

## Book Reviews

**Toxicology Annual. 1974.** Edited by C. L. Winek. Marcel Dekker, New York, N.Y. 1975. 344 pp. \$29.50.

This is the first of what is planned to be a continuing series of Toxicology Annuals containing articles dealing with various aspects of the overall field of toxicology. According to the editor's preface, this volume is intended to complement and supplement the other regular review publications in toxicology. This is not an annual review of topics in toxicology but rather an annual publication of selected topics of current concern or interest in the broad field of toxicology. As such, it is interesting to note the emphasis given to different areas within the science; out of 14 chapters, nearly half are devoted to drug abuse topics (especially marijuana and CNS depressants). Several chapters present material concerned with various clinical aspects of poisoning.

Toxicology today is broader than the more parochial definitions formerly used to limit its range of areas of interest. Because toxicology has evolved as a multidisciplinary field of study, definitions of toxicology often reflect the area of study from which the definition derives. Perhaps this accounts for the apparently uneven approach of this book. Several chapters of the book deal with specific analytical techniques, for example, Postmortem Drug Level Changes (J. M. Parker), The Determination Of Drugs In Biological Specimens—A Review (J. E. Wallace et al.), and Interfering Compounds In Urine Screening For Drugs (E. Spratt). Other sections of the volume, however, approach their topics in the fashion of a very general overview, for example, Mission Of The National Clearing House For Poison Control (H. L. Verhulst) and This Is Veterinary Toxicology (F. W. Oehme). These latter sections are in marked contrast to those others which present original data or specific critical evaluations of present methodology found in chapters like Research In The Treatment Of Poisoning (A. L. Picchioni), Testing To Predict Ocular Hazards Of Household Chemicals (E. V. Buehler), and Toxicity Problems Related To Oral Ingestion Of Prolonged Release Dosage Forms (A. N. Voldeng). One chapter, Drug And Chemical Blood Levels (C. L. Winek), presents valuable tables listing therapeutic, toxic, and lethal blood concentrations of various common agents; much of these data is unavailable from other sources.

Other chapters cover The Current Status Of Saccharin (I. C. Munro et al.), Narcotic Drug Dependence (R. H. McDonald, Jr.), The Marijuana Dilemma (B. R. Manno and J. E. Manno), Postmortem Synthesis Of Alcohol (W. D. Collom), and The Identification Of Marijuana (F. W. Fochtman).

While the majority of chapters in this book are well written and informative, many lack new or original information presented in a rigorous, scientific format. It is also unfortunate that, while the book contains a heavy emphasis on forensic toxicology, there are no sections dealing with environmental or industrial toxicology issues.

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**Microbiology. 1975.** Edited by David Schlessinger with 77 contributors. American Society for Microbiology, Washington, D.C. 1975. viii + 521 pp. 18 × 26 cm. \$16.00.

This volume is the outgrowth of papers presented at five conferences and symposia sponsored by the American Society for Microbiology.

The first of the five sections discusses the use of Rapid Diagnostic Techniques in Clinical Microbiology. These include a variety of methods such as electrical measurements, microcalorimetry, bioluminescence, gas-liquid chromatography, and

immuno-electrophoresis, among others. They are unique and, even if all are not completely refined, present an exciting potential for rapid microbial detection in the (near?) future. Two papers deal with the use of computers in the clinical laboratory. These seem slightly out of place in a chapter on rapid detection techniques since, though the potential for the latter is present, the authors have not presented the material as having been put to use for such a purpose.

The second section deals with Pathogenic Mechanisms in Bacterial Diseases and is divided into five parts: interaction at body surfaces, penetration, inflammation and cellular events, exotoxins, and pathogenetic mechanisms in opportunistic gram-negative bacillary infections. The presentations discuss the characteristics of the host-parasite relationship from a broad viewpoint, both known and hypothesized.

Section three contains five papers on Mycotoxins. Basically, these are review articles (a total of 388 ref are given) dealing with the effects of mycotoxin on host metabolism, synergistic effects, and, in one case, on immunological processes.

Section four concerns itself with the development of new vaccines, specifically against *Hemophilus influenzae* type b, Neisserial meningitis and gonorrhoea, respiratory viruses, and *Pseudomonas aeruginosa*. Unfortunately, some of the material presented in this section is unusually brief.

The final section presents material given at a conference on Cell Differentiation and Communication. It is divided into Cellular Communication, Microdifferentiation, Biochemical Approach to Cell Differentiation, and Genetic Approach to Developmental Pathways. A variety of eucaryotic systems are discussed, including such diverse organisms as *Dictyostelium*, *Caulobacter*, *Anabaena*, *Neurospora crassa*, and *Blastocladiella*, not to mention *Hydra* and the nematode *Caenorhabditis elegans*. One paper on gene expression during procaryotic (*Bacillus*) sporogenesis is also included.

The volume is a must for those interested in, or requiring, an up-to-date synopsis of what is going on in clinical microbiology. The section on Cell Differentiation and Communication is an added bonus, but its presence in this volume on medically oriented microbes might be questioned.

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**Essays in Toxicology. Volume 6.** Edited by Wayland J. Hayes, Jr. Academic Press, New York, N.Y. 1975. xii + 195 pp. 18 × 23.5 cm. \$18.50.

This volume is the sixth in a continuing series of collected essays which deal with various aspects of toxicology. This volume contains five essays which approach toxicology by different routes: two essays consider materials (plastics and tobacco alkaloids), one describes the effects of abnormal pressures, another discusses the biochemistry of a single organ (the lung), and one deals with poison control centers.

In the first essay entitled "Toxicological Problems and Un-toward Effects from Plastic Devices Used in Medical Applications", John Austin discusses some of the medical risks associated with both the short-term and long-term (suture materials, artificial heart valves, dental fillings) uses in patients. Drawing from animal studies the author reviews some of the experimental data which has accumulated concerning the induction of tumors by implanted polymeric materials. Also presented are some of factors which can influence the incidence of tumor formation by implants and some of the theories, both current and past, which have been advanced to explain the mechanism of carcinogenesis by "insoluble" materials. Finally the author discusses some of the special problems, such as blood-plastic and drug-plastic interactions, which may be encountered

in the medical applications of plastic devices.

In the second chapter John Gorrod and Peter Jenner summarize quite nicely the current situation regarding the metabolism of the tobacco alkaloids. After a brief introduction concerning the occurrence of these alkaloids, their uses, and their biological actions, the authors present a very concise summary of the principal pathways involved in both the *in vivo* and *in vitro* metabolism of nicotine in man and various animal species. In addition to nicotine, the metabolism of some of the minor tobacco alkaloids (nornicotine, anabasine, myosmine, anatabine, and nicotyrine) is also described. Included in this essay is a discussion of the effects of smoking on the metabolism of nicotine with particular emphasis placed on the alterations of various enzyme systems by nicotine and tobacco smoke. In Chapter 3, Roy Goulding of the New Cross Hospital Poisons Unit in London discusses the role of poison control centers in England and in the United States. Goulding discusses their development over the last 20 years, their benefits and shortcomings, and offers constructive suggestions for improving their future.

The fourth chapter, a relatively short essay (16 pp) by Alfred Small and Seymour Friess, treats the problems associated with exposure to hypobaric and hyperbaric environments. Although the essay considers the biological effects of exposure to extremes of pressure, ranging from the ultrahigh vacuum of outer space to the highest underwater pressures, the greatest emphasis is placed on the physiological effects produced by pressures that humans are mostly likely to encounter (0.3–200 atm).

The last essay, the longest in the book, by Hanspeter Witschi deals with biological approaches for the evaluation of toxic lung damage. The first part of the essay discusses various aspects of lung biochemistry. After a brief but descriptive review of the biochemical composition of the lung and the *in vivo* biosynthesis of pulmonary macromolecules, the author discusses some of the techniques that have been used to describe and to quantitate lung damage using isolated lung slices. In the second part of the essay Witschi describes some of the biochemical alterations that result following lung damage caused by various agents such as oxidant gases, paraquat, nickel carbonyl, and the pyrrolizidine alkaloids.

In general, each essay is well written, clear, and free from typographical errors. Each essay is very well referenced giving the reader easy access to a more detailed coverage of each topic. This volume complements the series quite nicely and would be of interest not only to the toxicologists but also to the medicinal chemists and biochemists alike.

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**Predictability in Psychopharmacology: Preclinical and Clinical Correlations.** Edited by A. Sudilovsky, S. Gershon, and B. Beer. Raven Press, New York, N.Y. 1975. 315 pp. \$22.50.

The rate of development of truly new and effective pharmacologic treatments of psychopathologic conditions has been disappointingly slow due, in large part, to problems in finding appropriate predictive testing procedures. Traditionally, new drugs for use in psychiatric disorders are first tested in various animal models, then the pharmacologic properties of these drugs are investigated in man in preclinical trials, and their therapeutic effects are correlated with those of other agents used in the disease state. Unfortunately, each of these steps is based on a shaky foundation. Animal data, both behavioral and biochemical, are open to various interpretations since the subjects cannot communicate and the biological etiology for mental diseases is far from being clearly understood. While we believe we can communicate objectively with the patient, there are many subtleties involved

in attempting to interpret human behavioral patterns. Ethical questions are now arising regarding the use of inactive placebos for experimental protocols in clinical investigations. These are some of the reasons why it seems serendipity often plays a greater role in drug development than purely rational approaches.

At a time when regulatory requirements and the costs of drug development are increasing around the world, the problem of predictability in psychopharmacology, the subject of this book, is clearly an important issue. Most of the chapters included in the book are from presentations at the First CNS Symposium of the Squibb Institute for Medical Research (June 1974). Other (invited) chapters cover pertinent areas of interest that were not explored during the meeting.

The problems, and some suggested solutions, of developing human and animal test models for psychiatric drugs are presented here. Two chapters on clinical nosology and typology offer useful guidelines for approaches to psychiatric diagnosis. Several chapters offer new suggestions for the use of detailed behavioral evaluations of animal responses to a variety of therapeutic psychoactive agents. Two chapters deal with the predictability of computerized EEG measures for determining specific psychiatric indications of potential psychotropic drugs and the utilization of this method to study drug bioavailability in the CNS. Several chapters deal with various animal models as predictors of therapeutic activity for psychotropic drugs. The book concludes with three chapters which offer incisive discussions of different neurotransmitter receptor models, e.g., dopamine, indole (hal-lucinogen), and glycine, and their usefulness in predicting therapeutic efficacy and incidence of side effects.

In both a critical and imaginative fashion this volume approaches the serious problems of predicting psychotropic drug activity and should prove of interest to psychopharmacologists involved in the development and clinical application of new therapeutic agents.

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**The Alkaloids. Specialist Periodical Report. Volume 5.** By J. E. Saxton, Senior Reporter. The Chemical Society, London. 1975. x + 303 pp. 13.5 × 21.5 cm. £ 17.5.

This fifth volume of a continuing series has been admirably edited by Edwin Saxton. Natural products chemists are indebted to him and his coauthors for this comprehensive and exhaustive review of the literature (in the present volume from July 1973 to June 1974). The following topics are covered by the indicated authors: Biosynthesis, including several nitrogen-containing microbial products such as the  $\beta$ -lactam antibiotics; Solanum and Veratrum alkaloids (R. B. Herbert); Pyrrolidine, Piperidine, Pyridine, Quinoline, Quinazoline, Acridone,  $\beta$ -Phenethylamines, Isoquinolines, Amaryllidaceae, Erythrina, Lycopodium, and Miscellaneous Alkaloids (V. A. Snieckus); Tropane, Pyrrolizidine, Indolizidine, Quinolizidine Alkaloids (J. E. Saxton); Indole Alkaloids (J. A. Joule); Diterpenoid Alkaloids (F. Khuong-Huu and R. Goutarel). The most active areas of research, judging from the lengths of the various chapters, are the indole alkaloids (especially synthesis), isoquinoline alkaloids, and biosynthesis. The book is remarkably free of typographical errors.

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