

Page 417: For eq 2 substitute the following.

$$\frac{K^{1/2}}{2A_0} \ln \left| \frac{CK^{-1/2} - C + A_0}{CK^{-1/2} + C - A_0} \right| = k_+t \quad (2)$$

The calculations using eq 2 do not require correction.

Structures and Mass Spectral Behavior of the Inositol Cyclic Boronic Esters [*J. Am. Chem. Soc.*, **101**, 979 (1979)]. By JACEK WIECKO and WILLIAM R. SHERMAN,* Departments of Psychiatry and Biological Chemistry, Washington University School of Medicine, St. Louis, Missouri 63110.

On p 982, column 2, paragraph 2, line 7, the text should read: "In the spectra of these inositol butaneboronates the ratio of abundances of *m/e* 126 to *m/e* 139 is about 3:1, whereas in the spectra of the other inositol butaneboronates the ratio is 1:3 or greater."

Nonchair Conformations in Phosphorus-Containing Cyclohexanes. Crystal and Molecular Structures of *cis*- and *trans*-2-Phenyl-2-oxo-5-*tert*-butyl-1,3,2-dithiaphosphorinanes and

***cis*-2-Phenyl-5-*tert*-butyl-1,3,2-dithiaphosphorinane** [*J. Am. Chem. Soc.*, **101**, 1600 (1979)]. By ROBERT O. HUTCHINS,* BRUCE E. MARYANOFF,* MARIO J. CASTILLO, KARL D. HARGRAVE, and ANDREW T. MCPHAIL,* Department of Chemistry, Drexel University, Philadelphia, Pennsylvania 19104; Chemical Research Department, McNeil Laboratories, Fort Washington, Pennsylvania 19034; and Paul M. Gross Chemical Laboratory, Duke University, Durham, North Carolina 27706.

Structure **5** should read $R_1 = \text{Se}$, $R_2 = \text{NH-}t\text{-C}_4\text{H}_9$, $R_3 = \text{CH}_3$ (R_3 was inadvertently omitted).

A Pair-Specific Osmium Reagent for Polynucleotides [*J. Am. Chem. Soc.*, **101**, 2251 (1979)]. By H. FORD, C.-H. CHANG, and E. J. BEHRMAN,* Department of Biochemistry, The Ohio State University, Columbus, Ohio 43210.

Line 14: VIII, not VII.

Line 21: $(k_0 + k[L])$, not $(k_0 + k)[L]$.

Acknowledgments: Insert, "We are very grateful to John W. Fowble for the NMR spectra."

Book Reviews

Atmospheric Chemistry. By JULIAN HEICKLEN. Academic Press, New York. 1976. xiii + 406 pp. \$38.00.

The author has presented a systematic organization of the vast amount of new information provided during the recent surge of interest in atmospheric processes. The monograph provides a synthesis of these results, mainly those of the Climatic Impact Assessment Program, through 1974. The emphasis is on experimental results. The book discusses both the lower and upper atmosphere neutral and ion chemistry.

The first chapter is a presentation of the physical and chemical structure of the atmosphere. A review of the spectroscopy of the main atmospheric constituents is included. Chapter Two presents an analysis of the neutral chemistry of the atmosphere, beginning with the photochemistry of neutral oxygen and successively introducing more species as the chemical structure is developed in detail. The analysis is closely related to in situ observations and explained using simple steady-state arguments. A brief summary of the stratospheric effects of NO_x and the chlorofluorocarbons concludes this chapter. Chapter Three briefly presents the chemistry of the ionosphere. Chapter Four considers the major atmospheric pollutants: CO , CO_2 , NO_x , hydrocarbons, oxidants, halogenated compounds, sulfur compounds, and particulate matter. The concern of this chapter is not the chemistry of these species but rather to catalog their known sources and environmental insult. The detailed chemistry of hydrocarbon combustion, photochemical smog, ozone and singlet oxygen, SO_2 , and aerosols is presented in succeeding chapters. The final chapter presents an interesting analysis of attempts at controlling atmospheric pollutants, including a controversial suggestion for chemical control of photochemical smog through large-scale dispersion of a radical scavenger.

This book must be compared with "Chemistry of the Atmosphere", by McEwan and Phillips, published two years earlier, which covers much the same material, although the present book is slightly more current. However, the style is quite different. The present author, in attempting to present a vast amount of precise experimental detail, has had to sacrifice, to an extent, readability. The earlier book, although not as rich in detail, is easier to absorb.

Thomas J. O'Brien, *Texas Tech University*

Polyvinylidene Chloride. By RITCHIE A. WESSLING (Dow Chemical Co.). Gordon and Breach Science Publishers, New York. 1977. xii + 199 pp. \$25.00.

This well-organized book fills a real need for a review of significant

aspects of vinylidene chloride copolymers, best known in formulations of the Dow Chemical Company as Saran packaging films and coatings of low moisture permeability. Wessling not only has reviewed the extensive literature critically but has included historical, polymerization, properties, and applications data contributed by his named colleagues of Dow. The commercialization of Saran is credited to Ralph M. Wiley and coworkers at Midland in 1933 to 1940.

Wessling uses "polyvinylidene chloride", abbreviated PVDC, to include the VDC copolymers. In fact, there are relatively few data available on the unmodified homopolymers. The book includes excellent chapters on the monomer, copolymerization (including heterogeneous, graft and ionic), copolymer structure, transitions, and degradation, as well as a short chapter on application technology. The latter contains some disclosures about Saran copolymer compositions. For example, packaging films are lower in vinyl chloride units than commercial shrink films, and acrylonitrile is a comonomer along with alkyl acrylate or methacrylate for copolymers used as coatings of low moisture permeability.

Among the features of the book are photomicrographs of a wide variety of VDC copolymer morphologies obtained from different copolymerization systems and from different solvents. Areas needing further research are pointed out, for example, branching, morphology, and the conformations of the crystalline polymers.

Perhaps Wessling might have given more attention to problems of toxicity. The commercial VDC monomer may contain some vinyl chloride. VDC in air forms peroxides which decompose to phosgene and formaldehyde. Pyrolysis of Saran gives HCl gas as well as carbons having interesting electrical properties. The book gives many patent and other references as well as both subject and author indexes.

C. E. Schildknecht, *Gettysburg College*

Organometallic Polymers. Edited by CHARLES E. CARRAHER, JR. (Wright State University), JOHN E. SHEATS (Rider College), and CHARLES U. PITTMAN, JR. (University of Alabama). Academic Press, New York. 1978. v-xii + 353 pp. \$18.50.

Polymeric materials combining the thermal and oxidative stability of organic polymers and the interesting optical and electrochemical properties of metal complexes have much obvious potential: thus, the study of organometallic polymers is becoming an important area of research and development activity. This book consists of a series of papers (33) presented as part of a three-day Symposium on Organometallic Polymers held at the ACS National Meeting in New Orleans, March 1977. The book is divided into seven major sections dealing

with various aspects of the subject matter, including polymerization of transition metals containing vinyl monomers, polymer-bound catalysts, recent developments in group IV polymers (silicones and anti-fouling tin applications), and a section on the interesting polyphosphazenes. Volume contributors come from academic, industrial, and military laboratories in the U.S. and abroad, thus guaranteeing a sufficiently balanced view of the subject area and providing articles ranging from simple procedures for synthesis of organometallic monomers to studies using relatively new analytical techniques (photoacoustic spectroscopy) and polymer biocompatibility studies.

The book, which is well edited and produced, provides a valuable overview of the subject illustrating those areas of clear applicability and equally demonstrating the disappointing progress in others. In common with other such "symposium" books, this volume will be of limited shelf life, but given the surge of interest in the general area of organometallic chemistry, such symposia, and hence this volume, will hopefully stimulate many researchers in the field to enter the polymer arena. There are many interesting and important problems to be tackled and as yet a limited number of workers, this latter fact being evidenced by the number of recurring authors noted in the present volume.

Keith H. Pannell, *The University of Texas at El Paso*

Protons and Ions Involved in Fast Dynamic Phenomena. Edited by P. LASZLO (University of Liege). Elsevier Scientific Publishing Co., Amsterdam-Oxford-New York, 1978. xiv + 452 pp. \$69.50.

This book records the proceedings of the 30th international meeting of the Société de Chimie Physique, 28th November-2nd December 1977. The meeting was devoted to fast ionic processes in solution. Many of the most outstanding people in this field were present. Thirty-one papers are included, concerning a very wide range of topics from fundamental physicochemical studies to biological applications. Each of the papers is followed by a short discussion. All but one of the papers and most of the discussion are in English. Some of the papers appear to be descriptions of new work; others are largely reviews of material which has been published elsewhere.

Papers which particularly caught my eye included an exciting, though inconclusive report of the use of neutron scattering to probe proton dynamics in aqueous trifluoroacetic acid, by J. W. White, A. D. Taylor, and J. C. Lassegues; an NMR study of the nature of the hydrogen bonding interaction between triethylamine and phenolic acids in a variety of aprotic solvents, by M. Ilcyszyn, L. Le-Van, H. Ratajczak, and J. A. Ladali; and a paper on proton transport and charge separation across the mitochondrial membrane coupled to electron flow, by A. L. Lehninger. These give some idea of the scope of the volume. In general very little experimental detail is given. The papers focus on theory and results. They provide some fascinating reading.

Maurice M. Kreevoy, *University of Minnesota*

Synergetics. An Introduction. Second Enlarged Edition. By H. HAKEN (Universität Stuttgart). Springer-Verlag, Berlin-Heidelberg-New York, 1978. xii + 355 pp. \$36.30.

Self-organization in nonequilibrium systems has become the focus of an exciting and rapidly developing area of research. Self-organization is a widespread phenomenon, observed in laser physics to biology, and an important task is defining common features of very different systems. Professor Haken does an admirable job of developing analogies between a variety of systems. Convenient tables allow comparison of variables for different systems undergoing bifurcation. Interesting mathematical similarities between some equilibrium and nonequilibrium systems are also presented.

Principles and techniques currently utilized in the field are developed in the first two-thirds of the book. A dual approach is presented emphasizing the interplay between stochastic and deterministic "forces". The following chapter headings appear in this section: Goal, Probability, Information, Chance, Necessity, Chance and Necessity, and Self-Organization. Various systems are analyzed in the last third of the book with the chapter headings: Physical Systems, Chemical and Biochemical Systems, Applications to Biology, Sociology: A Stochastic Model for the Formation of Public Opinion, Chaos, and Some Historical Remarks and Outlook.

A significant difference between the first and second editions is the added chapter on "chaos", the fascinating phenomenon of random

variable behavior arising from completely deterministic equations. Although the discussion is far from exhaustive, it serves as an excellent introduction. In particular, the behavior arising from the Lorenz equations is explained in an intuitive and understandable manner. Whether truly endogenous chaos exists in actual chemical systems remains a matter of controversy in the literature. The second edition also includes extended treatments on morphogenesis and ultrashort laser pulses.

The book contains little discussion of real chemical systems analyzed in terms of their reaction mechanisms. However, any chemist interested in systems that may exhibit self-organization will find this book valuable. The interdisciplinary approach proves effective for developing a deeper understanding of any particular system.

Kenneth Showalter, *West Virginia University*

Topics in Dietary Fiber Research. Edited by GENE A. SPILLER (Syntex Research, Palo Alto, Calif.). Plenum Press, New York and London, 1978. x + 223 pp. \$34.50.

The importance of plant fiber in human nutrition is now recognized by a growing number of physicians and nutritionists. This collection of papers is a valuable addition to the literature on the subject. Topics covered include analysis of fibers and the role of fibers in digestion and health, paleodietetics, and laboratory procedures for fiber analysis.

M. C. W. Smith, *University of Michigan*

Mycotoxic Fungi, Mycotoxins, Mycotoxicoses. An Encyclopedic Handbook. Volume 3. Edited by THOMAS D. WYLLIE and LAWRENCE G. MOREHOUSE (University of Missouri-Columbia). Marcel Dekker, Inc., New York and Basel, 1978. xxiii + 202 pp. \$45.00.

Public health workers, food technologists, and physicians will appreciate this comprehensive treatment of the problems associated with toxin producing fungi. Pathology, epidemiology, and preventative measures are discussed.

M. C. W. Smith, *University of Michigan*

The Stereo Rubbers. Edited by WILLIAM M. SALTMAN (The Goodyear Tire & Rubber Co.). John Wiley and Sons, New York, N.Y., 1977. x + 897 pp. \$49.50.

The thirteen chapters in this volume provide a broad view of the science and technology of the synthetic rubber industry. These chapters are each presented by one or more internationally recognized expert on the topics covered. Considering the format and large number of authors, the contributions complement each other very well. The first half treats the chemistry of catalysts and polymerization of synthetic rubbers made in solution. The second part of the book is devoted to the chemical and physical properties of these rubbers.

The brief introduction by the editor provides a review of the synthetic rubber industry including some of the history, economics, raw materials, technology, and end uses. The next six chapters treat the catalyst and polymerization chemistry of synthetic rubbers made with coordination and anionic catalysts. These chapters cover the polydienes such as polybutadiene and polyisoprene, the olefin copolymers like the ethylene-propylene rubbers, and even rubbers produced by the more recently developed ring opening polymerization of cycloolefins. They discuss not only the types of catalysts used and their reaction schemes, but also the behavior of a wide variety of monomers and the structural and physical properties of rubbers produced therefrom.

The last six chapters of the book cover network formation, aging and degradation, physical properties, viscoelastic behavior, rupture of elastomers, and behavior characteristics of rubbers in tires such as friction, abrasion, and fatigue failure. Many of these chapters treat not only the solution rubbers but also consider concepts applicable broadly to all rubbers. While the science of rubber is a rapidly growing field and sometimes involves controversial topics, these chapters represent concise references and useful summaries on many important features of the behavior of rubbery materials.

The various chapters are supplied with generous lists of references covering the extensive literature base for the topics discussed. In addition to the general index at the end of the volume, each chapter is headed by a topical outline of its contents with page references, thus allowing rapid access to information of interest to the reader. The comprehensive treatment of the newer synthetic rubbers should make this book valuable to scientists and technologists both inside and outside the rubber industry.

D. A. Meyer, *The General Tire & Rubber Company*