

Book Reviews

Fluorescence and Phosphorescence Analysis. Principles and Applications. Edited by DAVID M. HERCULES, Department of Chemistry and Laboratory for Nuclear Science, Massachusetts Institute of Technology, Cambridge, Mass. Interscience Publishers, John Wiley and Sons, Inc., 605 Third Ave., New York, N. Y. 1966. xiii + 258 pp. 16 × 23 cm. \$12.00.

This book consists of eight chapters, each written by a different author or set of authors. Some of the chapters are good, some are interesting, and a few are of indifferent quality. In view of this it seems best to review each chapter separately.

Chapter 1. "Theory of Luminescence Processes." The stated aim of this chapter is pedagogic, and in this regard it is reasonably successful. However, the level of presentation is sophomoric, and the discussion is marred by some errors. For example, the discussion of absorption intensity of pages 11-13, particularly that concerning application of Eq. 1-2, is in error.

Chapter 2. "Luminescence Instrumentation and Experimental Details." This chapter is informative but insufficiently critical.

Chapter 3. "Fluorescence and Phosphorescence of Organic Molecules." This is a well-informed, well-written article. The discussion relating to Figure 3-8 is erroneous, but it is not the authors who are culpable in this regard (see F. J. Smith and S. P. McGlynn, *J. Chem. Phys.*, **42**, 4308 (1965)). We note that this chapter contains chemical equations, kinetic equations, and thermodynamic equations—but no quantum mechanical expressions whatsoever. It is odd that so palpably quantum mechanical a phenomenon as luminescence should be discussed in a quantum mechanical vacuum, so to speak. We assume that this paucity of quantum mechanical discussion implies a judgment by the authors concerning their audience and we are tempted to paraphrase: "When the good Lord created this earth, he did not forget his quantum mechanics in order to make the average (insert appropriate type of chemist) happy."

Chapter 4. "Fluorescence of Metal Chelates." There is much more known about this area of endeavor than the article indicates.

Chapter 5. "Analytical Uses of Phosphorescence." This is a good chapter. The author discusses his subject lucidly and critically.

Chapter 6. "Chemiluminescence and Other Luminescence Phenomena." This is a thumb-nail sketch of phenomenology.

Chapter 7. "Fluorescence in Biomedical Research." This chapter is concerned with only two aspects of the utility of fluorimetry to biological research: (i) "intercalation" of dye molecules in nucleic acids, a negative view being taken; and (ii) the solubilization of aromatic hydrocarbons in aqueous media by purines and nucleic acids. The observed effects are attributed to formation of "polarization complexes," but it is not clear just what a "polarization complex" is.

Chapter 8. "Polarization of Fluorescence of Solutions." This is an excellent discussion concerned with idealized notions of fluorescence polarization and depolarization phenomena.

This collection of essays suffers from the usual defects of edited works: it is too amorphous, slightly repetitious, and insufficiently advanced. Since the price is quite high we cannot recommend the book to the average molecular spectroscopist or physical chemist. However, for the analyst interested in luminescence measurements, it probably does provide a useful summation of present knowledge.

S. P. McGlynn

Coates Chemical Laboratories, Louisiana State University
Baton Rouge, Louisiana 70803

BOOKS RECEIVED; October 1966

ENDRE A. BALAZS and ROGER W. JEANLOZ, Editors. "The Amino Sugars. The Chemistry and Biology of Compounds Containing Amino Sugars." Volume IIB. "Metabolism and Interactions." Academic Press Inc., 111 Fifth Ave., New York, N. Y. 1966. 516 pp. \$22.00.

DONALD J. CRAM. "Fundamentals of Carbanion Chemistry." Academic Press Inc., 111 Fifth Ave., New York, N. Y. 1965. 289 pp. \$9.50.

GERHART JANDER, HANS SPANAU, and C. C. ADDISON, Editors. "Chemistry in Nonaqueous Ionizing Solvents." Volume I. "Chemistry in Anhydrous Liquid Ammonia." Part I. "Anorganische und Allgemeine Chemie in Flüssigem Ammoniak." Interscience Publishers, John Wiley and Sons, Inc., 605 Third Ave., New York, N. Y. 1966. 561 pp. \$27.50.

ROBERT O. KAN. "Organic Photochemistry." McGraw-Hill Book Co., Inc., 330 West 42nd St., New York, N. Y. 1966. 293 pp. \$12.50.

LIONEL SALEM. "The Molecular Orbital Theory of Conjugated Systems." W. A. Benjamin, Inc., 1 Park Ave., New York, N. Y. 1966. 576 pp. \$19.75.

J. LEYDEN WEBB. "Enzyme and Metabolic Inhibitors." Volume II. "Malonate, Analogs, Dehydroacetate, Sulfhydryl Reagents, *o*-Iodosobenzoate, Mercurials." Academic Press Inc., 111 Fifth Ave., New York, N. Y. 1966. 1237 pp. \$34.00.

J. LEYDEN WEBB. "Enzyme and Metabolic Inhibitors." Volume III. "Iodoacetate, Maleate, N-Ethylmaleimide, Alloxan, Quinones, Arsenicals." Academic Press Inc., 111 Fifth Ave., New York, N. Y. 1966. 1028 pp. \$32.00.