

Notes and News

Announcements and other items of crystallographic interest will be published under this heading at the discretion of the Editorial Board. Copy should be sent direct to the British Co-editor (R. C. Evans, Crystallographic Laboratory, Cavendish Laboratory, Cambridge, England).

International Union of Crystallography

Notice of adhesion in Group VIII, as from 1 January 1953, has been received from the German Federal Republic through the Deutsche Forschungsgemeinschaft. The Sektion für Kristallkunde der Deutschen Mineralogischen Gesellschaft forms the National Committee, of which the Secretary is Prof. Dr G. Menzer (Universitäts-

institut für Kristallographie und Mineralogie, Luisenstrasse 37/II, München 2).

The number of Adhering Bodies is now 20.

Acta Crystallographica

Parts 8 and 9 of the current volume will be published together as a single issue on 10 September 1953.

Book Reviews

Works intended for notice in this column should be sent direct to the Editor (P. P. Ewald, Polytechnic Institute of Brooklyn, 99 Livingston Street, Brooklyn 2, N.Y., U.S.A.). As far as practicable books will be reviewed in a country different from that of publication.

Tables for Microscopic Identification of Ore Minerals. By W. UYTENBOGAARDT. Pp. vii+242. Princeton: University Press; London: Geoffrey Cumberlege. 1951. Price \$5.00; 32s.6d.

This publication is an informative and valuable compilation in which all available data likely to assist in the identification of opaque and semi-opaque ore minerals have been presented in a systematic and concise manner.

In the first table the minerals are listed in order of increasing polishing hardness, with additional data on composition, reflectivity, and anisotropism; the second table gives the same information, but with the minerals arranged in order of increasing reflectivity. The main table of mineral species, which follows, is divided into seven groups depending on whether the minerals have less, equal or more resistance to polish than the three standards galena, chalcopyrite and pyrite. The choice of this criterion as the main basis of classification is unfortunate, since, with modern polishing techniques, relief is not normally observed. In addition, the groups tend to be much too large (one contains 90 separate species) so that more supplementary tests are called for than are really necessary.

Within the main table much valuable information is presented under the headings of chemistry, crystallography, Tselmage hardness, reflectivity, colour, etch tests, and miscellaneous. The last column is probably the most useful one in the compilation. It gives details of ease of polish, reflection pleochroism, anisotropism, cleavage, twinning, texture, and paragenesis, together with copious references. It is important to note, however, that the remarks on ease of polish do not always apply when metal laps with diamond abrasives are employed: for example, with such techniques pyrite and cassiterite take a perfect polish which is smooth and entirely free from scratches. Reflection pleochroism and anisotropism are usually

given for oil-immersion only, and this must be constantly borne in mind when using the dry objectives of low and medium power now widely used in ore microscopy.

The table listing the minerals in order of increasing reflectivity has proved most useful to the reviewer, even although the data at present available are far from satisfactory. It seems likely that accurate measurements of reflectivity, with standardized polishing techniques and in monochromatic light, will soon become the most reliable starting point of opaque-mineral identification, in the same way as indices of refraction are now used for non-opaque minerals.

The volume contains a long list of discredited mineral species and a bibliography of 441 publications, which to some extent supplement those given in the 1950 edition of Ramdohr's *Die Erzminerale und ihre Verwachsungen*.

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Structure Reports for 1949. Edited by A. J. C. WILSON, C. S. BARRETT, J. M. BIJVOET and J. M. ROBERTSON. Pp. 478 with many figs. Published for the International Union of Crystallography. Utrecht: N. V. A. Oosthoek's Uitgevers Mij. 1952. Price 45 Dutch florins.

The new *Structure Reports* are so well done and represent such a monumental piece of work on the part of the Editors and Abstractors that it is hard to find anything critical to say of the present volume, any more than of its predecessor.

Volume 12 covers the year 1949. The great amount of X-ray work now being done is very graphically shown by the 450 pages required merely to abstract one year of it.

So detailed and factual a review should be invaluable to many besides crystallographers, and the Editors have given an almost ideal coverage of the field. It includes a statement of fragmentary X-ray and electron diffraction data from a wide variety of substances as well as descriptions of the complete or partial structures which crystal analysis is providing in undiminished numbers.

The only uncertainty that the study of this volume raises in the mind of the reviewer is a doubt as to whether or not we can afford so ideal a review. This doubt applies mainly to the detailed recording of the X-ray data, referred to above, that may help the physical chemist or the person using diffraction for analysis but that contribute little to an exact description of structure. There is value in collecting such items, often widely scattered through the literature; but their description often requires more space than is needed by a first-rate and significant structure. If the uses of X-rays expand still further the coverage of these fragments may ultimately eclipse in bulk what many will consider the primary field of the *Reports*. In that case it may become more difficult indefinitely to subsidize annual volumes which this coverage has already made rather large and expensive.

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Structure of Metals. By C. S. BARRETT. Pp. xvi+661 with many figs. and tables. New York; Toronto; London: McGraw-Hill. 2nd ed., 1952. Price \$10.00; 72s.6d.

'Barrett', as it is known in metallurgical laboratories, was born a standard work, an aristocrat among text books. Prof. Barrett has now produced a new edition which, while it retains the continuity of style essential for a text-book, also remains a book of reference so up-to-date that it almost discourages the keeping of a card index. There are a number of references dating from the year of publication.

The book has been increased in length by some 100 pages. The chief changes have come in the chapters on the structure of metals and alloys, transformations,

annealing texture and all that section of the book devoted to the plastic behaviour of metals. The theoretical part of this section has been entirely remodelled into a new chapter on dislocation theory, which replaces the former chapter on theories of slip. Extensive additions have also been made on theories of annealing textures, the crystallography of martensitic transformations, and neutron diffraction. The changes have not, however, been restricted to addition of new material and the occasional removal of outdated theories. The systematic treatment of basic crystallography has been clarified or amplified in places, the most important amplification being a concise vectorial treatment of the reciprocal lattice and the diffraction laws. Practical techniques have been brought up-to-date, comprising expanded treatments of such topics as chemical analysis by diffraction (including a critical discussion of the ASTM card-index); Geiger, proportional and scintillation counters and their uses, as for texture mapping and the determination of short-range order; X-ray microscopy; Fourier analysis of line profile; and the uses of low-angle scattering (though here the researcher requiring a full discussion will still need to turn to Guinier's book). Only structure analysis continues to be severely rationed for space. Prof. Barrett has evidently decided to give this subject a marginal place in his scheme, and moreover recent advances do not lend themselves to concise treatment, so that one cannot in fairness complain of this. The outstanding references are given.

In spite of the systematic way in which the basic concepts of crystallography are introduced and developed, the book is probably too daunting in scope to serve as a general undergraduate textbook. As the author himself implied in the preface to his first edition, it is better suited to the needs of postgraduate students and researchers, and of final-year undergraduates in physical metallurgy. The graduate starting research in almost any field of physical metallurgy can accompany the author on a tour of inspection which will make him familiar with the state of knowledge, and indeed the flavour of that field. He will also find, in sufficient detail, those humdrum but essential practical points which will save him much floundering when he rolls up his sleeves in the laboratory.

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