1984 and sponsored by the Mineralogical Society, the British Ceramic Society, the Institute of Physics and the Polar Solids Discussion Group at the Royal Society of Chemistry. This symposium sought to review some of the recent developments and achievements in experimental and theoretical techniques for characterising the defect and transport properties, and to illustrate the range of problems encountered in the various disciplines—in both academic and industrial environments. The thirty-one papers are collected under five headings: characterisation, kinetics, modelling studies, mass transport and industrial topics. [M.A.87M/0572-0602]

R. A. HOWIE

Boisen, M. B. and Gibbs, G. V. *Mathematical Crystallography: an introduction to the mathematical foundations of crystallography.* Washington D.C. (Mineralogical Society of America: Reviews in Mineralogy, Vol. 15), 1985. xii + 406 pp. Price $18.00.

The mathematical foundations of crystallography treated in this book are of two kinds. The first (treated in chapters 1–3 and apendices 1–5, amounting to just less than half the book) is the kind of mathematical foundation needed by a crystallographer if he is to take advantage of the essential simplicity of treating crystallographic problems by vector and matrix methods, rather than the trigonometric methods that are being relegated to the past. Such a crystallographer will find here an excellent introduction to the mathematics involved, and one which is wholly relevant to his purpose. There are plenty of exercises provided for anyone using the book as a self-teaching manual, and they are interspersed in the text so as to press home each development of ideas as it occurs. One only wishes that answers were provided to more of them.

The second kind of foundation treated (in chapters 4–7 and appendices 6–8) is the kind that most people prefer to leave buried and undisturbed while they live in the superstructure built on it. This is the mathematical theory and proofs of the existence of the 32 point groups, the 14 Bravais lattice types, and the 230 space groups. Not many practising crystallographers need, or wish, to pursue the subject to this depth, though it would be an excellent preparation for those who aim to follow, or contribute to, current work on modulated crystals and quasi-crystals.

The book has very few misprints or other blemishes. The worst is the orientation of the component drawings of the stereoscopic pairs illustrating the point groups: the principle of them is excellent, but because the y-axes have been set horizontal on the page instead of the z-axes being set vertical, none of them looks orthogonal when viewed stereoscopically. It is a pity that the authors have used the same word (system) for the concept involved in *both* the six crystal families and the seven crystal systems. However, these are minor matters, and I only wish that this excellent book had been available to me 30 years ago. It is curious that a book with the same main title and with much the same scope was published by H. Hilton in 1903: the crystallography was the same, only the mathematical foundations have changed.

E. J. W. WHITTAKER

Graham, A. L., Bevan, A. W. R. and Hutchison, R. *Catalogue of Meteorites: with special reference to those represented in the collection of the British Museum (Natural History), IVth Edition.* London, British Museum (Natural History), and Tucson (University of Arizona Press), 1985. xii + 460 pp. Price £38·50.

This replaces the 1966 Catalogue by Hey and the 1977 Appendix by Hutchison, Bevan and Hall. It is based on a computer file and is presented as a tribute to Max Hey who hand-crafted two earlier editions. Users of the 1966–77 works will naturally move up to this, but should not allow those earlier volumes to be mislaid, since they contain a measure of information which has now suffered deletion.

In style and format, the new pages are twice the size, laid out in double columns and without the benefit of the old emphatic differences of type face. Even the geographical coordinates have been restyled. The content has been influenced by developments such as the publication of Buchwald's monograph, the reclassification of stones by petrological criteria and a simpler view of their chemistry and the unearthing (?) of the Antarctic hoards.

Although it retains its sub-title relating to the B.M. collection, it has lost its ancient 'History of the Collection' and is very much the standard international work of reference. The Trustees of the British Museum deserve the gratitude of the space community for underwriting this work and it is important that the effort be continued toward the production of later editions. In 1914, just about a biblical lifetime ago, Lazarus Fletcher produced the eleventh edition of his 'Introduction to the study of meteorites with a list of meteorites represented in the Collection'. In 125 pages and at a price of one shilling it stands opposite the present work—providing historical book-markers for a generation of meteorite studies. With both volumes to hand