Postmasburg, South Africa. The mineral zunyite, previously known only from Colorado, has been found in some abundance in altered, highly aluminous shales and flagstones in the vicinity of the deposits of manganese ore of the Postmasburg District in Cape Province. Minute perfectly developed tetrahedra are aggregated in clusters or are disseminated through the rock, which contains also diaspore kaolin, and leverrierite. Most of the tetrahedra are simple, but a few are interpenetration twins with a triad axis as twin-axis. Analyses agree with the formula $Al_8(OH,F,Cl)_{12}(SiO_4)_3$.

MR. F. N. ASHCROFT exhibited minerals from Broken Hill, Rhodesia and from other localities, and MR. W. CAMPBELL SMITH exhibited specimens and photomicrographs of volcanic rocks from Kenya Colony.

W. CAMPBELL SMITH, *General Secretary.*

BOOK REVIEWS

ELEMENTS OF MINERALOGY. PART III. DETERMINATIVE TABLES. With colored chart and two diagrams in pocket on cover. Entirely rewritten and enlarged. ALEXANDER N. WINCHELL. Second edition. XII+204 pages. John Wiley & Sons, Inc., *New York.* **1929**. Price $4.50.

This is the third part, or volume, of a series pertaining to *Elements of Mineralogy.* Part I deals with principles and methods; Part II contains descriptions of minerals with special reference to their optic and microscopic characters; and Part III summarizes the data recorded in Part II with minor additions so as to include new data that have appeared since Part II was published.

Five determinative tables comprise Part III. Table 1 deals with the common minerals that are opaque in thin sections. Minerals which are subtranslucent to opaque are inserted in more than one table. Table II is based on birefringence primarily, with refringence as a contributing factor in determining 56 smaller groups of minerals. These groups are limited by the following values of N: $N<1.48$; $N>1.48<1.54$; $N>1.53<1.59$; $N>1.59<1.66$; $N>1.66<1.74$; $N>1.74<2.00$; $N>2.00$. If a mineral has a lower index than balsam its relief may be characterized as negative, if higher, positive.

Color and pleochroism form the basis of the classification of the minerals into 26 subdivisions in Table III. While the first three tables are intended for identification of minerals in thin sections, the fourth and fifth tables are designed essentially for use with powders and immersion liquids.

Tables 4 and 5 are based upon refringence and dispersion, respectively. The dispersion indicated is the difference between the index in light of 4861 Å wave length (=F, the Frauenhofer line or the β line of hydrogen), and the index in light of 6563 Å wave length (=C, the Frauenhofer line or the α line of hydrogen). In the tables this difference is expressed as F-C. Three useful charts accompany the tables, and four different styles of type are used to distinguish between the very common, common, less common and rare minerals.

The author is to be congratulated in completing this series of three books on the Elements of Optical Mineralogy. As the minerals listed and described are not confined to the rock-forming types but include practically all non-opaque minerals whose optical properties are known, the tables should prove extremely useful to all who employ the polarizing microscope and optical methods for purposes of mineral identification.

W. F. H.

ASBESTOS. A List of References to Material in the New York Public Library. Compiled by William B. Gamble. The New York Public Library, 1929. Price 50 cents.

In this pamphlet the author brings together all titles of abstracts relating to asbestos that are to be found in the New York Public Library. The list contains 1075 titles and represents all references in the Library on September 1, 1929. In most instances a brief statement is added indicating the nature of the article. Likewise 519 entries are appended dealing with patents granted in the United States, Great Britain, Germany and Canada. The task of compiling and arranging the 1594 references has been very well done and the book should be of great assistance to those interested in asbestos and its uses.

W. F. H.

KRISTALLZEICHNEN. Robert L. Parker. VI+112 pages, 35 text figures, and 50 drawing sheets in portfolio. Borntraeger, *Berlin*, 1929. Price 20 Marks.

This is one of the few books devoted entirely to the subject of crystal drawing. There are two others known to the reviewer: Hints on Crystal Drawing by Margaret Reeks, *London*, 1908, and Kristályszerkesztes by L. Tokody, *Budapest*, 1925 (in Hungarian), but neither of these are mentioned in the bibliography.

The book consists of two parts; the first deals with the theory and practice of crystal drawing and the second includes a series of tables to aid in crystal drawing.

After a general discussion of various orthographic and clinographic projections, the following methods of crystal drawing are described: (1) the method of intersection edges on an axial cross, (2) the method of coordinates of direction points of intersections on an axial cross (this method was described by C. B. Slawson in the *American Mineralogist*, vol. 6. pp. 155–158, 1921), (3) the method of the stereographic projection (no reference is made, either in the bibliography or in the text, to the original article on this method by F. Stöber, *Bull. fran. Soc. Min.*, vol. 22, pp. 42–60, 1899), and (4) the method of the gnomonic projection. Two other omissions in the bibliography may be noted: (1) "*Practical Crystal Drawing*" (based upon gnomonic projection) by Mary W. Porter, *American Mineralogist*, vol. 5, pp. 89–95, 1920, and (2) "*The Addition and Subtraction Rule in Geometrical Crystallography*" (projections of intersection edges in orthographic projections are obtained by subtracting Miller indices, index by index) by Austin F. Rogers, *American Mineralogist*, vol. 11, pp. 303–315, 1926.

In addition to the four methods of crystal drawing enumerated above, the author describes a new method in which use is made of "Bildkantenazimute" or directions of intersection edges. The directions of these edges or zone-axes are calculated in terms of azimuth angles from the zone-axis [001] taken as 0°. These angles for various zone-axes can be plotted on the accompanying sheets which give a hollow circle of 10 cm. radius divided into half degrees. The partial radii are printed in blue so that they will not show when the drawings are photographed for reproduction.

The second part of the book consists of a series of tables used principally to determine azimuth angles of various intersection edges (in terms of zone-indices) for isometric crystals and twenty of the more common non-isometric minerals. It seems likely that these tables and the accompanying drawing sheets may be useful if any considerable number of crystals of a given mineral have to be drawn, for

axial cross, stereographic projection, and gnomonic projection may all be dispensed with.

While the book falls somewhat short of being a complete treatise on crystal drawing, it will doubtless be found useful to any who are especially interested in the subject.

A. F. R.

MINERALOGY. SIR HENRY A. MIERS. Revised by H. L. Bowman. 2nd edition. XX plus 658 pages. Macmillan and Co., Ltd., *London*. Macmillan Company, *New York*. **1929**. Price, $8.50.

This well known standard textbook, the first edition of which was printed in 1902, has recently appeared in its second edition. Containing 658 pages and 761 illustrations, it is written in typical English style, explanations are complete and clear, and the subject matter is well classified and arranged.

Every phase of mineralogy is discussed at some length. An inclusive selection of mineral descriptions is found in the 260 pages devoted to descriptive mineralogy. This is followed by 32 pages of descriptive and determinative tables; the three principal ones, with subdivisions, making fourteen tables in all. The three principal tables contain a complete classified list of minerals, tables of chemical reactions and of physical properties. Separate tables under the last division include the arrangement of minerals according to index of refraction, birefringence, values of 2E and 2V, and specific gravity.

As a textbook this work is easily sufficient and well adapted to a thorough two-year course in pure mineralogy. A few minor criticisms might be made, such as the frequent use of X, Y, and Z in designating the crystallographic axes, in place of the usual *a*, *b*, and *c*; reference of many hexagonal crystals to rhombohedral axes; and a few antiquated illustrations. It must be said, however, that these certainly are not serious defects, if they may be so regarded at all.

While it may be too extensive a text for the usual introductory course in Mineralogy as given in most American universities, nevertheless, it will prove acceptable for some courses, and certainly will be found a valuable reference work in any field of mineralogic interest.

L. S. BROWN

ANORGANISCHE UND ORGANISCHE ENTFÄRBUNGSMITTEL. LEOPOLD SINGER. Volume **XX** of *Technische Fortschrittsberichte*. VIII+251 pages. Published by Theodor Steinkopff, *Dresden*, **1929**. Price 21.50 R.M. bound.

This book deals with natural and artificial decolorizing agents, and contains a very complete bibliography of this extensive branch of technology. Fifteen pages of author's index at the end of the volume give one an idea of the number of references in this work.

The author makes no attempt to treat any part of the subject in detail, but simply describes in a few words the discoveries and applications of the various decolorizing agents. Only about the first 20 pages are of general interest. The rest of the volume enumerates the manufacture and uses of the agents. Patents are also given in this connection.

The theory of decolorization (adsorption) is treated on pages 29 to 37.

JOHN W. GRUNER.