in establishing either the distinctness of the two, or the composition of the present one, and it is therefore classed as doubtful.

"Wodanite"


NAME: Origin unknown, as Lattermann's original manuscript was lost; presumably after the mythological character, Wodan.

CHEMICAL PROPERTIES: Four analyses are given, but they show wide variation; the following (by O. H. Heidenreich of Kristiania) is considered the most reliable

<table>
<thead>
<tr>
<th>Component</th>
<th>Amount (mass%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SiO₂</td>
<td>38.69</td>
</tr>
<tr>
<td>TiO₂</td>
<td>12.56</td>
</tr>
<tr>
<td>Al₂O₃</td>
<td>9.45</td>
</tr>
<tr>
<td>Fe₂O₃</td>
<td>3.09</td>
</tr>
<tr>
<td>FeO</td>
<td>10.63</td>
</tr>
<tr>
<td>MnO</td>
<td>0.09</td>
</tr>
<tr>
<td>MgO</td>
<td>13.80</td>
</tr>
<tr>
<td>CaO</td>
<td>0.83</td>
</tr>
<tr>
<td>SrO</td>
<td>0.76</td>
</tr>
<tr>
<td>K₂O</td>
<td>7.96</td>
</tr>
<tr>
<td>Na₂O</td>
<td>1.69</td>
</tr>
<tr>
<td>F</td>
<td>0.71</td>
</tr>
</tbody>
</table>

It is concluded that the Ti is present largely as TiO₂ replacing SiO₂. From this a highly complex formula is derived.

PHYSICAL PROPERTIES: Exhibits the features of biotite of the meroxene variety.

OCCURRENCE: Found in the shonkinite rock of the Katzenbuckel, a famous German locality.

DISCUSSION: The simple composition, corresponding as closely to the analysis as could be expected in view of the evident variability of the material, is: K₂O: 4(Mg, Fe)O: MgF(OH)(Al, Fe)₂O₃:TiO₂:6SiO₂, an "orthosilicate" ratio; placing the Ti along with the Si makes the ratio too basic. It should be called tentatively titaniferous biotite.

FAMILY: COLUMBATES, ETC. DIVISION: XR"”:YR””"”:ZCb, WITH X>Z>Y.

Unnamed


CHEMICAL PROPERTIES: A preliminary analysis gave: MgO 1.07, CaO 0.86, MnO 0.40, FeO 11.78, Al₂O₃ 0.87, rare earths 8.40, UO₂ 21.88, SnO₂ 1.20, SiO₂ 0.30, TiO₂ 0.21, CbO₂ 26.80, Ta₂O₅ 15.00, H₂O 0.89, sum 99.66%. This seems to correspond to 10 R"”O.R"”²O₆ (Cb, Ta)₂O₈, where R"” includes (UO₂)².

PHYSICAL PROPERTIES: Color black; luster brilliant; opaque; H. = 5-6; sp. gr. =6.2-6.4.

DISCUSSION: Thought to be different in properties from the minerals of the samarskite group, but assignment of a name is withheld until a final analysis is made. Up to the present time at least two names, "nolite" and "ænneroeidite," have been given to material not essentially different in composition from that noted above.

ABSTRACTS—CRYSTALLOGRAPHY


According to Johnsen, anatase, rutile, and xenotime are ditetragonal bipyramidal, while zircon is either ditetragonal or tetragonal pyramidal.

Edw. F. Holden.
CRYSTALLOGRAPHIC PROPERTIES OF THE COMPOUND \( \text{CuHgOZN} \)


This compound is monoclinic, holohedral, \( a:b:c = 1.335 \pm 0.003 : 1.057 \pm 0.06, \beta = 114^\circ 18'1/2' \pm 6' \); cleavage good (100), fair (101); sp. gr. = 1.345 \pm 0.002, at 16°C; \( Z \) parallel to (010), \( Y \) to (001), \( X \) perpendicular to (100), \( X \) is acute bisectrix, 2E large, \( \rho > \psi \) \( \beta_{\text{ane}} = 1.756 \pm 0.001 \), pleochroic.

---


R. concludes that isomorphous substances have a structure intermediate between chemical compounds and physical mixtures.

---


Quartz and tourmaline especially are discussed, and formulas are derived.

---


Benitoite is shown to be ditrigonal bipyramidal.

---


The slags were for the most part melts consisting principally of the three oxides \( \text{FeO}, \text{MnO}, \text{SiO}_2 \) and yielded fayalite and rhodonite. The small amount of calcium silicate usually present is held in isomorphous solid solution, but when the amount of lime exceeds 8% a new silicate appears, which does not seem to belong to any of the known mineral groups. A summary of its properties are:

**NAME:** Vogtite, in honor of J. H. L. Vogt. (This name was first proposed by C. Hlawatsch in 1907 to describe a substance either identical or at least isomorphous with the present material.)

**CRYSTALLOGRAPHIC PROPERTIES:** Elongated crystals, triclinic system. \( a:b:c = 1.0931:0.729 \). \( a = 99^\circ 37', \beta = 99^\circ 21', \gamma = 83^\circ 53' \). Forms: (010), (110), (110), (011), (101), (310).

**OPTICAL PROPERTIES:** Color, transparent and pale amber. Little or no pleochroism and nearly straight extinction. Axial plane is nearly \( \bot \) to zone of elongation. Sign \(-\). \( 
\beta = 1.701. \gamma - \alpha = 0.018. \) 2V = 65°. Prismatic cleavage.

**CHEMICAL PROPERTIES:** Composition approximates the metasilicate ratio; the deviation is greater than would be expected for the material analyzed, but is explained by solid solution of non-isomorphous compounds.

---


A condenser with a numerical aperture of 1.55, to be used in conjunction with a microscopic objective of numerical aperture 1.52, is described. The upper lens of the three lens condenser has a refractive index of 1.66 which is the same as that of the immersing liquid, \( \alpha \)-monobromnapthalene. This lens system is par-
particularly valuable for observation of interference figures. The condition that both optic axes appear in the field in sections cut perpendicular to a bisectrix is given by: \( b \sin \alpha = A \), where \( b \) = mean refractive index of crystal, \( \alpha \) = \( \frac{1}{2} \) optic axial angle, \( A \) = numerical aperture. A plate accompanying the paper shows among other things a section of anhydrite cut perpendicular to the obtuse bisectrix, both axes appearing in the field; the optic axial angle represented is \( 136^\circ 19' \).

O. von SCHLICHTEN.


Laue diagrams of ice place it in the dihexagonal bipyramidal class. E. F. H.


The crystals examined were small and associated with stibnite, valentinite, ankerite, calcite, sphalerite and pyrite. Measurements were obtained by means of a 3-circle goniometer, and the values on two crystals are recorded. \( a:b:c = 1.1356: 1: 1.0218 \). \( \beta = 105^\circ 46' \). These data do not agree very closely with those previously published, which were obtained on crystals from Felsőbanya. The forms observed are: (100), (001), (201), (310), (021), (041), (223), (111), (221), (112), (111), (112), (449), (331). The faces (18.18.19) and (556) are probably vicinal, and do not represent distinct forms. The material for the analysis was obtained from the drusy lining of one of the small cavities. The analysis checks closely with that required by the formula, \( 9 \text{PbS} \cdot 4 \text{SbS}_2 \).

W. F. H.

FELDSPAR CRYSTALS DEVELOPED IN THE UPPER CRETACEOUS PYRENEAN LIMESTONES. J. DE LAPPARENT, *Compt. Rend.*, 167, 784-6, 1918; thru *Min. Abst.*, 1, 216.

Small albite crystals are associated with foraminifera and algal remains. The author believes the algae have been responsible for the formation of albite.

E. F. H.


The Laue diagrams of nephelite agree with the etch figures in placing it in the hexagonal pyramidal class.

E. F. H.

MINERALOGY


The objects discussed include concretions, geodes, stalactites, etc. E. T. W.


Comprises descriptions of various nodules and concretions. E. T. W.


An analysis of an andesine found in a pegmatite gave \( Ab_{65}An_{35} \). Sp. gr. 2.67. Extinction on (001) about \( 0^\circ \), on (010) -2° to -3°. \( 2V \) 93.2°, \( a 1.5447 \), \( b 1.5489 \), \( c 1.5528 \) (Na).

E. F. H.

The transformation of foraminifera tests to chalcedony, and the production of fine chalcedony in certain limestones, is attributed to the action of algae.

E. F. H.


The following minerals were analyzed, examined in polished section and in some cases crystal measurements were made: argentite, galena, chalcocite, breithauptite, niccolite, cobaltite, smaltite, chloanthite, arsenopyrite, glaucodot, matildite, proustite, polybasite, scorodite, erythrite, and (new for Cobalt) löllingite, rammelsbergite, chalcocite, and symplectite. Intergrowths of minerals are the rule here rather than true isomorphous mixtures. The paragenesis of the deposit is given.

E. F. H.


Three quartz crystals from Serra dos Cristaes in Goyaz, Brazil, twinned after $\xi$ (1121) are described minutely, followed by a discussion and summary of previous observations on twinning according to this law.

O. von Schlichten.


In Seiland, Finmarken, Norway there are three types of pegmatites, characterized respectively by calcite, nephelite, and corundum. The calcite type contains primary calcite, zircon, tourmaline, apatite, muscovite, biotite and albite; the albite is in large xls. with forms $b c m M f s p o y n x u$.

E. F. H.


The solubility of kaolinite in boiling NaOH at temps. from 110° to 1100° is recorded. The water goes off at 500-600°, and various Al silicates are successively formed until at 1100° there remains only a mixture of sillimanite and cristobalite.

E. F. H.


Quartz crystals from six localities are described. Eight new forms are noted: from Hořepnìk, (13.0.13.6), (7073), (15.2.13.7), (16.3.13.4), (4.19.13.4), from Písek (9.1.10.6), from Marešov (7101), (9.1.10.6).

E. F. H.

CALCITE FROM LIBUŠÍN. AUG. ONDŘEJ. Rozpravy České Akad., class 2, 27, no. 14, 5 pp., 1918; thru Min. Absts., 1, 289.

Beautiful calcite crystals occur in veins traversing Algonkian spilites in the Janský coal mine. Two new vicinal forms are $o$ (6.27.33.10) and $p$ (31.93.124.32).

E. F. H.


A tabulation of axial ratios and crystal forms, with a bibliography. In only a few cases can axial ratios be correlated with composition.

E. F. H.

Minerals new for Bohemia are: bismuth, valentinite, brookite, caledonite, olivenite, phillipsite. Many new localities for other minerals are recorded.

E. F. H.


Specimens from six European localities were analyzed and examined optically. Thin sections showed needles and spherulites in an isotropic base. The purest material (Buggerru), wholly crystalline, gave the formula, $2ZnCO_3 \cdot 3Zn(OH)_2$, and dehydration expts. on artificial and natural material point to this as the formula.

E. F. H.


A means of determining the optic axes using the stereographic projection.

W. F. Foshag.


A new locality for torbernite is at Německá Lhota near Pribram, Bohemia. The following values were given: autunite, Joachimsthal $n$ (mean) 1.596, 2$E$ 45°; torbernite, Joachimsthal 1.628 and 20°, Schönficht, 1.610 and 25°, Schlaggenwald, 1.622 and 25-30°, Německá Lhota, 1.621 and small; zeunerite, Joachimsthal, 1.612 and 20°.

E. F. H.


Small colorless barite crystals showed the forms $c \ a b m N d n o l x$ and (new) (4.4.15) and (1.2.24). Epidote crystals showed $b s n$ and (new) (11.0.4).

E. F. H.


The pegmatite of the Velka skala (Great Rock) contains crystals of beryl, albite, apatite, and pseudomorphs of gigantolite after cordierite.

E. F. H.


This mineral, formed by solfataric processes at Solfatara di Puzzoli near Naples, was finely granular and isotropic and gave $Al_2O_3$ 36.66, $K_2O$ 11.91, $SO_3$ 38.35, $H_2O$ (diff.) 13.08%, or $K_2O \cdot 3Al_2O_3 \cdot 4SO_4 \cdot 6H_2O$. E. F. H.


Soft green hexagonal plates of aphthitalite were found around a fumarole in the ava of 1918. On keeping, they have become blue and crumbly. The composition
is Na₂SO₄ 58.9, K₂SO₄ 38.3, and CuSO₄ 2.8%. The mineral is thought to have been formed by the action of H₂SO on alkali chlorides.

E. T. W.

HORIZONTALLY BANDED AGATES. RAFAEL ED. LIESEGANG. Centr. Min. Geol., 1919, 184–188.

A discussion of the physical and chemical conditions under which horizontally banded agates may be produced.

E. F. H.


(a) Natural etch figures on sulfur crystals conform with the symmetry of the holohedral class. (b) Two new forms, (115) and (11.5.2), were found on a stibnite crystal from Japan. (c) Twinned quartz crystals from Sanaraka, Urals, show a tabular development parallel to two prism faces and 5 new forms, (0.11.11.2), (4.13.9.4), (7.29.22.9), (2.11.5.2), and (17.61). (d) Two heartshaped twins of calcite from Egremont, Cumberland are described. (e) The axial ratio of crystals of chessylite from Copper Queen mine, Arizona, gave $a:b:c = 0.8561:1:0.8842$; $\beta = 87°35'$. Material from Broken Hill, N.S.W. gave $\beta = 86°41'$. (f) Manganaxinite from Franklin Furnace, N. J. showed one new (454) of the 25 forms present.

W. F. H.


The occurrence of the hydrocarbon mineral hatchettite in association with siderite is described.

E. T. W.


Several Belgian minerals are described crystallographically, including: calamine from Moresnet with the form $f$; gypsum from Corphalie with the form $e$; aragonite from Lavois with the forms $b$ and $e$; calcite from Denée; anglesite and barite not previously noted. Apophyllite, new to Belgium, has been found at Quenast, and zonal groupings of hopeite at Moresnet. A complex clay was analyzed; efflorescences in Liege coal mines found to be trona; and fuchsite indentified optically at Salm-Château.

E. T. W.


The bones are partly transformed into a crust of crystalline calamine, and also into a spongy aggregate of minute crystals of willemite, smithsonite, hopeite, etc.

E. T. W.


Brown and green tourmaline from St. Gothard, and colorless to pale yellow tourmaline from St. Piero Elba were thoroly investigated as to crystallography, indices of refraction, and specific gravity.

E. F. H.