crystal systems are dealt with excellently in both line drawing and text. No unessential matter is included.

The physical properties are very well described and illustrated. The description of a home-made beam balance and Jolly Balance is just the type of information required by an amateur. The optical properties are only briefly considered as is right in such a text as this. The discussion of some properties such as triboluminescence is a little beyond most who describe themselves as amateurs. Refractive index and double refraction are well done, but the apparatus described would be beyond the reach of most amateurs. The study of optical figures is not really adequately covered.

More could have been made of the formation and association of minerals, particularly in respect of their genesis, but the brief consideration offers inspiration for further study.

The identification methods are mercifully shorn of many of the more obscure methods. The descriptive mineralogy is good, particularly the paragraphs dealing with mineral occurrence. The identification tables are very useful.

The outstanding feature of the book is the high quality of its illustrations, which, no doubt, accounts for its high price.

BRIAN SIMPSON

JONES (M. P.) and FLEMING (M. G.). *Identification of Mineral grains.* Amsterdam (Elsevier), 1965. 102 pp. Price: 30*s*.

A useful and well set out laboratory and field compendium for the identification of minerals in grains—mainly the opaque minerals often associated with ore deposits but not exclusively so. A concise summary of the Determinative Scheme is set out in the opening pages and is followed by a list of equipment and reagents necessary to implement the scheme: these are reduced to a safe minimum and are sufficient for the needs of the scheme.

The procedure is outlined in ten sections in each of which the descriptions of operations are reduced to a minimum, but are clear and easily understood. The first eight groups of tests, including specific gravity, refractive index, hardness, streak, magnetic permeability, and solubility, can all be carried out easily in the field and call for no highly specialized apparatus. More information for identification is obtained from spot tests, which call for more chemical reagents, but still quantities that could be used in rough field conditions. The tenth section, which is labelled 'Additional Tests', includes closed tube tests, fusibility, flame

tests, and radioactive tests. The final section labelled 'Confirmatory Tests' includes precise refractive index determination of transparent minerals, chemical analysis, and X-ray analysis. A scheme is set out for a logical way of recording the information for identification as it is gathered.

The tables provide the properties of all the common minerals likely to be met and certainly of those able to be identified by their use. In Table I the minerals are listed alphabetically and in Table II they are split into four groups based on specific gravity; each of these groups is further subdivided on the basis of hardness and these are split up on the colour of the streak.

This is a book to be recommended to all mineral workers in the field of ore and industrial materials. BRIAN SIMPSON

KAPLAN (S. R.). *Guide to information sources in science and technology, volume 3: mining, minerals and geosciences.* New York (Interscience), 1965. 599 pp., 2 pls. Price: 95*s*.

This is a reference book listing those world organizations that are connected with mining and geology and also the periodical literature on the subject. Part 1 consists of nine chapters, each covering a continental area but with the Americas separated into North, Central and Caribbean, and South America. The Middle East and International organizations also have separate chapters. The countries in each chapter are listed alphabetically, as are the organizations under each country heading. There is a brief description of each organization, its address, and its publications. Part 2 indicates the periodical literature that each country publishes on mining, geosciences, and a few related subjects.

Errors and omissions are to be expected in a first edition of a reference book of this sort and the publishers have thoughtfully provided a tear-out reply form for readers. However, errors and omissions are plentiful, unless this reviewer is particularly unlucky in the organizations and journals he knows best. Some are a matter of compilation, for the address of Overseas Geological Surveys is given wrongly on page 371, but correctly on page 303. Information is also not always complete: the address of the Turkish Mineral Research and Exploration Institute is missing although it is simple enough to obtain. There are also omissions in Part 2, the Mineralogical Magazine among them!

An irritating feature of the book is that some foreign organizations are listed alphabetically under their foreign language name, sometimes followed by an English translation. Others are listed under the English