

## REVIEWS

**Plastic Containers for Pharmaceuticals—Testing and Control.** By JACK COOPER. World Health Organization, Geneva 27, Switzerland (WHO Offset Publication No. 4), 1974. 204 pp. 22 × 28 cm. Price SW. fr. 32, \$12.80.

Packaging of pharmaceuticals in plastic containers has increased at an unprecedented rate. Testing and control procedures are needed for the pharmaceutical industry. During revision of the second edition of the *International Pharmacopoeia*, the World Health Organization recognized the importance of general monographs on this subject and it was at their request that Mr. Cooper prepared this comprehensive report. Mr. Cooper's experiences with the sorption of preservatives by rubber closures are well documented. As Chairman of a Commission for the Standardization of Regulatory Requirements for Plastic Containers set up by Fédération Internationale Pharmaceutique, he is cognizant of the potential problems in the use of plastics in pharmacy. He has done an excellent job of compiling his information.

In Sections I to V, physical-chemical properties of the most important plastics (polyethylene, polypropylene, polyvinyl chloride, and celluloids) used in packaging drugs are considered. Possible difficulties in the use of plastic containers for drugs are loss of product ingredients to the plastic (sorption), loss of plastic ingredients to the product (desorption), transport of water vapor or gases across the plastic wall (permeation), drug loss through radiation (photodegradation), and change in physical properties of the container by contact with the product (polymer modification). The nature and the means of dealing with these issues are succinctly described and illustrated with published work. The author points out that most of the materials causing drug-plastic interactions are preservatives, and that any significant drug loss is adequately identified by the comprehensive stability programs used by the pharmaceutical industry. Section VI describes the implications of these problems in some of the main dosage forms such as parenterals, ophthalmics, topical preparations, solid dosage forms, and oral liquids.

Sections VII and VIII cover pharmacopoeial regulatory requirements from seven countries, and standards issued by institutions or industries from four countries. The greater part of the book consists of 24 attachments that enlarge on the material found in these chapters. Mr. Cooper also discusses the possibility of establishing international standards.

The report is highly recommended as an addition to industrial quality control and stability laboratories and libraries.

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**Comparative Pharmacology, Vol. 1.** Edited by M. J. MICHELSON. Pergamon Press Inc., Maxwell House, Fairview Park, Elmsford, NY 10523, 1973. 517 pp. 24 × 16 cm.

Dr. Michelson has performed an excellent job in editing the book *Comparative Pharmacology, Vol. 1*, and the choice of international authors for the preparation of this book is excellent. The comparative pharmacology of acetylcholine in various phyla is well presented and represents one of the best comparative treatises that I have seen. The chapter on the structure and mutual disposition of cholinergic receptors and changes in their disposition in the course of evolution, by Dr. Michelson, is exceptionally well presented.

In addition, Chapter 3, on the comparative pharmacology of catecholamines, by Dr. Goteborg and Dr. Malmo, provides a readily usable review and compilation of the comparative pharmacology of the catecholamines in both invertebrates and vertebrates. Each of

the contributors to this book has provided excellent bibliographies to allow the reader to obtain an in-depth knowledge of the comparative pharmacology of the neurotransmitters acetylcholine and catecholamines.

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**Terpenoids and Steroids, Vol. 4.** Senior Reporter, K. H. OVERTON. Specialist Periodical Reports, The Chemical Society, Burlington House, London W1V 0BN, England, 1974. 608 pp. 15 × 22 cm. Price £18.50. (Orders should be addressed to The Publication Sales Officer, The Chemical Society, Blackhorse Road, Letchworth, Herts., SG6 1HN, England)

This is the fourth volume on terpenoids and steroids in a valuable series first published 4 years ago. The aim of the various series of Specialist Periodical Reports is to provide systematic, comprehensive, and critical review coverage of progress in the major areas of chemical research. The various series are being published annually or biennially on such topics as Foreign Compound Metabolism in Mammals; Biosynthesis; The Alkaloids; Carbohydrate Chemistry; Amino-acids, Peptides and Proteins; and Photochemistry.

This volume does not contain a subject index but is organized in a systematic manner which facilitates finding any information being sought. The six pages in the Table of Contents outline this volume in detail. The chapters are divided into many sections which are identified 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. There is an author index which is helpful to those following the research of a given individual.

This review is illustrated with drawings of over 2400 chemical structures. It is documented with 2100 references which are listed at the bottom of the first page of each chapter where used.

Part I, which covers the terpenoids, is divided into chapters which include Monoterpenoids; Sesquiterpenoids; Diterpenoids; Sesterterpenoids; Triterpenoids; Carotenoids and Polyterpenoids; and Biosynthesis of Terpenoids and Steroids. Of special interest is the identification and referencing of over 150 recent reviews covering 1968–1973. The chapter on sesterterpenoids deserves special attention since it contains an excellent review of the literature published on this class of terpenoids beginning with the first report published in 1965.

Part II, which covers steroids, includes three large chapters. The chapter on steroid properties and reactions is divided into sections based upon more common functional groups, a section on compounds of nitrogen and sulfur, and sections on such important subjects as molecular rearrangements, functionalization at nonactivated positions, and photochemical reactions.

The chapter on microbiological reactions with steroids provides a comprehensive account of research published since this subject was last reviewed in this series in 1967. Subject matter in this chapter is organized according to types of transformations and presented under headings which include hydroxylation reactions; hydroxy-steroid-oxo-steroid interconversions; dehydrogenation and the reductions of carbon-carbon double bonds; olefinic bond isomerization; esterase, amidase and hydrolase reactions; reactions involving heteroatoms; and steroid degradation reactions.

In this reviewer's opinion, the "frosting on the cake" is the last chapter entitled "Steroid Conformations from X-Ray Analysis Data." The authors have utilized data from their laboratory at Rijksuniversiteit, Leiden as well as from research literature, part of which they recalculated. The authors were thus able to recalculate equilibrium geometries and analyze the effects of functional groups and configurations upon these geometries of steroids. The

section entitled "Biological Activity at the Molecular Level" would be of special interest to pharmaceutical scientists.

The chapter on steroid synthesis, which had been included in previous volumes of this series, was not included. A 2-year review of this subject will appear in Volume 5.

It is a credit to the editor and 15 reporters preparing this volume that it is so well written and organized. Everyone interested in the chemistry of terpenoids and/or steroids should have access to this volume and others in the series. They would be a great time saver and a source of many new ideas. I highly recommend this series.

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**Pharmacy Practice: Social and Behavioral Aspects.** Edited by A. I. WERTHEIMER and M. C. SMITH. University Park Press, Baltimore, MD 21202, 1974. xv + 556 pp. 16 × 24 cm. Price \$15.50.

The main purpose of this excellent collection is also the greatest drawback to its broad-scale usefulness as a college text. It identifies and satisfies a need for a text presenting abstracts from the literature of the social and behavioral sciences in relation to pharmacy practice. The intended audience is the pharmacy student and the pharmacy practitioner (hopefully, including the administrator and scientist, as well as the community and institutional practitioner). Unfortunately, we are disappointed with the book as an undergraduate text primarily because it does provide abstracts exclusively related to the social and behavioral sciences. The lack of substantial material related to the marketing of pharmaceuticals probably limits its use in survey courses in pharmacy administration.

Each of the 12 chapters begins with a 1-page statement of the issues to be addressed and a summary of the major points to follow. An original contribution, ranging in length from nine to nineteen pages follows (except in the last chapter). Each chapter contains several well-chosen abstracts from the literature.

The organization of the book provides areas of overlapping coverage. For example, we find the stages of becoming a patient (symptom recognition, etc.) treated in both the chapter on "Discerning the Role of the Patient" and the chapter on "The Patient's Search for Care." Such duplication is, however, not as frequent as one might expect in a book which covers a wide range of interrelated subjects prepared by many authors.

The selection of the authors for the original contributions represents an excellent selection of experts, well known and well respected for their work in the social sciences of pharmacy and health care. The quality and relevance of the original contributions vary, possibly related to the assignment of subject matter. For example, the chapter, "The Patient and the Prescribed Regimen," while interesting (dealing with patient compliance) seemed out of place in a book dealing with major issues of pharmacy and health care, such as "The Health Professions" or "Drugs and Drug Use." This is not to minimize the importance of studies on patient compliance, but merely to indicate they seemed overly emphasized considering the general tone of the book.

Similarly the quality of the abstracts following the original contributions varied. Space priorities sometimes seemed amiss. In the chapter "The Health Care System," the 10-page original contribution is followed by a 15-page "abstract." A short abstract in the book consisted of only thirteen lines, which made the desired point but in a way which caused one to say, "Prove it."

Overall, the quality of the book more than compensates for its relatively minor shortcomings. It is a very thorough review of the relevant literature in the field. It is highly recommended for the pharmacy student (although its status as a required text would probably require many supplemental readings in most introductory pharmacy administration courses). While technically thorough, the book is not written in "social science talk" so that it can be readily understood by the pharmacist without training in sociology or psychology. The information contained in the book should be of

significant value and interest to the pharmacy practitioner (as defined above) and reading the book will be time well spent, even for the non-social scientist.

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## NOTICES

*Natural Flavouring Substances, Their Sources, and Added Artificial Flavouring Substances.* Council of Europe, 1974. 464 pp. 15.5 × 24 cm. Price 160 F.

*Europaisches Arzneibuch, Vol. 1.* Amtliche Ausgabe. Deutscher Apotheker-Verlag, Stuttgart, Germany, 1974. 391 pp. 24 × 17 cm. Price DM 48.

*Social Aspects of the Medical Use of Psychotropic Drugs.* Edited by R. COOPERSTOCK. Addiction Research Foundation, 33 Russell St., Toronto, Ontario M5S 2S1, Canada, 1974. 179 pp. 26 × 17.5 cm. Price \$6.50, soft cover; \$10.00, hard cover.

*The American Journal of Drug and Alcohol Abuse, Vol. 1.* Edited by E. KAUFMAN. Dekker, 270 Madison Ave., New York, NY 10016, 1974. 140 pp. 18 × 25.5 cm. Price \$12.50 single issue; \$30.00 per volume (four issues per volume).

*British Medical Bulletin, Research in Medical Care, Vol. 30.* Edited by W. W. HOLLAND. Medical Department, The British Council, 65 Davies St., London W1Y 2AA, England, 1974. 95 pp. Price \$6.50.

*The Physiological Basis of Starling's Law of the Heart.* Ciba Foundation Symposium 24 (new series). American Elsevier, New York, NY 10017, 1974. 298 pp. 17 × 25 cm.

*Essential Immunology, 2nd Edition.* By I. ROITT. Lippincott, Philadelphia, PA 19105, 1974. 260 pp. 16 × 23.5 cm. Price \$8.75.

*The Fate of Drugs in the Organism, Vol. 1.* Edited by J. HIRTZ. Dekker, 270 Madison Ave., New York, NY 10016, 1974. 579 pp. 16 × 24 cm. Price \$59.50.

*Drug Actions on Cholinergic Systems.* By R. W. BRIMBLE-COMBE. University Park Press, Chamber of Commerce Building, Baltimore, MD 21202. 227 pp. 16 × 24 cm. Price \$29.50.

*Folk Remedies of the Low Country.* By J. F. MORTON. E. A. Seemann Publishing, Inc., 8770 S.W. 131st St., Miami, FL 33156, 1974. 176 pp. 16 × 24 cm. Price \$12.95.

*Treatment of Common Acute Poisonings.* By A. A. H. LAWSON and H. MATTHEW. Longman, Inc., New York, NY 10011, 1975. 202 pp. 19 × 13 cm. Price \$8.75.

*Bilayer Lipid Membranes (BLM) Theory and Practice.* By H. TI TIEN. Dekker, New York, NY 10016, 1974. 655 pp. 23.25 × 16 cm. Price \$39.50.

*Manual of Medical Therapeutics.* By E. BOEDAKER and J. DAUBER. Little, Brown, Boston, MA 02106, 1974. 460 pp. 21.5 × 14.5 cm. Price \$7.95.

*Parasites in the Immunized Host: Mechanisms of Survival.* Ciba Foundation Symposium 25 (new series), American Elsevier, New York, NY 10017, 1974. 280 pp. 24 × 17.5 cm.

*The Poisoned Patient: The Role of the Laboratory.* Ciba Foundation Symposium 26 (new series). American Elsevier, New York, NY 10017, 1974. 325 pp.

*Lehrbuch der Pharmazeutischen Chemie.* By H. AUTERHOFF and J. KNABE. Wissenschaftliche Verlagsgesellschaft mbH, 7000 Stuttgart 1, Germany 1974. 574 pp. 24 × 17.5 cm. Price DM 58.

## NEW JOURNAL

*Drug Development Communications, Vol. 1.* Edited by C. T. RHODES. Dekker, Inc., 270 Madison Ave., New York, NY 10016. 15 × 23 cm. Price \$35 (six issues).