

the reaction appeared to be first order in cyclohexene and I. Results of two experiments are presented in Table I.

(1) T. Ohashi, M. Sugie, M. Okahara, and S. Kowori, *Tetrahedron Lett.*, **1968**, 4195.

(2) W. Theilacker and H. Wessel, *Justus Liebigs Ann. Chem.*, **703**, 34(1967).

(3) M. S. Kharasch and H. M. Priestley, *J. Amer. Chem. Soc.*, **61**, 3425(1939).

(4) H. Dawn, T. Higuchi, and I. H. Pitman, to be published.

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## Books

### REVIEWS

**The Molecular Orbital Theory of Organic Chemistry.** By MICHAEL J. S. DEWAR. McGraw-Hill Book Company, New York, NY 10036, 1969. vii + 484 pp. 15.5 × 23.5 cm. Price \$16.50.

This book is representative of a general class of books written over the past decade in which quantum chemistry is applied to organic chemistry, with major emphasis on molecular orbital theory. The book is divided into ten chapters, the first four of which develop the concepts of molecular orbital theory useful to the organic chemist. In subsequent chapters, molecules of increasing complexity are treated with considerable emphasis on the conceptualization of the theory. The continual relationship to more classical concepts such as reaction types based upon valence bond mechanisms and the Hammett relationships makes the entrance into molecular orbital theory particularly useful.

There is much emphasis on self-consistent field theory, with very little attention paid to the less exact but simpler Hückel schemes in common use. This is particularly true of Hückel all-valence electron methods which are completely ignored. In places, the level of sophistication of treatment exceeds the needs of the medicinal chemist. There is much written about hydrocarbons but perhaps too little about heteroatom-containing molecules, which, of course, are the tools of the medicinal chemist's trade.

In summary, this book is a useful reference for the organic or medicinal chemist who already has some background in molecular orbital theory.

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**Principles of Physical, Organic, and Biological Chemistry.** By JOHN R. HOLUM. John Wiley and Sons, Inc., New York, NY 10016, 1969. x + 728 pp. 17.2 × 23.5 cm. Price \$10.95.

This book consists essentially of two parts. The first deals with basic physical and chemical principles, including the concepts of energy, atomic structure, thermodynamics, chemical bonds, spontaneity, equilibria, and organic chemistry. The second comprises the application of these principles in developing an understanding of and an appreciation for the molecular basis of life.

The material, which contains appropriate illustrations and examples, is well organized and easily understood. Particularly noteworthy is the author's lucid treatment of the rather difficult subject of thermodynamics. His qualitative discussions of such concepts as internal energy, entropy, enthalpy, and spontaneity are commendable. Indeed, the student of physical chemistry would do well to read his account first and then proceed to the advanced texts.

The latter chapters deal with such topics as, "Biochemical Regulation and Defense," "Important Fluids of the Body," "Energy for Living," "Metabolism of Lipids, Carbohydrates and Proteins," and the "Chemistry of Heredity." These chapters apply the fundamental principles presented in earlier chapters to explain the compositions and functions of living matter. The author's approach in explaining life on a molecular basis should prove to be not only informative to the student but stimulating and fascinating as well.

As stated in the Preface, this book "... is intended for use in a two- or three-term terminal college course in chemistry for students in the humanities, the social sciences, and the paramedical sciences, including nursing, home economics, physical therapy, many areas of biology, and many programs in the agricultural sciences." It is well suited for that purpose.

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