were participants of the conference. However, the two volumes are by no means conference proceedings. The contributors were encouraged to present overviews of their fields of research and their bearings on related fields. This very appropriate practice has made the book much more readable and beneficial to scientists and students of diverse disciplines.

The conference concerned itself exclusively with inorganic compounds. In addition to simple compounds, silicates and related compounds also received much attention. A few papers were devoted to alloys and intermetallic compounds. Throughout the two volumes Pauling's classical book was closely and frequently referred to. Here I should mention a statement made by the editors in the preface:

> Before this renaissance, virtually the only guide to the factors determining crystal structure was the principles set out in the early days of solid state chemistry and put in definitive form in the chemists' 'bible' – Pauling's *Nature of the Chemical Bond.* Indeed, in dealing with complex silicates, it is little exaggeration to state that there had been little progress (until recently) since the formulation of the celebrated 'Pauling's Rules' 50 years ago.

This statement may well reflect the opinion of most contributors.

The twenty-six chapters can be divided, by and large, into four groups. The first group, from chapter 2 to chapter 7, reports on work which makes rather exact calculations and predictions of the structure, stability, and properties of solids of simple types from the electronic properties of the isolated atoms. The development of atomic pseudopotentials with their successful application to atoms in crystals has been one of the remarkable advances in solid-state science. An alternative approach is to apply theoretical methods developed for molecules, such as MO theory, to crystal-chemical problems. The second group, from chapter 8 to chapter 12, belongs to this category. Each of the two approaches has merits and demerits. The present state of theoretical treatment of solid-state structures allows more exact calculations often at the expense of applicability and clarity.

The understanding of the older topics such as bond length, bond strength, ionic radii, *etc.*, has been renewed and refined. Some of these advances are very impressive and useful indeed. For instance, the valence-sum rule is a refined form of Pauling's electrostatic valence rule. In the light of the distortion theorem one can elucidate the experimental fact that with elevation of pressure Si changes from tetrahedral to octahedral coordination. Chapters 13–19 present these concepts and the last three papers discuss their applications in geosciences.

As the inorganic structures determined by X-ray diffraction nowadays become increasingly complex, the classification of solids and the systematic description of the relationships between their structures present a particularly important problem. In the remaining chapters one can see that many complex structures are made much easier to appreciate and understand when described in an ingenious way.

Most chapters cover the literature up to 1980 or even later.

The editors have done a very good job in organizing thirty-five conference participants to turn out such an up-to-date and coherent book of high quality. It is highly recommendable to structural chemists and crystallographers, solid and materials scientists, geochemists and geophysicists or to any of those who wish to keep up with recent developments in various aspects of crystal chemistry.

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Inorganic stereochemistry. By DAVID L. KEPERT. Pp. xii + 227. Heidelberg: Springer-Verlag, 1982. Price DM 154.00, US $71.70.

The importance of an adequate understanding of stereochemistry in the practice of inorganic chemistry is unquestioned. The wide variety of coordination numbers and structural types known makes any attempt at a systematic approach to structure correlation and the rationalizing of diverse structural types extremely valuable. This work, which is Volume 6 in the Springer-Verlag series entitled 'Inorganic Chemistry Concepts', attempts just such a task, as an outgrowth of a series of articles written by the same author for the well known series 'Progress in Inorganic Chemistry'. The potential reader should understand, however, that new sections, together with the more unified treatment of the book, definitely make the whole add up to more than the sum of the parts.

The author's approach to understanding and rationalizing stereochemistry is based on a systematic quantitative application of the common ideas regarding electron-pair repulsion. The first chapter sets out the elements of this simple theory, which incorporates important refinements such as individual atomic repulsion-energy coefficients, effective bond-length ratios, and normalized bite parameters for multidentate ligands. Of the many possible types of multidentate ligands, the author treats only bidentate and single-chain tridentate ligands.

The second chapter begins with a systematic treatment of the types of classic geometric polyhedra useful in a chemical context. The chapter then continues with a careful discussion of the origins and types of distortions which relate actual chemical coordination polyhedra to the idealized polyhedra. While some of these distortions (those arising from the different size of faces in the semiregular and non-uniform polyhedra for example) are consequences of the repulsive forces which create the polyhedra in the first place, others are shown to be a consequence of the constraints associated with variations in the normalized bites of chelating ligands. Since a wide variety of such chelating ligands is available, the author is careful to demonstrate how the different coordination geometries possible for a given coordination number are related to one another, as well as how they depend on the bite parameters of the chelate ring.

The remaining chapters deal with the stereochemistries associated with coordination numbers from four through twelve. For each of the coordination numbers treated, plots showing repulsion energy as a function of structural variables allow the author to deal with the relative repulsion

energies of the various idealized geometries. The possible chemical coordination polyhedra for that coordination number are then discussed. This discussion, which occasionally extends over two chapters, takes account of variations in ligand type, multidentate-ligand character, and the effects of mixing ligand types. Points in these discussions are amply illustrated by the repulsion-energy plots referred to above, by extensive tabular data from the structural literature, and by carefully chosen structural diagrams. Exceptional structures are identified, and important types of structural distortions, such as the *trans* influence and the Jahn–Teller effect, are taken into account.

Taken in its entirety, this book makes a strong case for the viability of the repulsion approach to stereochemistry. The relatively simple repulsion model clearly has the advantage of allowing ready correlation of structural data for inorganic compounds involving a variety of central atoms and ligand species.

The reader interested in a systematic understanding of inorganic stereochemistry will find this work very valuable. The wealth of information (tables with references, repulsion-energy diagrams, structural drawings) presented makes the book useful as a reference source. However, the successful synthesis of structural facts with the repulsion model makes the book's value extend beyond mere reference use. The careful and systematic discussion of possible stereochemistries, together with their structural and energetic relationships, can be extremely helpful in identifying and rationalizing seemingly complicated, unusual, and/or distorted stereochemistries. Careful perusal of the ideas set forth here should also aid the reader immensely in making rational predictions of stereochemistry in other systems of interest.

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Steric effects in biomolecules. Edited by G. NÁRAY-SZABO. Pp. xiv + 417. Amsterdam: Elsevier, 1982. Price Dfl 230.00, US $107.00.

The book consists of a collection of papers, both invited and contributed, which were presented at an international symposium organized at Eger, Hungary, 5–8 October 1981 'to bring together scientists interested in the combined application of diverse experimental and theoretical methods to special biochemical problems'.

The book is composed mainly of three sections: small molecules (14 papers), DNA and RNA (3 papers) and proteins (10 papers). In section (1) the conformational characteristics and the results pertaining to the structure–activity relationships of biologically active molecules such as tetracyclines, ionophorous antibiotics, natural ergot alkaloids, macrotetrolide antibiotics, hypothalamic hormones *etc.* are discussed. The three papers in section (2) deal with rather different aspects of DNA and RNA molecules. One of the papers discusses aminoacylation of tRNA whereas the remaining two present theoretical results on accessibilities and molecular electrostatic potential in B- and Z-DNA as well as tRNA. The papers in section (3) mainly pertain to the structure–function relationships of a few enzymes and proteins, *e.g.* serine proteases, sulfonamide–human erythrocyte carbonic anhydrase, snake neurotoxins *etc.* Data obtained from X-ray crystallography, NMR, CD and quantum-chemical methods have been the basis for the discussions in most of the papers appearing in this book.

Since each of the 27 papers contained in the book is separately prepared, there are the expected variations in style and typescript. All the authors have given detailed references and a subject index is also provided.

In summary, the book embodies valuable information for crystallographers working on drug molecules, for protein crystallographers and for medicinal chemists.

The editor is to be congratulated in producing this excellent book.

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Books Received

The following books have been received by the Editor. Brief and generally uncritical notices are given of works of marginal crystallographic interest; occasionally a book of fundamental interest is included under this heading because of difficulty in finding a suitable reviewer without great delay.

Proceedings of the first international symposium on cyclodextrins (Budapest, October, 1981). Edited by J. SZEJTLI. Pp. xiii + 544. Dordrecht: Reidel, 1982. Price Dfl 195.00, US $84.50.

Inorganic geochemistry. By P. HENDERSON. Pp. xv + 353. Oxford: Pergamon Press, 1982. Price £21.00, US $42.00 (hardback), £9.25, US$18.50 (softback).