

## Book Reviews

*Works intended for notice in this column should be sent direct to the Book-Review Editor (J. H. Robertson, School of Chemistry, University of Leeds, Leeds LS2 9JT, England). As far as practicable books will be reviewed in a country different from that of publication.*

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**International tables for crystallography: Brief teaching edition of Volume A: Space group symmetry.** Edited by T. HAHN. Pp. viii + 119. Dordrecht: Reidel, 1985. Price Dfl27.50, US \$8.50, £7.60.

This is a slim volume consisting of 24 selected space-group descriptions and several pages of the basic text sections from Volume A of *International tables for crystallography*. The declared purpose of the *Teaching edition* is:

- (i) to provide a handy and inexpensive tool for researchers and students to become familiar with the use of the space-group tables in Volume A;
- (ii) to be used in classroom teaching;
- (iii) to serve as a laboratory handbook, because the 24 examples include most of the frequently occurring space groups, for both organic and inorganic crystals.

The basic text section consists of material found in chapters 1, 2, 3 and 5 of Volume A: namely *Symbols and terms used*, *Guide to the use of the space-group tables*, *Space-group determination and diffraction symbols*, and *Transformations in crystallography*.

I approve strongly of the idea of bringing out an introductory book on the excellent, but detailed, Volume A, as there is a serious need for material which can be read and understood by beginners and non-specialists. I was therefore delighted to hear that the International Union of Crystallography had, at last, brought out such a text. However, I am sorry to say that, when I opened my review copy, I felt somewhat surprised and, even, disappointed. The title had suggested a digestible and specially written account, which could be recommended to someone meeting, for the first time, the beauty and mysteries of crystallographic symmetry. Instead of the elementary treatment I had anticipated, it seems that the basic text has been lifted entirely without change from Volume A.

As a result, I certainly could not expect a novice to take the text away and learn from it by him/herself. Indeed, because no attempt has been made to adapt the text to suit its declared aims, on almost every page peculiar inconsistencies can be found which ensure that it cannot stand alone as a teaching text. It is particularly irritating to encounter so many references to sections that are missing entirely. As typical examples, in the *Guide to the use of the space-group tables*, page 10, the reader is referred to sections 8.3.1 and 9.1 for further details on lattice centring and to section 9.3 for reduced bases. On page 30 the index of a maximal subgroup requires the footnote in section 8.1.5 to be consulted. Again, picking a page at random, I find on page 39 reference to a missing Table 4.3.1, and so on. This occurs so frequently throughout that one might as well use Volume A in the first place.

The main problem with the *Teaching edition* is that it falls between two stools. On the one hand, it is too difficult to act simply as a text for learning about the space-group tables and, on the other, it is not complete enough for the

experienced researcher to use as a handbook. In any case, those who already know about space groups and the *International tables* are unlikely to want to consult the introductory texts in this book. I believe that it would have been better either to have rewritten the introductory text to suit the level of reader expected or to have published just the space-group pages, together with the useful key on the inside covers (incidentally, the book could then have been even less expensive!). I wish I could be more positive about the *Teaching edition* but, frankly, I am not sure to whom it can be recommended.

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**The structure of surfaces.** Edited by M. A. VAN HOVE and S. Y. TONG. Pp. xii + 435. Springer series in surface sciences 2. Berlin: Springer, 1984. Price DM 138.00, £36.00.

This book is the result of a 1984 conference held in California with the grand title of First International Conference on the Structure of Surfaces. This new series of conferences is planned to relate surface structures with the various physical and chemical properties of surfaces. I find this volume, which is effectively a selection of the conference proceedings, rather disappointing. Indeed, it is as though a direct correlation between properties and structure is being forced on the reader and has been allowed to dictate the layout which I found to be fragmented.

Structural determinations using low-energy electron diffraction (LEED) still form the backbone of the subject and we observe from many contributions that a consolidation stage has been reached with continued refinement of technique and experiment/theory comparison. Some of this refinement is a direct result of the availability of new evidence from some new techniques, such as scanning tunneling microscopy. Generally, new techniques such as this get rather sparse treatment and the reader is left to put them into context. Several contributions on the use of X-rays for surface structure analysis have been dispersed throughout the book rather than collected together, thus reflecting the editors' wish to place less emphasis on 'techniques' and more on the nature of the surface property.

The determination of local order and bonding arrangements in surface structures which do not necessarily display long-range order is clearly one of the biggest contemporary challenges. This is being pursued by variants of X-ray absorption fine structure techniques and by a detailed analysis of the diffuse background in LEED. Another