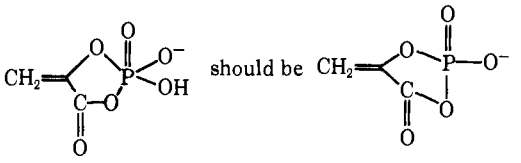
Mechanisms of Hydrolysis of Phosphate Ester Derivatives of Phosphoenolpyruvic Acid [*J. Amer. Chem. Soc.*, **93,** 2522 (1971)]. By KEITH J. SCHRAY and STEPHEN J. BENKOVIC, Department of Chemistry, The Pennsylvania State University, University Park, Pennsylvania 16802.

In Scheme III, page 2529, the structure



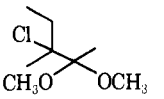
should be

Photochemical Transformations of Small Ring Carbonyl Compounds. XXX. Electron Transfer in the Photochemistry of Azetidinyl Ketones [*J. Amer. Chem. Soc.*, **93,** 2928 (1971)]. By ALBERT PADWA, FRED ALBRECHT, PIARRA SINGH, and ELIGIO VEGA, Department of Chemistry, State University of New York at Buffalo, Buffalo, New York 14214.

On page 2932, the intermediate in Scheme II should read $CH_2{=}C{=}N{-}$*tert*-Bu rather than $CH_2{=}N{-}$*tert*-Bu.

The Synthesis of the Optically Active Form of the C-18 *Cecropia* Juvenile Hormone [*J. Amer. Chem. Soc.*, **93,** 3765 (1971)]. By PETER LOEW and WILLIAM S. JOHNSON, Department of Chemistry, Stanford University, Stanford, California 94305.

Formula Ia,b is incorrectly represented and should appear as shown below.



The Chemistry of Atomic Carbon. Desulfurization [*J. Amer. Chem. Soc.*, **93,** 3807 (1971)]. By K. J. KLABUNDE and P. S. SKELL, Department of Chemistry, The Pennsylvania State University, University Park, Pennsylvania 16802

On page 3807, column 1, in the next to last line it should read: (25% based on C_2 content).

On page 3807, column 2, in the last equation the structure above 14% should be *trans*-2-butene.

Reference 7 should be: J. H. Plonka and P. S. Skell, *Chem Commun.*, 1108 (1970).

*Book Reviews**

Statistical Mechanics at the Turn of the Decade. Edited by E. G. D. COHEN (The Rockefeller University). Marcel Dekker, Inc., New York, N. Y. 1971. viii + 235 pp. $12.50.

A conference, having the same title as the book, was held in 1969 to commemorate the seventieth birthday of G. E. Uhlenbeck. Eight invited lectures presented at that conference are published here. The contributors, and their topics, are (1) A. S. Wightman, "Statistical Mechanics and Ergodic Theory: An Expository Lecture"; (2) E. G. D. Cohen, "The Generalization of the Boltzmann Equation to Higher Densities"; (3) D. Ruelle, "The C*-Algebra Approach to Statistical Mechanics"; (4) C. Domb, "The Curie Point"; (5) Freeman J. Dyson, "Phase Transitions in Ferromagnets"; (6) A. J. F. Siegert, "From the Mean Field Approximation to the Method of Random Fields"; (7) Paul C. Martin, "A Review of Superfluids and Superconductors"; and (8) P. C. Hohenberg, "Dynamic Phenomena Near a Critical Point." The general tone is highly mathematical, but some contributors have made a valiant effort to explain in words what is going on. Wightman's lecture on ergodic theory is particularly good in this respect. The chapter that will probably be of greatest interest to a physical chemist is Domb's survey of the Curie point. This is an excellent summary of the current status of the theory of phase transitions in lattice systems.

R. Zwanzig, *University of Maryland*

Electroanalytical Chemistry. Volume 5. Edited by A. J. BARD (University of Texas). Marcel Dekker, Inc., New York, N. Y. 1971. ix + 386 pp. $28.50.

This fifth volume of the series does fulfill the purpose stated for the series in that it provides authoritative reviews in the field of electroanalytical chemistry. Reviewed in this volume are hydrated electrons, metal deposition, and chemical reactions in polarography.

Hydrated electrons are introduced by the authors by use of an "Alice in Wonderland" paraphrase. This paraphrase serves well to convey the curious and transient nature of the hydrated electron. The authors refer the reader to six other reviews in the field which are more specialized than the more general review in this volume. The material is presented in a clear and ordered fashion as postulate, proof, and models. This section is an excellent first reading for persons interested in the recent developments in this area. The deposition of metals section is a loosely ordered assemblage of physical models for nucleation and metal deposit growth. The author has overemphasized theory and left out references to experiment, rendering this review section to be of interest to only a restricted number of persons. The review of chemical reactions in polarography is written in such a clear and logical fashion that this section could be used as a text for a special topics course in colleges and universities. The author not only treats the chemical reactions in polarography mathematically and compares theoretical predictions with experimental results, but also discusses the mathematical tools employed in problem solving throughout the section and in a mathematical appendix.

W. G. Sayre, *Slippery Rock State College*

Military and Civilian Pyrotechnics. By H. ELLERN. Chemical Publishing Co., Inc., New York, N. Y. 1968. xii + 464 pp. $15.00.

This book emphasizes the practice rather than the chemistry of pyrotechnics; it contains enough inorganic equations to illustrate the important phenomena, but the structure, properties, and production of organic explosives lie outside its intended scope. Various chapters are devoted to methods of production of light, noise, heat and fire, smoke, etc. The approach is suited to the nonspecialist, and both fundamental principles and technical concepts and terms are explained as they are met, and in a useful glossary. A 40-page formulary of pyrotechnics is included. Apart from its general interest, this section alone can be very helpful to chemistry professors, who are frequently called on as informal consultants for

* Unsigned book reviews are by the Book Reviews Editor.

student's enterprises in dramatics, parade floats, band performances, etc. A fine bibliography (663 references) and a good index complete the work.

Encyclopedia of Industrial Chemical Analysis. Volume 12. Edited by F. D. SNELL and L. S. ETTRE. Wiley-Interscience, New York, N. Y. 1971. xiv + 618 pp. $45.00 separately; $35.00 by subscription.

This volume consists of twenty chapters by different authors on subjects ranging from Dyes to Flour, including EDTA and Related Compounds, Elastomers, Explosives, and Fats. As usual, much of each chapter consists of orienting background about the particular class of substance, and the analytical chemistry, which includes many sample procedures, is sometimes the minor part. The bibliographies are substantial, and in most cases are subdivided into General and Specific References.

Pollution: The World Crisis. By L. HAMBLIN. Barnes & Noble, Inc., New York, N. Y. 1971. viii + 168 pp. $4.00.

This is a highly popularized, exhortative presentation of the subject, compiled entirely from secondary sources. It is nontechnical, and there are no specific reference, but it has a brief glossary containing such useful entries as "carnivore: animal-eating animal," and a simple index. It might be useful in libraries of primary or secondary schools.

Chemistry and Physics of Carbon. By P. L. WALKER, JR. (Pennsylvania State University). Marcel Dekker, Inc., New York, N. Y. 1971. xii + 403 pp. $29.50.

Volume 7 of this monograph series is the most comprehensive compilation of past achievements in research on the thermal reactions leading from organic compounds to graphite. More than 300 pages and 550 references are devoted to this important topic. The mechanisms and kinetics of the pyrolysis of many organic compounds into solid carbon are presented in detail. The subsequent thermal conversion of disordered carbons to graphite is covered thoroughly by presentation of the generally accepted mechanisms for this solid-state reaction and the attendant kinetics.

Although conflicting data are presented, the authors have managed to present summaries which give a consistent explanation.

The remainder of Volume 7 adds somewhat more to the vast literature published on the electronic properties of solid carbon.

J. C. Bowman, *Union Carbide Corporation*

Bacteriophage Biochemistry. By CHRISTOPHER K. MATHEWS (University of Arizona College of Medicine). Van Nostrand Reinhold Co., ACS Monograph Series, New York, N. Y. 1971. viii + 373 pp. $19.95.

Dr. Mathews has undertaken the task of writing a review of the field of phage biosynthesis, and he has succeeded in writing a book which will have appeal for honors undergraduates as well as professional phage workers. Although this book is written primarily from a "biochemical" viewpoint, the importance of genetical and biological aspects of phage development are not overlooked. And although half of the book is devoted to the T-even phages, the object of Dr. Mathews' own research interests and the prime target for biochemists over the past decade or two, he has chapters devoted to other T-even phages, temperate phages, subtilus phages, single-stranded DNA phages, and RNA phages. These chapters on the other phages could well have been written by researchers working with each phage.

There are two aspects of the book which make it particularly valuable and enjoyable. First, this book avoids the redundancy which is commonly found in multi-author works in which the basic ideas, methods, and conclusions are reiterated in each chapter. For example, Dr. Mathews is able to present a discussion of the ideas behind the use of conditional lethal mutations using the T-even phages as an example, and then to use this discussion to describe conditional lethal mutations in other phage systems.

Second, Dr. Mathews writes well, with a sense of the historical development of the field of phage biochemistry, and with an ability to describe (and critically evaluate) the experimental basis of many of the ideas now current in phage development. Although this book is not a complete thesis on all that has been done with phage, it is recommended as an excellent review of the biochemistry of bacteriophage development.

Stephen Cooper, *The University of Michigan*

The Aldrich Library of Infrared Spectra. By C. J. POUCHERT (Aldrich Chemical Co., Inc.). Aldrich Chemical Co., Inc., Milwaukee, Wis. 1971. xxiii + 1203 pp. $44.50.

The title suggests that a single book can be a library, and it is close to the truth in this instance. On 1111 large pages are reproduced 8000 infrared spectra, each $4\frac{1}{2}$ inches long, over the range 625 to 4000 cm^{-1}. The value of such a collection depends heavily on the ease of finding what one is interested in, a fact of which the compiler has obviously been appreciative. The spectra are arranged in fifty sections, according to functional type, and within each section there is a logical sub-ordering, so that one may consult the table of contents and quickly find, for example, under "Non-aromatic Carboxylic Acids," the entry "Halogenated Open-Chain." Alternatively, there is an empirical formula index.

A valuable feature is the fact that there are several examples of each structural type, so that one may browse through a rich variety so as to become directly acquainted with the variations that can be found among compounds of a common type. The collection is thus of value for both reference and self-teaching.

The spectra themselves are reasonably clear, and are calibrated in both wavelength and wavenumber. Some chemists, however, will regret that they were recorded on an instrument linear in wavelength rather than frequency, but one should not carp when the spectra cost little more than two for a penny!

The NMR of Polymers. By I. YA. SLONIM (Plastics Research Institute, Moscow) and A. N. LYUBIMOV (Radiospectroscopy Design Section, Institute of Organic Chemistry, Moscow). Translated by C. N. and T. I. TURTON. Plenum Press, New York, N. Y. 1970. x + 365 pp. $19.50.

This is a practical introduction into the application of nmr to polymers. It is written in two parts. Part I is a short introduction to the principles and practice of nmr for the reader with little previous knowledge of this field. The presentation is based on matrix representation of the Hamiltonian, and the necessary mathematics is quickly defined and introduced. This part of the presentation may be too condensed for use by the student exposed to nmr for the first time.

Part II consists of discussions of specific applications in the polymer field, including determination of structure (sequence, tacticity), characterization of molecular motion, chemical processes, and quantitative analysis. Abundant use of illustrative examples and good literature coverage are strong points. Theory is applied rather qualitatively, but the reader should come away with a good intuitive feeling for the possibilities of the method. The bibliography through 1966, indexed by subject, looks extremely useful. This book is a good one for polymer chemists wishing to become familiar with nmr applications and is a handy reference for scientists already working in the field.

Aksel A. Bothner-By, *Carnegie-Mellon University*

Ab initio Molecular Orbital Calculations for Chemists. By W. G. RICHARDS and J. A. HORSLEY. Oxford University Press, London. 1970. 102 pp. $4.00, paper.

This small volume is in the series of Oxford Science Research Papers. The authors survey the techniques of purely theoretical electronic energy calculations in molecules. The emphasis is on self-consistent field linear-combination-of-atomic-orbital molecular orbital calculations (SCF–LCAO–MO). The book is aimed at the practical chemist who may wish to use available computer programs without being bothered by such details as integral evaluation, for example. Derivations are generally omitted.

Rules are presented for obtaining matrix elements between Slater determinants, for projecting pure spin states in a configuration interaction problem, and for the use of group theory in polyatomic molecules. Currently important topics are discussed such as contracted Gaussian orbitals, open-shell calculations, the correlation energy problem, multiconfiguration SCF, and the relationship between *ab initio* and semiempirical MO calculations. Examples are given for the setting up of SCF calculations for BH, CO, N_2, H_2O, NH_3, and MF_6, but results are omitted.

The book may be used by students after an introductory course in elementary quantum mechanics. It can also be helpful to one working in the field of *ab initio* calculations, but it cannot take the place of a thorough treatise on the subject.

Arthur A. Frost, *Northwestern University*