SCIENTIFIC BOOKS

A Key for the Determination of Rock-forming Minerals in Thin Sections. By Albert Johannsen. New York, John Wiley & Sons. 1908.

This key has been prepared, as the author states, for the reason that tables for the optical determination of minerals in thin sections have heretofore been made of secondary importance in text-books. Most of the books on this subject, while admirable in their way, are of more use to trained mineralogists than to beginners, this being due principally to the absence of "classification."

The book is divided into four parts: Part I. treats of introductory optics, measurements to be made with the microscope and the methods of recognizing the common optical characters of minerals. Part II. takes up the general discussion of the relations between the different members of the common groups of minerals. Diagrams are here given to assist in the determination of the species in the pyroxene, amphibole and feldspar groups. The part treating of the feldspars is particularly elaborate, giving fourteen methods of investigation. Part III. (415 pages) gives an explanation of the tables and contains a very elaborate scheme for determination, based on a systematic identification of the fundamental optical characters of the minerals in question, the minerals with similar optical characters being grouped in the same part of the scheme. Following the description of each mineral are given the distinctions between it and other similar minerals. Part IV. contains tables of mean indices of refraction, maximum birefringences, specific gravities, and also lists of minerals by crystalline system and "habit." A summary is appended of the optical characters of the minerals in alphabetical arrangement, which is very convenient, as it does away with the necessity of remembering the author's special arrangement, a universal fault to be found with other tables.

This book represents a very elaborate and painstaking collation of the important optical and crystalline characters of some one hundred and sixty-four rock-forming minerals, and, for the first time in the literature of the subject, the minerals have been arranged in a way for systematic optical determination. A further advantage lies in the fact that these optical and crystalline characters are always recorded in the same order and that paragraphing is freely used. The author has made the introductory discussions on optics and determination of optical characters as simple as possible, but has given detailed footnotes referring to more complete theoretical discussions of the underlying principles. Standard authorities have been consulted in the preparation of the general data, but the tables might have proved more useful had authorities been cited.

The scope of the work along optical lines is similar to that covered by Penfield and Brush in their "Tables for Blowpipe Determination of Minerals."

The scheme is sufficiently elastic to provide for mistakes likely to be made in the determination of some of the optical characters, as for example, extinction angles. Minerals with small extinction angles (under 5°) are found in two places of the scheme, both with minerals with inclined extinction and with those with parallel extinction. The micro-photographic cuts of interference figures are very good and many of the tests are explained with the aid of detailed diagrams, so that they may be easily and quickly made. A good color chart of the interference colors (after Lévy and Lacroix) is appended.

The value of the book might have been increased by a more detailed description of the types of petrographical microscopes and their common adjustments. Also the suggested indenting of the pages of the text is a matter of much trouble and an arrangement providing for this being done by the printer would certainly prove of great advantage in subsequent editions.

L. McI. L.

Southern Agriculture. By F. S. Earle. Pp. vi + 297. Containing 9 half-tone plates, many text cuts, and full index. New York, The Macmillan Co. 1908.