

Additions and Corrections

Heteroannulation of Chromium Carbene Complexes. A Novel and Efficient Pyrrole Synthesis [*J. Am. Chem. Soc.* 1990, 112, 1251].

VERA DRAGISICH, CHRISTOPHER K. MURRAY, BENJAMIN P. WARNER, WILLIAM D. WULFF,* and DOMINIC C. YANG

Reference 11c should read: Aumann, R.; Althaus, S.; Krüger, C.; Betz, P. *Chem. Ber.* 1989, 122, 357.

A Direct Total Synthesis of (+)-Longifolene via an Intramolecular Diels–Alder Strategy [*J. Am. Chem. Soc.* 1990, 112, 4609–4610].

BO LEI and ALEX G. FALLIS*

Page 4610, line 15, left column: (–)-Methyl chloroformate should be (–)-menthyl chloroformate and (–)-methanol should be (–)-menthol.

A New Method for the Stereocontrolled Synthesis of Silyl Dienol Ethers Using (Naphthalene)chromium Tricarbonyl Catalyzed Isomerization [*J. Am. Chem. Soc.* 1990, 112, 4906].

SODEOKA, HIROYOSHI YAMADA, and MASAKATSU SHIBASAKI*

Page 4906: The introductory statement that stereocontrolled synthesis of silyl dienol ethers has never been reported is in error. The following papers report just such a process: Wan, C. S. K.; Weedon, A. C.; Wong, D. F. *J. Org. Chem.* 1986, 51, 3335. Krägeloh, K.; Simchen, G.; Schweiker, K. *Liebigs Ann. Chem.* 1985, 2352. Tominaga, Y.; Kamio, C.; Hosomi, A. *Chem. Lett.* 1989, 1761.

Proton-Coupled Electron-Transfer Reactions. Mechanisms of Two-Electron Reduction of *trans*-Dioxoruthenium(VI) to *trans*-Aquooxoruthenium(IV) and Disproportionation of *trans*-Dioxoruthenium(V) [*J. Am. Chem. Soc.* 1990, 112, 5176–5181].

CHI-MING CHE,* KEUNG LAU, TAI-CHU LAU, and CHUNG-KWONG POON

trans-Aquooxoruthenium(IV) incorrectly appeared as *trans*-aquooxoruthenium(VI) in the title.

Computer Software Reviews

SYSTAT/SYGRAPH 5.0. Systat, Inc.: 1800 Sherman Avenue, Evanston, Illinois. List price \$795.00. Government Services Administration Contract allows discount for this product in the U.S.A.

Systat/Sygraph 5.0 is a statistical and scientific graphics package designed and developed for the Macintosh computer.

The package contains four disks for use on the Mac II or SE/30 and requires a 68020, 68030, 68881, or 68882 coprocessor, and similar four disks for use on Mac SE or Plus. Four manuals, Getting Started, Data, Systat, and Sygraph, are also included. It requires a Macintosh with 4 Mb of RAM, a hard disk, and System 6.0 or higher in order to use the package. The programs are fully menu-driven with all work done through menus and dialog boxes.

At first use the program is quite intimidating, but this is primarily due to the comprehensive nature of the package. The list of statistics, graphics, and data management is comprehensive and impressive but too

exhaustive to present in this review. Suffice to say that it includes the simple to the sophisticated and will satisfy the beginning, intermediate, and advanced scientist in terms of his needs for reduction and presentation of his data. Particularly useful is the graphics program which exhibits such useful features as pseudo-3-D highlighting and exaggerated and perspective effects.

The package has been used in this laboratory for only six weeks and we have only used a fraction of the program's capabilities. The program will be a useful addition to an industrial or academic laboratory that requires a number of various (simple to the complex) statistical, graphics, and data management calculations and presentations. It is relatively straightforward to use due to the comprehensive and complete nature of the manuals.

Joseph Sneddon, *University of Lowell*

Book Reviews*

The Elements. Their Origin, Abundance, and Distribution. By P. A. Cox (University of Oxford). Oxford: Oxford and New York. 1989. viii + 207 pp. \$19.95. ISBN 0-19-855298-X.

This little book traces the origin of elements in the universe from its conception, a subject of enormous scope. The author does it in a highly interesting and readable fashion. A year of college chemistry would prepare a reader for this fascinating account. In the introduction, we are introduced to the formation of the galaxies and stars and their spectroscopic probe to determine the abundance of elements in them. A brief review of electronic structure of atoms, the periodic table, and the nuclear structure follows. In the succeeding chapters the building up of elements based on nuclear reactions in the stars and their scattering supernova explosions are dealt with with clarity. The formation of the solar system from condensation of the interstellar gas and dust clouds is presented. The abundance of elements in the earth is discussed by considering the mechanism of formation of its crust through solidification of the magma and tectonic processes. The formation of the principal types of rocks and their further modification by hydrothermal and chemical processes are described leading to a discussion of the distribution of elements in various

rocks, as well as in the oceans, and in the living systems. Finally, the isotopic distribution of the elements is explained on the basis of radioactive decay of elements and their isotopic fractionation. Each chapter is followed by a brief summary and book reference. An appendix tabulates pertinent data.

The book has a minimum of error or obscurity. I only wish there were a complete periodic table in the book, and the isotopes in the text had both mass numbers and atomic numbers. The author is to be congratulated for covering such a vast subject in a short volume without losing accuracy and clarity.

S. K. Dhar, *DePaul University*

Sonochemistry: Theory, Applications and Uses of Ultrasound in Chemistry. By T. J. Mason and J. P. Lorimer (Coventry Polytechnic). John Wiley & Sons: Chichester and New York. 1988. 252 pp. \$87.95. ISBN 0-7458-0240-0.

This book presents an introduction to various aspects of sonochemistry. Its publication follows by 2 years the First International Symposium on Sonochemistry held at Warwick University in 1986. The content of some of the chapters reflect the discussions at this Symposium.

*Unsigned book reviews are by the Book Review Editor.

About half the book is taken up by two chapters dealing with general principles of ultrasound and with the kinetics and mechanism of sonochemical reactions. There are also chapters on the applications of ultrasound for synthesis and in polymer chemistry, as well as one on equipment. These major chapters are written in a clear, readable style and are a suitable introduction to the concepts of sonochemistry.

Chapters entitled *The Uses of High Frequency Ultrasound in Chemistry and Miscellaneous Effects of Power Ultrasound* do not add much to the value of the book. The former discusses the use of ultrasound for the study of relaxation phenomena, a topic far removed from the book's major emphasis of the use of lower frequency, higher power ultrasound. The latter chapter gives very brief discussions of four topics that could either have been better integrated into other chapters (e.g. sonoluminescence in the mechanism chapter) or else been left out.

There are many figures in the book showing experimental results. These are often unnecessarily large, of poor quality, and of doubtful utility. This leaves the reader with the impression that more time should have been used in the planning and the preparation of the book.

In spite of these shortcomings, Mason and Lorimer's book fills a need in the sonochemical literature. A more thorough and advanced discussion can be found in another book also published in 1988, *Ultrasound: Its Chemical, Physical, and Biological Effects*, K. S. Suslick, Ed. These two books are the first substantial unified treatment of this area of knowledge since the translation (from Russian) of El'Piner's book became available in 1964. They show that sonochemistry has "come of age" outside the Soviet Union.

Peeter Kruus, *Carleton University*

Pharmaceutical Chemicals in Perspective. By B. G. Reuben and H. A. Wittcoff. John Wiley & Sons: New York and Chichester. 1989. xviii + 518 pp. \$69.95. ISBN 0-471-84363-6.

This book joins a growing number of texts attempting to provide a description of the syntheses, activities, and modes of action of currently used pharmaceuticals, but it has the added, and unique, feature of providing an overview of the pharmaceutical industry. This blending of industrial aspects with the more commonly encountered description of contemporary drugs has provided a most interesting treatment. Along with a wealth of information on usage of drugs in developed and undeveloped countries, patterns of illness and health care, and epidemiological facts, the book has provided a perspective not previously encountered in one volume.

A review of the topics treated should illustrate this. Following a brief history of the growth of the modern pharmaceutical industry and the chemotherapeutic revolution responsible for it, the characteristics of the pharmaceutical industry are discussed. This includes information on world pharmaceutical production and consumption, a description of the costly route to new drugs, and a discussion of the more prevalent diseases and health care in various settings.

A chapter on pharmacological aspects gives a brief account of drug-receptor theory, the nature of agonists and antagonists, and the more usually found topics of drug absorption, distribution, metabolism, bioavailability, and dosage forms. The discussion is brief but lucid, and it may be appropriate for the beginning reader in this field. In this chapter, I found the definition of "agonist" too narrow and the definition of "pharmacologist" too broad; the role of the medicinal chemist in synthesis and drug design is not mentioned, and the present discipline of biopharmaceutics is not generally inhabited by pharmacologists.

The remainder of the book is concerned with the various classes of drugs, on the basis of pharmacological action, and a description of the more important drugs in each class. The selection of drugs was made from the top-100 drugs of 1986, based on the most widely prescribed ethical drugs in the United States (plus the next 35). There is also a discussion of drugs outside the top-100, which includes those used for tropical diseases, the prostaglandins, and antiviral, anticancer, and orphan drugs. Although the treatment is familiar, including the syntheses and modes of action of the top-100 drugs, the discussion has the added aspect

of an industrial perspective in regard to drug discovery and problems.

The book concludes with a brief consideration of issues and problems facing the industry, including the profit motive. There are appendices on the following: The Most Widely Prescribed Drugs by Chemical Entity; International Classification of Diseases; and an annotated Bibliography and Notes. I found the book a most useful addition to the literature on contemporary drugs, it is very well written, and it should be of value to medicinal chemists, pharmacologists, and others involved with drug manufacture and research.

William O. Foye, *Massachusetts College of Pharmacy and Allied Health Sciences*

Volumes of Proceedings

Phase Transitions in Soft Condensed Matter. NATO ASI Series B: Physics Volume 211. Edited by Tormod Riste (Institute for Energy Technology) and David Sherrington (Imperial College of Science, Technology, and Medicine). Plenum: New York and London. 1989. ix + 391 pp. \$89.50. ISBN 0-306-43394-X.

The NATO Advanced Study Institute held in Norway in April 1989 produced the many typescript reports of original research in this volume, which has an index of 2.5 pages and an 8-page list of participants.

Trends in Drug Research. Pharmacochimistry Library 13. Edited by V. Claassen (Duphar, Weesp, The Netherlands). Elsevier: Amsterdam and Oxford. 1990. viii + 430 pp. \$143.50. ISBN 0-444-88614-1.

The seventh Noordwijkerhout-Camerino Symposium on the title subject took place in September 1989 and gave rise to this book of invited lectures, reproduced from camera-ready copy of good quality. The papers are about 6 to 25 pages in length and are mostly reviews, opening with "Receptors: from Dream to Reality", by E. J. Ariens. There is a good subject index.

Separation of Gases. Royal Society of Chemistry Special Publication No. 80. *Proceedings of the Fifth BOC Priestley Conference.* Edited by W. J. Thomas. Royal Society of Chemistry: Cambridge. 1990. viii + 382 pp. \$100.00. ISBN 0-85186-637-9.

The Fifth BOC Priestley Conference, held in Birmingham in 1989, gave rise to this softbound volume of typescript papers. They include the BOC Centenary Lecture, "Gas Separation Fundamentals", by G. G. Haselden, and the 1989 Priestley Lecture, "A Scientist's View of Religion", by the Reverend Dr. J. Polkinghorne. There is no index.

Metallized Plastics 1: Fundamental and Applied Aspects. Edited by K. L. Mittal (IBM US Technical Education) and J. R. Susko (IBM Corporation). Plenum: New York and London. 1989. viii + 284 pp. \$65.00. ISBN 0-306-433893.

The Electrochemical Society's Dielectrics and Insulation Division sponsored a symposium in Chicago in 1988 from which the typescript papers in this volume derive. They are grouped in three Parts: (I) Metallization Techniques and Properties of Metal Deposits; (II) Spectroscopic Investigation of Interfacial Interactions; and (III) Surface Modification and Adhesion Aspects. A section of short descriptions of the contributors and a 4-page subject index conclude the volume.

Geochemistry of Sulfur in Fossil Fuels. ACS Symposium Series 429. Edited by Wilson L. Orr (Mobil Research and Development Corporation) and Curt M. White (Pittsburgh Energy Technology Center). American Chemical Society: Washington, D.C. 1990. xi + 708 pp. \$109.95. ISBN 0-8412-1804-8.

A symposium sponsored by the ACS Division of Geochemistry, held in Dallas in 1989, is the source of this volume of 32 typescript papers. They are grouped under five headings: Overviews and General Topics, Studies of Depositional Environments, Characterization of Sulfur in Fossil Fuel Materials, Molecular Structure of Sulfur Compounds and their Geochemical Significance, and Special Studies. The references from all of the papers are grouped into one 50-page Bibliography. There are indexes of contributors and affiliations, as well as a thorough subject index.