

If the indices of all grains of the plagioclase are  $>$  the liquid it is hardly likely to be  $< \text{An} \pm 44$ .

If the indices of all grains of the plagioclase are  $<$  the liquid it is hardly likely to be  $> \text{An} \pm 30$ .

If one index is greater and one less than the liquid then it is between  $\text{An} \pm 30$  and  $\text{An} \pm 44$ .

Therefore mere inspection of a crushed sample, in this medium, generally serves to identify an igneous rock or at least place it in its correct group. When more careful work is necessary the relative proportions of the constituent minerals are roughly estimated by areal or linear measurements. Grains of minerals other than quartz and feldspars are then selected from the sample and identified. From the properties and proportions of the minerals the rough composition of the rock is readily obtained. So far those results that have been checked against actual chemical analyses of the rock have shown good agreement. The crushed fragments are obtained by breaking pieces from different parts of the handspecimen, and crushed by sharp blows of a pair of two-inch-square hardened-steel plates.

An ordinary student's zoological set is very useful for accessory apparatus in this work. The scalpel is used for picking up samples of the crushed grains. The seeker is used for isolating grains by pushing them apart, and is also magnetized; the lancet is used for breaking off pieces of a mineral on the handspecimen; the forceps for handling cover-glasses, and the scissors for cutting the absorbent paper.

## NEW PUBLICATIONS

KURSUS DER KRISTALLOMETRIE, VICTOR GOLDSCHMIDT; HANS HIMMEL AND KARL MÜLLER. Gebrüder Borntraeger, Berlin, 1934, viii+167 pages, 183 text figures. 11.50 RM. bound.

Victor Goldschmidt, in his last years, gave considerable thought to the publication of a textbook describing the principles and methods of crystal measurement, projection, drawing, and calculation which he had developed.<sup>1</sup> The present volume is a laboratory manual, and follows closely the course<sup>2</sup> as given at Hauptstrasse Nr. 48.

Prefaced by 14 precepts (Arbeitsregeln), the introduction discusses the gnomonic, stereographic, and orthographic projections of crystals, and crystal measurement by means of the "Penfield" contact goniometer, and the Goldschmidt two-circle

<sup>1</sup> *Am. Mineral.* vol. 19, pp. 106-111, 1934. The Goldschmidt Two-circle Method; *Am. Mineral.*, 1921.

<sup>2</sup> Victor Goldschmidt Institut für Kristallforschung, Heidelberg.

instrument. A study of the crystals of quartz (Sutrop), garnet (Fort Wrangel), idocrase (Wilui), topaz (Brazil), feldspar (Pikes Peak), and copper sulfate, serves to ground the student in the general methods of sketching a crystal, projecting and drawing it; also the graphic determination of the face symbols, the polar elements, and crystal system. Likewise the cutting of plaster of Paris models is introduced here.

With this preparation, the intricacies of Goldschmidt's two-circle reflecting goniometer are described. By examples of typical crystals measured on this instrument: topaz (Thomas Mountain), realgar (Felsöbanya), calcite, (Egremont), phenacite (Brazil), anorthite (Vesuvius), idocrase (Vesuvius and Ala), and pyrite (Binnenthal), the methods of calculation of the polar and linear elements, and of an angle table are detailed. The treatment of twin-crystals is illustrated by examples of spinel (Ceylon) and epidote (Ober-Sulzbach).

The text is concise, but clearly written, and abundantly illustrated with good figures. Tables useful in making gnomonic projections (when charts are not available) are appended, and there is a brief index to the volume.

SAMUEL G. GORDON

COMPOSITION-TEMPERATURE PHASE EQUILIBRIUM DIAGRAMS OF THE REFRACTORY OXIDES. ROBERT B. SOSMAN AND OLAF ANDERSEN, Research Laboratory, United States Steel Corporation, Kearny, New Jersey. \$2.00 per set of four sheets.

The publication consists of four sheets, 24" by 19", reproducing in colors the four ternary composition-temperature diagrams of the four refractory oxides: silica, alumina, lime and magnesia. The scale is large enough to permit of interpolation to 0.1%. The base is a 500-millimeter equilateral triangle. The authors have recalculated the compositions and have replotted many of the original data of the Geophysical Laboratory, making minor revisions in the original diagrams to take account of later work, and have prepared the drawings by the same methods as are used for colored topographic maps. The base is in blue, temperature contours in green, compositions (including solid solutions) in red, and boundary curves and primary phases in black.

The sheets are now available at \$2.00 per set of four. Orders should be placed with the Research Laboratory, United States Steel Corporation, Kearny, New Jersey.

## PROCEEDINGS OF SOCIETIES NEW YORK MINERALOGICAL CLUB

### *Minutes of the April Meeting, 1934*

A regular meeting of the New York Mineralogical Club was held on the evening of April 18th, 1934, at the American Museum of Natural History. The meeting was called to order at 8:15 P.M. by President Hawkins. The attendance was 75.

The speaker of the evening was the retiring President, Dr. Alfred C. Hawkins, who gave a paper illustrated with charts and lantern slides on the subject of "The Distribution of the Heavy Minerals in the Coastal Plain Sediments of New Jersey." Dr. Hawkins described the methods of elutriation, that is, the washing of the clay