

## Book Reviews

*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.*

**Cristallographie–Morphologie.** By H. BRASSEUR. Pp. 141. Liège: Gothier, 1967. Price Fr. Belg. 300.

**Cristallographie–Éléments de cristallographie physique, de radiocristallographie, de cristallographie chimique et détermination des structures des cristaux.** By H. BRASSEUR. Pp. 196. Liège: Gothier, 1968. Price Fr. Belg. 350.

These two books are intended to provide an elementary introduction to crystallography. After a brief historical introduction, the first volume is mainly concerned with the description and classification of crystals in terms of their morphological symmetry. The second volume deals with more physical aspects, mainly optical crystallography and X-ray diffraction, with very brief treatment of pyro- and piezoelectric properties of crystals. The two final chapters on crystal chemistry and crystal structure analysis are too short and do not do justice to these subjects.

The books have certain virtues; on the whole the treatment is systematic and probably quite sound, as far as it goes. There are also serious defects. The developments of the last thirty years or so are hardly touched; the reader might well get the impression that crystallography had become a cut and dried subject by say 1940 and that nothing much had happened since then. Besides this omission, the book tends to be tedious and suffers in places from the use of unnecessarily clumsy mathematical formulae. Most students nowadays have picked up enough mathematics to enable them to handle the standard problems of geometrical crystallography (*e.g.* calculation of angle between two crystal faces) by vector methods. The relationships between direct and reciprocal coordinate systems are described in the first volume but little use is made of them in subsequent chapters.

Both books are preceded by detailed lists of contents but they lack indices (lengths are given sometimes in Å, sometimes in kX, which seem to have crept in without having been defined). They could serve as a partial basis for an introductory course on crystallography but they are not recommended for self-study.

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**Defects in crystalline solids.** By B. HENDERSON. Pp. ix + 203, 89 Figs., 12 Tables. London: Arnold, 1972. Price (cloth) £6.00, (paper) £3.00.

The chapters of this book are entitled: Defects in Solids, Some Experimental Techniques, Point Defects in Ionic Solids, Colour Centres in Ionic Solids, Defects in Crystalline Semiconductors, Point Defects in Metals and Alloys, and Interaction of Dislocations with Other Defects. These titles show at once that the book is mainly directed towards point defects and their aggregates. It is in effect a kind of

review presenting experimental data together with the essential formulae and their derivation. As a textbook it would be more useful if it contained exercises. Since the author seems to be more at home with colour centres than with dislocations, the sections dealing with the latter are not the strongest. The title of the book appears to be somewhat too general and something more specific such as 'The role of point defects in crystalline solids' might give a prospective buyer a clearer idea of the content. Otherwise he might consider it as just another book on dislocations.

Henderson's book is certainly useful to possess for general information on a field in which one is not specifically working, and also as a lead to more specific literature. It is well presented and extensively illustrated. Its bibliography contains 71 titles and its subject and author indices are quite detailed. The price is fair, especially as the book also exists in a paperback edition.

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**The mathematical theory of symmetry in solids. Representation theory for point groups and space groups.** Von C. J. BRADLEY und A. P. CRACKNELL. S. xii + 745. Oxford: Clarendon Press, 1972. Preis £28.00.

Wohl kaum ein Gebiet der exakten Naturwissenschaften ist so gut untersucht und zugleich lehr- und handbuchmässig so schlecht zugänglich wie grosse Teile der mathematischen Kristallographie. Dabei hat es gerade in der letzten Zeit auf mathematischer Seite neue Entwicklungen gegeben, welche einerseits die Kristallographie wesentlich fördern und andererseits die Mathematiker steigendes Interesse an der Kristallographie gewinnen lassen. Genannt seien die Theorie der Darstellungen von Gruppen durch ganzzahlige Matrizen und die Nutzbarmachung der Computer für Symmetrieprobleme. Eine das früher Erreichte und den neueren Fortschritt einigermaßen zusammenfassende Darstellung fehlt jedoch. Der Titel des vorliegenden Buches berechtigt zu der Hoffnung, dass diesem die Verständigung von Kristallographen und Mathematikern empfindlich störenden Mangel jetzt abgeholfen ist. Zugleich lässt er erwarten, dass die Resultate der in der Literatur weit verstreuten Einzelarbeiten der theoretisch-kristallographischen Forschung hier zusammengestellt und damit leicht zugänglich sind.

Schon der erste Satz des Vorworts zeigt jedoch, dass das Buch ein ganz anderes Ziel verfolgt: 'As the sub-title suggests, this book is devoted to the theory of the deduction of the irreducible representations of point groups and space groups and to their tabulation, together with some discussion of the determination of symmetry-adapted functions that belong to these representations'. Was ist nun der tatsächliche Inhalt?