theless make it difficult to compare data across chemical classes without excessive page flipping.

This book tries to offer something for the medicinal chemist, the renal pharmacologist and physiologist, and the physician. With its interdisciplinary approach it can be highly recommended to all three, but particularly to the medicinal chemist because of its emphasis on structure–activity relationships and possible future directions for diuretic research.

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Polyether Antibiotics, Volume 2: Naturally Occurring Acid Ionophores. Edited by JOHN W. WESLEY. Marcel Dekker, 270 Madison Avenue, New York, NY 10016. 1983. 415 pp. 15 × 23 cm. Price $65.00 (20% higher outside the U.S. and Canada).

This work is the second of a two-volume set on polyether antibiotics. As the title indicates, it concentrates on the chemical aspects in this field whereas the microbiology, biosynthesis, pharmacology, and veterinary applications were covered in the first volume. The editor has chosen an excellent array of contributing authors, each of whom has done important original work in this field. The resulting volume therefore has the added advantage of being authoritative as well as informative.

The first chapter by Yoshito Kishi is an excellent review of the total synthesis of many of the polyethers which not only includes the author's own contributions, but also a critical view of other major contributors to this field. This is followed by a review of known chemical modifications of this class of antibiotics, which focuses attention on the lack of progress in this aspect of polyether chemistry in light of the high level of understanding brought to bear by X-ray crystallography. The remainder of this book covers the major contributions made to polyether chemistry by physical chemistry including X-ray crystallography, mass spectrometry, and ^{1}H- and ^{13}C-NMR. The authors of each of these sections used similar formats with illustrations, figures, and stereoviews. Each also tried to highlight the strengths and limitations of these various techniques.

The general tone of this book is to give the reader an overview and an exposition with an eye on future research. As such, this volume as well as the previous one, should prove useful as both a primer for the novice researcher and as a review and reference source for the established investigator. As the reviewer of Volume I noted in this journal, the subject index of Volume II is also somewhat inadequate and may prove a hindrance for those less familiar with this field. This book generally includes work up to 1980—only one author (Y. Kishi) attempted to update his chapter to cover work done in 1981.

In conclusion, this volume gives an excellent coverage of the subject matter it sets out to review. It has been well edited, is authoritative, and generally error free. It will surely be of great value to anyone interested in these fascinating antibiotics.

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Applied Statistics: A Handbook of Techniques, 5th Ed. By LOTHAR SACHS (translated by ZENON REYNAROWYCH). Springer-Verlag New York, Inc., 175 Fifth Avenue, New York, NY 10010. 1983. 706 pp. 16 × 24 cm.

This book was written "... both as an introductory and follow-up text ... and as a reference book with a collection of formulas and tables, numerous cross-references, and extensive bibliography." Satisfying such divergent purposes in one book is difficult, and the author does not entirely succeed. Although written at an introductory level, I found the organization of the material too confusing and the coverage too encompassing for an introductory text.

The book extensively covers the techniques relevant to most data analysis problems addressed in introductory texts in applied statistics. Chapter 0 covers arithmetic operations. Chapter 1 covers a wide variety of techniques relating to one variable. Chapter 2 suggests the diversity of specialized statistical problems and techniques arising in medicine and engineering and directs the reader to the relevant literature. Chapters 3–7 cover the comparison of two or more samples, correlation and regression, the analysis of contingency tables, and analysis of variance. In each case, most of the relevant parametric and nonparametric techniques are presented. Keeping with the introductory level of the book, general linear and categorical models are not discussed.

For a handbook, the inclusion of material could be better delineated. You might find a relatively unknown technique such as the minimum discrimination information statistic for analyzing multiway contingency tables or the Thorndike nomogram for evaluating Poisson probabilities. However, you will fail to find techniques for analyzing covariance studies, repeated measure studies, or studies with missing data. But, if the technique is there, its stepwise execution is lucidly illustrated. Assumptions are stated in practical terms and cross-referenced to techniques for testing their validity. The original and related references are always given. Statistical tables are readily accessible due to their placement in the text and convenient page referencing.

This easy use is one of the joys of this book. Another is the pleasure of perusing the book. To quote the author, "The numerous cross-references appearing throughout the text point out various *interconnections*. A serendipitous experience is possible." I concur.

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Structure–Activity Correlation as a Predictive Tool in Toxicology: Fundamentals Methods, and Applications. Edited by LEON GOLDBERG. Hemisphere Publishing Corp., 19 W. 44th St., New York, NY 10036. 330 pp. 16 × 23 cm. Price $49.50.

This book is a reasonably current review of the application of quantitative structure–activity relationships (QSAR) to problems in toxicology. Although the work is the result of a symposium which was held in February 1981, it is remarkably well-written and not at all like the usual symposia proceedings. The book is divided into four sections that, for the most part, are well-organized and show little evidence of overlap or duplication.

The first section covers biological activities and describes moderately well the problems that toxicologists have in defining and measuring the biological effects of toxic substances. Of particular interest are the examples in Chapter 2 on inhibition of chemical carcinogenisis by various factors which modify procarcinogen activation. The survey of literature and computer-accessible data bases for obtaining information on both toxicological responses and physical and chemical properties of toxicants is particularly helpful.

The second section contains a somewhat sketchy but suggestive survey of biochemical mechanisms underlying the toxic action of chemicals (Chapter 4) and an excellent historical overview of the physical and chemical parameters that have been correlated to biological activities (Chapter 5).

The third section, "Correlative Methods," contains the heart of the material presented in this book. An excellent review (Chapter 6) of multiple regression (Hansch) analysis by Y. C. Martin clearly states the fundamental assumptions that are frequently not met by the novice. Criteria for the acceptable quality of the biological data, for the selection of appropriate physiochemical parameters, and for the intellegent use of regression analysis methods are all succinctly stated. Chapter 7, by P. C. Jurs, contains a reasonably intelligible introduction to the use of pattern-recognition techniques for QSAR; however, the novice unfamiliar with the statistical basis for this method may find the discussion somewhat confusing. Finally, Chapter 8 contains a discussion of the application of quantum chemical methods to predicting the relative carcinogenicity of a series of polycyclic aromatic hydrocarbons.

The remainder of the book consists of examples of applications of QSAR methods to toxicological problems. Although the quality of those application reviews varies considerably, each topic is covered with sufficient depth such that these reviews should serve as a useful guide to the recent literature. Chapters 10 (Computer-Assisted Prediction of Me-

tabolism), 14 (Quantitative Structure–Mutagenicity Relationships), 18 (Molecular Basis for the Structure–Carcinogenicity Relationships of Polynuclear Aromatic Hydrocarbons), and 20 (Concept of the Integrated Approach)—the last a description of the EPA GENE-TOX program—provide some especially interesting applications to toxicological research.

QSAR methods should become increasingly important in toxicology, since the toxicologist is confronted with the problem of assessing the safety of millions of chemical entities which may cause injury or death to living organisms by only a reasonably small number of distinct toxic mechanisms. For example, genetic effects of toxic chemicals can be assessed by a half-dozen or so distinct classes of bioassays for different types of genetic damage. As the mechanisms underlying various types of toxic responses become better understood, QSAR methods will become more useful as a screening tool for predicting the adverse effects of new chemical entities. This book can serve as a useful introduction to the literature on QSAR for the practicing toxicologist and other scientists concerned with safety assessment of drugs and chemicals. The novice will find Chapters 5 and 6 particularly useful as an introduction to the field. Chemists who routinely use SAR approaches in research will find this work less helpful, since the problems of defining toxicological endpoints are not treated with the same standards of quality as the chapters on SAR methods. Nevertheless, this book is a valuable review.

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New Calcium Antagonists: Recent Developments and Prospects. Edited by A. FLECKENSTEIN, K. HASHIMOTO, M. HERRMANN, A. SCHWARTZ, and L. SEIPEL. Gustav Fischer Verlag, D-7000 Stuttgart 72, Postfach 720143, West Germany. 1983. 236 pp. 15 × 23 cm. Price DM 36.

This book represents the proceedings of a workshop on the calcium channel blocker diltiazem, held in May 1982 in honor of Professor A. Fleckenstein (the "father of calcium antagonists") on the occasion of his 65th birthday. Twenty-four international experts and their coworkers contributed chapters dealing almost exclusively with the authors' personal experimental findings. Of the 24 chapters in the book, only two are of a review nature. However, all the chapters provide recent and fascinating data on calcium antagonists. Although the focus of the workshop is on diltiazem, many other calcium antagonists are discussed throughout the book.

Eleven chapters are devoted to clinical experience with diltiazem and other calcium antagonists in the treatment of angina pectoris, coronary artery stenosis, coronary atherosclerosis, hypertension, and cardiac arrhythmias. The concensus from these chapters, is that the calcium antagonists are most valuable in treating all of these cardiovascular diseases.

Thirteen chapters deal with various aspects of the basic pharmacology of diltiazem and other calcium antagonists. Of these, nine chapters are concerned with the basic and applied pharmacology of calcium antagonists on the cardiovascular system. Among them, a notable chapter discussing the value of calcium antagonists in the prevention of arterial calcinosis provides tantalizing information and paves the way for future preventive clinical uses of this group of drugs. One chapter briefly suggests a therapeutic use for calcium antagonists in cerebrovascular disease, and another chapter details the molecular aspects (and pitfalls) of the binding properties of calcium antagonists to their presumptive membrane receptors and the relation of these receptors to the calcium channels which are blocked by these drugs. A review of the cellular mechanisms by which calcium antagonists preserve the integrity of myocardial cells and intracellular structures provides insightful reading. One chapter outlines the evidence for an interaction of calcium antagonists with presynaptic and postsynaptic α-adrenoreceptors, and serves to remind the reader of the complexity of the mechanism(s) of action of the calcium antagonists. Another reminder is provided in a chapter dealing with inhibition of adrenergic transmission by calcium antagonists at the vascular neuromuscular junction.

Despite the excellent scientific information provided in this book, a number of negative attributes are worth mentioning. The reader is repeatedly distracted by typographical errors which abound in virtually all chapters. Even the title on the front cover suffered from lack of proper proofreading. Furthermore, some chapters appear to have been transcribed from taped presentations, since incomplete sentences, verbless phrases, improper paragraph breakdown, and other miscellaneous grammatical oddities abound. A few chapters do not include a bibliography, and only one chapter was updated prior to publication. Finally, the absence of an index is unnerving, as is the absence of summaries or conclusions in a few chapters and English language summaries for two German language chapters.

In general, the book is most valuable to cardiovascular physiologists, pharmacologists, and clinicians who are involved in research aspects of calcium antagonists. It complements a half-dozen books on the same subject which appeared in the 1980's.

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