

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.

X-ray Diffraction Patterns of Lead Compounds. Pp. 81 with 9 figs. Chester: Shell Petroleum. 1954. Obtainable free of charge from Thornton Research Centre, Shell Petroleum Company Ltd, P. O. Box 1, Chester, England.

The identification of a substance by means of its X-ray diffraction powder pattern is a straight-forward procedure provided a standard pattern corresponding to the unknown can be found in an index of patterns. Failing this, one turns to crystallographic calculations or a literature survey, often followed by chemical analysis and in turn by chemical synthesis, all in an effort to identify the unknown pattern. To avoid repetition of this time-consuming search, many firms have set up data files from the detailed examinations they have made of compounds of particular interest.

The problem then arises, should one publish these data which would be helpful to others working in similar lines? Several companies have answered this question emphatically in the affirmative and have gone to considerable expense to present their collection of data in a manner which would be most helpful. The notable example of this was the publication in 1938 by the Dow Chemical Company of Midland, Michigan, of the powder data for one-thousand compounds. This became the foundation of the now widely used method for powder-pattern identification. This publication, together with other data, is consolidated in the index of the American Society for Testing Materials which is universally consulted.

The book under review presents the powder diffraction data of forty-two compounds of lead, many of which have been identified in deposits formed in internal combustion engines using leaded fuels. Data had been previously published on less than half of these compounds. The care evident in the presentation of the data suggests that new and improved standards are now available for these compounds as well as those published for the first time.

We trust that in the publication of this book, by the Shell Petroleum Company Limited, other companies will find inspiration to prepare for publication data from their files which may be released to the benefit of all.

Canadian Industries (1954) Limited,
McMasterville, Quebec, Canada

F. W. MATTHEWS

Précis de Minéralogie. By P. LAPADU-HARGUES. Pp. 310 with 69 figs. Paris: Masson. 1954. Price bound 2200 fr.; paper cover 1700 fr.

The express intention of the author was to provide 'a mineralogy for those who are not mineralogists professionally'—in particular for students of allied sciences, such as physics and chemistry. There is nothing novel in the approach, however, and the form common to many mineralogical texts is followed. About one-third is devoted to general principles of morphological crystallography,

physical properties and chemical tests, and the remainder to descriptions of minerals. These are grouped as non-silicates, silicates, and radio-active minerals, the classification being chemico-structural.

In spite of the attention called, both in the preface and conclusion, to the remarkable advance of mineralogy by the impact of structural physics and the frequent comparisons made between mineral structures, no introduction to the principal types of mineral structures is given. With the exception of SiO_4 groupings and linkages, no structures are described or figured, and even the basic structural feature of oxygen close-packing, common to so many minerals, goes without mention.

It is surprising that, having admitted the logical, universal and rational character of the Miller system of crystal indexing, the author adopts the Levy system throughout, and every crystal drawing is indexed with Levy symbols only. Mistakes of fact abound and begin with the description of the cover design as a twin crystal. Misprints too are unnecessarily frequent. Some of the crystal drawings glaringly disobey the rules of perspective and symmetry.

With these shortcomings it is difficult to commend the book, although it is well printed and bound.

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Der Ultraschall und seine Anwendungen in Wissenschaft und Technik. By L. BERGMANN. Pp. xvi+1114 with 609 figs. Stuttgart: Hirzel. 6th ed. 1954. Price DM. 72.

The fifth (1949) edition of this standard work on ultrasonics was called *the* book of ultrasonics by the reviewer in this journal, J. Weigle (*Acta Cryst.* (1952), 5, 298). The sixth edition deserves the same praise: in it the same standard of completeness and alertness is maintained, in spite of a vastly augmented output of research papers in this field. The numbers of pages, figures and references have been increased from 748, 460 and 2212 to 1114, 609 and 3550, respectively. This indicates only partly the great amount of work spent by the author on the new edition, since most chapters have been entirely overhauled. The barium titanate and the ammonium dihydrogenphosphate ultrasonic generators are given a full discussion. The 260 pages on technical applications of ultrasonics form stimulating reading.

It is sometimes not sufficiently realized what a magnificent tool ultrasonics provide for the determination of the elastic constants of crystals by means of the diffraction pattern obtained when light traverses the ultrasonic stress field in an oscillating crystal. This method was inaugurated experimentally by Schaefer and Bergmann in 1934 and the theory was formulated by Fues and Ludloff in 1935 and recast by Nath and Mueller a little later. In the case of barytes the discussion of only three diffraction photographs yields the nine elastic