dips.' The active ectoparasiticidal agent, usually in the form of an emulsifiable concentrate, is maintained at an effective concentration by periodic additions to the bath. Thousands of animals may pass through a dip-bath in the course of a week, and as they do, excreta, soil, microorganisms and other miscellaneous debris accumulate. The emulsion must retain its chemical and physical integrity in the murky bath for months, while the ectoparasiticidal film left on the skin and hair of dipped animals must withstand tropical rains and sun for at least a week. Think on this, if you are accustomed to working with elegant human dosage forms!"*

Animal Health Products covers several of the major problems in veterinary pharmacy, with particularly good information on the pharmacokinetics of oral dosage forms in multigastric animals, the analyses and metabolism of tissue residues, the problems of incorporating drugs into feed, and the special stability problems of veterinary formulations.

Staff Review