

In the reviewer's opinion, the nicest feature of the book is its emphasis on the effects of electron correlation in many-electron systems, a topic which often is glossed over in most books of this type. After a section devoted to zero-potential problems, the hydrogen atom and the standard approximation methods, the author takes up the problem of the helium atom in some detail. The various methods of introducing radial and angular correlation in He are clearly discussed and numerical comparisons are made. The method of configuration interaction is touched upon from this point on throughout the book.

A section on H_2^+ and H_2 introduces the reader to molecular quantum mechanics, with emphasis mainly upon the older methods of handling the H_2 problem. (The diagrammatic representation of H_2 orbitals on page 109, although correctly emphasizing the inner node of the 2s-functions, is otherwise very rough and a little misleading.) Determinantal eigenfunctions for the many-electron problem are introduced at the beginning of Chapter VIII. Perhaps it would have been more natural to present this formalism in the discussion of the excited states of He, but this may be a matter of taste.

The last 32 pages of the book give a generally good, but very brief, description of the quantum theory of polyatomic molecules. The organic molecules, acetylene, ethylene, butadiene, benzene and pyridine, and some simple inorganic molecules, notably H_2O and B_2H_6 , are discussed. Ligand field theory and the nature of van der Waals forces are also briefly mentioned in the last few pages of the book.

Two further criticisms of the book should be made for the record. The first concerns the bibliography, which seems to the reviewer always to be virtually non-existent in most British monographs. This book carries on the tradition quite well. The second concerns the cover of the book, which apparently has a tendency to warp badly, at least in a dry climate.

Since much of the book is of a descriptive, qualitative nature, and yet touches on most of the modern aspects of quantum chemistry, it should serve well its intended purpose as an introduction on the undergraduate or first-year graduate student level to this important field.

CONTRIBUTION No. 2700

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Steric Aspects of the Chemistry and Biochemistry of Natural Products. Biochemical Society Symposium No. 19 held at Senate House, University of London on 30 June, 1959. Edited by J. K. GRANT and W. KLYNE. Organized by J. K. Grant. Cambridge University Press, 32 East 57th Street, New York 22, N. Y. 1960. 16 × 25 cm. Price, \$5.50.

The first paper of this Symposium is an excellent summary by Klyne of the methods available for correlating configurations of organic compounds and establishing absolute configurations. The examples are chosen from naturally occurring compounds or synthetic biologically active materials.

The second paper by Arigoni discusses some stereochemical aspects of the biosynthesis of polyisoprenoids, including a demonstration of the absolute configuration of mevalonic acid. Some of the discussion parallels that which has already appeared in the Ciba Symposium on biosynthesis of terpenes and sterols.

The remaining six papers deal with stereochemical effects in enzyme systems or pharmacological preparations, which are more complex and less well-known than the purely chemical systems in Klyne's paper. A consideration of these papers underlines the comments of Professor Peat, in summing up the Symposium, that although the definition of enzyme structure and function in chemical terms is one of the most fundamental and challenging problems facing chemists and biochemists, our exact knowledge is still very vague, and has not advanced far beyond the pictorial notions of Emil Fischer and Paul Ehrlich. If research is allowed to continue at its present pace, we may expect that by 1975 a symposium similar to this one should be able to show us the complete structure of several enzymes, and to give us a complete explanation of their steric specificities and mechanisms of action.

The chapter by Barlow discusses steric effects of drug action, considering mainly compounds which are imitators of acetylcholine. Pitt and Morton discuss the importance of *cis-trans* isomerization of retinene in the visual process. Webb reviews briefly the steric specificities of hydrolytic enzymes—esterases, glycosidases, peptidases and some miscellaneous types. The classical work by Westheimer and Vennesland on DPN mediated hydrogen transfers furnishes the most important part of Slater's paper on steric factors in oxidation-reduction processes. The last paper by Barker discusses the mechanism of the enzymatic processes involved in the biosynthesis of the pentose sugars, the nucleotides and polynucleotides.

Organic chemists with any interest in the biochemical implications of their science will find the papers in this collection stimulating and rewarding.

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Organic Analysis. Volume IV. Editorial Board: JOHN MITCHELL, JR., I. M. KOLTHOFF, E. S. PROSKAUER and A. WEISSBERGER. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1960. vii + 429 pp. 16 × 23.5 cm. Price, \$13.50.

This volume, like the earlier offerings in this series, concerns itself with a number of entirely separate areas of interest to the analytical chemist. There are chapters on: Determination of Organic Peroxides, by A. J. Martin; Enzyme Analytical Reactions, by John B. Neilands; Gas Chromatography, by Stephen Dal Nogare and Leo W. Safranski; Applications of Nuclear Magnetic Resonance Spectroscopy to Organic Analysis, by Harlan Foster; Crystallographic Methods of Analysis: X-ray Diffraction and Microscopy, by John Krc, Jr.; and Applications of Differential Thermal Analysis to High Polymers by Bacon Ke.

Like the earlier members of the series, the contents of this volume represent a mixture of subjects chosen on the basis of sample composition on the one hand and analytical technique on the other. There is also a more subtle heterogeneity of subject matter in terms of the probable rate at which the various chapters will become obsolete. The chapters on Gas Chromatography and Nuclear Magnetic Resonance particularly will require early revision owing to the rapidity of new developments in these fields. In contrast, the thorough and generally excellent treatment of the Determination of Organic Peroxides will endure for a much longer period.

John Neilands' brief treatment of Enzyme Analytical Reactions will find many interested readers, although most analytical chemists would have preferred a more detailed and complete discussion of the subject. An extensive listing of commercially available enzymes, however, is given as well as a three-page table of known enzymic reactions. The chapter will adequately serve as an introduction to the subject and perhaps as a stimulus to further reading.

The chapter on Gas Chromatography by Dal Nogare and Safranski fills 136 pages without padding or digression. The authors probably have found approximately the right balance between theory and practice for most of their audience. The chapter is well written and provides a clear and comprehensive view of the field. Interest in Gas Chromatography crosses many of the scientific disciplines and this chapter will appeal to a broad cross section of the scientific community.

Harlan Foster clearly has not represented n.m.r. as the universal solution to the organic chemists' structural problems. He has been careful to avoid such a posture and indeed may have presented a somewhat pessimistic view. His final paragraphs are entitled "Appraisal of the Method" which seems entirely appropriate in a discussion of a technique as new as this. He has attempted to describe a complicated field in relatively few pages (about 60) and has succeeded very well. Organic and analytical chemists particularly will find this discussion an easy way to become informed concerning the potentialities of an important new technique.

The chapter on Crystallographic Methods of Analysis presents a great deal of information in highly concentrated