Short Notices

An Introduction to X-Ray Crystallography

M. M. Woolfson

Pp 380 (Cambridge University Press, 1969) 85*s*

This book deals with the fundamental science rather than the practice of X-ray crystallography. Although the author claims that this is an elementary text which will serve either the undergraduate or postgraduate student, it isunlikely to appeal to those whose introduction to X-ray crystallography is experimental.

The reader needs to be fairly competent mathematically to appreciate the approach. It will therefore appeal to those who are considering X-ray crystallography as a profession and to those in other disciplines who use X-ray crystallography as a tool and who wish to gain a deeper understanding of the scientific basis of their measurements and experimental interpretations.

Following an introduction to the geometry of the crystalline state Professor Woolfson continues with a study of how X-rays are scattered by the lattice and the diffraction effects which occur when a primary X-ray beam is incident onto a crystal array. Experimental methods of measuring the diffracted beams are then considered with a discussion of both single crystal and powder techniques.

The Fourier transform is introduced and it is shown how this mathematical technique may be applied to deduce the arrangement of the diffracting atoms in space. The final chapters of the book are devoted to the solution of space groups and crystal structures from the measured experimental intensities.

A very useful last chapter deals with the accuracy of the measurements and the refinement techniques that can be applied.

The value of the book as a teaching source is extended by the inclusion of questions at the end of each chapter and a bibliography of the currently available works on X-ray crystallography.

R.A.F.

Structure, Properties and Preparation of Perovskite-type Compounds

Francis S. Galasso

Pp 207 (Pergamon Press, 1969) 70*s*

This is the fifth volume in the International Series of Monographs on Solid State Physics and deals with the preparation structure and properties of the perovskite compounds (e.g. $BaTiO_3$).

The book is wide ranging in scope and deals not only with the traditional ABO_3 compounds, but also with the newer $A(B_x' B_{1-x}'')O_3$ and non-oxide perovskite compounds (e.g. $RbFeF_3$).

Because of the growing number of applications for these compounds as catalysts and laser modulators as well as for devices utilising long fluorescent lifetimes, room temperature electro-optical effects, ferroelectric and piezoelectric effects, a substantial part of the book is devoted to the structure, phase equilibria and preparation of the compounds, as single crystals, thin films and powders.

The author has reviewed the known structure and properties of the currently available materials in several extensive tables, and has sought to show how new perovskite compounds with improved properties might be derived from the insight already gained into the structure-property relationships.

Further chapters of the book deal with topics such as conductivity-including superconductivity and semiconductivity, ferroelectricity-including the properties of pseudo binary compounds, ferromagnetism and optical properties.

Although the book will have an immediate appeal to those working with perovskite and similar compounds, it will be a valuable source of information to a much wider circle of research workers and postgraduate students.

R.A.F.