I must compare this treatment with developments in the theory of chemical transport reactions by physical-inorganic chemists. The problems, the variables, are similar, but I think modern quantitative chemical treatments are more advanced and probably more useful even geologically.

W. S. FYFE

LIPSON (H.) and STEEPLE (H.). *Interpretation of X-ray powder diffraction patterns.* London (Macmillan) and New York (St. Martins Press), 1970. viii+335 pp., 129 figs., 3 pls. Price £4·00.

This book is a revised edition of that part of the earlier text *Interpretation of X-ray diffraction patterns* by Henry, Lipson, and Wooster (M.A. **11**–357, 15–87) dealing only with powder methods. Although powder methods may be of less fundamental significance than single-crystal methods, they are of considerable importance in determinative mineralogy and this text will be of use to mineralogists as well as to X-ray crystallographers. For the former perhaps the most useful section will be the chapters on the interpretation of powder photographs and on the accurate determination of cell dimensions. These chapters have been considerably expanded over those in the previous editions and now include details on the techniques of assigning indices in the monoclinic and triclinic systems, Ito's procedure for transformation of axes, various graphical methods of indexing, and an important section on checking the validity of a result. A new feature is the inclusion of a new 20-page section of problems and their solutions, whose completion should ensure a thorough grasp of space groups, the problem of selecting suitable radiation, and the determination of cell parameters. This new version of part of a well-established text-book will be welcomed widely.

R. A. HOWIE

ANDERSON (B. W.). *Gem Testing* (eighth edition). London (Butterworths), 1971. xiv+384 pp., 129 figs., 5 colour pls. Price £7·00.

In the latest edition of this well-known book, the text has been brought completely up to date and the section on the detection of synthetic and imitation stones has been enlarged to include the more important of the recently developed man-made materials. As before, the emphasis is full practical instructions, based on the author's considerable experience, with the provision of just enough theoretical background to allow intelligent use to be made of the observations. In view of the increasing number of simulants with high refractive indices, a useful innovation in this new edition is a description of the direct measurement method of determining the refractive index of stones that have values for this property above the range of the refractometer; any microscope with an accurate scale measuring the amount of vertical movement of the body tube will serve. The arrangement of the text is generally as before, with the early chapters dealing with principles and techniques and chapters 10–26 devoted to the major gems and the natural and synthetic materials resembling them. The importance of fluorescence as an aid to identification is recognized by its inclusion as a separate chapter