

determination of fluocerite and certain monazites high in neodymium (and praseodymium). The mineral may be examined by reflected light without recourse to flame or chemical treatment. He also called attention to the very intimate association of monazite with uraninite alterations as found at the Deake Mine, near Sprucepine, Mitchell Co., N. C.

Notable among the unusual specimens exhibited as illustrating his paper were, kunzite from Rumford, Me.; transparent pollucite from Brazil (with cut stone weighing 1.6 carats); aguilairite from the San Carlos Mine, Guanajuato, Mexico; cossyrite from Cuddia Mida, Pantellaria Island near Sicily; berzelianite from Skrikerum, Sweden; brannerite from the head of Kelly Gulch, Stanley Basin, Idaho; an ilmenite crystal from Judge Martin Place, near Sprucepine, Mitchell County, N. C. (unreported locality discovered by Mr. Lee in 1907); a sipylyte crystal weighing 47.25 gm. from the northwest slope of the (Bald) Friar Mountain, near Lowesville, Amherst Co., Va. A specimen of ductile, metallic tantalum was also shown. This was first made in America in 1922 by the Fansteel Products Co. of North Chicago.

At the close of his paper a vote of thanks was tendered to Mr. Lee for his very interesting presentation. The meeting then adjourned.

HERBERT P. WHITLOCK, *Recording Secretary*

PHILADELPHIA MINERALOGICAL SOCIETY

Academy of Natural Sciences of Philadelphia, February 8, 1923

A stated meeting of the Philadelphia Mineralogical Society was held on the above date with the president, Mr. Vaux, in the chair. Fourteen members and three visitors were present.

Mr. Harry A. Warford addressed the society on "*The Garnets.*" The physical properties, composition, modes of occurrence, and classification of the garnets was described in detail. Many specimens were exhibited.

The chair announced the death, on January 27th, of Mr. Clarence S. Bement, and related reminiscences of his mineralogical activities.

Mr. Vaux exhibited specimens of allactite from Franklin, N. J.

SAMUEL G. GORDON, *Secretary*

BOOK REVIEWS

AN INTRODUCTION TO SEDIMENTARY PETROGRAPHY. HENRY B. MILNER. Cr. 8 vo., 125 pages, 16 plates. Thomas Murby & Co., 1, Fleet Lane, E. C. 4, London, 1922. (D. Van Nostrand Co., 8 Warren St., New York).

This small handbook, consisting of only four chapters, will be favorably received, no doubt, by all petrographers and students of stratigraphy. It is designed to meet the requirements of all those engaged in a microscopical examination of loose, detrital deposits and treats especially of the principles, practice, scope and limitations of correlation by means of heavy concentrates. While the book is based largely on a course of lectures in sedimentary petrography as applied to oil technology, the author realizes that the methods employed are applicable to a far greater field in both theoretical and applied geology.

Correlation by petrographic methods is rendered possible by noting (1) the frequency of occurrence of individual species, (2) the persistence of each species (lateral and vertical distribution), and (3) the constancy or inconstancy of mineralogical features of species. Comparison of grain size of the same species and the percentage of heavy residue in a series are supplementary factors of considerable importance.

Tables listing the crystallographic, physical and optical properties of fifty-five detrital minerals are given in 56 pages of text. These tables together with 16 plates of exceptional clarity constitute the main portion of the book, which closes with a brief discussion of the bearing of sedimentary petrography on palaeogeographical problems. A bibliography of 82 entries is appended.

W. F. H.

GRAPHICAL AND TABULAR METHODS IN CRYSTALLOGRAPHY. T. V. BARKER. 152 pages. Thomas Murby and Co., London, 1922. (American price \$4.25).

The main purposes of this work are stated by its author to be "to provide the researcher with a select collection of exact graphical methods, which personal experience has proved to be both accurate and time-saving; to discuss the relation of these methods to formal processes of computation; and finally, to outline a new system of practice."

The first chapter deals with a crystallographic protractor, a useful instrument the price of which (30 shillings) seems however rather excessive. The second takes up the stereographic projection and the solution of problems by its aid. The great advantages of the two-circle method of measurement are emphasized. The gnomonic projection is then similarly treated, and the use of a combination of the two projections is urged. A chapter is also devoted to the graphic determination of indices.

The Goldschmidt method of crystal drawing is shown to be superior to all others, and is described in detail. The usefulness in crystallographic calculations of a multiple tangent table is pointed out. The table given in an appendix consists of a series of angles between 5 and 87° with 3' intervals, arranged in columns headed 1, 2, 3, 4, 5, and so related that the tangent of one of them is equal to the indicated multiple of another in the same row.

In Chapter 8 is described the author's "new system of practice." It is shown that in the triclinic system at least the axial ratio-angle mode of stating the data is undesirable, and a series of interfacial angles, such as was at one time used, would be preferable. In describing a substance, it is urged that doubtful forms be not recorded, that Miller symbols alone be given, and that a standard series of crystallographic letters be adopted so that for certain forms only a letter and not even the Miller symbol need be stated. Over-measurement should be avoided, 2 or 3 crystals giving results are as useful as 5 or 10. It is thought that nothing is gained by stating limits of variation in angles measured. The mutual adjustment of fundamental angles by means of the multiple tangent table is suggested, but Goldschmidt's plan of averaging the results of all reasonably dependable measurements is not favored. In general, the publication of theoretical angles for all the forms is discouraged. The fuller use of projections leads to a reversal of the usual procedure,—angles are now to be calculated logarithmically, then checked graphically.

By way of illustration, the data for a triclinic substance are given, and it is shown that if all the suggestions listed above are adopted, only one fourth as much space as heretofore would be required for recording the data, and of course a marked economy of time would be effected.

On the whole, the impression produced by this book is favorable. The saving of the scientist's time, and of publication space, are both urgent necessities in these days. The reviewer feels, however, that Dr. Barker has gone somewhat too far, and is recommending procedures which render the interpretation of published data unduly difficult. If all authors were equally skilled in interpreting their measurements, the omission of angle ranges might be permissible, but since as a matter of fact one student can often improve on the work of a predecessor, the recording of full data is likely to be of real value. The slight additional time needed to adjust fundamental angles by the measurements of all forms seems well justified by the increase in knowledge of the crystal thus obtained. The failure to publish values which have been calculated, or their publication in such an obscure form that it is a puzzle to interpret them, will merely result in the need for others to duplicate the original work. The "new system of practice" resolves itself then into a few valuable suggestions, and a number of attempted simplifications which seem likely to make the way less easy for future crystallographers.

W.

NOTES AND NEWS

Every mineralogist will regret to learn of the death of Dr. Mauzelius, chemist of the Swedish Geological Survey, whose great skill in determining rare elements, although present in small amounts, has led to the establishment of numerous new mineral species.

Dr. Rudolph Koechlin has retired from the Directorship of the Mineralogical Division of the State Natural History Museum in Vienna, and has been succeeded by Dr. Hermann Michel.

In the review of Samuel G. Gordon's book, *The Mineralogy of Pennsylvania*, published in a recent issue of *The American Mineralogist* (vol. 8, p. 12) the price was erroneously given as \$3.75 instead of \$2.75.

Grants for research made by the American Association for the Advancement of Science include in the field of geology the following concessions: V. C. Allison, Bureau of Mines, Pittsburgh, Pa., \$150 for assistance in a study of rate of growth in a micro-chemical study of oils, shales and coal.

We congratulate the Board of Trustees of the University of Chicago in their announcement that Professor R. A. F. Penrose, Jr., of Philadelphia, has *again* contributed five hundred dollars to help provide the full eight issues during the year of the *Journal of Geology*.

A new mineralogical society, to be known as *The Mineralogical Society of Washington, D. C.*, was organized Friday, February 23, 1923. The transactions of the first meeting, held at the residence of Dr. W. T. Schaller, will be given in detail in an early issue of this Journal.