Book Reviews

Biochemistry of Quinones. Edited by R. A. MORTON, Biochemistry Department, Johnston Laboratories, University of Liverpool, England. Academic Press Inc., Ltd., Berkeley Square, London, W1, England. 1965. xvii + 585 pp. 16 × 24 cm. $18.00.

The "Biochemistry of Quinones," edited by R. A. Morton, was published by Academic Press in 1965, and consists of fifteen chapters. Although quinones are covered broadly, the book deals significantly with compounds of the ubiquinone, vitamin K, and vitamin E groups. Such compounds include quinones, chromenols, chromanols, tocopherylquinones, and plastoquinones. The editor considers the range of chapters under the title of this book as illustrating the unification in science which appears to be taking place. The scope of this book will provide investigators of quinones with a helpful broad background for their research.

R. A. Morton, besides his contribution as editor, provided two chapters: (1) "Introductory Account of Quinones;" (2) "Spectroscopy of Quinones and Related Substances. I. Ultraviolet Absorption Spectra." J. F. Pennock added another chapter on spectra: (3) "Spectroscopy of Quinones and Related Substances. II. Infrared Absorption Spectra and Nuclear Magnetic Resonance Spectra."

Chapters containing comprehensive yet concise summaries of substantial organic chemical information include: (4) "Chemistry of Isoprenoid Quinones," by A. Langemann and O. Isler; (5) "Plastoquinone," by E. R. Redfearn; (8) "Quinones Related to Vitamin E," by J. Green and D. McHale; (6) "Distribution of Ubiquinones," by F. L. Crane.

The rapidly advancing and current field on biosynthesis of quinones was surveyed by J. Glover in Chapter 7, "Biosynthesis of Biologically Active Quinones and Related Compounds."

Appraisal of the biochemical aspects of "The Role of Coenzyme Q in Electron Transfer," by D. E. Green and G. P. Brierley, constituted Chapter 12. Britton Chance has summarized data which bear on the function of ubiquinone in Chapter 14 entitled "Steady State and Kinetic Responses of Ubiquinone in Phosphorylating Mitochondria." Arnold F. Brodie has reported broadly on "The Role of Naphthoquinones in Oxidative Metabolism," particularly in regard to microorganisms for Chapter 11. Daniel I. Arnon and F. L. Crane have effectively summarized in Chapter 13 the "Role of Quinones in Photosynthetic Reactions."

E. A. Doisy, Jr., and John T. Matschiner have covered recent advances on the chemistry of vitamin K and related research on the mechanisms of blood coagulation in Chapter 10 entitled "Nutritional Aspects with Special Reference to Hypoprothrombinemia and Vitamin K." F. W. Hemming and J. F. Pennock have examined the relationships between ubiquinone and the fat-soluble, water-soluble, and other factors in Chapter 9 entitled "Vitamins and Ubiquinone Status in Animals." Chapter 15 on "Radiosensitization of Cells by a Derivative of 2-Methyl-1,4-naphthoquinone," by J. S. Mitchell and D. H. Marrian, is a review based largely on research at Cambridge since 1946 on this subject.

This book is timely, useful, and important in a field which is generating an ever increasing amount of new information concerning the biochemical processes of electron transfer and coupled oxidative phosphorylation.

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Macromolecules in Solution. By HERBERT MORAWETZ, Polytechnic Institute of Brooklyn, Brooklyn, N. Y. Interscience Publishers, John Wiley and Sons, Inc., 605 Third Ave., New York, N. Y. 1965. xvi + 495 pp. 16 × 23.5 cm. $16.50.

This volume describes virtually all the properties of macromolecular solutions and the wide variety of experimental techniques that are utilized to describe such solutions. The major chapter headings, which give a good indication of the subject matter discussed, are: The Solubility of Macromolecules; Configuration and Conformation of Chain Molecules; Equilibrium Properties of Dilute Solutions; Spectroscopy, Optical Activity and the Scattering of Light and X-ray; Frictional Properties of Dissolved Macromolecules; Polyelectrolytes; Molecular Association; The Reactivity of Macromolecular Solutions. The subject matter contained in the last two chapters mentioned above is rather specialized and important and cannot be easily found in review form elsewhere.

In the Preface, the author indicates that the motivation for the book was based on developments which occurred within the last decade which he considers to be revolutionary. These are the synthesis of stereoregular polymers and the discovery that ordered conformations can exist in dilute solution particularly among polymers of biological interest. From this theme a portion of the text is directed along the lines of attempting to remove any artificial barriers that might exist in the study and elucidation of various kinds of macromolecules. This is accomplished mainly by citing the different experimental techniques and results that are common to all such molecules. One of the major theoretical connections, between synthetic polymers, polypeptides, proteins, and nucleic acids, which is the matrix formulation of the chain partition function, is completely ignored. This powerful method allows for a uniform, self-consistent description of the chain conformation and its average properties. Moreover, the helix–coil transition develops naturally from this formulation.

To assess this book it is necessary to develop a feeling for whom it was intended. To paraphrase the author, the intent was to develop a qualitative comprehension of the manner in which theoretical results are obtained coupled with a feeling for the physical significance of those results. The author has admirably achieved this goal. The book is heartily recommended to those who would appreciate and utilize the aforementioned approach. The level is such that it is easily within the grasp of a person with a one-year undergraduate physical chemistry course. There are, however, many who believe that one of the more pressing needs of polymer science is a more penetrating and critical assessment of a given subject. Considering the vast scope of the subject matter and the aims as stated, it is not unexpected that the depth of treatment is limited here. A large variety of experimental data are presented, particularly of recent vintage. These data are extremely helpful and useful information to have collected and compiled in one place.

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