

Book Reviews

Modern Aspects of Electrochemistry. No. 8. Edited by J. O'M. BOCKRIS (Flinders University) and B. E. CONWAY (University of Ottawa). Plenum Press, New York, N. Y. 1972. x + 347 pp. \$25.00.

This volume of the oldest review series in electrochemistry surveys a number of topics. Chapter 1 by G. Blyholder reviews available quantum mechanical treatments of adsorbed species on metals. This overview of the field will be difficult going for those not well-acquainted with the methods of quantum mechanics. J. Wojtowicz discusses, in Chapter 2, oscillatory behavior in electrochemical systems. He describes most of the oscillating systems observed in electrochemical studies (but omits mention of my own favorite—hydrazine oxidation on platinum) mainly from the viewpoint of nonlinear differential equations and kinetic models. While he omits mention of irreversible thermodynamic treatments of systems of this kind (*i.e.*, the Prigogine-Glansdorff-Sanfeld approach), the chapter is a useful and clear survey of this complicated field. In Chapter 3, A. A. Humfray covers both methods and mechanisms in electroorganic chemistry. His treatment is surprisingly successful, considering the limited space available, and his emphasis on the use of electroanalytical methods in the study of reaction mechanisms is particularly refreshing. More detailed discussions in this same area have just appeared in the monographs of Baizer and Fry. L. J. Mandel's chapter, "Electrochemical Processes at Biological Interfaces," provides a useful guide to the literature in this field, but it is really too brief (33 pp) to give a complete discussion of any phase of this field. Finally Chapter 5 by A. T. Kuhn covers electrochemical methods for treatment of effluents in pollution control. While the chapter is rather engineering-oriented and gives many rather obscure references to more complete treatments, it is a gold mine of information in this area, particularly for the removal of metals from solution.

In general, this volume, like its predecessors in this series, is successful in making available a large amount of information to the chemical community in a concise and predigested form; both authors and editors should be praised for their efforts.

Allen J. Bard, *The University of Texas*

Enzymes: Physical Principles. By H. GUTFREUND (University of Bristol). Wiley-Interscience, New York, N. Y. 1972. xii + 242 pp. \$16.50.

This book presents a basic thermodynamic and kinetic description of biochemical reactions at an introductory level. The first half of the book is devoted to equilibrium thermodynamics which includes a brief discussion of the structure of water, ligand binding by enzymes, and transport processes. Both steady-state and transient enzyme kinetics are treated in the later half. Although organic reaction mechanisms are neglected, as was the expressed intent of the author, the value of the book is derived from treatment of the interaction between binding sites of enzymes and application of rapid reaction techniques for detection of intermediates in enzymic reactions. Oxygen binding to hemoglobin is presented as an example of homotropic interaction between binding sites. Experiments using both stopped-flow and relaxation methods to determine reaction sequences of NAD dependent enzymes are described and the mechanistic information to be derived from such experiments presented in ample detail.

Development of topics follows a logical progression from simple to complex reactions. Derivations of equations are easily followed. An upper division or first year graduate student in either a chemical or biological discipline will find this to be an extremely readable and understandable text.

John P. Fox, *Virginia Polytechnic Institute and State University*

Liquid Scintillation Counting. Volume II. Edited by M. A. CROOK. (Polytechnic of the South Bank), P. JOHNSON (Wellcome Research Laboratories), and B. SCALES (Pharmaceuticals Division ICI Ltd.). Heyden & Son Ltd., London. 1972. ix + 324 pp. \$21.50

Volume II is a collection of papers presented at the Symposium on Liquid Scintillation Counting of the Society for Analytical

Chemistry in September 1971. (Volume I is an account of a preceding symposium in 1970.)

Biomedical applications are emphasized in Volume II. A wide variety of theoretical and technical problems are considered: characteristics of solvents and solutes in liquid scintillators; color quenching; a history of modern liquid counters including details of several new instruments; problems of unwanted luminescence; estimations of ATP, ADP, and NADP; carbon-14 counting for radioactive dating; measurement of plutonium-239 and -241 in urine; counting carbon-14 and phosphorus-32 in labeled samples of polluted water; sample preparation of organic materials in biological systems such as digoxin assay in human serum or tritium-labeled thymidine from mouse tumors. The concluding seven chapters discuss Liquid Scintillator Data Processing.

The text should be of particular interest to any analytical chemist who has encountered technical obstacles in liquid scintillation analyses. To quote B. Scales, "Much more care is required in liquid scintillation counting than many workers are prepared to admit."

Virginia Deno, *Mountainview Hospital*

Absorption of Light and Ultraviolet Radiation. Fluorescence and Phosphorescence Emission. By G. H. SCHENK (Wayne State University). Allyn and Bacon, Inc., Boston, Mass. 1973. xii + 312 pp. \$6.50.

The author of this book takes a practical and integrated approach to teaching about absorption and emission of radiation by inorganic as well as organic species. He seems to be writing for seniors or graduate students though parts of the book could be supplementary to general chemistry. The book contains a large number of qualitative, as well as quantitative, analytical experiments many of which could be used as vivid demonstrations. The emphasis on the use of the eyes, augmented at times by instrumentation, to investigate the phenomena is very welcome at a time when we are so busy teaching theory, even in our basic courses, that many of our students never experience the facts on which theory must ultimately rest. Theory is not neglected, however, and many problems, some of them mathematical, are also included with some answers being given in an appendix. The book is further enlivened by discussions of medical, criminological, and environmental applications of the techniques. A fairly detailed discussion of instrumentation is also useful.

The first chapter was rather distracting because different units are used for familiar quantities without definition. For example, I still have not figured out whether the speed of light given on p 1 as $3.0 \times 10^{-8} \text{ m S}^{-1}$ is a misprint or a system of units that I do not know. Planck's constant is given with different units on different pages, and both s and sec seem to stand for seconds. Other minor annoyances are an inconsistency in presenting spectra, and some diagrams which have been simplified to the point of not being very helpful. In general, though, the book is well written and seems to be relatively free of typographical errors.

Seyhan N. Ege, *University of Michigan*

Photochemistry. Volume IV. By D. BRYCE-SMITH (The University, Reading). The Chemical Society, London. 1973. vi + 979 pp. £16.00.

The latest volume of the Specialist Periodical Reports on Photochemistry maintains the high standards of the preceding volumes. Volume IV organizes the literature published between July 1971 and June 1972 into four broad categories: Physical Aspects of Photochemistry, Inorganic Photochemistry, Organic Aspects of Photochemistry and Polymer Photochemistry. The Reporters who wrote the individual sections of this volume have done an excellent job of reviewing the literature completely without too much repetition, and yet with enough that reactions which reasonably fall in more than one category are found both places. They have also referred back to earlier literature enough to create a sense of continuity. An excellent table of contents and an author index help to make up for the lack of a subject index.

Seyhan N. Ege, *University of Michigan*