

MAUCHER (A.) and REHWALD (G.). *Bildkarten der Erzmikroskopie*. (Card index of ore photomicrographs.) Frankfurt am Main (Umschau-Verlag), 1961.

The aim of the card index of ore photomicrographs is to give a comprehensive survey of all the typical microscopic features of ore minerals, using polished sections prepared by the Rehwald machine. The first set of 104 cards has recently been published; subsequent sets are to follow at quarterly intervals until within a few years the planned number of about a thousand cards has been reached. Realizing that only a few selected institutions are able to establish large reference collections of polished sections of ore minerals, the authors claim that—with certain limitations, of course—a similar service may be rendered by sets of typical ore photomicrographs.

The card index is subdivided into three main sections: general, systematic, and technical. The first part is to deal, in a purely descriptive way, with features and faults of sample preparation and preservation as well as with mechanical, optical, and morphological features of ore minerals and mineral aggregates. There are three sub-sections in the systematic part: Survey of the ore minerals on the lines of 'Dana's System of Mineralogy'; Microscopic features of typical parageneses of ore minerals; and Microscopic features of typical ore deposits. The third, technical part deals with the application of ore microscopy to problems of ore dressing and metallurgy.

The authors emphasize that publication of cards does not follow entirely the arrangement outlined above, but allows for cards of different main sections to be published simultaneously. The first set of 104 cards now available contains a clear survey of textures of ore minerals as well as cards on native iron, argentopyrite, the pyrrhotine-vallerite paragenesis, and typical photomicrographs from the Corbach and Marienberg ore deposits of Germany. Each card shows, on its upper half, either one 110×170 mm. photomicrograph or, in cases where a specimen is illustrated both in plane polarized light and under crossed nicols, two 110×83 mm. photomicrographs. The quality of polished sections and photomicrographs is excellent. Explanations of the illustrations are given in English, French, Spanish, Russian, and German. A sliding scale serves to locate points on the illustrations corresponding to x and y co-ordinates, which are given, according to the magnification used, in microns or millimetres. Thus, immediate determination of grain size is easily possible. Groups of cards dealing with a certain subject, for

instance 'pits', 'anisotropy', 'cellular texture', 'native iron', are followed by a 'text-card' with a more detailed description of the sections concerned in English and German. The price is DM 0.75 per photo-card, DM 0.45 per text-card. These prices are reduced by 10% for University departments and academic staff, by 15% for students.

The great value of this unique publication is self-evident and does not need further appraisal. Ore-microscopists will welcome the card index as a high-quality source of reference, and university staff will find it a great help in teaching. Economic geologists and mineralogists will appreciate the straightforward and clear approach, which provides an excellent introduction for research workers less well acquainted with the subject matter. Ore dressing workers and metallurgists will be able to use the card index for the solution of their problems without having to go into details of ore mineralogy. The authors should be warmly congratulated on this first part of a very fine piece of work.

A. F. H.

MENDELSON (F.), editor. *The Geology of the Northern Rhodesian Copperbelt*. London (Macdonald & Co. Ltd.), 1961, xvi+523 pp., 185 figs. Price 84s.

Twenty-three authors have contributed to this comprehensive volume. Part 1 provides a general account of the physiography, stratigraphy, structure, metamorphism, and ore deposits of the Copperbelt together with a history of mineral exploration and an account of the methods employed. Part 2 gives detailed descriptions of the individual deposits. In addition to synthesizing the considerable volume of published work on the subject the authors draw extensively on material from unpublished company reports.

The ore bodies occur in a variety of host rocks—shales, quartzites, impure dolomites—belonging to the Lower Roan Group of the Katanga system. The common primary sulphides, which are moulded onto and replace the rock-forming minerals, show the paragenetic sequence pyrite–chalcopyrite–bornite–chalcocite. Covellite, digenite, linnaeite, carrollite, cattierite, pyrrhotine, melonite, scheelite, molybdenite, uraninite, brannerite, and coffinite are reported in subordinate amounts. The remarkable zonal distribution of the principal sulphides and its relation to facies changes is described and discussed but it is made clear that the details have not yet been fully established for all deposits.

Supergene alteration is extensive and persists to considerable depths.