in boldface type in the text as well as in the Table of Contents. These sections are further divided into subsections. Chapter titles are found at the top of every second page of the text. The author index of 3500 names is helpful to those following the research of a given individual.

This review is illustrated with 2000 chemical structures. It is documented with 1900 references, most of which are listed at the bottom of the page of each chapter where first cited.

Part I, which covers the terpenoids, is divided into chapters including Monoterpenoids, Sesquiterpenoids, Diterpenoids, Triterpenoids, Carotenoids and Polyterpenoids, and Biosynthesis of Terpenoids and Steroids. Part II, which covers steroids, is divided into two large chapters entitled Steroid Properties, Reactions and Partial Synthesis and Steroid Total Synthesis. The omission of a compilation of references to review articles on subjects related to terpenoids or steroids is the only disappointment. Such compilations were included in most previous volumes of this series.

The biochemist will find the 50 pages on Biosynthesis and subsection on Steroid Radioimmunoassay and Labelled Steroids very useful.

This volume was prepared by nine reporters in addition to the editor. Chemists interested in terpenoids or steroids should have access to this volume and others in the series. They are valuable in reviewing any topic in these subject areas, in developing new ideas and in identifying references for consultation. I highly recommend this series.

Reviewed by Norman J. Doorenbos
College of Science
Southern Illinois University
Carbondale, IL 62901

Drug Design and Adverse Reactions. Edited by HANS BUNDGAARD, PER JUUL, and HELMER KOFOD. Academic, 111 Fifth Ave., New York, NY 10003. 1977. 382 pp. 16 × 24.5 cm.

This book contains a collection of 25 papers presented at the 10th Alfred Benzon Symposium held in Copenhagen on May 17–20, 1976, on drug design, with particular emphasis on the safety of pharmaceutical products and their ethical standards. These papers are grouped into four general areas: (*a*) damaging effects at tissue, cellular, and molecular levels, (*b*) allergic and immunological reactions, (*c*) molecular aspects of drug toxicity, and (*d*) status and perspectives.

In the first area, drug-induced lipidosis, ultrastructural evaluation of drug-induced cellular injury, neurocytochemistry of guanethidine, cytotoxicity of guanidines, lysosomotropic chemotherapy and applications to neoplastic and parasitic diseases, liver toxicity of isoniazid analogs, acetaminophen (paracetamol) hepatotoxicity, and prediction of local damage by intramuscular injection are discussed. The second general area includes discussions of assessment of the immune response to drugs, immunological aspects to drugs, antigenic determinants in drug allergy, allergic reactions to impurities and drug metabolites, penicillin antigenicity, hapten and immune response, and correlation of drug structure and toxicity mediated by both immune and nonimmune mechanisms.

The third general area, which shifts the attention from biology to chemistry, is composed of the following six topics: adverse reactions and chemical structure, structure–activity relationships of carcinogenic drugs, carcinogenicity of benzo[*a*]pyrene, metabolites of estrogens and gastagens, differential metabolism of enantiomers, and molecular structures with inherent toxicity. The remaining four presentations, chemical structure and toxic action, protein binding and adverse reactions, chemically reactive metabolites and toxicity, and drug delivery considerations, comprise the final general area of status and perspectives.

The ultimate goal of every medicinal chemist in drug design is to find useful drugs with specific action without uncontrollable toxicity. To achieve this goal, an understanding in many basic disciplines of science, including organic chemistry, analytical chemistry, physical chemistry, biochemistry, microbiology, molecular biology, pharmacology, toxicology, and immunology, is required. A correlation of the compounded knowledge to appreciate the chemical and biological mechanisms of drug action is also necessary. This book, which accumulates the presentations of "a mixed party attacking a complicated subject matter from different expert angles" (H. Kofod, opening remarks), is an attempt in this direction. Although, in general, many topics of discussion seem somewhat scattered and not closely interrelated, it is the consequence of a worthwhile attempt to study the problem of drug toxicity.

The participants, who are well established in their own field of study, tried their best to unveil the urgent problems, to point out the pitfalls, to align certain common factors and principles they observed, and to make suggestions. Here, a word of caution may be added. In this almost virgin field of drug design, suggestions and recommendations should only be made in the pretext of working hypotheses, and each should be treated with respect and used with caution. For example, if not the drug but one of its metabolites is responsible for the therapeutic action, the use of that metabolite or derivatives as a therapeutic agent was suggested. With due respect, this reviewer believes that the suggestion may not be adequate. Often a metabolite formed *in vivo* may be unstable or exist only with a short half-life. Even if the metabolite is stable and can be properly characterized and synthesized in the laboratory, one should also consider the problems of solubility, transport, absorption, *etc.*, which may be quite different from those of the original drug. Remember the story of the Trojan horse? The "metabolites" or "active species" are the soldiers inside; to eliminate the problem of transport, the entire Trojan horse, the original drug, may be needed.

At the end of this book, there is only an index of invited authors and discussants. This index may be useful for the meeting participants but is of little use to others. Perhaps the editors should consider installing a general subject index for the forthcoming meeting proceedings. This book is recommended as general reading to all scientists interested in the problem of drug design.

Reviewed by C. C. Cheng
Midwest Research Institute
Kansas City, MO 64110

NOTICES

Drug Dependence. Current Problems and Issues. Edited by M. M. GLATT. University Park Press, Chamber of Commerce Bldg., Baltimore, MD 21202. 1977. 332 pp. 14 × 22 cm. Price $28.50.

The Science and Technology of Gelatin. Edited by A. G. WARD and A. COURTS. Academic, 111 Fifth Ave., New York, NY 10003. 1977. 564 pp. 15 × 23 cm. Price $39.50.

Case Studies In Medical Physiology. By ROBERT S. ALEXANDER. Little Brown, 34 Beacon St., Boston. MA 02106. 1977. 170 pp. 13 × 22 cm. Price $6.95.

Health Organizations of the United States, Canada, and Internationally. 4th Ed. Edited by PAUL WASSERMAN and JANE K. BOSSART. Edwards Brothers, 2500 S. State St., Ann Arbor, MI 48104. 1977. 327 pp. 21 × 28 cm.

Haemostatic Drugs: A Critical Appraisal. By M. VERSTRAETE. Martinus Nijhoff, Lange Voorhout 9-11/P. O. Box 269, The Netherlands. 1977. 155 pp. 15 × 23 cm.

Molecular Biology, Biochemistry, and Biophysics 23: Secondary Metabolism and Cell Differentiation. By MARTIN LUCKNER, LUTZ NOVER, and HARTMUT BÖHM. Springer-Verlag, 175 Fifth Ave., New York, NY 10010. 1977. 130 pp. 19 × 24 cm. Price $21.20.

Medication Guide For Patient Counseling. 1st Ed. by DOROTHY L. SMITH. Lea & Febinger, 600 Washington Square, Philadelphia, PA 19106. 1977. 15 × 23 cm. Price $12.00.

Pharmacie. 5th Ed. Edited by YVAN TOUITOU. Masson, 14 E. 60th St., New York, NY 10022. 1977. 340 pp. 13 × 21 cm.

Chemotherapy of Solid Tumours. Report on a WHO Expert Committee. World Health Organization, 1211 Geneva 27, Switzerland. 1977. 106 pp. 14 × 20 cm. Price $4.00.

Drugs and Driving. NIDA Research Monograph 11. Edited by ROBERT E. WILLETTE. National Institute on Drug Abuse, 11400 Rockville Pike, Rockville, MD 20852. 1977. 15 × 23.5 cm. 137 pp. Price $1.70. Available from Superintendent of Documents, U. S. Government Printing Office, Washington, DC 20402.

Chemotherapy of Infection. By WILLIAM B. PRATT. Oxford University Press, 200 Madison Ave., New York, NY 10016. 1977. 462 pp. 15 × 23 cm. Price $9.95.

Topics in Antibiotic Chemistry, Vol. 1. Edited by P. G. SAMMES. Halsted, 605 Third Ave., New York, NY 10016. 1977. 217 pp. 16 × 24 cm. Price $28.50.

Herbicides and Fungicides—Factors Affecting Their Activity. Edited by N. R. McFARLANE. The Chemical Society, Burlington House, London, W1V OBN, England, 1977. 141 pp. 12 × 22 cm. Price $15.00.