to use a restrained-least-squares refinement program. Restrained least-squares refinement for proteins is discussed by Wayne Hendrickson. As proteins are so large some way of reducing the number of entries in the normal matrix is needed.

This book is highly recommended for every laboratory (and computer room) bookshelf. It contains the old and the new, the practical and the thoughtful, and covers a wide range of topics with many good references. I raise one adverse criticism on the production of this photo-offset book; namely, the quality of printing of some of the articles. Certain chapters, produced faintly by a dot-matrix printer, are very difficult to read. They would have been better if they had been retyped or type-set. Apart from this the editors have done a first-class job of producing an up-to-date volume covering advances in computing in crystallography.

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Structural chemistry of silicates: structure, bonding, and classification. By F. LIEBAU. Pp. xiii+347, 136 figures. Berlin, Heidelberg, New York, Tokyo: Springer-Verlag, 1985. Price DM 163.00.

'The hardness of men's hearts makes an idol of classification, *but a knowing heart will use it as an aid*'. Thus ends this remarkable book with an optimistic twist by the author (in italics) of a statement by Samuel Butler. Silicates are perhaps among the least lauded of substances in human societies. Yet, six silicate species comprise about 95 volume % of the Earth's crust. They play an essential economic role from stained-glass windows and wine goblets to building stone, from computer chips to bricks and concrete. Without silicates and their products, civilization as we know it would not exist.

A very readable and highly informative book, it can be easily incorporated into a graduate level course sequence, particularly in ceramics, structural inorganic chemistry and the earth sciences. A bibliography with over 650 references to nearly every significant publication on silicate crystal chemistry is a valuable aid for literature search. The figures – most of them displaying scaled crystal structures – are elegantly crafted. A most important feature, rarely noted in such treatises, is the complementary and uniform quality of these drawings.

Ten major chapters comprise the book. Aspects of chemical crystallography make up six (Chapters 4, 5, 6, 7, 9 and 10). Chapter 4 is of key importance, for it reveals the symbols and principles behind silicate anion nomenclature. Because $[^{[4]}Si^{4+}O_4]^{4-}$ has mesodesmic properties, silicates polymerize in bewildering variety and to this day, a rationalization of rules for predicted silicate polymerization does not exist. Important classificatory principles involve the connections of the silicate polyhedra, usually tetrahedra. Linkedness (L) involves topologic fusions of the polyhedra (corners, edges, faces), connectedness (S) refers to the available corner-sharing elements, and branchedness (B) refers to the secondary dendrites which attach to the central spine and five types are discerned. The dimensionality (D) refers to the space in which the Si_xO_y cluster is described and multiplicity (M) to further polymerizations of similar units within the same space to form a larger aggregate in that space. Finally, a diversity of chain lengths in SiO_4 units can exist, the periodicity (P). The German word for the number of polyhedra before a chain segment translationally repeats followed by -er, specifies the periodicity. Alamosite, $Pb_{12}[Si_{12}O_{36}]$, is one of the largest, a *zwölfer* chain.

The remarkable feature of this book is its thoroughness. The description and portrayal of crystal structures is wonderfully reviewed in Chapter 2. Very few textbooks on mineral structure (and there are many!) do justice to this problem. Chemical bonding theory in all its ramifications appears in Chapter 3. Chapter 8 reviews the other classifications of silicates. This is another rich lode. Yet it is clear no classification is absolute. A classification must always serve some purpose (an added bonus would be built-in predictability of general properties, but this is rare!). This one, I believe, is an efficient working classification, a means toward sensible taxonomy and information retrieval. It is a language of crystal structure. Unfortunately, not all bases can possibly be covered. For example, I would create a new radical class for all $2r[Si_{2p}O_{5p}]$ (r = ring, p = number of tetrahedra in a ring), the so-called double rings. All these map with their connectivities conserved on a sphere. Recently, I was involved with the giant $[Si_{48}O_{120}]$ core in ashcroftine, but $p \neq 24$! It defines the truncated cuboctahedron, an Archimedean semiregular solid. All of these silicates whose connectivities define maps on a sphere, define polyhedra.

A magnificent book! At least ten years of effort went into it. The uniformity of figures, the sensibility of the tables, the beautiful layout, the thorough coverage and above all a book which befriends the reader (freely translating a remarkable late Bach cantata '... And take me by your hand/and gently lead me on.'). I doff my hat to author and publisher.

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Diamond. By G. DAVIES. Pp. x+255. Bristol: Adam Hilger, 1984. Price £17.50, US $28.00.

This is a delightful book, written not for the diamond specialist, but for the intelligent layman. Focusing on a single topic such as diamond might seem to be very narrow, even if glamorous, but the author leads the reader through wide-ranging tracts of solid state physics, surface physics, spectroscopy, chemistry and geology, not to mention history, politics, economics and gemology, whose variety and interest are an intellectual feast, educative and entertaining in the best sense.