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.

Reviewed by Gregory M. Shutske
Department of Chemical Research
Hoechst-Roussel Pharmaceuticals, Inc.
Somerville, NJ 08876

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.

Reviewed by Manuel Debono
Lilly Research Laboratories
Microbiological and Fermentation Products Division
Indianapolis, IN 46285

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.

Reviewed by Mark A. Johnson
The Upjohn Company
Kalamazoo, MI 49001

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-