

corundum would not crystallize from a melt of the composition of peridotite, and there is therefore no evidence that magmatic segregations of corundum occur normally in the ultrabasic igneous rocks.

Mr. George Vaux, Jr., addressed the society on "The William S. Vaux Collection." William Sampson Vaux was born in Philadelphia, May 19, 1811, and died there May 5, 1882. When a boy he acquired a strong taste for mineralogy, perhaps thru his uncle, Joseph Sampson (1767-1826) who made probably the first mineral collection in America, which was later given to Haverford College. Mr. William S. Vaux made the magnificent collection which bears his name, having had many opportunities to acquire choice specimens on his numerous European trips, as well as fine things from the early American localities. The collection was bequeathed to the Academy of Natural Sciences, of which Mr. Vaux was vice-president.

The society then adjourned to the mineral hall for an examination of the collection. A case containing the latest acquisitions was exhibited in the rear of the meeting room.

SAMUEL G. GORDON, *Secretary*

NEW MINERALS

FAMILY 7. PHOSPHATES, ARSENATES, ETC.

SUBFAMILY 1. ARSENITES

TRIGONITE

GUST. FLINK: Trigonit och dixenit, två nya mineral från Långbanshytte Gruvor. (Trigonite and dixenite, two new minerals from the Långbanshyttan mines.) *Geol. Fören. Förh.*, 42(7), 436-452, 1920. [Swedish with English summary.]

NAME.—From the Greek *trigonos*, triangle, referring to the crystal habit.

PHYSICAL PROPERTIES

Color pale yellow to brownish; luster vitreous to adamantine. $H. = 2$ to 3; sp. gr. 8.28. Cleavage perfect on b (010), less perfect on p (101).

CRYSTALLOGRAPHIC PROPERTIES

Observed only in crystals, up to $\frac{1}{2}$ cm. in diameter, usually markedly triangular in outline.

Monoclinic, domatic. $a : b : c = 1.0740 : 1 : 1.6590$, $\beta = 91^\circ 31'$. Forms: $a(100)$, $b(\bar{1}00)$, $c(001)$, $d(00\bar{1})$, $e(010)$, $p(101)$, $q(\bar{1}0\bar{1})$, $r(10\bar{1})$, $s(\bar{1}01)$, $f(011)$, $g(012)$, $h(014)$, $i(01\bar{1})$, $m(110)$, $k(\bar{1}10)$, $l(210)$, $n(111)$, and $o(1\bar{1}\bar{1})$. The dominant forms are e , forming the base of the apparent triangular prism, and c , q and r forming the sides of the same (the plane of symmetry crossing the center of this prism).

OPTICAL PROPERTIES

$\alpha = 2.08$ and $\gamma = 2.16$, both ± 0.02 , determined by N. Alsén by immersion in mixtures of sulfur and selenium. Double refraction 0.06; optic axial plane $b(010)$; extinction angle in this plane 45° . Non-pleochroic.

CHEMICAL PROPERTIES

The mineral dissolves readily in dilute acids. Analysis was made on several small samples by Dr. R. Mauzelius, giving average values: As_2O_3 28.83, PbO 63.40, CaO 0.23, FeO 0.15, MnO 6.79, MgO 0.11, H_2O 0.81, Cl trace, insol. 0.13, sum 100.45%. The scarcity of the material prevented quantitative determination of the state of oxidation of the arsenic, but the indications point to the arsenious form. The formula derived is $H_2O.2MnO.6PbO.3As_2O_3$ or $HMnPb_3(AsO_3)_3$, which requires H_2O 0.9, MnO 6.7, PbO 64.0, and As_2O_3 28.4%.

OCCURRENCE

Found in 1919 at the 150 meter level in masses of dolomite, associated with native lead and several undetermined minerals.

DISCUSSION

This mineral is interesting as adding one to the very small group of minerals crystallizing in the monoclinic-domatic (clinohedral) class; it is noteworthy that one other representative of this class, tilasite, also occurs at Langban, and another, clinohedrite, in the similar deposit at Franklin Furnace, N. J.

[The species may be regarded as satisfactorily established, altho the formula is perhaps open to some modification. E. T. W.]

FAMILY 9. SILICATES

DOUBLE SILICATES WITH SULFATES, ARSENATES, ETC.

DIXENITE

GUST. FLINK, *paper above cited*.

NAME.—From Greek *di* = two and *xenos* = stranger, referring to the unique association of silica and arsenious oxide in a compound.

PHYSICAL PROPERTIES

Color nearly black, but intense red by transmitted light when in thin sheets. Luster metallic to resinous. $H. = 3$ to 4 ; $sp. gr. = 4.20$. Cleavage basal, micaceous.

CRYSTALLOGRAPHIC PROPERTIES

Observed only as aggregates of thin flakes without crystal outlines. X-ray study shows the symmetry to be hexagonal or rhombohedral.

OPTICAL PROPERTIES

Mean $n = 1.96 \pm 0.02$. Under the microscope uniaxial and positive. Non-pleochroic.

CHEMICAL PROPERTIES

The mineral dissolves readily in HCl with the separation of gelatinous silica and in HNO_3 with evolution of brown fumes, indicating the As to be trivalent. Analysis by Mauzelius on a small amount of material gave:

As_2O_3 30.55, P_2O_5 0.09, SiO_2 8.66, CuO 3.38, FeO 4.54, MnO 48.94, MgO 0.50, CaO 0.28, H_2O 3.38, sum 100.32%. This corresponds to $4RO.SiO_2.As_2O_3$, or, representing all the R by Mn and the water as hydroxyl, $(MnOH)_2Mn_3(SiO_3)(AsO_3)_2$, which would require H_2O 2.8, MnO 56.2, SiO_2 9.6 and As_2O_3 31.4%.

OCCURRENCE

Found like the preceding mineral, but in hematite and serpentine as well as dolomite.

DISCUSSION

[May be regarded as established, except that the formula is somewhat uncertain. E. T. W.]

FAMILY 5. CARBONATES, BORATES, ETC.

SUBFAMILY 6. HYDROUS BORATES

PATERNOITE

F. MILLOSEVICH: Paternoite, un nuovo minerale del giacimento salifero di Monte Sambuco in territorio di Calascibetta, Sicilia. (Paternoite, a new mineral from the salt-bearing deposit at Mount Sambuco, Calascibetta, Sicily. *Rend. accad. Lincei, (phys., math. and nat. sci. class)*, 29, 286-289, 1920.

NAME: In honor of the eminent chemist, Emanuele Paternò.

PHYSICAL PROPERTIES

Color pure white; structure minutely granular; somewhat deliquescent. Sp. gr. 2.11. Under the microscope seen to be made up of minute crystalline laminae of rhombic outline, with acute angle about 62° , rarely truncated and hexagon-like.

OPTICAL PROPERTIES

Mean refractive index, by immersion method, about 1.475. Extinction symmetrical.

CHEMICAL PROPERTIES

Partially soluble in water, giving an alkaline reaction. Readily soluble in dilute acids. The material for analysis was dried at 100° , water lost below this temperature being considered hygroscopic, as the optical properties are constant up to this point. The boron was determined by Gooch's method, the water by the lead oxide method. The results were: B_2O_3 66.02, MgO 10.93, K_2O 1.08, Na_2O 0.36, Cl 2.35, SO_3 1.06, H_2O 19.16, sum less O = Cl 0.53, 100.43%.

The K and Cl are believed to be present as admixed carnallite, the Na and SO_3 as bloedite; on subtracting these, with the corresponding amounts of MgO and H_2O , the remainder is: B_2O_3 71.66, MgO 10.67, H_2O 17.67%, corresponding fairly closely to $MgO : 4B_2O_3 : 4H_2O$ or $H_3MgB_3O_{17}$ (theory B_2O_3 71.4, MgO 10.3, H_2O 18.3%).

OCCURRENCE

The occurrence of this material had been described by the same author in an earlier paper. Bloedite and other minerals from the salt-bearing deposit at Mount Sambuco, territory of Calascibetta, Sicily. (*Accad. Lincei*, 29, 344-347, 1920). The deposit contains besides kieserite, halite, etc., abundant bloedite in good crystals, of which detailed measurements and an analysis are given. In the bloedite-bearing beds there are numerous small rounded masses of the new mineral, which was at first thought to be boracite.

DISCUSSION

[This may provisionally be accepted as a new species, altho more complete optical data and an analysis of purer material would be desirable. In par-

ticular, the water content needs study, especially as to the rate of loss both below and above 100°. E. T. W.]

DISCREDITED SPECIES: "Collbranite"; see page 86.

ABSTRACTS—CRYSTALLOGRAPHY

THE PROBLEM OF CHEMICAL AFFINITY IN CRYSTALS AND THE VELOCITY OF CRYSTALLIZATION. M. PADOA. *Atti accad. Lincei*, 27, II, 59-65; *Gazz. chim. Ital.* 48, II, 139-147, 1918.

For abstract of this mathematical paper see *Chem. Abstr.* 13, 1963-1964, 1919. E. T. W.

THE OPTICAL BEHAVIOR OF WATER OF HYDRATION. K. BRIEGER. *Ann. Physik*, 57, 287-320, 1918.

For abstract of this physical paper see *Sci. Abstr.* 22a, 111; *Chem. Abstr.* 13, 3076-3077, 1919. E. T. W.

METHOD OF OBTAINING AN OPTICAL STUDY OF CRYSTALS OF SODIUM CHROMATE TETRAHYDRATE. LUCIEN DELHAYE. *Bull. soc. franc. min.* 41, 80-92, 1918.

Directions are given for crystallizing this salt. Its optical properties have been determined in detail. E. T. W.

DISTRIBUTION OF TWO KINDS OF ATOMS IN THE REGULAR FRANKENHEIM-BRAVAIS SPACE LATTICES. G. TAMMANN. *Nachr. Ges. Wiss. Göttingen*, 1918, 190-234.

ATOMIC STRUCTURES OF NON-METALLIC MIXED CRYSTALS. The same, pp. 296-318.

ISOMERIC ALLOYS. pp. 332-350.

ALTERATION IN THE CHEMICAL BEHAVIOR OF METALS AND THEIR MIXED CRYSTALS BY MECHANICAL WORKING. pp. 351-361.

For abstracts of these papers on crystal structure see *Chem. Abstr.*, 14 (6), 668-671, 1920. E. T. W.

PYROMORPHITE FROM HORCAJO, CIUDAD-REAL, SPAIN. F. PARDILLÓ AND F. GIL. *Mem. R. Soc. españ. Hist. Nat.*, 10, No. 6a, 30 pp. and 5 plates, 1916; thru *Rev. Géol.*, 1 (3), 75, 1920.

The specimens are among the most beautiful minerals of Spain. The forms found on 51 crystals are described, of which the following are new: (6057), (905.10), (6055), (9057), (4043), (7075), (3032), (8085), (5053) and (7074); many rare, doubtful, and vicinal forms were also present. Three new twinning laws were observed. E. T. W.

STUDIES ON THE GROUPINGS OF BORAX. M. SAN MIGUEL and M. DE J. NARANJO Y VEGA. *Publ. Secc. Cienc. Nat. Univ. Barcelona*, 1918, 21-34, 14 figs.; thru *Rev. Géol.*, 1 (3), 75, 1920.

Two new twinning laws, on (221) and (331), as well as several groupings, are described. These are discussed in accordance with the Goldschmidt theories. E. T. W.