

## Book Reviews

**Problems in Organic Reaction Mechanisms.** By HERMANN HÖVER, Union Rheinische Braukohlen Kraftstoff A. G., Wesseling, Germany. Wiley-Interscience, John Wiley and Sons, Inc., 605 Third Ave., New York, N. Y. 1970. ix + 468 pp. 16 × 23.5 cm. \$24.95.

Discussion of problems in organic chemistry between professor and students is one of the better tools for learning and stimulating research. The classroom and the seminar are the places where the aforementioned is generally achieved. This book attempts to simulate seminar conditions and, in my opinion, has done a commendable job. It is one of the better problem books that I have encountered.

The book is well organized. It is divided into two parts; the first presents some problems in organic reaction mechanisms and the second offers a discussion of the problems.

Part I. The stress is placed upon problems in aliphatic addition, elimination, and substitution reactions. Some aromatic substitution, photochemistry, and radical problems are presented. The major deficiency here was the incorporation of only one problem in aromatic nucleophilic substitution.

Part II. I was particularly impressed with a fundamental discussion of each area in which problems were presented before considering the answers. Leading references were also presented for additional reading. I was pleased to observe that the responses to most of the problems were not black and white. The latter will obviously stimulate further research into these areas.

I recommend this book to all graduate students and faculty even though the price is rather high.

Anthony J. Sisti

Department of Chemistry, Adelphi University  
Garden City, New York

**Organic Charge-Transfer Complexes.** By R. FOSTER, Chemistry Department, University of Dundee, Scotland. Academic Press Inc., Ltd., Berkeley Square House, Berkeley Square, London W1X 6BA, England. 1969. xii + 470 pp. 16 × 23.5 cm. \$22.50.

Prior to 1969, three books were published on charge-transfer (CT) complexes, commonly called electron donor-acceptor complexes or just molecular complexes. The first, by G. Briegleb, "Elektronen-Donator-Acceptor-Komplexe," Springer-Verlag, Berlin, 1961, gives thorough coverage of experiment and theory through 1960. The exponential increase in the number of articles on this subject appearing in journals in all branches of chemistry limited the breadth or depth of coverage of the field in subsequent texts. The book by L. J. Andrews and R. M. Keefer, "Molecular Complexes in Organic Chemistry," Holden-Day, San Francisco, Calif., 1964, is oriented toward the physical-organic chemist, as implied in the title. The book by J. Rose, "Molecular Complexes," Pergamon Press, New York, N. Y., 1967, is a short, rather general survey of the field.

Foster's book follows along the lines of that of Andrews and Keefer. In fact, several chapter and section headings in the two

books are the same; but more material is presented by Foster, attesting again to the rapid growth of this subject. Emphasis is on experimental aspects, both with regard to methods and recently reported results. As such, the book is complementary to, rather than competitive with, the one by R. S. Mulliken and W. B. Person, "Molecular Complexes: A Lecture and Reprint Volume," Wiley, New York, N. Y., 1969, which appeared at almost the same time. The latter book is an authoritative account of CT theory.

The introduction in Chapter 1 and theory in Chapter 2 of Foster's book are quite brief. Only the most general features of the theory are presented, but they provide sufficient background for the material covered in the other chapters. The next five chapters are on experimental methods and treatment of data. Chapter 3 on electronic spectra is the most extensive, in line with the fact that spectrophotometry is the method used most often to study CT complexes. Nuclear magnetic resonance in Chapter 5 is the second most discussed method, and this reflects in part the author's own research interest. Chapter 4 on infrared spectra is the shortest of all. Here, only those complexes are considered which also have CT bands. The author did not include such topics as H-bonding to which CT theory can be applied. This is a wise choice because H-bonding is such a vast topic in itself.

The analytical treatment of data to determine the equilibrium constants, enthalpies, and spectral properties of complexes are discussed in Chapter 6. Results of these determinations are analyzed in Chapter 7. The pertinent comments made would be of benefit to anyone contemplating studying CT complexes or quoting literature results.

The remaining chapters expand and up-date topics that appeared in the book of Andrews and Keefer, namely, crystal structures (Chapter 8), electric and magnetic properties (Chapter 9), some selected complexes of special interest (Chapter 10), reactions which may involve CT complex intermediates (Chapter 11), CT complexes in biochemical systems (Chapter 12), and the analytical application of CT complexes in organic chemistry (Chapter 13). The last three chapters should be of particular interest to organic chemists. Finally, there is a very useful compilation in the Appendix of a long list of literature references to a wide variety of CT complexes.

When extensive recent data are incorporated in a book, it is not an easy task to evaluate them all critically. The author has done so in many places, however, for which he should be commended. The fact that some statements already are no longer valid is a further indication of a rapidly changing field. As stated by the author in the preface, several hundred articles have appeared during the period of publication which would have been pertinent to his book; in fact, he himself has completed studies recently which would modify his discussion in comparing results obtained from electronic spectra and from nuclear magnetic resonance.

This is a well-written book and a good addition to the literature on CT complexes. It should be of interest to a broad spectrum of chemists, and certainly ought to be read by anyone active in the study of these complexes.

Milton Tamres

Department of Chemistry, The University of Michigan  
Ann Arbor, Michigan 48104