

as it was then practised. The new edition, as mentioned by the authors, now represents an introductory account of the subject. Even so, the size has increased; the book is now sixty-nine pages longer, and another eighteen pages previously devoted to appendix material (covered more fully in *International Tables for X-Ray Crystallography*) are now devoted to regular text matter.

The essential character and content have been retained even though the original nine chapters have grown into fourteen. A new chapter (3), 'Intensity Statistics Applied to Space-Group Determination', has been expanded by A. Hargreaves from Section 4.5 of old Chapter 2. The remaining chapters of 1-9 retain their original titles. The earlier ones are substantially the same as before. The later ones are more extensively revised. Chapter 9 (old 8), 'Direct Methods', has been rewritten and expanded by M. M. Woolfson. Chapter 12, 'Accuracy and Refinement', has been revised from old Chapter 8.

The new material is well described by the new chapter titles: 10, 'Fourier Transforms and Optical Methods'; 11, 'Effects of Thermal Vibration'; 13, 'Neutron Diffraction and Electron Diffraction'; and 14, 'Anomalous Scattering and Structure Determination'. The authors state that, after careful consideration, they decided against including any treatment of (electronic) computing. They feel that this aspect cannot be treated adequately in a book of this size and type.

As before, the book presumes a knowledge of structural crystallography, X-ray optics, simple vector algebra, and some higher algebra. Without a doubt, this clear and concise presentation will continue to be popular among those with sufficient preparation. Among mineralogists, the book is most likely to be used by those who have a somewhat stronger physical and mathematical background than what is typically obtained by the end of undergraduate work in geology.

D. M. HENDERSON

AMOROS (J. L.) and AMOROS (M.). *Molecular Crystals: Their Transforms and Diffuse Scattering*. New York and London (John Wiley & Sons), 1968. xxi+479 pp., 42 figs. Price 210s.

This book is the second to be published in a series of monographs in crystallography under the editorship of M. J. Buerger. Although the title itself indicates that the book has its greatest relevance to the study of organic compounds, nevertheless it contains much of interest to others concerned with crystal structure determination, whatever the realm in which they practise.

The most commonly performed crystal structure determination assumes that the crystal has an ideally periodic distribution of atoms, giving a regular array of X-ray diffraction maxima in Bragg reflection positions. Although for many substances this is a very close approximation to reality, for many others it is not, since crystals are often to some degree and in some manner disordered. This disorder can lead to measurable X-ray intensity scattering in non-Bragg directions. The present work discusses mainly the effects on diffraction of disorder of a particular kind, that produced by thermal vibration.

The subject is treated in six chapters. The first three (nearly half the book) deal with the basic concepts of X-ray diffraction. The fourth and fifth chapters deal with the diffuse scattering of X-rays as observed in molecular crystals, and the relation of this to elastic constants and molecular forces. (Studies of this kind have also been carried out on mineral specimens including diamond, halides, and sulphides as well as metals.) The last chapter is concerned with the temperature dependence of diffuse scattering, and also discusses the special effects that appear at the transition temperature of a continuous (displacive) transformation.

Optical analogies of X-ray diffraction have been used for crystal structure determination, including some studies of disorder. The authors of the present work have been the leading practitioners of this method in its application to the study of thermal disorder. This approach to the problem therefore features prominently in their book, but not by any means to the exclusion of mathematical treatment.

The text of the book, including a useful reference list and index, is well produced as are also the figures. Crystallographers will be glad to have it and will no doubt look forward to the appearance of others in this series.

J. ZUSSMAN

HANSFORD (S. HOWARD). *Chinese Carved Jades*. London (Faber and Faber), 1968, 131 ff., 6 figs., 8 coloured pls., 96 half-tone pls. Price 105s.

This book is a successor to the same author's *Chinese Jade Carving*, published in 1950 and for long out of print; it is, however, a new book and not a revised edition of the earlier one. The introductory chapter includes a useful account of recent developments in museums and archaeological work in Taiwan and in mainland China. The second chapter deals with the jade minerals, their properties, identification, and world distribution, and concludes with a description (including the economic and political history) of the source-areas of the jade materials that were used in China. Mineralogists, as well as more general readers, will find this somewhat involved chapter difficult to follow, but ample references to geological reports and other books and documents are given. At least part of the difficulty is due to the uncertain identification of some of the carved objects that are critical to the interpretation of the origin of the material; much wider use of modern non-destructive methods of identification and characterization of carved jade and 'pseudo-jade' objects is needed. Chapter 3 describes the methods used for carving jade, and the remaining three chapters are concerned with the art and archaeology of jade. The book makes no claim to be a comprehensive treatise or catalogue; rather it is a study, by an acknowledged expert, of a material that has in its time been valued above all others, and of the art-form to which it gave expression. The book is well illustrated, and the eight colour plates in particular are of fine quality.

B. C. M. BUTLER

MEEN (V. B.) and TUSHINGHAM (A. D.). *Crown Jewels of Iran*. Toronto (University of Toronto Press), 1968, viii+159 pp., 10 figs., 78 coloured pls. Price \$20.00.

This book records in a series of magnificent colour photographs what is probably the most dazzling collection of gemstones and jewellery known in the world. The collec-