

mechanical theory of single scattering, Rutherford's law, wave mechanics and the discovery of electron diffraction. Chapter II outlines the geometrical theory of electron diffraction by atoms in terms of Schrödinger's equation and Dirac's theory, and extends this to the interference maxima obtained from molecules in gases and vapours. Chapter III, on the geometrical theory of electron diffraction by crystals, begins with the now familiar definitions of the reciprocal lattice, and proceeds to give Laue's expressions for the intensity of electrons in any direction resulting from diffraction of a plane wave by a parallelipedal crystal, Ewald's construction for the strong diffracted rays and, finally, the intensity distribution in ring patterns from polycrystalline specimens and in single spot patterns. Effects due to crystal shape are also discussed. A short description of diffraction of molecular rays and neutrons is given in the fourth chapter. The highest development of the theory of electron diffraction by crystals, namely, the dynamic theory with its many assumptions and approximations, forms the subject matter of the fifth and longest chapter. The author has made it clear that this is still incomplete in that he has not been able to take into account the unknown variation of fields near the surface of the crystal. The effect of heat motion in crystals on the diffraction phenomena is not discussed and it is hoped that this gap will be filled in a later edition.

As one who finds the Gothic alphabet confusing, I would like to express the further hope that some day an internationally accepted system of symbols and notation will be achieved.

This important book can be warmly recommended to the advanced physics student and to all workers in the field of structure analysis. No reader can fail to appreciate and be stimulated by Laue's brief discussion of causality in relation to the development of the particle-wave idea.

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### Gmelin Handbuch der anorganischen Chemie.

**Platin A5.** Pp. 188 + viii, with 61 figs. Clausthal-Zellerfeld: Gmelin-Verlag. 1949. Price DM. 43.00.

This part, which consists of pp. 533-718 inclusive of the volume on 'Platinum', is concerned not at all with platinum itself, but deals comprehensively and exclusively with the alloy systems of ruthenium, rhodium and palladium, (a) with one another, and (b) with all other metals *except* the remaining platinum metals. In the case

of more than half of the 279 two- to five-component systems reviewed, copious cross-references are given to the patent literature on the subject. This is especially valuable as the patent literature is frequently the only source of information available. Valuable also is the specific mention of those binary systems with these metals, of which there is no record in the literature. The provision of a double index makes reference to a particular alloy system very easy. The published information regarding these alloys has been extracted in great detail and includes phase diagrams, crystal-structure data, mechanical, magnetic, electrical, thermal, chemical and other properties. Included also is a full discussion of the sorption of hydrogen by the alloys of palladium with silver and gold and mention of its sorption by alloys with copper, nickel and rhodium. The original literature has been reviewed up to the end of June 1948.

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### Gmelin Handbuch der anorganischen Chemie.

**Antimon B3.** Pp. 69 + xlv, with 4 figs. Clausthal-Zellerfeld: Gmelin-Verlag. 1949. Price DM. 24.75.

This part completes the volume devoted to antimony in the eighth edition of the *Gmelin Handbuch*. It covers the compounds of antimony with the less electro-negative non-metals, particularly sulphur and selenium, and as usual includes with much detailed and up-to-date physico-chemical data (literature references up to the middle of 1948 are given) some fascinating oddities from the byways of descriptive chemistry. It does not perhaps contain all the oddities which a crystallographer or mineralogist might expect; thus we learn that precipitated  $Sb_2S_3$  is converted by a pressure of 1000 atm. to a form called metastibnite, but we are not told that this name was applied much earlier to an amorphous form of  $Sb_2S_3$  found naturally, or indeed that naturally occurring crystalline  $Sb_2S_3$  is called stibnite by English-speaking writers. A curious omission among the wealth of physical data (including optical data) on crystalline  $Sb_2S_3$  is the refractive indices. Crystallographic details appear to be accurate, and a good feature is a statement of the method (e.g. 'powder photograph with Mo K radiation') when two substances are reported to have been shown to be the same by X-ray examination.

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## Books Received

*The undermentioned works have been received by the Editors. Mention here does not preclude review at a later date.*

**Angewandte Gitterphysik.** By W. KLEBER. Pp. viii + 215, with 54 figs. Berlin: de Gruyter. 2nd improved ed. 1949.

**An Introduction to Luminescence of Solids.** By H. W. LEVERENZ. Pp. xv + 569, with 143 figs., 23 tables and 1 chart. New York: Wiley; London: Chapman and Hall. 1950. Price \$12; 96s.

**An Index of Mineral Species and Varieties Arranged Chemically.** By M. H. HEY. Pp. xx + 609. London: printed by order of the Trustees of the British Museum. 1950. Price 30s.

**Plasticity of Crystals.** By E. SCHMID and W. BOAS. Pp. 353 + xvi, with 222 figs. and 42 tables. Translated from the German. London: F. A. Hughes & Co. 1950. Price 35s.