BOOK REVIEW

A COMPREHENSIVE TREATISE ON INORGANIC AND THEORETICAL CHEMISTRY. J. W. MELLOR. Six volumes published, royal 8vo, total 5988 pages and 1261 diagrams. Longmans, Green and Co., *London*, 1922–1925.

This exhaustive compilation of the facts and theories of inorganic chemistry, contains a vast amount of information of direct interest and value to the mineralogist, particularly under the headings of history and occurrence devoted to each element, and the minerals thereof, of which it is an essential constituent. Inaddition, a very complete bibliography of references is given at the close of each main division.

As an example, 42 pages are given concerning the occurrences of the rare earths and the formulas and properties of their minerals, as well as some sixty-two complete analyses and upwards of a thousand original references. The discussion of the nature of these rare and complex species and the relations between certain groups is frequently suggestive.

Many pages are devoted to admirable articles on such subjects as crystals, their internal structure and seven styles of architecture, growth and x-ray analysis; composition of the Stassfurt salt beds and the synthesis and genesis of diamonds.

Volume six is almost exclusively devoted to silica and the silicates. Hitherto, the best reference books covering the field of inorganic chemistry have been available only to those familiar with German, more specifically, the famous "Handbuch(s) der anorganischen Chemie" by Abegg and by Gmelin-Kraut. Since a comparable treatise in English may now be had, it is urged that all interested in mineralogy as a science, should familiarize themselves with these encyclopedic storehouses of the data of the inorganic world. O. IVAN LEE

ABSTRACTS

FOUR RECENT PAPERS ON THE FELDSPARS. HAROLD L. ALLING, *Rochester, N. Y.*

During my studies of the feldspars, I have received four papers some of which may not be readily available to mineralogists in this country. Abstracts of these papers are offered below:

Johansson, Dr. H. E., of the Geol. Survey of Sweden. "ON THE COMPOSITION AND FORMATIONAL CHANGES IN THE FELDSPARS." "Om. Faltspaternas Sammansättning och Bildningsbetingelser." *Geol. Fören Förhandl.*, No. 237, Bd. 27, Häft 6, pp. 338–346, **1905**.

Johansson collected about 1000 analyses of feldspars and found that 470 of them were sufficiently accurate for interpretation. He divided the feldspars into two groups; first, those which occur in igneous rocks which contain no quartz such as syenites, nepheline-syenites, diorites and gabbros, together with metamorphic equivalents. Second, feldspars that occur in igneous rocks containing quartz such as the granites. These two groups of feldspars he has plotted on triangular diagrams. The three components are orthoclase, albite and anorthite which can be abbreviated to Or-Ab-An. Johansson draws the probable solubility lines on these triangles. The areas occupied by the above mentioned feldspars show where homogeneous single-phase feldspars occur. He evidently includes in this group, however, many perthitic feldspars. The plotting of the analyses of potassium feldspars from pegmatite granites and quartz-bearing gneisses show that there is a concentration of feldspars from 20 to 30 mol. % Ab, 2 to 4 mol. % An. and the almost complete absence of feldspars in the interval 30 to 50 mol. % Ab. Johansson concludes, therefore, that there is not a continuous series between Or and Ab, which is in perfect accord with the conclusions of other investigators. The diagram showing the feldspars from quartz-free rocks indicates that the break between Or and Ab is not as pronounced as in the former case.

He comments on the significance in the difference in the structure and composition of the feldspars derived from volcanic rocks which have cooled rapidly from those which occur in deep-seated igneous rocks where the rate of cooling was much slower. The feldspars from quickly chilled rocks possess a greater compositional range than the corresponding feldspars from rocks that have cooled more slowly. He concludes that many perthitic feldspars are due to the "ex-solution" of the feldspar phases due to decrease in solubility with falling temperature. In the presence of abundant mineralizers the zonal grown crystals become homogeneous and consequently the feldspars from surface rocks show a greater diversity in composition.

In view of the fact that the feldspars constitute a ternary system, Johansson concludes that the common methods of determining the composition of feldspars by optical means are very inadequate.

I agree with Johansson on many of these points and since I have received his paper after the publication of the result of my own studies, (Part I), I am very glad to credit to him the ideas above expressed.

From Sendai, Japan, from the laboratories of the Tohoku Imperial University, come the following two papers:

1. The Influence of Temperature on the Optic Axial Angle of Adularia, Yellow Orthoclase and Moonstone. Shukustké Kôzu and Masatoshi Suzuki.

2. Thermal Expansion of Alkali-Felspars. Shukustké Kôzu and Shô-Ichi-Rô Saiki.

These were published in the *Science Reports* of Tohuku University, Series 3, Vol. II, No. 2.

These Japanese investigators find that there is a very pronounced change in the optic angle at various temperatures, roughly, in the neighborhood of 900° which is below the disassociation temperature of most feldspars. The actual temperature of this rapid change depends upon the composition of the feldspar investigated. In the case of adularia from St. Gothard, the temperature of rapid change is about 850°, while the yellow orthoclase from Madagascar was higher occurring at 1075°. It is apparent that the presence of $KFe\ Si_3O_8$ in a potash feldspar raises the critical point.

The second paper on the thermal expansion of the feldspar indicates some changes within the crystal structure on heating. Curves of expansion presented in the papers indicate a number of critical temperatures. There are five points at which expansions or contractions appear at a different rate. These points correspond to the temperatures between 200°C and 300°C, between 450°C and 500°C, between 650°C and 700°C, between 850°C and 900°C to 950°C. Among these points the expansion at 950°C is the most prominent and abrupt changes can be seen on both curves obtained in the two directions, perpendicular to the base and parallel to the *b*-axis. The author does not offer any interpretation of these results. I believe that any solution of the ever present problem—are orthoclase and microcline mere polymorphous modifications of the same substance, or does the difference depend upon the type of twinning—can only be obtained through investigations of this kind.

The last paper to which I wish to call attention is by E. D. Mountain of the Department of Mineralogy in the British Museum of Natural History. POTASH-OLIGOCLASE FROM MT. EREBUS, ANTARCTIC AND ANORTHOCLASE FROM MT. KENYA, EAST AFRICA. *Mineralog. Mag.*, June 1925, pages 331–345.

Mountain has collected 68 analyses of potash-oligoclase and anorthoclase and discusses from his plotted results the optical and physical properties of these feldspars in the hope of finding a suitable criteria for distinguishing potash oligoclase from oligoclase. He reaches the conclusion that a classification of feldspars of this range in composition must be purely arbitrary. He has selected 16 from the above that when plotted lie upon a line truncating the albite corner of the Or-Ab-An ternary diagram running from $Ab_{65}Or_{35}$–$Ab_{65}An_{35}$ and shows a series of diagrams showing the extension angles, specific gravities, refractive index, optic axial angles and curve of cleavage angles. He discusses whether in this range of composition there is only one series of triclinic crystals or whether the potassium component as orthoclase enters into the system to give rise to two distinct series of feldspars of this compositional range. He questions whether there are two series which I advocated in the Journal of Geology in 1923. I believe that much more work along the same line that Mountain is doing is necessary before many of the problems of the feldspars can be solved.

NEW MINERALS: DOUBTFUL SPECIES

CLASS: CARBONTAES

"Elatolite"

A. E. FERSMANN: Crystallites of magmatic Calcium Carbonate from Khibinsky and Lovozersky tundras. *Bull. Acad. Sci. Russia*, **17**, 251–274 (1923).

NAME: From the Greek ἐλάτη, fir, in allusion to its shape.

CHEMICAL COMPOSITION: The mineral is represented by cavities, the original material having been removed. Believed, however, to have been calcium carbonate.

CRYSTALLOGRAPHIC PROPERTIES: The cavities show a trigonal form.

OCCURRENCE: The original mineral was not found but was represented by cavities in the nepheline syenites of the Kola Peninsula, especially in the northwestern portion of the "Umptek massif" and the western part of the "Luyavrurt massif."

DISCUSSION: These cavities are believed to represent α calcium carbonate now leached out. Such forms are certainly not deserving of specific mineral names.

W. F. FOSHAG

CLASS: SULPHATES

"Manganolangbeinete"

F. ZAMBONINI AND G. CAROBBI: Sulla presenza, tra i prodotti dell'attuale attivita del Vesuvia, del composto $Mn_2K_2(SO_4)_3$. (On the prescence, among the