

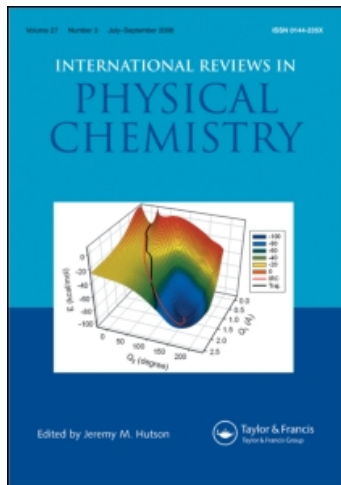
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Book Reviews

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BOOK REVIEWS

Jack D. Dunitz. *X-ray Analyses and the Structure of Organic Molecules*. Ithaca, NY: Cornell University Press, 1980. pp. 514

When asked to name the texts that have influenced them most, many middle-aged physical chemists are likely to quote Pauling's *Nature of the Chemical Bond*, Slater's *Chemical Physics*, Herzberg's *Spectra and Structure of Simple Free Radicals* and maybe Bell's *Proton in Chemistry* and Robertson's *Organic Crystals and Molecules*. This list is obviously subjective; but it is striking how many of the texts (all but one of the above) are products of the Baker Lectures in Cornell University, a series which has profoundly influenced the evolution of both teaching and research in chemistry generally.

This book, also the product of the Baker Lectureship, is in the finest traditions of its predecessors. It is richly researched, delightfully informative and beautifully written with a style, zest and love for the subject so characteristic of the author's approach to science. One learns in Part One (six chapters, 300 pages) not only about the emergence of diffraction as a tool for structural investigation, the salient features of the internal symmetry of crystals and modern methods of crystal structure analysis and refinement, but also about the impact of structure analysis on chemistry, a theme taken up more fully in Part Two.

Chapter 7, with its survey of conformational analysis, solid-state organic chemistry, molecular potential energy surfaces and how to proceed from crystal structure data to chemical reaction paths—a subject which Dunitz himself has pioneered—is one of the most instructive and enjoyable in the book, with a wealth of memorable historical asides as an extra bonus (we read of H. E. Armstrong's remark to Robert Robinson 'Curved arrows never hit the mark', as well as his criticism of W. L. Bragg's description of the rock-salt structure—'chemistry is neither chess nor geometry whatever X-ray physics may be').

All the information in this text is of considerable value especially to those engaged in, or about to embark upon, X-ray crystal structure analysis but even more so, perhaps, to the non-specialist who may now proceed profitably and discriminately to read the explosively growing crystallographic literature. The author has certainly succeeded in taking us not only on a guided tour, but at the same time has provided rather more of the kind of detail one expects in the best guidebooks.

One section of the book that is likely to date relatively quickly is Chapter 8, which deals with the burgeoning topic of electron-density distribution in molecules. There are a few minor errors in the text, e.g. on p. 42 legend to Fig. 1.10 $4\pi r^2$ should read $2\pi r^2$. An errata list is available from the author or publisher.

J. M. Thomas