NEW MINERAL NAMES*

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Cyanophillite*

Analyses gave CuO 36.3, 32.5; Al2O3 8.5, 8.5; Sb2O3 36.5, 38.3; H2O 19.8; sum 101.1%, corresponding to 10CuO · 2Al2O3 · 3Sb2O3 · 25H2O. The mineral is dissolved readily by cold 1:1 HCl, partly dissolved by 1:1 HNO3. Loss of weight when heated (%) 110° 3.4, 150° 9.5, 200° 19.8%. At 250° the mineral is decomposed and turns black.

X-ray study shows the mineral to be orthorhombic, space group Pmmb, a = 11.82, b = 10.80, c = 9.64 Å, Z = 1, D calc. 3.10, meas. 3.12. The strongest X-ray lines (30 given) are 9.67(6)(001), 4.84(10)(002), 2.59(6)(041, 2.44(5)(240, 4.12(230, 3.35(50)(110), 3.208(50)(020), 3.080 (80)(111), 2.781(100)(221, 2.750(70)(112), 1.721 (60).

Colorless to white, luster vitreous. Cleavages {010}, {001}, (011) good, not easily observed. Hardness about 5. Optically biaxial positive, ns α = 1.713, β = 1.730, γ = 1.748, 2V + 88° (89° calc.). Material with Zn: Mg = 1:1 is biaxial, neg., ns. α = 1.689, β = 1.707, γ = 1.727, 2V − 85°.

The mineral occurs as coatings and small crystals, largest dimension about 1 mm; on prosperite, adamite, and austinite from Tsumeb, Namibia. Forms observed {010}, {001}, also {100} very small.

The name is for Robert I. Gait, Curator of Mineralogy, Royal Ontario Museum, Toronto. Type material is at the Royal Ontario Museum and at the Smithsonian Inst., Washington. M.F.

Gaitite*

Electron microprobe analysis (H2O by DTA-TGA) gave As2O5 50.2, CaO 24.2, ZnO 15.3, MgO 1.2, FeO 0.2, MnO 0.2, H2O 7.8, sum 99.1%, corresponding to H2Ca2Zn(AsO3.84Mg0.14Fe0.01 Mn0.01)(AsO3)2(OH)2, the Zn analogue of talcmonite. DTA study shows two endothermic peaks at 470 and 513°C. The material is zoned with Zn:Mg ranging from 86:14 to 36:64.

X-ray study shows the mineral to be triclinic, a = 5.90, b = 7.61, c = 5.57 Å, α = 111°40', β = 70°50', γ = 119°25', Z = 1. D calc. 3.80, meas. 3.81. The strongest X-ray lines (53 given)

are 3.350(50)(110), 3.208(50)(020), 3.080 (80)(111), 2.781(100)(221, 2.750(70)(112), 1.721 (60).

Colorless to white, luster vitreous. Cleavages {010}, {001}, (011) good, not easily observed. Hardness about 5. Optically biaxial positive, ns α = 1.713, β = 1.730, γ = 1.748, 2V + 88° (89° calc.). Material with Zn: Mg = 1:1 is biaxial, neg., ns. α = 1.689, β = 1.707, γ = 1.727, 2V − 85°.

The mineral occurs as coatings on quartz and barite, as spherulitic aggregates of minute tabular crystals. Associated minerals are chalcophyllite, chrysocolla, brochantite, and triphylite at the Clara Mine near Oberwolfach, Black Forest, Germany.

The name is for the blue color and the platy form. Type material is at the University of Stuttgart.

Discussion
A badly chosen name, sure to be confused with Kyanophillite, 32, 255, 701 (1947) = hydrous mica? M.F.

Geerite*

Electron microprobe analyses are given of 27 samples; in 10 of these Zn was not detected; they contained (range and average) Cu 61.44–76.94, 71.9; S 21.47–26.09, 23.7, Cu:S 1.44–1.62, 1.53. X-ray data are indexed on a cubic cell, space group F43m, a = 5.410 Å, Z = 4 (Cu1.60S), D calc. 5.61. The optical data, however, indicate that the mineral is pseudocubic, probably orthorhombic.

The strongest X-ray lines (9 given) are very close to those of the associated sphalerite (a = 5.398 Å). For geerite, 3.128(100)(111), 1.918(50)(220), 1.637(30)(311), 1.109(20)(422).

The mineral is opaque and appears bluish-white and weakly birefringent in reflected light. It is moderately anisotropic in yellow. Polishing hardness less than that of sphalerite.

Geerite occurs as a thin, iridescent coating or as platelets about 15 microns thick, oriented along {110} cleavage planes of sphalerite from Dekalb Township, N.Y. (exact locality not known). In some specimens geerite is partly or completely replaced by spionkopite. Associated minerals include calcite, malachite, azurite, brochantite, crysocola, stibiconite, cervantite, hemimorphite, tetrahedrite, and chalcopyrite.

The name is for Adam Geer (deceased) of Utica, N.Y., who collected the material. M.F.

Gittinsite*

Electron microprobe analysis gave SiO2 40.8, ZrO2 40.3, CaO 18.4, sum 99.5%, corresponding closely to CaZrSi3O9. The X-ray pattern was indexed, by analogy with thortveitite, as monoclinic,
probably $C2/m$, $a = 6.878$, $b = 8.674$, $c = 4.697\,\text{Å}$, $\beta = 101.74^\circ$. $Z = 2$, D calc. 3.624. The strongest X-ray lines (38 given) are 5.32(5)(110), 3.155(10)(021), 3.026(8)(201), 2.660(8)(220), 1.677(7)(150,132). The mineral occurs as fibrous to radiating masses, associated with apophyllite and commonly with vlasovite. Color chalky white. The fibers of gittinsite have max length about 0.1 mm. $H = 3\frac{1}{2}$. Optically biaxial, negative, $n_{x} = 1.620$, $n_{y} = 1.736$, $n_{z} = 1.738$, $2V = 30^\circ$, $X$ and $Z$ nearly perpendicular to $c$. Elongated $c$.

The name is for Professor John Gittens, Department of Geology, University of Toronto, who first found it. Type material is at the Geological Survey of Canada, Ottawa, the Royal Ontario Museum, and the University of Toronto. M.F.

**Goosecreekite***


Electron microprobe analysis ($H_{2}O$ by DTA/TGA) gave SiO$_2$ 59.3, Al$_2$O$_3$ 17.2, CaO 9.3, H$_2$O 15.0, sum 100.8%, corresponding to $\text{Ca}_1.0_{0.01}\text{Al}_{0.05}\text{Si}_{6.016.10.12}\text{H}_2$O. The sample lost 2.7% $H_{2}O$ in high vacuum at 25°C, and another 12.3% up to 328°C in high vacuum.

Weissenberg and precession photographs showed the mineral to be monoclinic, space group $P2_1$ or $P2_1/m$, $a = 7.52$, $b = 17.56$, $c = 7.35\,\text{Å}$, $\beta = 105.71^\circ$. $Z = 2$, D calc. 2.16, meas. 2.21. The strongest X-ray lines (25 given) are 7.19(50)(100), 5.59(50)(120), 4.91(50)(121), 4.53(100)(130,032), 3.350(40)(221,220).

Goosecreekite is colorless to white, luster vitreous. $H = 4\frac{1}{2}$. Cleavage perfect and easy (010). Optically biaxial, neg., $n_{x} = 1.495$, $n_{y} = 1.498$, $n_{z} = 1.502$, dispersion not discernible, $Y = b$, $Z \perp c = 46^\circ$.

The mineral occurs as polycrystalline aggregates and as imperfect single crystals up to 2 mm in diameter at the Goose Creek quarry near Leesburg, Va., in vugs in diabase. Type material is at the Smithsonian Museum; the Royal Ontario Museum, Toronto; the Am. Museum of Natural History, N.Y.; the British Museum, and at Harvard University. M.F.

**Jamesite***


Microprobe analysis (standards hornblende for Fe, ZnO for Zn, PbO for Pb, synthetic Cu$_2$(OH)(\text{AsO}_4) for Cu and As) gave As$_2$O$_3$ 36.2, SO$_3$ trace, Fe$_2$O$_3$ 25.5 PbO 27.1, ZnO 11.1, CuO, MnO traces, sum 99.9%, corresponding to the formula above. Jamesite is difficultly soluble in hot HNO$_3$ and HCl.

X-ray study showed the mineral to be triclinic, $P1_1$, $a = 5.622$, $b = 9.593$, $c = 10.279\,\text{Å}$, $\alpha = 109.80^\circ$, $\beta = 90.54^\circ$, $\gamma = 97.69^\circ$, $Z = 1$, D calc. 5.10. The strongest X-ray lines (47 given) are 9.678(8)(001); 7.408(101); 3.40(10)(122,121); 3.26(8)(112,120); 3.04(9)(032); 2.92(6)(131,131); 2.046(025,203,015).

Color reddish-brown, luster subadamantine. $H = 3$. Optically biaxial, neg., $n_{x} = 1.960$, $n_{y} = 1.995$, $n_{z} = 2.020$, $2V = 75^\circ$, $r > v$. Strongly pleochroic, $X$ and $Y$ pale brown, Z deep reddish-brown.

$Y \perp a$ on (001) $\sim 5^\circ$, $Y \perp a$ on (010)15°. Crystals are tabular, elongated $a$, up to 0.5 $\times$ 0.2 $\times$ 0.05 mm.

The mineral occurs in oxidized Pb ore of the oxidized zone of the Tsumeb mine, associated with duftite, tsumcorite, and goethite.

The name is for Christopher James, mining engineer at the Tsumeb Mine. Type material is at the Univ. of Stuttgart, Germany, and the Smithsonian Museum, Washington. M.F.

**Keithconnite***, **Telluropalладinite***


The minerals were found in the Stillwater complex, Montana. Type material is at the U.S. National Museum, Washington; Geological Survey of Canada, Ottawa, and the Royal Ontario Museum.

Keithconnite

Electron microprobe analyses of 4 grains gave Pd 68.7, 68.4, 71.0, 68.4; Pt – – – 0.03; Te 29.1, 28.5, 14.2, 26.3; As – – – 0.16, 6.7; Bi 1.0, 0.54, 0.96, –; Sn – – – 0.08, 5.0, 4.5; Sb – – – 1.4, 0.23; Pb 1.6, 0.94, – – – Hg – 0.37, – – – sum 100.49, 99.02, 99.26, 99.43%. This corresponds to Pd$_{3-x}$Te$_x$ with $x = 0.42–0.27$.

Keithconnite is rhombohedral, space group $R3$, $a = 11.45$, $c = 11.40\,\text{Å}$, $Z = 7$, very similar to synthetic Pd$_{29}$Te$_7$. The strongest X-ray lines (25 given) are 2.26(10)(214), 2.16(9)(140), 1.32(3)(3.45), 0.885(3)(2.10.1), 0.794(4)(758).

The color depends on the association, ranging from cream to gray. Anisotropism moderate to strong. Reflectances in air 470 nm, 44.1, 42.2; 546 nm, 46.4, 43.7; 589 nm, 48.2, 45.5; 650 nm, 51.1, 48.5%. Micro-indentation hardness (15 g load) 394–424, av. 410.

The name is for Mr. H. Keith Conn, General Technical Manager, Johns-Mansville Corp., who aided the discovery of Pt-Pd mineralization in the Stillwater Complex.

Telluropalладinite

Electron microprobe analyses of 7 grains gave Pd 64.6–65.4, Te 31.4–34.1, As 0.10–0.68, Bi 0.15–2.6, Sn 0.07, Sb 0.02, O 0.30, Hg 0.6, sum 99.82–100.17, corresponding closely to Pd$_{29}$Te$_7$.

X-ray study shows the mineral to be monoclinic, space group $P2_1/c$, $a = 7.45, b = 13.95, c = 8.82\,\text{Å}$, $\beta = 91.9^\circ$, $Z = 4$, D calc. 10.68. These data agree well with those for synthetic Pd$_{29}$Te$_7$. The strongest X-ray lines (30 given) are 2.237(10)(152), 2.094(4)(322), 1.306(5)(2.10.0).

Color cream with a yellowish tint. Anisotropism moderate to strong, in oil. Reflectance 470 nm, 45.2, 42.5; 546 nm, 47.7, 45.4; 589 nm, 49.5, 47.4; 650 nm, 53.1, 51.9. Hardness (15 g load) 376–399, av. 388 for 1 grain; 296–308 (av. 302 for another grain).

The name is for the composition. M.F.

**Kingsmountite***

NEW MINERAL NAMES

Electron microprobe analyses gave P_2O_5 36.0, 35.9, 35.9; Al_2O_3 16.5, 16.8, 16.7; CaO 15.1, 15.0, 15.4; MnO 8.2, 7.8, 8.3; FeO (total Fe) 4.2, 4.2, 3.9; MgO 0.2, 0.2, 0.2, H_2O (by Mettler thermo-analyzer) 20.6%, corresponding to (Ca_3.18Mn_0.82) (Fe_{0.56}Mn_{0.44}O_{0.65}) (PO_4)_{1.9} (OH)_{4} · 1.2H_2O, the Fe^{2+} analogue of montgomeryite.

The X-ray pattern (33 lines) has strongest lines 12.28 (500), 5.15 (100), 2.95 (004), 2.62 (600). The powder data, indexed by analogy with montgomeryite, gave a unit cell with \( a = 10.029 \), \( b = 24.46 \), \( c = 6.258 \) Å, \( \beta = 91.16^\circ \), space group probably \( C2 \). D calc = 2.58, meas. 2.51. Color white to very light brown, streak white. H = 2½, brittle, inelastic. Optically biaxial, negative, \( n_a = 1.575 \), \( n_c = 1.583 \), Y = 1.583, Y is perpendicular to laths. The crystals are small fibers; the occurrence of cleavages could not be determined.

The name is for the occurrence at the Foote Mineral Co. spodumene mine, near the town of Kings Mountain, N.C. Type material is at the Smithsonian Institution, Washington, D.C. M.F.

McGillite*


Electron microprobe analysis by W. H. MacLean gave SiO_2 34.54, As_2O_3 < 0.1, MnO 47.76, FeO 4.85, MgO 1.62, ZnO < 0.1, CaO < 0.05, Cl 6.36, H_2O^+ 7.16, (calculated, assuming 25 anions per formula unit), H_2O not detd. 102.29 -(O = Cl)1.44 = 100.85%, corresponding to Mn_3Si_6O_{18}(OH)_3Cl. The mineral is decomposed by HCl.

Precession and Laue photographs, show the mineral to be rhombohedral, space group probably \( R3m \), \( a = 13.498 \), \( c = 85.657 \) Å, D calc. 3.071, meas. 2.98. The strongest X-ray lines (26 given) are 7.16(7), 2.88(6), 2.56(10). Color light to dark pink, luster pearly. Cleavages \([0001]\) easy and good, \([1011]\) difficult but fair. Optically uniaxial, negative, \( n_s = 1.6658, n_c = 1.6415 \); occasional fragments show 2V up to 10°. Vickers hardness 278–330 kg/sq.mm, with 15 g load.

The mineral occurs as fracture fillings in the Sullivan mine, Kimberly, British Columbia, associated with dark sphalerite and small amounts of boulangerite, jamesonite, galena, and quartz. It has also been found at the Kyrarawaza mine, Tochigi Prefecture, Japan.

The name is for McGill University. Type material is at the Geological Survey of Canada, Ottawa, and the Redpath Museum, McGill University, Montreal. M.F.

Mcguinessite*


Microprobe analyses by F. E. G. gave: (1) MgO 23.7, CuO 39.6, CaO 0.07, CO_2 24.73, H_2O (given as H_2) 10.08 (calc. from 34.86% loss in TGA), sum 98.23 (av. compn. of fiber); (2) MgO 25.2, CuO 37.8 (Mg-rich rim of spherule); (3) MgO 19.4, CuO 45.7, CaO 0.08 (Cu-rich core of spherule); ratio MgO/CuO (1) 54:46; (2) 57:43; (3) 46:54. The mineral is slowly but completely dissolved by cold acids. Silica (0–6%) was present, distributed inhomogeneously throughout the spherules. Formula (Mg,Cu)_2 (CO_3)(OH)_2. A member of the rosasite group. The DTA curve shows large endothermic breaks at 498° and 1080° and a small exothermic break at 810°.

X-ray data are indexed on a monoclinic cell with \( a = 9.398, c = 3.379 \) Å, \( \beta = 93.28^\circ \). Triclinic symmetry is not excluded. The strongest X-ray lines (31 given) are 6.015(100), 3.694(67), 2.530(25), 2.139(23).

The mineral occurs as spherules; the fibers are light blue-green; Cu-rich cores are a slightly darker blue, and Mg-rich rims are very pale blue-green to nearly white. Luster vitreous to silky. D meas. 3.02 (Mg-rich) to 3.22 (Cu-rich); calc. 3.076 to 3.234. H 2½, brittle, inelastic. Optically biaxial, negative, \( n_a = 1.396 - 1.607, n_c = 1.724 - 1.740 \) (increasing with Cu content); \( n_s \) (Na) \( \alpha = 1.602, \beta = 1.730, \gamma = 1.732 \). Elongation negative, max. extinction \( X \perp c = 11^\circ \). Weakly pleochroic, \( X \) very pale green, \( Y \) and \( Z \) light bluish-green.

The mineral occurs in serpentinized peridotite at Red Mountain, Mendocino County, California associated with vuagnatite, goethite, malachite, azurite, and chrysocolla. The spherules range from 0.1 to 2 mm in diameter. It has also been found at Gabbs, Nevada, and in Austria.


O’Daniellite*


A previous abstract is in 66, 218-219 (1981). Additional data are given below. Microprobe analysis gave As_2O_3 54.4, ZnO 33.8, FeO 0.2, MgO 2.9, MnO 0.6, CaO 0.3, Na_2O 4.7, H_2O 2.8 (to 480°), sum 99.7%, corresponding to the formula (Na_0.95Ca_0.03)(Zn_2.60Mg_{0.03}Mn_{0.03}Fe_{0.02})H_{1.96}(As_{2.96}O_{12}). Refined cell constants are \( a = 12.113, b = 12.445, c = 6.793 \) Å, \( \beta = 112.87^\circ \), \( Z = 4 \), D calc. 4.49 g/cc, detd. as >4.24. The strongest X-ray lines (34 given) are 6.22(10), 5.59(5), 3.56(7), 3.26(10), 2.78(6), 2.02(2), 0.86(1), 1.68(7), 1.66(6), 1.24(1), 1.22(0), 1.16(0), 1.05(0), 0.86(0), 0.82(0), 0.73(0), 0.67(0), 0.63(0), 0.59(0), 0.55(0), 0.51(0), 0.47(0), 0.43(0), 0.39(0), 0.35(0), 0.31(0), 0.27(0), 0.23(0), 0.19(0), 0.15(0), 0.11(0), 0.07(0), 0.03(0), 0.00(0). Color pale violet, luster vitreous H ~ 3. Cleavages \([010]\) and \([100]\) perfect, also \([001]\). Optically biaxial, positive, \( n_a = 1.745, n_b = 1.753, n_c = 1.778, 2V = 60^\circ \), \( Z = b, Y \perp c = +18^\circ \), dispersion not observed. Associated minerals were cuprian adamite, koritnigite, prosperite. The name is for Herbert O’Daniel, 1903–1977, professor of mineralogy at Univ. Munich. Type material is at the Univ. of Stuttgart and the Smithsonian Institute. M.F.

Paranatrolite*


The name paranatrolite is given to a new zeolite that is unstable in air and dehydrates to form tetranatrolite. It has been observed only as colorless, transparent epitectic overgrowths up to 1 mm in thickness on large natrolite crystals that have been preserved in water from the time of collection. All studies were made using water-immersion mounts.
Analysis was not possible; on the assumption that it differs from tetranatrolite only in water content, the formula is calculated from the unit cell and density as $\text{Na}_2\text{Al}_2\text{Si}_6\text{O}_{18} \cdot 3\text{H}_2\text{O}$.

X-ray study shows the mineral to be pseudo-orthorhombic, monoclinic or triclinic, space group $\text{Fm} \overline{2} \text{m}$, $\text{F}2\text{2} \overline{2}$, or $\text{Fm} \text{mm}$, $a = 19.07$, $b = 19.13$, $c = 6.580 \AA$, D calc. 2.20, meas. 2.21. The strongest X-ray lines (19 given) are $5.92(60)(111)$, $4.78(30)(040,400)$, $4.44(40)(131,311)$, $2.94(100)(3.51,531)$.

H 5–5 ½. Fracture conchoidal. Under the microscope, biaxial, negative, $2\nu < 10^\circ$, birefringence very low, extinction slightly undulatory, $n_s$ slightly higher than those of natrolite.

Type material is at the Royal Ontario Museum, Toronto, and the National Museum of Natural Sciences, Ottawa. M.F.

Pararealgar*  

The average of 2 electron microprobe analyses from Mount Washington gave As $69.81$, S $29.97$, sum $99.78\%$, corresponding to $\text{As}_8\text{S}_9\text{O}_5$, a new polymorph of AsS. Insoluble in $\text{H}_2\text{O}$, conc. $\text{HCl}$, $\text{HNO}_3$, or $\text{H}_2\text{SO}_4$, reacts with 40% KOH to give a dark brown precipitate.

X-ray study shows the mineral to be monoclinic, space group $\text{Pc}$ or $\text{n} \text{c}$, $a = 9.929$, $b = 9.691$, $c = 8.503 \AA$, $\gamma = 97.06^\circ$, $Z = 16$, D calc. 3.499, meas. 3.52. The strongest lines (24 given) are $5.56(91)(111)$, $5.14(100)(111)$, $3.75(78)(112)$, $3.29(50)(221)$, $3.02(51)(202)$, $2.79(71)(222)$.


The mineral occurs as powdery to granular aggregates that replaced realgar. Maximum grain size 0.02 mm. It occurs with realgar, stibnite, tetrahedrite, arsenopyrite, arsenic, arsenolite, $\alpha$-AsS, and other minerals at Mount Washington, Vancouver Island, British Columbia, and with stibnite, realgar, and $\alpha$ AsS at the Gray Rock property, Lilloet district, British Columbia. It has also been found (misidentified as orpiment) at the Golconda mine, Humboldt Co., Nevada, at Siwash Creek, British Columbia, and at the Lengenbach quarry, Switzerland.

Type material is at the Geological Survey of Canada, Ottawa. M.F.

Petarasite*  

Subrata Ghose, Che’ng Wan, and G. Y. Chao (1980) Petarasite, $\text{Na}_2\text{Zr}_2\text{Si}_6\text{O}_{18}(\text{Cl},\text{OH}) \cdot 2\text{H}_2\text{O}$, a zeolite-type zirconosilicate. Can. Mineral., 18, 503–509.

Five electron microprobe analyses (range and av.) gave SiO$_2$ 42.4–43.3, 42.9; ZrO$_2$ 29.1–30.1, 29.5; TiO$_2$ 0.06–0.21, 0.07; CaO 0.65–1.15, 0.88; Na$_2$O 17.2–17.4, 17.3; K$_2$O 0.17–0.29, 0.25; H$_2$O 7.06–7.12, 7.09; Cl 2.01–2.07; sum 99.30–100.69, 100.03 – (0=Cl$_2$ 0.45–0.47, 0.46) = 98.84–100.23, 99.57%, corresponding to $(\text{Na}_4\cdot_{0.49}\text{Ca}_{0.13}\text{K}_0.07)(\text{Zr}_2\cdot_{0.99}\text{Ti}_0.01)\text{Si}_6\text{O}_{18}(\text{OH})_0.6\text{Cl}_0.48) \cdot 3.01\text{H}_2\text{O}$. The structural study shows 2H$_2$O, the excess being adsorbed or in open channels; the formula is therefore $\text{Na}_2\text{Zr}_2\text{Si}_6\text{O}_{18}(\text{OH},\text{Cl}) \cdot 2\text{H}_2\text{O}$. TGA curves show loss of weight 25–830°C 6.17–6.39, av. 6.24%; 25–1100°C, 9.13–9.81, av. 9.43%.

X-ray study showed the mineral to be monoclinic, space group $\text{P}2_1/m$, $a = 10.796$, $b = 14.492$, $c = 6.6229 \AA$, $\beta = 113.214^\circ$, $Z = 2$, $D$ 2.28 meas., 2.213 calc. The strongest X-ray lines (42 given) are $7.25(70)(020)$, $6.09(40)(001)$, $4.10(100)(220)$, $2.92(40)(240)$.

Color greenish-yellow, luster vitreous. Cleavages (110) perfect, {010} very good, {001} distinct; fracture subconchoidal. H 5–5 ½. Optically biaxial, positive, $\nu_s$ (Na) $\alpha = 1.596$, $\beta = 1.598$, $\gamma = 1.632$, $2\nu = 29^\circ$, calc. 28°, dispersion, $r < v$ weak. Pleochroic, X colorless, Y and Z pale-greenish-yellow, X = b, Z = c = +41.5°.

The mineral occurs as irregular grains up to 10 mm across, associated with biotite,apatite, catapleite, and zircon in a xenolith in nepheline syenite, Demix quarry, Mont St.-Hilaire, Quebec.

The name is for Dr. Peter Tarasoff, amateur mineralogist of Dollard-des-Ormeaux, Quebec. Type material is at the National Museum, Ottawa, and the Royal Ontario Museum, Toronto. M.F.

Sabinaite*  

Analysis by neutron activation gave CO$_2$ 27.1, ZrO$_2$ 39.1, HFO$_2$ 0.47, TiO$_2$ 12.0, Na$_2$O 20.7, CaO 0.2, sum 99.57, corresponding to $(\text{Na}_{0.79}\text{Ca}_{0.05})(\text{Zr}_{4.17}\text{Hf}_{0.83})\text{Ti}_{1.98}(\text{CO}_3)_{0.19}$, or $\text{Na}_{0.6}\text{Zr}_4\text{Ti}_2\text{O}_6(\text{CO}_3)_{1.8}$. The mineral is decomposed with effervescence by warm HCl. The DTA curve shows endothermic peaks at 519° and between 600 and 780°; the product is monoclinic ZrO$_2$.

Electron diffraction patterns indicate sabinaite to be monoclinic, $a = 6.605$, $b = 10.186$, $c = 37.94 \AA$, $\beta = 90^\circ$, $Z = 8$, D calc. 3.41, meas. 3.36. The strongest X-ray lines (33 given) are 8.97(10)(012), 2.99(11)(036), 2.07(25)(240), 1.84(76), 1.64(5).

The mineral occurs as fine-grained white, powdery coatings and chalky aggregates in a dawsonite-rich sill associated with calcite, quartz, wegonite, and cryolite, St. Michel, Montreal Island, Quebec. Platy, max. dimensions 0.01 x 0.001 mm. Cleavages {001} perfect, {100} good. Optically biaxial, negative, $\nu_s$ $\alpha = 1.74$, $\beta = 1.80$, $\gamma = 1.85$, $2\nu = 85^\circ$, X perpendicular to the plates.

The name is for Ann Phyllis Sabina Stenson, mineralogist, Geological Survey of Canada, who collected the mineral. Type material is at the Geological Survey of Canada, Ottawa, and the Royal Ontario Museum, Toronto. M.F.

Saneroite*  


Microprobe analyses of 2 zones of different color gave an average composition SiO$_2$ 39.33, MnO 40.13 (total Mn), Fe$_2$O$_3$ 0.36 (total Fe), CaO 0.25, V$_2$O$_3$ 6.60, As$_2$O$_3$ 0.29, Na$_2$O 4.53, loss wt. in TGA analysis 5.0, sum 96.49%. The 2 zones were similar in composition except for V$_2$O$_3$ (5.6% in dark zone, 7.6% in pale zone). Spectroscopic traces of B, Ba, Co, Cr, Cu, Li, Ni, Sr, and Ti were found. For charge balance, the Mn was calculated to be MnO 37.24, Mn$_2$O$_3$ 6.44%. Formula Na$_2$Mn$_{19}$Si$_{29}$V$_{10.5}$O$_{107}$(OH)$_{41}$(Si$_{11}$Vo)$_{34}$(OH)$_{13}$.

X-ray study showed the mineral to be triclinic, P1, a = 9.741 ± 0.005, b = 9.974 ± 0.007, c = 9.108 ± 0.005Å, α = 92.70°, β = 117.11°, γ = 105.30°, Z = 1. The strongest X-ray lines (29 given) are 3.06(s)(131,221); 3.01(m)(321), 2.98(m)(231), 2.83(s)(213); 2.70(s)(220,112); 2.62(m)(232); 2.20(m)(341); 1.678(m)(433); 1.433(m)(105,605).

Color bright orange, luster resinous to greasy, D 3.47. Cleavage perfect in 2 directions. Optically biaxial, negative, −2V = 40–48°, n$_{α}$ = 1.720, β = 1.740–1.745, γ = 1.745–1.750, elongation positive, strongly pleochroic, X deep orange, Y lemon-yellow, Z yellow-orange, extinction oblique, max. about 15°. The mineral occurs in veins in Mn ores of Val Greveglia, Italy, associated with pyrolusite, and ganophyllite. The name is for Edoardo Saneero, Emeritus Professor of Mineralogy, Univ. of Genova; type material is at the Univ. of Genova and The Natural History Museum, Genova, M.F.

Electron microprobe analysis showed only Sb and V; IR study showed no OH or H$_2$O. Analysis gave Sb$_2$O$_3$ 79.31, V$_2$O$_3$ 22.01, sum 101.32%, corresponding to Sb$_2$O$_3$V$_2$O$_3$O$_4$Sb$_2$O$_3$. The possibility that V$^{+5}$ was present was disproved by the structure analysis. Insoluble in cold conc. HCl or HNO$_3$, dissolved by aqua regia.

X-ray study shows the mineral to be monoclinic, space group C2/c, a = 17.989, b = 4.7924, c = 5.500Å, β = 95.15°, Z = 4. D calc. 5.27. The strongest lines (36 given) are 4.646(6)(110); 3.502(7)(111); 3.173(7)(311); 2.996(10)(311,600).


The mineral occurs as radiating fibrous crystals up to 2 mm in diameter. Easily split into flexible and elastic fibers. It occurs in ores from the Lake George deposit, New Brunswick, Canada, associated with antimony, stibnite, sanarmontite, pyrite, arsenopyrite, and sphalerite.

The name is for the composition. Type material is at the Geological Survey of Canada, and the National Museum of Natural Sciences, both in Ottawa, and the Royal Ontario Museum, Toronto. M.F.

Tancoite*  

Electron microprobe analysis (Li$_2$O by AAS, H$_2$O by TGA) gave P$_2$O$_5$ 50.1, Al$_2$O$_3$ 18.3, Na$_2$O 20.0, Li$_2$O 5.2, CaO 0.5, sum 100.9%, corresponding to HNa$_3$ LiAl$_2$(PO$_4$)$_2$(OH). The TGA curve shows 1% loss in wt. at 337–429°C, 5.2% at 429–472°C, and 6.6% 472–542°C. The DTA curve shows 3 small endothermic peaks at 452°C, 615°C, and 650°C (fusion). The IR spectrum is given. The mineral is dissolved by dilute HNO$_3$ or HCl.

X-ray study shows tancoite to be orthorhombic, space group Cmmb, Cm2a, or C2mb, a = 7.041, b = 14.130, c = 6.975Å, Z = 4, D calc. 2.724, meas 2.752. The strongest X-ray lines (49 given) are 4.672(100)(111), 3.413(90)(131), 3.150(100)(041,220,201), 2.479(90)(042,202), 2.029(30)(242), 1.765(30)(080), 1.760(40)(400).

The mineral occurs as isolated crystals up to 1 mm long and as drus of columnar individuals. Forms found are (100), (010), and (111), dominant, (021), (001) minor. Goniometric data are given. Colorless to pale pink, luster vitreous. Cleavages (010), (001) fair, fracture conchoidal. H 4–5, bcc. Optically biaxial, neg., n(α) = 1.541, β = 1.563, η = 1.564, 2V = −23° (24° calc.), r < v weak, X = a, Y = b.

The mineral occurs in the Tanco spodumene-bearing pegmatite, associated with lithiumphosphate and pink apatite and a hydrous sodium phosphate, Na$_3$HPO$_4$·2H$_2$O. Type material is at the Royal Ontario Museum, Toronto; metatype specimens in the National Museum of Natural Sciences, the Smithsonian Institution, and the University of Manitoba, Winnipeg. M.F.

Tetranatrolite*  

The mineral described as unnamed tetragonal natrolite from...
**NEW MINERAL NAMES**

**Yarrowite**, **Spionkopite**


Microprobe analyses of yarrowite (8) gave (range and average) Cu 65.3–71.7, 69.6, S 30.2–32.8, 31.4; Fe 0–0.5, 0.1; total 95.9–103.5, Cu/S = 1.06–1.17. 1.12, agreeing with previous analyses (Can. Mineral., 12, 95–103 (1973)). Analyses of spionkopite (6) gave (range and average) Cu 67.1–70.8, 68.9; S 25.8–27.2, 26.4; Cu/S 1.31–1.32, 1.32.

The Gandolfi X-ray pattern of yarrowite is indexed as hexagonal, space group $P3_1m$, $P3_11$, or $P3_21$, $a = 3.800$, $c = 6.726$. $Z = 3$ (Cu$_2$Se$_6$). D calc. 4.89. The strongest X-ray lines (44 given) are 3.076(55), 2.777(30), 2.977(25). The strongest X-ray lines (42 given) are 1.910 (100), 1.820 (60.19).

The minerals were previously called “blueblubell eveitite” (blue-remaining covellite). Both are opaque, birefringent in blue (O) and bluish-white (E). Yarrowite is strongly anisotropic in orange-red, reflectances at 546 nm, O 12.1, E 20.6%. Microhardness 93–98 kg/sq.mm ($5$ g load). Spionkopite is anisotropic in orange, reflectances at 546 nm, 0 15.5, E 20.6%. Microhardness 63–93 kg/sq.mm ($5$ g load).

The minerals occur in stratiform red-bed copper deposits in the Yarrow Creek and Spionkop Creek areas, S.W. Alberta. Associated minerals include chalcocypire, bornite, anilite, djurleite, wittichenite, and tanenartite.

The names are for the localities. Type material is at the Geological Survey of Canada, Ottawa, and Queen’s University, Kingston, Ontario. M.F.

**Unnamed iridium sulfides**


Microprobe analyses of metals and troilite (for SI) on two grains of the unnamed mineral (s) gave Ir 36.10, 51.40; Pt 17.10, 0.89; Rh 11.50, 25.20; Cu 11.10, n.d.; Os 0.10, 0.18; Fe 0.12, n.d.; Ni 0.10, n.d.; S 24.90, 22.10; As n.d., 0.35; sums 101.02 (100.92 general); 100.12 and Ru, Pd n.d. The authors propose generalized formulae of (Ir$_8$,9Cu$_{0.9}$Pt$_{0.45}$Rh$_{0.58}$)S$_2$ and (Ir$_{1.9}$Pt$_{0.9}$Rh$_{1.41}$)S$_2$ and suggest these are similar in chemical composition to poorly characterized minerals of Begizov et al. (1975). Dokl. Akad. Nauk SSSR, 225, 1408–1411.

The sulfides occur as round to isometric inclusions of 10–60 $\mu$m in a matrix of Pt–Fe alloys (0.1–1.5 mm) in ore slimes collected from talus and alluvium within and below a zone of chloritic and quartzitic metamorphic rocks of the northern Kamchatka metamorphic block. The Pt-Fe grains are found associated with cuprian gold, gold, and other platinum-group minerals.

**Discussion**

The unnamed iridium sulfides of Begizov et al. (1975) have stoichiometries known in the synthetic systems: (Rh, Ir)$_2$S$_3$ and Ir$_2$S$_3$. The stoichiometry proposed by Zhdanov and Rudashevskii is unknown in the Ir–S system. L.J.C.

**Unnamed Minerals**


This report describes 33 minerals formed in 5 burning anthracite waste piles and 1 burning mine. They include the new mineral downeyite (SeO$_2$), 62, 316–320 (1977), and 5 unnamed minerals, identified by X-ray and microprobe analyses. They are (1) As$_5$Se$_3$, monoclinic, dark-red clusters of tabular crystals up to 3 mm long; (2) Ge$_2$S$_2$, orth., white fibers on ottemanite; (3) KAlF$_4$, tetragonal, colorless lath-like crystals generally about 100 microns wide, some exceeding 1 mm in length; (4) KAl(SO$_4$)$_2$, tetragonal, colorless laths and white branching rods; (5) (NH$_4$)$_2$Al(SO$_4$)$_2$, hexagonal, as an earthy white powder or yellowish-white to gray stalactic masses up to 20 cm in length; (6) Al$_2$(SO$_4$)$_3$, hex., white earthy masses, $n = 1.468$. M.F.

**Unnamed (Mn,Ca)$_2$[(V,As)Si$_2$O$_{16}$(OH)]**


Analysis (av. of 7) gave SiO$_2$ 38.09, As$_2$O$_3$ 2.11, V$_2$O$_5$ 7.44, MnO 49.94, FeO 0.31, CaO 1.30, sum 99.19% corresponding to $(\text{Mn}_{0.77}\text{Ca}_{0.19}\text{Fe}_{0.03})\text{Si}_2\text{O}_7\text{As}_{0.85}\text{V}_{0.15}\text{O}_{18}(\text{OH})$. X-ray study shows it to be monoclinic, $P2_1/n$, $a = 6.71$, $b = 28.94$, $c = 7.57$. $\beta = 95.4\degree$. The strongest X-ray lines (50 given) are 3.332(83), 122.042(120), 3.181(63), 180, 3.137(91), 112.171, 2.894(99), 190.250, 2.737(68), 241.191, 2.6327(202), 162.172, 2.603(74), 270.212, 2.450(100), 280.092, 0.332, 2.4285(91), 103.113.

The mineral occurs at Molinello, Italy (compare tiragalloite, 65, 947–952 (1980)) as small brown grains in quartz veins with braunite. M.F.

**Unnamed palladium bismuth chloride**


Average of 3 separate microprobe analyses (using metals and synthetic chlorapatite) gave Pd 24.5, 2.07, Fe 0.78, Ni 0.27, Bi 64.1, Cl 6.43, sum 98.15 and a formula of $(\text{Pd}_{0.81}\text{Pt}_{0.18}\text{Fe}_{0.24}\text{Ni}_{0.06})_2\text{Bi}_{5.07}\text{Cl}_{3.00}$ for an empirical formula of $\text{Pd}_4\text{Bi}_2\text{Cl}_3$. The mineral occurs as very small rounded to anhedral inclusions, not larger than 30 $\times$ 30 $\mu$m in cross-section, in a matrix of insizwaiite-geversite and paolovite. This occurrence is in the massive pyrite ore of the Oktayb or Cu–Ni deposit also containing chalcocypire, pentlandite, and magnetite. Minor and rare minerals are hisingerite (CI-bearing), sphalerite, pyrite, marcasite, argentopentlandite, cubanite, mackinawite, galena,
native silver electrum, and other platinum-group minerals. The
unnamed mineral is strongly bireflectant, from dark gray to
nearly white with a rose tint. It has an externally fine fibrous
structure and appears gray with a shagreen surface in sections
perpendicular to the fibers. It has a relatively low reflectance
which increases uniformly towards the red end of the spectrum.
The mineral is strongly anisotropic, with color effects, from near
extinction to yellowish, which are at maximum in oil immersion.
The mineral qualitatively resembles a fine-grained aggregate of
crystalline valleriite. One distinct, fracture-free micro-indentation gave
VHN20 = 114.

Discussion
A probable new mineral species requiring X-ray data for con-
firmation. The discovery is important as it is the first of a
chloride-bearing platinum-group mineral. Also this is the first
confirmation of insizwaite in the Noril’sk-Talnakh area. L.J.C.

Unnamed Sulfate of Cu and Mn
Franco Contecini, Silvio Menchetti, Cesare Sabelli, and Renza
Trostri-Ferroni (1980) Alteration minerals in sulfide ores of
rol., 36, 295–308 (in Italian).

Analysis (not given) gives the formula Mn(Cu,
Zn)4(SO4)2(OH)6·4H2O (microprobe analysis, H2O calc. to fit
unit cell). Monoclinic, C2/m or Cm or C2, a = 21.707, b = 6.098,
c = 11.245 Å.; β = 100.3°. The strongest X-ray lines (16 given)
are 10.68 (100) (200), 5.34 (60) (400), 3.56 (44) (600). Optically biaxi-
al, neg., 2V = 51°, ns (Na) α = 1.589, β = 1.645, γ = 1.659, D
calc. Gladstone-Dale 3.06. Color pale blue to greenish. M.F.

Unnamed Sulfides and Sulfosalts
Sven Karup-Møller and Hans Pauly (1979) Galena and associat-
ed ore minerals from the cryolite at Ivigtut, South Greenland.

Three probably new minerals occur in these ores. Mineral B,
Ag3TeS, occurs in association with arcubisite. Mineral C occurs
in galena or intergrown with hesstite, tellurian canfieldite, or
freibergite. Three microprobe analyses gave Ag 64.8, 66.8, 61.7;
Sb 11.9, 8.6, 7.1; Te 6.1, 12.4, 17.0; S 13.7, 9.7, 8.8; sum 96.5, 94.6,
suggesting the formula Ag6Sb6(S,Te)6. In reflected light it is light bluish-gray with reflectance slightly higher than
that of freibergite. Pleochroism weak in oil, not visible in air.
Anisotropy distinct. Mineral D has developed from the alteration
of aikinite. Microprobe analysis gave Ag ~ 15, Pb ~ 23, Cu ~ 5,
B ~ 45, S ~ 17%, suggesting the formula (Ag,Cu)PbB2S6. Color
and reflectance similar to those of galena. Anisotropy distinct.

M.F.

NEWDATA

Calderite
569–571.

Microprobe analysis of garnet from Otjosundu, S.W. Africa,
analyzed by Vermaas (1952) gave SiO2 35.16, TiO2 0.28, Al2O3
9.04, Fe2O3 (total Fe) 16.27, MgO 0.50, CaO 12.12, MnO 27.38,
sum 100.75%, confirming the analysis by Vermaas. It can be
calculated to the end-members: calderite 51, grossular 36, spes-
sartine 13. This analysis and those published by Klein (Jour.
Petrol., 7, 246–305 (1966)) from Labrador confirm the validity of
the garnet end-member calderite, Mn5.2Fe2.3 (SiO4)3. M.F.

Jugenge (correction)
The abstract in 65, 1067 (1980) gave the color incorrectly.
It should be “bright yellow to greenish-yellow”. M.F.

LISTS OF BOOKS RECEIVED

ESSENTIALS OF EARTH HISTORY, 4th edition. By W. Lee
xiv + 577 pages. Price not given.

SILVER: AN INSTRUCTIONAL GUIDE TO THE SILVER-
SMITH’S ART. By Ruel O. Redinger. Prentice-Hall, Inc.,

FLUID INCLUSION RESEARCH: PROCEEDINGS OF
COFFI, volume 10. Edited by Edwin Roedder and Andrezej
Koslowksi. The University of Michigan Press, Ann Arbor,
Michigan, 1981. xiv + 352 pages. $10.00.

TURBULENCE IN THE FREE ATMOSPHERE, second edition.
By N. K. Vinnichenko, N. Z. Pinus, S. M. Shmeter, and
pages. $49.50.

PETROLEUM AND HARD MINERALS FROM THE SEA.
ix + 291 pages. Price not given.

A CONCISE WORLD ATLAS OF GEOLOGY AND
MINERAL DEPOSITS. By Duncan R. Derry. John Wiley &
Sons, New York, 1980. 110 pages. $61.95.

ORIGIN OF SEDIMENTARY ROCKS, second edition. By
Harvey Blatt, Gerard Middleton and Raymond Murray.
782 pages. Price not given.

A BIBLIOGRAPHY OF THE MINERAL RESOURCES OF
TANZANIA. By Odd Nilsen. The Scandinavian Institute of
given.

MINERALI OSSOLANI. By V. Mattioli. May be purchased by
writing directly to author, via Keplero 5, 20126, Milano, Italia.
267 pages. $20.00.

SYNTHETIC FUELS. By Ronald F. Probstein and R. Edwin
not given.