

Correlation Analysis of Chemical Data; by O. Exner, Plenum, New York and London, 1988, 275 pages, US\$55.00. ISBN 0-306-41559-3.

In this volume Professor Exner, who has produced valuable reviews of substituent constants and their use in the past, considers the wider topic of correlation analysis as a method of interpreting or rationalizing experimental data. The scope of his account can be seen from the chapter headings: The purpose of correlation analysis; the Hammett equation as an example of correlation equations; theoretical aspects of Hammett-type equations; extensions of the Hammett equation; qualitative evaluation of *I*, *M*, and *S* effects; multiparameter correlation equations; special correlation equations; some statistical problems; basic concepts of multivariate analysis. The chapter on special correlation equations deals with correlation of physical properties, correlations of solvent effects, dependence of reactivity on the reagent, rate-equilibrium relationships, the reactivity-selectivity principle, and correlation of biological activities.

The account presents useful lists of the values of the various types of substituted constant for a range of the most commonly encountered substituents, but for more comprehensive tables the reader is referred to Professor Exner's earlier compilations. Organometallic substituents are represented only by $\text{B}(\text{OH})_2$ and SiMe_3 ; the latter is an especially uninteresting group as a substituent on aromatic rings, and I am sorry not to see the much livelier Me_3SiCH_2 group listed. I did not notice any reference to organometallic reactions, except for a passing mention of some aromatic demetallations, but use of substituent constants and linear free energy correlations generally is finding increasing application in organometallic chemistry, and the book will be of interest to a good number of readers of this journal.

Literature is surveyed mainly up to the end of 1984, with a few later references. Problems (with answers provided) are scattered through the book to aid understanding by students. There is a satisfactory index.

*School of Chemistry and Molecular Sciences,
University of Sussex, Brighton BN1 9QJ (U.K.)*

Colin Eaborn

Advances in Physical Organic Chemistry, Volume 24; edited by D. Bethell. Academic Press, London etc., 1988, 225 pages, £35.00, ISBN 0-12-033524-7.

This volume contains a significant amount of material of interest to organometallic chemists. Thus in the first review by N.M.M. Nibbering (55 pages), dealing with gas phase reactions of organic anions, reactions of such anions at silicon and phosphorus centres are discussed, and in the second, by C.I.F. Watt, dealing with hydride shifts and transfers (56 pages), 9 pages are devoted to metal-to-carbon transfers, and these are placed nicely within a wider context of related hydride migrations. The third review, by M.L. Sinnott (93 pages), on the principles of least nuclear motion and the theory of stereo-electronic control is very predominantly devoted to organic chemistry, but 8 pages deal with reactions at phosphorus centres.

The book is well produced and reasonably priced. It continues the excellent tradition of the series.

*School of Chemistry and Molecular Sciences,
University of Sussex, Brighton BN1 9QJ (U.K.)*

Colin Eaborn