up 154 pages. There are also 20 papers, in 216 pages, which were given in general sessions dealing with a wide range of clay mineral studies. The book begins with a report on a field trip held in conjunction with the conference and is completed by an adequate 11 page index.

As the title suggests, the unifying topic is clays, and everyone working in this field will find something of interest in the book. The subject matter, mainly the physical chemistry and mineralogy of clays, will be of only marginal interest to crystallographers. Crystallographers, however, may be interested in the one-dimensional swelling in water of crystals of the butylammonium-vermiculite complex described by Garrett and Walker. In the swollen crystals the 10 Å thick alumino-silicate layers are separated by some hundreds of Å of water. Facing p. 558 is a photograph showing crystals before and after swelling in which the swollen crystal appears to be about 40 times as thick as the crystal before swelling.

The editor and the printers are to be congratulated on the appearance of the book. The printing is good and few errors were noticed. The interval between the conference and the publication of the proceedings, nearly two years, does seem rather long for what is in effect an annual production.

G. Brown

Rothamsted Experimental Station
Harpenden
England

Proceedings of the International Conference on Magnetism and Crystallography. Kyoto, 25–30 September, 1961. Volume III. Neutron Diffraction Study of Magnetic Materials. Journal of the Physical Society of Japan. Volume 17. Supplement B–III 1962. Pp. 71. Price U.S. $1·00.

The International Conference on Magnetism and Crystallography held in Kyoto, Japan, in September 1961 consisted of two parts, a conference on magnetism and a symposium on electron and neutron diffraction. For two sessions the two sections of the meeting combined together and the present volume of seventy pages is a collection of the 20 papers delivered at these joint sessions under the title 'Neutron Diffraction Study of Magnetic Materials'.

The reader will not be surprised to find that nearly all the papers are concerned with the transition metals of the iron group and their alloys or compounds. Unless, however, he has kept in close touch with this work he may well be surprised at the precision and discrimination in measurement which is now being achieved, the range of problem which is being studied (covering elastic and inelastic, coherent and incoherent scattering) and the variety and complication of the magnetic arrangements in solids which now stand revealed. As examples of the former we may note very careful studies of magnetic form factors, aimed at giving precise knowledge of the spin-density distribution in magnetic atoms, and measurement of the temperature-dependence of the lifetime of spin waves in magnetite: on the last topic we can see the fascinating magnetic structures postulated for chromium, manganese chromite and many of the rare-earth metals, involving sinusoidally varying magnetic moments and spiralling configurations of spins.

It is not usual to recommend a collection of conference papers as general reading. However, this compilation is exceptional. The papers are commendably short, averaging little more than three pages each, and a reader with only a slight interest in the subject may find that to read them all straight through does not require undue perseverance. It will be rewarded by a well-balanced view of the present knowledge and prospects in this field.

G. E. Bacon

Atomic Energy Research Establishment
Harwell
England