

Book Review

Works intended for notice in this column should be sent direct to the Book-Review Editor (M. M. Woolfson, Physics Department, University of York, Heslington, York YO1 5DD, England). As far as practicable books will be reviewed in a country different from that of publication.

Symmetry. A stereoscopic guide for chemists. BY IVAN BERNAL, WALTER C. HAMILTON AND JOHN C. RICCI. Pp.viii + 180. Illustrations 150. London: Freeman, 1972. Price £4.30.

'Central to the description of molecules and their properties is the concept of symmetry, by which (their) pictorial and mathematical description . . . can be simplified.' (From the Preface.)

This book is beautiful to look at, stylishly composed, and useful. It is written at an elementary level suitable for first year (university) students of chemistry, and demanding no more than school mathematics. After a readable introduction on symmetry in art and science, there is a simple account of symmetry operations and of symmetry groups as far as their multiplication tables. These principles are first illustrated in two dimensions: the ten crystallographic point groups, and four of the (repetitive) plane groups – a pity, perhaps, that the full seventeen were not covered, as they provide a readily intelligible microcosm of the 230 space groups.

The main part, 90 pages, goes into three dimensions, and illustrates the 32 crystallographic point groups plus some non-crystallographic groups involving the operation 5. The feature here is the lavish use of stereoscopy. (A stereoviewer is provided; but the drawings, by *ORTEP*, are so well done that most readers – maybe after a little practice – should be able to achieve stereopsis without mechanical aid. The

components of each stereo-pair are uniformly 5.0 cm apart, which makes for comfortable viewing. (Regrettably, even in *Acta* we still find the occasional diagram with a separation approaching 7.0 cm.) Each group is displayed with two stereo-diagrams: one of a formal kind, the other a view of an actual molecule.

As many teachers have recognized, there is 'an overabundance of examples of certain point groups . . . none of others'. The authors have searched the literature of 1960–70 and succeeded in finding molecules belonging to most of the 37 groups covered. Only in a few cases have they had to introduce a molecule which is hypothetical, or which has to be shown in a questionable conformation. For each example there is a literature reference, as well as a note explaining the specific chemical interest that justified the study of the molecule. Thirty problems, with answers, are appended.

The book may be recommended to students starting serious work on chemistry or chemical crystallography. The (inevitably) high price may make it hard for all of them to own a copy.

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