criteria do not uniquely determine the space group, and until such time as the latter would become known from other properties, such as morphology, piezoelectricity, pyroelectricity, optical activity, intensity statistics, or a structure determination.

Note that, in the monoclinic and orthorhombic systems, all possible orientations are foreseen. They are collected in braces. All the symbols given may be needed when the cell edges are labelled according to metric considerations (for instance, monoclinic: $c<a$; orthorhombic: $c<a<b$).

In Laue class $\bar{3}m$ aspect $P3^{**}$ has been split into $P3^{*}1$ and $P31^{*}$; and aspect $P3_{1,2}21$ and $P3_{1,2}12$. In each case the distinction can be made on upper level photographs (Bokii & Porai-Koshits, 1952).

We wish to thank Dr Gabrielle Donnay for a critical reading of the manuscript.

References

BUERGER, M. J. (1942). *X-ray Crystallography*. New York: Wiley.

Crystal Data (1963). A.C.A. Monograph No. 5. Brooklyn: American Crystallographic Association.

DONNAY, J. D. H. & HARKER, D. (1940). *Naturaliste canadien*, **67**, 33, 160.

International Tables for X-ray Crystallography (1952). Vol. I, pp. 347 *et seq.* Birmingham: Kynoch Press.

BOKII, G. B. & PORAI-KOSHITS, M. A. (1952). *Prakticheskii Kurs Rentgeno-strukturnogo Analiza*, Vol. I. Moscow: University Press.

Book Reviews

Works intended for notice in this column should be sent direct to the Editor (A. J. C. Wilson, Department of Physics, University College, Cathays Park, Cardiff, Great Britain). As far as practicable books will be reviewed in a country different from that of publication.

Electron Microscopy and Strength of Crystals. Edited by GARETH THOMAS and JACK WASHBURN. New York: Interscience, 1963. Pp. xi+1022. Price £11.

All the old favourites are here: Amelinckx and Delavignette on dislocations in layer structures; Keh and Weissmann on b.c.c. metals; Marcinkowski on superlattices; Nicholson on the nucleation of precipitates; Price on hexagonal crystals; Segall on fatigued metals; Thomas on precipitation hardening alloys; Swann on dislocation arrangements in f.c.c. metals; Washburn on MgO; Whelan on defects produced by quenching and irradiation. These articles contain little that is new, but serve as an introduction for a research student to the various important aspects of transmission electron microscopy.

English metallurgists should read with particular interest the two loosely related papers from Stuttgart by Mader and by Seeger, Mader & Kronmüller. These bring together a range of ideas and references which will prove as valuable as Seeger's famous Lake Placid (1957) article. There are also particularly interesting articles by Friedel and Saada; the former condensing what seems to be slightly *more* than his book into forty pages.

It is remarkable how *little* impact electron microscopy has made on the theories of the strength of crystals. Most of the theories proposed at this conference have no basis in thin foil observations. Few people have indeed troubled to make the sort of detailed correlation between microstructure and mechanical properties which is required for further advance. Exceptions which spring to mind are Ashby's attempt to correlate flow-stress and particle spacing in internally oxidized alloys, and so to confirm Orowan's theory of strength, and, of course, the slip-line-stress-strain curve studies of the Stuttgart School. These serve to show what can be done.

This collection of papers gives us the by now familiar story of how powerfully transmission microscopy can provide quantitative information on a wide range of metallurgical investigations; information, that is, on a micron or hundred-Ångström scale. What the collection only hints at is the still obscure and fascinating question of the cooperative and dynamic behaviour of many dislocations in a straining crystal.

The book can be said to be a timely summary of a specialized field, and if it were not so highly priced, it would be a useful addition to every microscopist's library.

L. M. BROWN

Cavendish Laboratory
Free School Lane
Cambridge
England