significance to be attached to their environment and associations. This need not create space problems in revised editions, for in many cases the paragenesis subsections are in need of complete reappraisal rather than expansion (e.g. pp. 144–53 of this volume). G. M. BROWN

SCHOUTEN (C.). *Determination Tables for Ore Microscopy.* Amsterdam (Elsevier Publishing Company), 1962. vii+242 pp.

This manual is the outcome of Professor Schouten's experience that students frequently misidentify ore-minerals under the microscope because existing tables are 'almost too systematic and concise'. The situation improved in his mineragraphy demonstrations when the author introduced a more comprehensive classification that was not based solely upon the determination of one or two physical properties. This classification, which has 23 tables with 54 sub-groups, does not follow a uniform scheme but is based on distinctive physical properties, mineral associations, and chemistry. An immediate consequence of so many subdivisions is that border-line minerals are listed several times, e.g. chalcocite appears in nine different sub-groups because it lies on the chosen border-lines for hardness, colour, anisotropism, and reflectivity. However, the author considers that such cross-references are desirable and should reduce the possibility of error.

The main subdivisions for the tables are: I. *Distinctly coloured*: blue, green, brown, yellow, pink to violet (5 tables), subdivided into isotropic and anisotropic categories, and sub-grouped where appropriate under internal reflections, hardness, and reflectivity. II. *Not distinctly coloured*: reflectivity $> 50$ %, $< 25$ %, and $< 50$ but $> 20$ %, further subdivided and grouped on the basis of hardness, isotropy, internal reflections, and bireflectance (7 tables). III. *Special mineral groups* based on composition, e.g. Ni–Co–Fe arsenides, tellurides, selenides, and platinum minerals (11 tables).

Apart from a dozen works listed in the Introduction, only a couple of additional references appear in footnotes in the text and the reader is left to his own devices to obtain further information on a particular mineral. In this connexion, the numerous blank spaces in the book would appear to give tacit encouragement to the user to make his own notes.

Although much useful information is contained in these tables, the reflectivity data have been obtained from four different sources employing different techniques and must be used with caution. References to hardness in the tables relate solely to polishing hardness, which is classed

as 'high', 'medium', or 'low'. The failure to incorporate published Vickers or Knoop microhardness indentation data is a serious omission to the mineragrapher, while the absence of microchemical tests must also be deprecated. J. B. A.

CAGNET (M.), FRANCON (M.), and THRIERR (J. C.). *Atlas optischer Erscheinungen.* (Title and text in parallel German, French, and English.) Berlin, etc. (Springer-Verlag), 1962. 44 pages of photographs with explanations opposite. Cloth boards 11×14 in. Price DM 74.

This is a 'de luxe' reproduction of about 140 best-known photographs of diffraction and other interference patterns. Many will be familiar in text-books dealing with the sections headed 'Geometrical aberrations, Interference, Diffraction at Infinity, Diffraction at Finite Distance, Polarization, Phase Contrast and Interference Contrast'. The mineral examples comprise a few interference figures (uniaxial, biaxial, and for crossed plates) and strain figures, Schlieren, and growth figures. Explanations, in three languages, often occupy only half the page, and are of an elementary standard with simple diagrams. A. F. H.

SCHMITT (HARRISON H.), editor. *Equilibrium diagrams for minerals at low temperature and pressure.* The Geological Club of Harvard (Cambridge, Massachusetts), 1962. ix+199 pp. Price $2.80.

Compiled by the Geological Club of Harvard, this book contains 186 diagrams showing theoretical stability limits of minerals in simple chemical systems at 25° C and 1 atmosphere pressure. Apart from a brief introduction there is no textual matter. The minerals considered are of the more common or important metallic elements of the various periodic groups. The diagrams, including partial pressure diagrams for hydrous and anhydrous systems and Eh–pH diagrams for aqueous systems, have been reproduced directly from the originals, which were submitted by graduate students in Prof. R. M. Garrels's course 'Topics in Geochemistry' at Harvard University. Each diagram gives the information necessary to define the conditions for which it was constructed. Mineralogists and geologists who are familiar with the physical-chemical basis of the various types of equilibrium diagram given, discussed in some detail by Prof. R. M. Garrels in 'Mineral Equilibria' (1960), will find this new collection of diagrams a useful addition to the information already available on theoretical stability fields of minerals at low temperature and pressure. G. D. BORLEY