

to be neglected the coefficient of total reflection is smaller than for a thin crystal', 'Let us consider the reciprocal lattice of a mosaic crystal. The points of this lattice are diffuse due to the disorientation of the blocks', and 'The angular width of the area of total reflection for a perfect crystal is given by the following equation  $\Delta\theta = 4\delta/\sin 2\theta_0$  where  $\delta = 1 - n$ ,  $n$  being the index of refraction for X-rays'.

In the description of experimental methods the lion's share of space (70 pages) is taken by the author's oscillating-film spectrometer technique for studying the angular range of reflexion from crystals. This would not be exceptional if other methods were dealt with conscientiously: in fact there are striking omissions of significant work emanating from both East and West. The chapter on topographic methods starts with an eight-page long description of very early experiments on anomalous transmission by Borrmann. The single page of unclear explanation of the Borrmann effect that follows serves quite inadequately to deal with this important topic. The theory of energy-flow refraction in slightly distorted crystals published by Penning and Polder in 1961, and the theoretical and experimental works that quickly stemmed from this, all pass unnoticed. Mistakes occur in the description of techniques developed by J.B. Newkirk and by the reviewer which imply either

remarkable carelessness or failure of comprehension on the part of the author.

The half-tone illustrations are generally very poor.

The number of references cited, 112, is small considering the breadth of the field the book attempts to review. Excluding papers by the author, only a dozen references relate to publications dated later than 1960. In running through those items familiar to the reviewer, no fewer than *fifty-two* errors, inadequacies and inconsistencies were noted. Many of these are bad enough to cause delay and frustration: their impact will fall heavily on the reader who does not have a good library at his elbow, and who is consequently poorly placed for ferreting out papers when given garbled clues – and this is just the type of reader whom monographs should try and assist. The publishers have done service neither to science nor to their own reputation by issuing this unreliable, unbalanced and obsolescent text.

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### Books Received

*The following books have been received by the Editor. Brief and generally uncritical notices are given of works of marginal crystallographic interest; occasionally a book of fundamental interest is included under this heading because of difficulty in finding a suitable reviewer without great delay. Mention here does not necessarily preclude a full review at a later date.*

#### **Optical properties of minerals. A determinative table.**

By HORACE WINCHELL. Pp. ix + 91. New York and London: Academic Press, 1965. Price 40 s.

This book provides up-to-date data for the optical identification of minerals without the use of restrictive methods or the precise measurements required for classification. It contains about a dozen pages of introductory notes, but the main part of the volume consists of tables and charts of the microscopical properties of minerals, based on refractive index, birefringence, and optic axial angle. It is claimed that the charts permit the identification of minerals of variable composition without difficulties connected with graphical discontinuities corresponding to changes of sign and so forth. The charts are applicable to observations on thin sections as well as on grains.

#### **Physical properties of magnetically ordered crystals.**

By E. A. TUROV. Pp. xx + 222. New York and London: Academic Press, 1965. Price not stated.

This book was originally published in Russian in 1963, and the translation has been prepared by A. Tybulewicz and S. Chomet. Its eleven chapters deal with General Phenomenological approach to the properties of nonconducting magnetic crystals, Ferromagnetism in uniaxial crystals, Temperature dependence of the magnetocrystalline anisotropy and of the magnetostriction of ferromagnets, Compensated collinear antiferromagnetism, General conditions for the existence of weak ferromagnetism in antiferromagnetic crystals, Weak ferromagnetism in uniaxial crystals of

even antiferromagnetic structure with respect to the principal axis, Weak ferromagnetism in uniaxial crystals of odd antiferromagnetic structure with respect to the principal axis, Weak ferromagnetism in orthorhombic crystals, Magnetic resonance in weak ferromagnets, Noncollinear antiferromagnetism, and Ferromagnetism and antiferromagnetism in a system of two crystallographically nonequivalent magnetic sublattices.

The primary aim of the book is to consider a wide range of physical phenomena, using a unified phenomenological method based on the spin-wave theory. The author attempts to establish qualitative and quantitative relationships between the different effects in ferromagnets and antiferromagnets, and devotes special attention to 'weak' ferromagnetic effects. There are a hundred and forty-five references, mainly but not exclusively Russian, and a subject index.

**Crystals.** By P. KRATOCHVIL. Pp. 112. London: Iliffe, 1967. Price 15 s.

This little book is an English translation, by Aleš Fořt, of a book originally published in Czech in 1963. Its four chapters are The structure of matter, Crystal structure, The origin of crystals, and The properties of crystals and their application. It is an ambitious undertaking to cover such a wide field in solid-state physics and crystallography in a very restricted volume, and the attempt cannot be regarded as entirely successful. Optical properties of crystals, for example, are dealt with in less than three pages. Nevertheless, the book provides a very useful survey, from which the reader can progress to more ambitious works.