NEW MINERAL NAMES

MICHAEL FLEISCHER[1]

Keldyshite

V. I. GERASIMOVSKII, Keldyshite, a new mineral. *Dokl. Akad. Nauk SSSR*, **142,** 916–918 (1962) (in Russian).

The mineral occurs as irregular grains up to 4 mm in size and as aggregates up to 6 mm in drill cores from the western and northwestern slopes of the Lovozero Massif, Kola Peninsula (Tavaiok and Angoundasiok Rivers, Alluaiv Mt.). It occurs in foyaites consisting of microcline (partly albitized), nepheline, sodalite, aegirine, alkali amphibole, and accessory eudialyte and ramsayite. It is a primary mineral, formed late in the sequence, and is closely associated with ramsayite.

The mean of three partial analyses by L. P. Voronina, M. E. Kazakova, and G. V. Kalenchuk and R. L. Timofeeva, is SiO_2 39.39, ZrO_2 40.35, TiO_2 0.60, Fe_2O_3+FeO 0.31, Na_2O 16.03, K_2O 0.94, H_2O^- 0.35, H_2O^+ 0.95, corresponding to $(Na, H)_2ZrSi_2O_7$, with Na:H=5:1. The ratios Zr/Hf, determined by I. D. Shevalevskii is 47–51. The mineral is decomposed by HCl, HNO_3 and H_2SO_4.

Keldyshite is white, luster vitreous to greasy, hardness 157–231 kg/sq. mm, corresponding to 3.8–4.3 Mohs, G about 3.30. Very brittle, fracture irregular. Optically biaxial, (−), α 1.670, γ 1.710. Strong dispersion of optic axes: 2V 60° for red, 78° for yellow, 112° for blue, *i.e.* the mineral is (+) in blue light. Two poor cleavages were found under the microscope which intersect at about 90°. The better cleavage gave: P (pole of cleavage) to γ 75°, to β 57°, to α 35°. Under the microscope shows very fine polysynthetic twinning.

Unindexed x-ray powder data (56 lines) are given: the strongest lines are: 3.97(10), 4.11 (7), 1.542 (7), 1.097 (6), 1.013 (6), 2.95 (5), 2.66 (5), 1.006 (5).

The name is for M. V. Keldysh, President of the Academy of Sciences, U.S.S.R.

Osarizawaite

YASURO TAGUCHI. On osarizawaite, a new mineral of the alunite group, from the Osarizawa Mine, Japan. *Mineral. Jour.* (Japan), **3,** 181–194 (1961) (in English).

Analysis gave PbO 32.72, CuO 11.27, ZnO 0.22, CaO none, MgO none, Fe_2O_3 4.43, Al_2O_3 12.35, SO_3 22.92. As none, H_2O^- 4.05, H_2O^+ 8.50, SiO_2 2.18, CO_2 0.45, sum 99.09%, corresponding to $Pb(Cu_{0.98}Zn_{0.02})(Al_{0.81}Fe_{0.19})_2(SO_4)_2(OH)_6$ *i.e.* the aluminum analogue of beaverite. A little quartz was present. Spectrographic analysis showed Mn and Ag in thousandths of a per cent. The mineral is insoluble in water and HNO_3, decomposed by boiling concentrated HCl or H_2SO_4.

Color greenish-yellow. Earthy. Mean n 1.735–1.757, birefringence rather high. G 3.89–4.02 (pycnometer), 4.20 calc. from x-ray data. Indexed x-ray powder data correspond to a rhombohedral cell with a 7.05, c 17.23 Å, c/a 2.44 Z=3, or a_{rh} 7.04 Å, alpha 60°06′, Z=1. The strongest lines are 3.00 (100) (015, 113), 5.79 (70) (003, 101), 3.52 (60) (104, 110), 2.87 (60) (006, 202), 2.28 (60) (107, 205, 121).

A dehydration curve shows a loss of weight of about 10% at 420–480°, another 12% at 600–700° and about 10% more at 850–950°. A DTA curve shows a very small endothermal break at 100°, a very large endothermal break at 460°, and large endothermal breaks at 760°, 830°, and 1000°. There is a small exothermic break at 640°.

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[1] M. Fleischer is now being assisted actively by several "co-editors" in the compilation of data on new minerals and new data on species previously described. Dr. Fleischer's contributions are not specifically designated, those of his co-workers are designated individually.

The mineral occurs in the oxidized zone of the Osarizawa copper mine, Akita Prefecture, Japan, as a powdery crust on anglesite and limonite. Other minerals present in the oxidized zone are linarite, azurite, brochantite, malachite, and kaolinite.

The name is for the mine. See also pp. 1079–1093, this number of this journal.

Mourite

E. V. Kopchenova, K. V. Skvortsova, N. I. Silantieva, G. A. Sidorenko and L. V. Mikhailova. Mourite, a new supergene uranium-molybdenum mineral. *Zapiski Vses. Mineral. Obshch.*, **91** (1), 67–71 (1962) (in Russian).

The mineral occurs as violet nodules, crusts, and plates in the supergene zone of a deposit, the hypogene ore of which contains pitchblende, molybdenite, jordisite, pyrite and other sulfides. Umohoite occurs directly below the supergene zone; the latter contains "U-Mo blacks," iriginite, U-containing powellite, sodium uranospinite, uranophane and tyuyamunite, as well as goethite, jarosite and kaolinite; the mine waters are acid sulfate waters. In places, mourite is forming on corroded umohoite. In the mine workings, mourite decomposes to ilsemannite. The locality is not given, as usual.

Microchemical analysis by N. N. Kuznetsova gave MoO_3 63.67, UO_2 19.38, UO_3 2.40, SiO_2 1.72, Al_2O_3 1.36, Fe_2O_3 0.57, MgO 0.49, CaO 2.09, K_2O 0.58, Na_2O 0.54, H_2O^- 1.67, H_2O^+ 6.07, sum 100.54% (given as 100.52%). In addition, small amounts of Mn, Cu, Pb, Tl, Sb, Ti and Ag were found spectroscopically. It is assumed that the minor components are due to admixtures (this is especially doubtful for CaO), the ratios are $(UO_2+UO_3):MoO_3:H_2O=1:5.5:5.3$. However, the oxidation states could not be determined; the violet color of the mineral and the incompatibility of U^{6+} with Mo^{4+} in acid solution makes it probable that Mo is present as Mo^{5+} or Mo^{4+}, or both.

Mourite dissolves with difficulty in conc. HCl on prolonged heating, dissolves in conc. HNO_3 with separation of molybdic acid, is insoluble in H_2SO_4 or 10% KOH, dissolves in 20% Na_2CO_3 solution on heating.

A dehydration curve shows gradual loss of 3.5% H_2O up to 200°, and 4% H_2O from 200–250°. The DTA curve shows small endothermal effects at 220° and 310° and a sharp one at 710–780°. *X*-ray study (G.A.S.) of samples heated at 230–320° gave a weakened pattern of the original material. When heated at 750°, most of the mineral volatilized leaving a small yellow residue giving the *x*-ray pattern of U_3O_8.

The mineral occurs in fan-shaped, radiating-fibrous, or vermiform aggregates of plates with rectangular outlines of a few microns size. Streak violet-blue. G greater than 4.2. Hardness 75 kg/sq. mm, corresponding to about 3 on the Mohs scale. Indices of refraction could not be measured because of the small size and deep color; they exceed 1.780. Elongation positive. Extinction inclined to cleavage about 10°. Pleochroism distinct, dark blue-violet on Z, pale violet-blue with greenish tint on X and Y. In reflected light strongly anisotropic, rose on X, green on Y, blue on Z. Reflecting power averaged 10.2%.

The *x*-ray pattern (47 lines) has strongest lines 5.897 (10), 12.77 (9), 2.871 (8), 1.728 (8), 3.285 (7), 3.193 (7), 3.148 (7), 1.639 (7), 2.464 (6), 2.024 (6), 1.788 (6), 1.716 (6), 1.675 (6), 1.565 (6), 1.553 (6), 1.165 (6).

The name is for the chemical composition.

Halurgite

V. V. Lovanova, A new borate, halurgite. *Dokl. Akad. Nauk. SSSR*, **143**, 693–696 (1962) (in Russian).

The mineral was found in rock salt with boracite, kaliborite, pinnoite and anhydrite at a depth of about 400 m in the Kungur saline rocks (Inder basin? M.F.), as fine-grained masses in interstices of halite. Rarely it occurs as platy crystals 0.01 to 0.25 mm.

Analysis by A. I. Sokolova of material containing halite and anhydrite gave SiO_2 0.02, R_2O_3 0.03, CaO 0.50, MgO 18.75, SO_3 0.63, CO_2 0.12, Cl 2.70, Na 1.70, B_2O_3 57.88, H_2O 18.82, undetd residue 0.11, sum 101.26 per cent. Analysis of a purer sample (about 1 g) by M. M. Vil'ner gave B_2O_3 61.90, MgO 17.80, H_2O 19.80, sum 99.50 per cent. Both correspond to $2MgO \cdot 4B_2O_3 \cdot 5H_2O$ or $Mg_2B_8O_{14} \cdot 5H_2O$. DTA curves show endothermal breaks at 150–170, 260–280, 350–360, 560–590, and 733–780°. The mineral is slightly soluble in cold water and dissolves completely on boiling.

Halurgite is white, hardness 2.5–3, G. 2.19. Optically biaxial, (+), α 1.532, β 1.545, γ 1.572, all $\pm$ 0.002, 2V calc. 70°. Z is parallel to the long diagonal of the rhombic plates, X to the short diagonal. The mineral is probably orthorhombic or pseudoorthorhombic.

Unindexed *x*-ray powder data by I. V. Brazulis (51 lines) are given. The strongest lines are 3.87 (10), 3.29 (10), 4.81 (9), 2.163 (9), 1.269 (8), 2.643 (7), 3.57 (6).

The name is for the Institute of Halurgy, U.S.S.R., which has studied saline deposits for many years. The mineral had been mentioned previously without description (*Am. Mineral.*, **47**, 417, 1962).

Amakinite

I. T. Kozlov and P. P. Levshov, Amakinite, a new mineral of the brucite-pyrochroite group. *Zapiski Vses. Mineral. Obshch.*, **91**, 72–77 (1962) (in Russian).

The mineral was found as thin veins (up to 3 cm) and pockets in fissured kimberlite in a drill core at depth 300 m in the "Lucky Eastern" kimberlite pipe, presumably in the Yakut A.S.S.R. It is mostly present as irregular grains, rarely as well-formed rhombohedra up to cm in size.

Analysis by Yu. V. Shevchenko gave SiO_2 0.43, TiO_2, Cr_2O_3, none, Al_2O_3 0.32, Fe_2O_3 31.58, FeO 30.40, MnO 3.63, MgO 10.10, CaO traces, H_2O^- 0.09, H_2O^+ 23.04, CO_2 0.32, sum 99.91%. However, tests of fresh material with potassium ferricyanide gave a heavy blue precipitate, but with potassium ferrocyanide gave a weak blue color, so the mineral is probably $(Fe_{0.73}Mg_{0.22}Mn_{0.05})(OH)_2$. The mineral alters rapidly in the air with formation of brown crusts of hydrous ferric oxide. Soluble in HCl. When heated in a closed tube, decrepitates, gives off much water, and is converted to dark brown to blackish magnetic particles.

Color pale green to yellow-green when fresh. Hardness $3\frac{1}{2}$–4, G 2.98 ± 0.01. Fracture irregular; a rough cleavage was observed in some grains. Weakly magnetic. Optically uniaxial, (+), ε 1.722, ω 1.707, both ± 0.002.

From Laue and oscillation photographs, amakinite is rhombohedral, space group D^5_{3d}, D^7_3, or C^5_{3v}, most likely $D^5_{3d} = R_{3m}$, a 6.917 ± 0.003, c 14.52 ± 0.01 kX, Z=12 or a_{rh} 6.276 kX, α 66°52′, Z=4. a is twice that of brucite, c triple that of brucite. Indexed *x*-ray powder data are given (28 lines); the strongest are 2.30 (10)$(20\bar{2}4)$, 1.728 (9) $(22\bar{4}0)$, 1.530 (8)$(12\bar{3}7)$, 5.49 (7)$(01\bar{1}1)$, 1.551 (7)$(02\bar{2}8)$, 1.386 (7)(0444), 1.265 (7)$(41\bar{5}3)$, 1.182 (6)$(05\bar{5}2)$.

The name is for the Amakin Expedition, which prospected the diamond deposits of Yakutia.

Discussion.—Further *x*-ray study would be desirable. Some of the indexed strong lines seem questionable.

Gunningite

J. L. Jambor and R. W. Boyle, Gunningite, a new zinc sulphate from the Keno Hill-Galena Hill Area, Yukon. *Canad. Mineral.* **7** (2), 209–218 (1962).

Gunningite, which occurs as sparse efflorescences on sphalerite, gives an *x*-ray powder pattern practically identical to that of synthetic $ZnSO_4 \cdot H_2O$. Insufficient material was available for quantitative analysis, but an *x*-ray fluorescence analysis (by G. R. Lachance) of a gunningite precipitate gave ZnO 40.8, MnO 3.1, CdO 1.0, FeO 0.6, sum 45.5. This total agrees with the theoretical ZnO content of 45.35 in $ZnSO_4\cdot H_2O$.

The color and streak are white and the luster is vitreous. The natural material is extremely fine-grained. The hardness is about $2\frac{1}{2}$. G (of synthetic material) is 3.195 (meas.) and 3.321 (calc.). Easily soluble in cold water.

Probably biaxial (+) (by analogy with other members of the kieserite group), with α' 1.577, γ' 1.630, and maximum $\gamma'-\alpha'$ 0.06. Other optical constants and orientation unknown.

X-ray powder data for the mineral from two mines in the area and synthetic $ZnSO_4\cdot H_2O$ prepared by the authors are in excellent agreement with the indexed data for the synthetic compound published by Pistorius (*Acta Cryst.*, **14**, 534, 1961). The strongest lines (FeKα radiation) for material from the 200′ level of the Calumet mine (source of the analyzed material) are: 3.40 (10), 4.77 (7), 3.05 (6), 2.51 (4), 1.673 (3), 2.19 (3) and 1.968 (3). Thirty-two more lines are given. The unit cell values for synthetic $ZnSO_4\cdot H_2O$ given by Pistorius are: a 7.566, b 7.586, c 6.954, β 115°56′; $a:b:c=0.9974:1:0.9167$. The space group is $C^6_{2h}-A2/a$. Z is 4.

The mineral occurs in the relatively dry portions of various mines in the area and on dumps. The original material is from the Comstock-Keno property. Examination of over 1000 specimens confirmed the presence of gunningite at seven other properties. The Keno Hill-Galena Hill district is in the Central Yukon, 35 miles northeast of Mayo and 220 miles due north of Whitehorse. Associated minerals are: sphalerite, "limonite," scorodite, gypsum, and other supergene minerals closely associated with the zinc sulfide. Other sulfates occurring in the area are szomolnokite, szmikite, zincian szmikite, zincian ilesite, and $FeSO_4\cdot 4H_2O$.

The mineral is named for Dr. H. C. Gunning, a former member of the Geological Survey of Canada.

Discussion.—To be classed as the zinc member of the kieserite group.

J. A. Mandarino

Unnamed (MgS)

E. R. Dufresne and Edward Anders, On the retention of primordial noble gases in the Pesyanoe meteorite. *Geochim. Cosmochim. Acta*, **26**, 251–262 (1962).

MgS was found in the Pesyanoe stone meteorite (fell, 1933, a chladnite or aubrite) as a fairly abundant constituent (0.1 to 0.5%), closely associated with monoclinic pyroxene (elsewhere in the sample the pyroxene is orthorhombic). It is black, non-magnetic. The x-ray powder pattern is close to that of synthetic MgS (NaCl type) with strongest lines 2.59 (10), 1.83 (8), 1.160 (5), 1.058 (5), 1.49 (4). Semiquantitative spectrographic analysis showed that the ratios Fe/Mg, Ca/Mg, and Mn/Mg are all well under 0.05.

Unnamed

J. L. Jambor, Second occurrence of bonattite. *Canad. Mineral.* **7** (2), 245–252 (1962).

Associated with bonattite in a single specimen from the Bonaparte River area, Lillooet District, British Columbia, is a fine, powdery to vermiform mineral. Analysis by G. R. Lachance and S. Courville on an unstated amount gave: CuO 20.3, FeO 17.2, ZnO 3.9, As_2O_5 0.4, SO_3 41.73, $H_2O^{\pm}$ 11.20, insol. 2.95, total 97.68 (cations determined in triplicate by x-ray fluorescence). The insoluble residue was quartz. Other elements detected by spectrographic analysis are: minor Si; trace Mg, Mn, Ca and Ni; faint trace Ba, B, Ag and Al. The formula derived from the analysis (neglecting the small amount of arsenic) is $(Cu_{.49}Fe_{.46}Zn_{.09})(SO_4)_{1.0}\cdot(H_2O)_{1.2}$. This is considered as $(Cu, Fe, Zn)SO_4\cdot H_2O$, with

Cu:Fe:Zn = 100:94:19. The mineral is thus a high copper-iron member of the kieserite group.

The mineral is salmon-colored, has a hardness of 3 to $3\frac{1}{2}$, and is slowly soluble in cold water. G is 3.30 (suspension) and 3.281 (calc.).

Optically, it is probably biaxial (by analogy to other members of the kieserite group). Because of the fine-grained material, only approximate indices could be determined: α'(?) 1.610, γ'(?) 1.636.

The *x*-ray powder data (26 lines indexed plus four non-indexed) are very similar to those of other minerals in the kieserite group. Strongest lines (for FeKα radiation) are: 3.46 (10)(111), 4.72 (5)(11$\bar{1}$), 3.08 (5)(20$\bar{2}$), 4.85 (4)(011), and 2.51 Å (4)(220). Unit cell parameters calculated from the powder data are: *a* 7.480, *b* 7.424, *c* 7.053 Å, $\beta = 114°40'$; $a:b:c = 1.008:1:0.9500$. Z=4. Space group *A*2/*a*.

The specimen also contains an olive-colored iron arsenate, quartz and bonattite.

The mineral is not named " . . . because the Cu:Fe ratio is approximately 1:1 and the mineral is thus not close to the theoretical end member." It is suggested that, if a complete series from $CuSO_4 \cdot H_2O$ to $FeSO_4 \cdot H_2O$ is found in nature, the iron-rich members be referred to szomolnokite and the copper-rich members (of which the British Columbia material is part) be referred to a new name.

Discussion.—Jambor has sufficient justification for proposing a name for the copper-rich end of the series in question. Because of the As_2O_5 content (presumably due to the olive-colored iron arsenate) reported in the analysis, it would appear that some of the FeO should be omitted from the calculations also. This would increase the Cu:Fe ratio. On the other hand, if the precision of the CuO and FeO determinations (unstated) is poor, I would agree with Jambor. If the CuO% is lowered from 20.3 to 19.7 and the FeO% is raised from 17.2 to 17.8, the Cu:Fe ratio becomes 1:1.

J. A. Mandarino

Plumboan Microlite

A. Safiannikoff and L. Van Wambeke. Sur un terme plombifère du groupe pyrochlore-microlite. *Bull. Soc. franç. Minér. Crist.*, **84**, 382–384 (1961).

The mineral was found as greenish yellow and orange crystalline masses and rare octahedra in an alluvial cassiterite deposit in the Kivu, Congo. It appears to have been derived from nearby spodumene-bearing pegmatites. Translucent in small fragments; lustre greasy; non-radioactive; insoluble in acids. G depends on Ta_2O_5/Nb_2O_5: G is near 6.5 for Ta_2O_5/Nb_2O_5 (by weight) = 4.5; ≥7.2 for $Ta_2O_5/Nb_2O_5 = 10$. H=6. Reflectivity (white light) = 18.2%. Chemical analysis (corrected for 3% cassiterite and about 0.5% mica) corresponds to the formula $(Pb_{0.74}Na_{0.13}Ca_{0.11}Cs_{0.07}Sb_{0.03}Fe^{2+}_{0.03}Ba_{0.01})(Ta_{1.45}Nb_{0.53}Ti_{0.02})O_{6.04}(H_2O)_{0.42}$. Compared to the general formula for the pyrochlore-microlite series, $A_2B_2O_6(F, OH)$, the "plumbomicrolite" shows a considerable deficit in the A group, attributed by the authors to "primary alteration." *X*-ray fluorescence analysis shows "rather important" variations in the ratio Ta_2O_5/Nb_2O_5 among different samples.

X-ray powder (diffractometer) patterns shows the strongest lines (in Å, I/I_0 for CuKα on Philips diffractometer): 1.867 (100), 1.593 (99), 2.642 (65), 1.526 (32), 3.01 (31), 0.8928 (29), 1.181 (27), 0.8801 (24), 1.078 (22). Space group *Fd3m*, $a = 10.56 \pm 0.01$ Å. G (calc.) = 6.65; G (meas.) = 6.6.

Discussion.—The authors are careful not to propose a formal name for this "plumboan member of the pyrochlore-microlite group" but use the term "plumbomicrolite" in their text. The deficit of 44% of the A-group atoms from the pyrochlore-microlite formula, and the crystallographic similarity of "plumbomicrolite" to synthetic $Pb_{1.5}Nb_2O_6$ and not

$Pb_2Nb_2O_6$, warrants caution in proposing new names in this group until further studies of its crystal chemistry are carried out.

P. TOULMIN

REDEFINITION OF MINERAL

Cervantite

W. GRÜNDER, H. PÄTZOLD AND H. STRUNZ. Sb_2O_4 als Mineral (Cervantit). *Neues Jahrb. Mineral., Monatsh.*, **5**, 93–98 (1962).

A thorough study of "antimony ocher," the yellowish to white cryptocrystalline product commonly formed by the oxidation of stibnite and other antimony minerals, led Vitaliano and Mason (*Am. Mineral.*, **37**, 982–999, 1952; *Mineral. Mag.*, **30**, 100–112, 1953) to define stibiconite as an isometric mineral with the pyrochlore structure and the general formula $(Sb^{3+}, Ca)_y Sb_{2-x}$ $(O, OH, H_2O)_{6-7}$, where $0<x<1$ and $y \simeq 1$. They suggested the identity of cervantite and stibiconite and relegated cervantite to synonymy with stibiconite on the basis of priority and their belief that anhydrous Sb_2O_4 does not occur as a mineral.

Examination by G., P. and S. of antimony oxides from Brasina, near the Drina River, Zajača-Stolice district, western Serbia, Yugoslavia, revealed a fine-grained yellow component with G somewhat more than 6.5, *n*s between 2.0 and 2.1, and chemical analysis not given) that indicated Sb_2O_4. Indexed *x*-ray powder diffraction values (19 lines) agree well with those for synthetic material. The strongest lines; 3.06 (10), 2.91 (7), 1.854 (7), 1.635 (7); correspond closely to those for stibiotantalite with which cervantite is isotypic. Unit cell dimensions, calculated from powder diffraction data, are *a* 4.79, *b* 5.43, *c* 11.73 Å; axial ratio $a:b:c=0.882:1:2.160$; G (calc.) 6.64; Z=4. Extinctions and comparison with stibiotantalite indicate orthorhombic symmetry, space group $Pbn2_1-C^9_{2v}$. In this orientation, one direction of excellent cleavage $\|c$ (001) another, poorer one, $\|a$(100). Rather than apply a new name to the mineral, G., P. and S. suggest the reinstatement of *cervantite* (Dana, 1850), although material from the type locality at Cervantes, Galicia, Spain, was unavailable for comparison.

G., P. and S. state that the pure mineral also occurs as pseudomorphs after stibnite at Felsöbánya, Hungary (=Baia Sprie, Roumania), and at Pocca, Bolivia.

Besides stibiconite, heating of artificial $Sb_2O_5 \cdot nH_2O$ produced an unidentified phase at 600° C. and a cubic phase with a defect pyrochlore structure and a composition Sb_6O_{13} at 700° C. On further heating, cervantite formed at 800° C. Cervantite was formed above 500° C. also by heating Sb_2O_3.

KURT SERVOS

NEW DATA

Planerite

F. CECH, P. POVONDRA AND E. SLANSKY. Über Planerit aus Ponikla bei Jilemnice (Nordböhmen) und über die Beziehung zwischen Planerit, Coeruleolactit, und Türkis. *Neues Jahrb. Mineral. Abh.* **96**, 1–30 (1961).

Planerite was considered by Fischer to be a member of the turquoise-ceruleolactite series (*Am. Mineral.* **43**, 1224, 1958). The present paper gives a new analysis of planerite from Ponikla and new *x*-ray powder data, optics and DTA on turquoise, planerite, and ceruleolactite. Although the *x*-ray data are very similar, the authors consider that there are differences—a few lines are present in the turquoise-ceruleolactite series that are absent in planerite and there are some differences in intensity. There are also some differences in optical properties. Planerite gave a double endothermic break at 250° and 340°, turquoise a single broad one at 360°. The authors consider that planerite is a separate mineral.

DISCUSSION.—The evidence does not seem convincing. Further study is needed.

Picropharmacolite

R. PIERROT. Nouvelles données sur la picropharmacolite. *Bull. Soc. franç. Minér. Crist.* **84**, 391–396 (1961).

Previously accepted optical properties for this mineral appear to have been measured on associated strontian barite. Measurement of newly analyzed material from the type locality gives α (calc.) 1.566, β 1.571, γ 1.578. $2V_\gamma = 50° \pm 2°$. $Z' \wedge c = 8° \pm 1°$ on "a good cleavage." Analysis of material from Riechelsdorf and from Sainte-Marie-aux-Mines confirms the formula $(Ca, Mg)_3(AsO_4)_2 \cdot 6H_2O$, with Ca:Mg = 4.5 (Sainte-Marie-aux-Mines)—5.3 (Riechelsdorf). G 2.62 ± 0.02. Found as tiny, white to slightly pearly (sometimes transparent colorless) needles; as mammillary incrustations; and as concretions and radial-structured nodules up to 1 cm in diameter. Monoclinic, c (parallel to fiber elongation) $= 6.74 \pm 0.02$ Å; $a = 21$ Å *ca.*, $b = 13.5$ Å *ca.*, $\beta = 140°$ *ca.* (presumably from single-crystal photographs—P. T.). Unindexed x-ray powder pattern (CuKα) has 44 lines, d's ranging from 1.362 Å to 13.50 Å; strongest lines are: 13.50 (very strong); 3.18 (strong); 9.20, 3.78, 3.06 (moderately strong). A completely different pattern is given for material heated 3 to 4 hours at 50° C. or higher; the presumably dehydrated material did not revert to picropharmacolite on soaking in water for a week. DTA shows sharp doubled endothermic peak between 100° C. and 200° C.

P. TOULMIN

Villamaninite

M. H. HEY, A new analysis of villamaninite. *Mineral. Mag.* **33**, 169–170 (1962).

A new analysis on 9 mg of the type material gave Cu 24.0, Ni 11.8, Fe 5.3, Co 4.0, S 54.0, Se 0.06, sum 99.2%, confirming the original suggested formula $(Cu, Ni)S_2$. The analyzed material consisted of two phases, both having the pyrite structure. The major component, considered to be villamaninite, has a 5.693 Å; the minor component, less than 25%, has a 5.62 Å and may be a ferrian vaesite. Villamaninite is listed as a synonym of bravoite in Dana's System of mineralogy, 7th Ed., vol. I, p. 290. The new data prove its validity as a distinct species.

J. A. MANDARINO

Kolovratite

J. L. JAMBOR AND G. R. LACHANCE, On kolovratite. *Canad. Mineral.* **7** (2), 311–314 (1962).

Kolovratite, which was very inadequately described, has been regarded as a doubtful species for many years. In 1955, Guillemin examined a specimen from a locality other than the type locality and found it to be identical with vésigniéite (*Am. Mineral.*, **40**, 942, 1955). Now, two specimens from the type locality have been restudied. The material consists of yellow, nonpleochroic, cryptocrystalline fibers. Mean index of refraction is 1.577 ± 0.005, birefringence is low, and extinction is parallel. Major amounts of V, Ni and Zn, and minor amounts of Cu, Fe and Mn were detected by x-ray fluorescence. A quantitative x-ray fluorescence analysis of $2\frac{1}{2}$ mg gave: ZnO 15%, NiO 12% and V_2O_5 12%, all accurate to within 25% of the amount present. It is concluded that kilovratite is a hydrous zinc-nickel vanadate or possibly a silicovanadate. Strongest lines in the x-ray powder pattern are (for CuKα): 11.6 (s), 5.83 (s), and 3.88 (s).

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Bonattite

J. L. Jambor, Second occurrence of bonattite. *Canad. Mineral.* **7** (2), 245–252 (1962).

Bonattite, $CuSO_4 \cdot 3H_2O$, was first described from Elba by Garavelli in 1957 (*Am. Mineral.* **43,** 180, (1958). The mineral now has been found in a specimen from the Bonaparte River area, Lillooet District, British Columbia. The present study shows that certain of the weaker lines in the x-ray powder pattern reported by Garavelli are due to chalcanthite. The strongest lines given by Jambor are (for CuKα radiation): 4.42 (10), 5.11 (7), 3.65 (6), 3.25 (6), 3.01 (6) and 3.42 (5).

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Nekoite

R. A. Chalmers, A. W. Nicol and H. F. W. Taylor, The composition of nekoite. *Mineral. Mag.* **33,** 70–71 (1962).

New analytical data indicate that the formula of nekoite is probably $3CaO \cdot 6SiO_2 \cdot 8H_2O$ rather than $CaO \cdot 2SiO_2 \cdot 2H_2O$.

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DISCREDITED MINERALS

Zirlite (=Gibbsite)

Heinz Meixner, Über den "Zirlit" (=Gibbsit, =Hydrargillit) von Zirl, Tyrol. *Der Karinthin* **42,** 148–153 (1961).

X-ray and optical study of material from the type locality showed that zirlite (Pichler, 1871, see Dana's System, 7th Ed., vol. I, p. 667) is gibbsite.

Royite (=alpha-Quartz)

J. Dhar, and K. V. Sundaram, An x-ray study of royite. *Quart. Jour. Geol., Mining, Met. Soc. India* **33,** 119–122 (1961).

X-ray powder data on type material shows that royite (*Am. Mineral.* **27,** 465, 1942) is alpha-quartz and not a new variety of high-temperature quartz.

Erionite (=Offretite)

M. H. Hey and E. E. Fejer, The identity of erionite and offretite. *Mineral. Mag.* **33,** 66–67 (1962).

Offretite, described by Gonnard in 1890 (see Dana's System, 6th Ed., p. 1043), was re-examined by Strunz in 1956 who stated that it was identical to phillipsite. (*Am. Mineral.* **42,** 444, 1957). Since phillipsite is abundantly present with offretite at the type locality, Strunz's identification was in some doubt. Hey and Fejer state that x-ray powder patterns of offretite are identical with those of erionite from Durfee, Oregon. Offretite has priority over erionite.

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