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

in the techniques section. The appendices include a useful glossary and various summary tables of properties. This eighth edition containing the latest information and practical techniques will be welcomed by all who are concerned with the identification of gems.

R. A. HOWIE

DESAUTELS (P. E.). *The Gem Kingdom* (with special photography by Lee Boltin). London (Macdonald), 1971. 252 pp., 70 figs., 72 coloured pls. Price £5·25.

This magnificently produced book is in the same style as *The Mineral Kingdom* (M.M. **37**–631), and here again the author's stimulating narrative is accompanied by colour photographs expertly displaying faceted gems and other worked mineral specimens. The text brings to life both the science and the romance of gems; the great gem species—diamond, ruby, sapphire, emerald, and opal—and the less precious but equally interesting species favoured by collectors and craftsmen are all illustrated and described. The qualities of gemstones, the art of the lapidary, the fashioning of jewellery, royal jewels, and the carving of jade—the 'sometimes green stone'—are included. But for many readers it will be Lee Boltin's incomparable colour photographs of many of the finest gems and minerals in the Smithsonian Institutions collections that make this a highly desirable work for all who admire, collect, or search for gems and gemstones.

R. A. HOWIE

LIEBER (W.). *Der Mineraliensammler. Über den Aufbau von Sammlungen und was man dazu wissen sollte* (fifth edition). Thun and München (Ott. Verlag), 1972. 274 pp., 73 figs., 40 pls. (16 in colour). Price Sfr. 34·80; DM 29·80.

This latest edition of a book for mineral collectors, first published in 1963, gives a general account of elementary mineralogy and the geological setting of mineral deposits. It also deals with the problems of collecting, identifying, classifying, and storing mineral specimens. The largest chapter is devoted to giving details of 259 mineral localities, mainly in Germany, Austria, and Switzerland but also in the rest of the world (including 21 British localities, from Strontian to Geevor mine). The plates are excellent but leave one salivating unnecessarily as they often present enlarged views of the original specimen (hematite rose $\times 20$, prismatic vivianite $\times 20$, a gold crystal $\times 80$, prismatic erythrite $\times 80$).

R. A. HOWIE