Notes and News

Announcements and other items of crystallographic interest will be published under this heading at the discretion of the Editorial Board. The notes (in duplicate) should be sent to the Executive Secretary of the International Union of Crystallography (J. N. King, International Union of Crystallography, 13 White Friars, Chester CH1 1NZ, England).

Notices of meetings

Notices of meetings of interest to crystallographers are published in two special sections in *Journal of Applied Crystallography*. A detailed announcement is made once only under the heading *Forthcoming Meetings*. The date, location, and title of the meeting, together with a reference to the issue of the Journal in which the detailed announcement was given, are repeated under the heading *Calendar of Events* in all issues up to and including the one immediately preceding the meeting. Notices of meetings are not regularly published in *Acta Crystallographica*, except that a meeting of special interest to structural crystallographers may be announced once only in Section B under the heading *Notes and News*.

Organizers of scientific meetings of interest to crystallographers are invited to send full details to Dr J. N. King, Executive Secretary, International Union of Crystallography, 13 White Friars, Chester CH1 1NZ, England. Announcements will be published at the discretion of the Editorial Board.

Book Reviews

Works intended for notice in this column should be sent direct to the Book-Review Editor (M. M. Woolfson, Physics Department, University of York, Heslington, York YO1 5DD, England). As far as practicable books will be reviewed in a country different from that of publication.

Magnetic properties of rare-earth metals. Edited by R. J. ELLIOTT. Pp. vi + 425, Figs. 193, Tables 31, New York: Plenum Press, 1972. Price $32.00.

The rare earths form a group of chemically similar elements which have in common an open 4*f* shell. This particular feature of the electronic structure gives rise to a large variety of interesting magnetic properties. Although the first acquaintance with the rare earths dates back to the 18th century, the majority of the fundamental research has been performed during the last decade. This is essentially a consequence of the breakthrough in the purification process of the rare-earth elements. A point has now been reached at which the overall knowledge of rare-earth magnetism is satisfactory, although there are many details still to be elucidated experimentally and much to be done theoretically. Nevertheless, a status report which reviews the rapidly growing subject of rare-earth magnetism will be welcomed by many physicists working in this field.

The book consists of a series of articles, written by acknowledged experts in their fields. Each article deals with a particular topic, and they are so written that they are complete in themselves and can be read without reference to each other. The titles of the chapters and their authors are as follows.

1. Introduction, by R. J. Elliott.
2. Phenomenological theory of magnetic ordering: importance of interactions with the crystal lattice, by B. R. Cooper.
3. Magnetic structures of rare-earth metals and alloys, by W. C. Koehler.
4. Bulk magnetic properties, by J. J. Rhyne.
5. Spin waves, by A. R. Mackintosh and H. Bjerrum Møller.
6. Energy band structure, indirect exchange interactions and magnetic ordering, by A. J. Freeman.
7. Transport properties, by S. Legvold.
8. Hyperfine interactions, by B. Bleaney.

After a general introduction by the editor, Chapters 2, 3, 4, 5, and 7 present an almost complete review of the experimental data accumulated up to now, and the results are quantitatively interpreted on the basis of a phenomenological theory including crystal-field, exchange, and magnetoelastic interactions. However, *a priori* calculations of the phenomenological constants are still in a fairly primitive state. An excellent review of our present understanding of the electronic properties of the rare-earth metals as derived from band theory is given in Chapter 6. Finally, some nuclear techniques applied to the investigation of hyperfine interactions are described in Chapter 8 which, in the opinion of the reviewer, should have been extended to include magnetic-resonance methods in general. The most powerful tool in the exploration of rare-earth magnetism, the thermal neutron-scattering technique, is mentioned in Chapters 3 and 5.

The overall quality of the writing is very high, and the illustrations are excellent. Of special interest are the numerous tables which contain a large amount of concentrated information. It is worthwhile pointing out the uniformity of the symbols throughout the book, a credit to the editor.

Overall the book has a high standard, but it is not necessarily addressed to the specialized physicist. It is based on a sound mathematical treatment, but it is backed by an exposition in purely physical terms which makes it interesting and readable. The book can be recommended to anyone who is interested in any aspect of rare-earth magnetism.

ALBERT FURRER

Delegation für Ausbildung und Hochschulforschung
am Eidg. Institut für Reaktorforschung
CH-5303 Würenlingen
Switzerland