

REVIEWS.

Rock Minerals: their Chemical and Physical Characters and their Determination in thin Sections. By JOSEPH P. IDDINGS. Pp. xii + 548, with 438 text-figures and one coloured plate. (New York: John Wiley & Sons; London: Chapman & Hall, 1906. Price 21s. net.)

THIS extremely valuable treatise on rock-forming minerals covers practically the same ground as the same author's translation and abridgement of Rosenbusch's 'Microscopical Physiography of Rock-making Minerals', which between 1888 and 1898 passed through four English editions; it is evidently intended to take the place of a translation and abridgement of the still more extensive fourth edition of the German work prepared by Rosenbusch and Wülfing. In many respects the present volume is a distinct improvement on the translated work. The arrangement of the subject-matter under prominent headings makes the volume much more useful for purposes of reference.

The first part, dealing with general principles and methods of research, extends to 200 pages, half of which is devoted to optical properties. In the second, and larger, part is given a detailed description of the various rock-forming minerals. Information respecting each mineral is clearly put forth under the following headings:—chemical composition; alteration; crystallographic characters (including twinning and cleavage); optical properties (and colour); inclusions; modes of occurrence; resemblances to, and differences from, other minerals; laboratory production. Some of the longer descriptions are preceded by a summary of the characters of the mineral, or, in the case of groups of minerals, by a general account of the group. The minerals are classified on a chemical basis, and this seems more rational than the classification according to systems of crystallization as adopted by Rosenbusch.

At the end of the volume are given useful tables of optical constants, which have the advantage of being printed on the pages rather than on inconvenient folding sheets. The coloured plate exhibiting the birefringence of minerals is borrowed from Lévy and Lacroix.

The book is one to be recommended to all students of petrology, but it would perhaps have been more generally useful if references to the literature had been quoted under each mineral. A few misprints have been noticed, especially in the spelling of the names of minerals.

Physikalische Kristallographie vom Standpunkt der Strukturtheorie.

By ERNST SOMMERFELDT. Pp. vi + 132, with 122 illustrations.
(Leipzig: C. H. Tauchnitz, 1907. Price 6 marks.)

EVEN with the addition of the last four words, which on the title-page are appended in smaller type and on the cover do not appear at all, the scope of the book can scarcely be said to be defined with much precision by its title. Far from dealing with the general characters of crystals and the methods and apparatus in use for their determination, Dr. Sommerfeldt confines himself, except in the last chapter, to a discussion of the various types of crystal-structure, the point-systems of Sohncke being treated in far greater detail. The proper comprehension of the symmetry appertaining to the several systems is considerably facilitated by the series of photographic reproductions of the actual models, which were constructed under the direction of Sohncke, and are preserved at Munich. The absence of relief unavoidable in such illustrations, unless presented in pairs for observation with a stereoscope, is to some extent compensated by a plan placed beside each illustration; unfortunately many of the latter diagrams are far from distinct. After defining in this way the 65 point-systems, the author determines, somewhat too cursorily, the remaining 165 systems possible in crystals by means of the method due to Barlow. This procedure is more easily understood by most crystallographers than the mathematical method of Schönflies, and it has the advantage of distinguishing clearly the enantiomorphous systems from those possessing mirror-image symmetry.

In the concluding chapter, Dr. Sommerfeldt treats briefly of many interesting physical questions closely connected with the discussion of crystal-structure; such as the etching-figures, which have thrown so much light on the internal symmetry of certain substances; the rotation of the plane of polarization, a phenomenon which can only be satisfactorily explained by the existence of some helical arrangement in the structure; cleavage, which suggested to Haüy the idea of a primitive form; isomorphism, morphotropy, and polymorphism; twinning; and the cause of the habit of crystals. The chapter ends with a discussion of the well-known case of pseudo-trigonal symmetry, which can be obviated only by admitting the idea of a grained structure.

Despite a want of balance in the discussion and some inexactitude in the reasoning, the book is one which may be commended to the reader who desires a comparatively simple exposition of the difficult and important subject of crystal-structure.