

excluded completely. They were dealt with so scantily that they could not easily be understood and their inclusion added nothing to the overall understanding of the material.

A chapter on the internal structure of crystals gives a brief account of each of the three main types of diffraction experiment, with X-rays, electrons and neutrons and also of electron microscopy. There are useful descriptions of electrostatic lenses and of how a magnetic structure can be elucidated with neutrons. A very important point, not made at all, is that structural information may be difficult to obtain from diffracted data, which is, after all, one of the basic features of structural crystallography.

The next chapter deals with the forces which bind crystals together, ionic and covalent bonding forces and van der Waals forces. The section of this chapter which deals with energy-band theory is done quite well and should be useful at the introductory undergraduate level.

The book concludes with three short chapters, one dealing with defects, dislocations and non-crystalline materials and

the final two with coloured symmetry and with elementary group theory.

A useful appendix includes instructions for making cardboard models (octahedron, rhombic dodecahedron, *etc.*) and gives some tips for crystal growing.

The book is interspersed with numerous examples, some fairly difficult, whose usefulness would have been enhanced had solutions, perhaps even worked solutions, been provided.

To summarize – some flaws but a good book on the whole. It can be recommended to that class of readers for which it is intended.

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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.*

**Manual of Petrographic Methods.** BY ALBERT JOHANNSEN. Pp xxviii + 649. New York: Hafner Publishing Co. Inc. 1968. (Originally published 1918). Price \$12.50.

This book is a facsimile of the second edition, first produced in 1918. The bulk of the work is a treatment in considerable depth of optical mineralogy with detailed descriptions of techniques for examining mineral crystals by microscopy and by other optical methods.

The last hundred-or-so pages deal with the measurement of specific gravity, the separation of the constituents of rocky specimens and the preparation of thin sections of rock.

**Igneous rocks and the depths of the earth.** BY REGINALD ALDWORTH DALY. Pp.xvi + 598. New York: Hafner Publishing Co., 1968. (Originally published 1933). Price \$12.00.

This work was originally published in 1933 and includes some revised chapters of *Igneous Rocks and their Origin* (1914).

It gives a comprehensive descriptive account of igneous activity in the earth's crust and surveys the theories which have been put forward to explain the observations.