

The authors express their sincere thanks to Prof. K. Tanaka of Kyoto University and Prof. S. Miyake of Tokyo University for their kind encouragements and discussions.

References

- BETHE, H. (1928). *Ann. Phys. Lpz.* **87**, 55.
 BOLLMANN, W. (1956). *Phys. Rev.* **103**, 1588.
 HASHIMOTO, H. & UYEDA, R. (1957). *Acta Cryst.* **10**, 143.

- HEIDENREICH, R. D. (1949). *J. Appl. Phys.* **20**, 993.
 HIRSCH, P. B., HORNE, R. W. & WHELAN, M. J. (1956). *Phil. Mag.* **1**, 677.
 MENTER, J. W. (1956). *Proc. Roy. Soc. A*, **236**, 119.
 MENTER, J. W. (1958). *Adv. Phys.* **7**, 299.
 PASHLEY, P. B., MENTER, J. W. & BASSETT, G. A. (1957). *Nature, Lond.* **179**, 752.
 READ, W. T. (1953). *Dislocations in Crystals*, p. 116. New York: McGraw-Hill.

Book Reviews

Works intended for notice in this column should be sent direct to the Editor (A. J. C. Wilson, Department of Physics, University College, Cathays Park, Cardiff, Great Britain). As far as practicable books will be reviewed in a country different from that of publication.

Studies in Crystal Physics. By M. A. JASWON. Original Papers and Papers Reprinted from *Research*, Vol. 11, 1958. 42 pages. London: Butterworths Scientific Publications. Price 10s. 6d.

Four of these papers, dealing severally with the geometry of lattice planes, lattice imperfections, X-ray diffraction by imperfect crystals, and the geometry of martensitic phase transformations, are reprinted from *Research*. The fifth, a survey of classical thermodynamics as applied to phase transformations involving crystals, has been specially written for this booklet.

The aim of the collection is to give the non-specialist some idea of the flavour of present-day research in the fields touched upon. However, the level and the degree of compression of the text is variable, and for non-specialists is rather too advanced in places, especially in the third and fourth papers. By way of example, the three short paragraphs devoted to the reciprocal lattice (pp. 17, 18) impart little real feeling for its role in crystal physics.

The second paper offers a good concise survey of some salient features of point and line defects in crystals. However, the most valuable part of the booklet, at any rate for the professional crystallographer, is the first paper, which is itself a précis of a series of three papers, by Dr Jaswon and Dr D. B. Dove, published in *Acta Crystallographica*. This deals with the solution of the mathematical problem of preparing a normal projection of an individual plane, or of a pair of planes, out of a family of lattice planes of specified Miller indices in any crystal system; the solution permits the positions of all lattice points lying in the plane to be computed. This is of much importance in several fields of geometrical crystallography and has not, to the reviewer's knowledge, been adequately dealt with before. A valuable application of this technique to the crystallography of deformation twins is briefly sketched.

Trivial errors only were encountered; in particular, the caption to Fig. 12 (p. 20) appears to be inexact, in that a back-reflexion ring with $Mo K\alpha$ radiation from steel will not have indices 310; and the corresponding paragraph in the text is tantalisingly incomplete. In general, however, printing and presentation are excellent.

R. W. CAHN

*Department of Physical Metallurgy
 Birmingham University
 Birmingham, England*

Dendritic Crystallization. By D. D. SARATOVKIN. Translated from Russian by J. E. S. BRADLEY. 2nd edition. New York: Consultants Bureau Inc. Price \$6; 50s.

This is a rather unusual book presenting the very individualistic viewpoint of the author. It seems that the author's ideas came under severe criticism from his colleagues after the publication of the first edition, and on reading the second edition one is not surprised. The book follows closely the pattern of a Ph.D. thesis giving first a review of literature, almost entirely Russian, then the experimental method and finally the results.

The author's experiments have been concerned with effects of different cooling conditions and organic additives on the modes of dendritic growth of ammonium halides. Precise details of how the experiments were carried out are given and the characteristics of the Russian microscopes for stereo photo micrography are discussed. Within the text a series of stereo pairs are presented, together with instructions for examining these without the aid of a stereo viewer.

The last two sections are of more metallurgical interest. Here the author classifies eutectics as a special form of dendritic growth and then describes experiments to determine the contact fusion temperature of mixed metal powders. This temperature is identified with the eutectic temperature, and from the identity and a topological argument it is then deduced that five component eutectics cannot exist.

The final chapter on the solidification of killed steel (translated as bubble-free steel) is very dull. The author makes somewhat extravagant claims for the ideas he is putting forward, but it is difficult to appreciate just what is original about them.

Whilst the aims of the publishers are very laudable, surely there must be books more worthy of translation from Russian than this one. The typographical monotony makes the book tedious to read, and the chapter headings are almost indiscernable. Altogether the book is very poor value for money and will probably find its way only into the obscure corners of library shelves.

JACK NUTTING

*Department of Metallurgy
 The University
 Cambridge
 England*