NEW MINERAL NAMES*

MICHAEL FLEISCHER AND LOUIS J. CABRI

Cyanophillite*


Analyses gave CuO 36.3, 32.5; Al2O3 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 Pmnb, a: 11.82, D = 10.80, c = 9.644, 2 = 1, D3.l0 meas., 3.12 calc. The strongest X-rays lines (30 given) are 3.350(50X110), 3.20E(50X020), 3.0E0 (80X111), 2.7E1(100) (22r,rr r), 2.7 so(1 0)(rr2), r.72r (ffi).

Color greenish-blue, luster pearly to silky. H about 2. Optical-biaxial, negative, ns α : L6/;O, P = 1.66a, 7 = 1.675 (all ±0.002), 2Y : 67'calc., X = c. Cleavage {001} perfect, another perpendicular to it (100 or 010) good to very good.

The mineral occurs as coatings on quartz and barite, as spherulitic aggregations of minute tabular crystals. Associated minerals are chalcophyllite, chrysocolla, brochantite, and tsumehite 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 Kyanophilite, 32, 255, 701 (1947) = hydrous mica? M.F.

Gaitite*


Electron microprobe analyses (H2O by DTA-TGA) gave As2O3 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 H2Ca2(Zn0.84Mg0.16Fe0.01Mn0.05)(AsO3)2(OH)2, the Zn analogue talmessite. 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, α = 5.90, b = 7.61, c = 5.57Å, 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) (221,111), 2.759(70)(112), 1.721 (60).

Colorless to white, luster vitreous. Cleavages {010}, {001}, {110} 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, adnamite, and tsumehite from Tsumeb, Namibia. Forms observed {010}, {001}, {110}, also {100} very small.

The name is for Robert L Gait, Curator of Mineralogy, Royal Ontario Museum, Toronto. Type material is at the Royal Ontario Museum and at the Smithsonian Inst., Washington. 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 = 5.410Å, Z = 4 (Cu16S8). 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 = 5.398Å). 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, crysocolla, stibiconite, cervan
tite, 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 CaZrSi2O7. The X-ray pattern was indexed, by analogy with thortveitite, as monoclinic,
probably C2/m, a = 6.878, b = 8.674, c = 4.697 Å, β = 101.74°, Z = 2, D calc. 3.624. The strongest X-ray lines (38 given) are 5.32(6)(110), 3.23(8)(111), 3.15(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 lavesovite. Color chalky white. The fibers of gittinsite have length about 0.1 mm. H 3.5-4. Optically biaxial, negative, ns a = 1.720, β = 1.736, γ = 1.738, 2V = 30°, X ⊥ c 5-10°, Y 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, Toronto, and the University of Toronto. M.F.

Goosecreekite*


Electron microprobe analysis (H2O by DTA/TGA) gave SiO2 59.3, Al2O3 17.2, CaO 9.3, H2O 15.0, sum 100.8%, corresponding to CaAl2O3SiO3·10.12H2O. The sample lost 2.7% H2O 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 P21/m or P21/m, a = 7.35, b = 17.56, c = 7.35Å, β = 105.71°, Z = 2, D calc. 2.16, meas. 2.17. The strongest X-ray lines (25 given) are 7.19(50)(100), 5.59(50)(120), 4.91(50)(121), 4.53(100)(130, 031), 3.35(40)(221, 220).

Goosecreekite is colorless to white, luster vitreous. H = 4½. Cleavage perfect and easy [010]. Optically biaxial, neg., α = 1.495, β = 1.498, γ = 1.502, dispersion not discernible, Y = b, Z ⊥ c = 46°.

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 Am. Mineral. 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 CuOH(AsO4) for Cu and As) gave As2O3 36.2, SO4 trace, Fe2O3 25.5, PbO 27.1, ZnO 11.1, CuO, MnO traces, sum 99.9%, corresponding to the formula above. Jamesite is diffractable in hot HNO3 and HCl.

X-ray study showed the mineral to be triclinic, P1, a = 5.622, b = 9.593, c = 10.279Å, α = 109.80, β = 90.54, γ = 97.69°, Z = 1, D calc. 5.10. The strongest X-ray lines (47 given) are 9.678(8)[001], 7.408(8)[101], 3.40(10)[122, 121], 3.268(112, 120), 3.049(302), 2.92(6)[131, 131], 2.04(6)[025, 023, 015].

Color reddish-brown, luster subadamantine. H = 3. Optically biaxial, neg., ns α = 1.60, β = 1.956, γ = 2.020, 2V = 75°, t > v. Strongly pleochroic, X and Y pale brown, Z deep reddish-brown. Y ⊥ a on (001) ~ 5°, Y ⊥ a on (010) 15°. Crystals are tabular, elongated a, up to 0.5 x 0.2 x 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*, Telluropalladinite*


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, 70.6, 70.6; 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 100.4, 99.02, 99.26, 99.43%. This corresponds to Pd0.9Te with x = 0.42-0.27. Keithconnite is rhombohedral, space group R3, a = 11.45, c = 11.40Å, Z = 7, very similar to synthetic Pd12Te. The strongest X-ray lines (25 given) are 2.26(10)[214], 2.16(9)[140], 1.32(3)[5.45], 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, 45.2, 42.5; 546 nm, 44.1, 42.2; 650 nm, 41.0. These data agree well with those for synthetic Pd16Te7. 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 air, strong in oil. Reflectance 470 nm, 45.2, 42.5; 546 nm, 44.1, 42.2; 650 nm, 41.0. These data agree well with those for synthetic Pd16Te7. The strongest X-ray lines (30 given) are 2.237(10)[152], 2.094(4)[322], 1.306(5)[2.10.0].

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

Telluropalladinite

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 0.07-0.08, Pb 0.30-0.30, Hg 0-0.6, sum 99.82-100.17, corresponding closely to Pd1.5Te4.

X-ray study shows the mineral to be monoclinic, space group P21/c, a = 7.45, b = 13.95, c = 8.82Å, β = 91.9°, Z = 4, D calc. 10.68. These data agree well with those for synthetic Pd1.5Te4. 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 air, strong in oil. Reflectance 470 nm, 45.2, 42.5; 546 nm, 44.1, 42.2; 650 nm, 41.0. These data agree well with those for synthetic Pd1.5Te4. The strongest X-ray lines (30 given) are 2.237(10)[152], 2.094(4)[322], 1.306(5)[2.10.0].

The name is for the composition. M.F.

Kingsmountite*

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, 14.5; $MnO$ 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 $(Ca_{15,5}Mn_{0.6})_2(Fe_{5.5}Mn_{0.8}Mg_{0.4})(Al_{3.8}Fe_{0.7})(PO_4)(OH)_4 \cdot 12H_2O$, the Fe$^{2+}$ analogue of montgomeryite.

The X-ray pattern (33 lines) has strongest lines 12.28(50)(020), 5.15(100)(111), 2.95(40)(311), 2.62(60)(190). The powder data, indexed by analogy with montgomeryite, gave a unit cell with $a = 10.029$, $b = 24.46$, $c = 6.285$, $\beta = 91.16^\circ$, space group $C2$. $D$ calc. 2.58, meas. 2.51.

Color white to very light brown, streak white. $H \frac{2}{3}$. Optically biaxial, neg., $2V = 62^\circ$, $n_\sigma = 1.575$, $n_\beta = 1.581$, $n_\gamma = 1.583$, $Y$ 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 $Mn_8Si_6O_{15}(OH)_3Cl_2$. The mineral is decomposed by HCl.

Precession and Laue photographs, show the mineral to be rhombohedral, space group probably $R3m$, $a = 13.498$, $c = 85.657$, $D$ calc. 3.017, meas. 2.98. The strongest X-ray lines (26 given) are 7.16(7)(00.12), 2.88(6)(40.4), 2.56(10)(40.16).

Color light to dark brown, luster pearly. Cleavages (0001) easy and good, (1011) difficult but fair. Optically uniaxial, negative, $n_g = 1.6685$, $n_p = 1.6415$; occasional fragments show 2V up to 10°. Vickers hardness 278–300 kg/sq. mm $= 15$ g load.

The mineral occurs as fracture fillings in the Sullivan mine, Kimberley, British Columbia, associated with dark sphalerite and small amounts of boulangerite, jamesonite, galena, and quartz. It has also been found at the Kyurazawa 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. comp. of fiber); (2) $MgO$ 25.2, $CuO$ 37.8 (Cu-rich rim of spherule); (3) $MgO$ 19.4, $CuO$ 45.7, $CaO$ 0.08 (Cu-rich core of spherule); ratio $MgO/CuO$ 1 (34.64); (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 $(Mg,Cu)_2(\text{CO}_3)_2(\text{OH})_2$. A member of the rosasite group. The DTA curve shows large endothermic breaks at 49° and 108° and a small exothermic break at 81°.

X-ray data are indexed on a monoclinic cell with $a = 9.398$, $b = 12.011$, $c = 3.379$, $\beta = 93.28^\circ$, Triclinic symmetry is not excluded. The strongest X-ray lines (31 given) are 6.015(100)(020); 3.694(67)(220); 2.530(25)(240); 2.139(23)(250).

The mineral occurs as spheres; 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. $H \frac{2}{3}$, brittle, inelastic. Optically biaxial, negative, $n_g = 1.596$–1.607, $n_p = 1.724$–1.740 (increasing with $Cu$ content); $n_g$ (Na) $= 1.630$, $n_p = 1.730$, $\gamma = 1.732$. Elongation negative, max. extinction $X < c = 11^\circ$. 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’Danielite**


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, $CaO$ 0.6, $Na_2O$ 4.7, $H_2O$ 2.8 (to 480°), sum 99.7%, corresponding to the formula $(Na_9,5Ca_{0.5})_5(Zn_{9.6}Fe_{0.4})_{2}OH(AsO_4)_3$. $R$ tinted $a = 12.113$, $b = 12.445$, $c = 6.793$, $\beta = 112.8^\circ$, $Z = 4$, $D$ calc. 4.49, detd. as 4.24. The strongest X-ray lines (34 given) are 6.22(10)(020); 5.59(5)(200); 3.56(7)(310); 3.26(10)(112); 2.78(8b)(022, 400, 041, 041, 330); 2.72(8)(240, 421); 1.83(5)(243, 332); 1.687(7) (641, 204); 1.664(6) (171, 624, 460, 550).

Color pale violet, luster vitreous $H = 3$. Cleavages (100) and (100), perfect, also (001). Optically biaxial, positive, $n_g = 1.745$, $n_p = 1.753$, $\gamma = 1.778$, $2V = 60^\circ$, $Z = b$, $Y < c = 18^\circ$, dispersion not observed. Associated minerals were cuprian adamite, korigite, 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 tetratrololite. It has been observed only as colorless, transparent epiplectic 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 Na₅Zr₂Si₆O₁₈(OH,Cl)·2H₂O.

X-ray study shows the mineral to be pseudo-orthohombic, monoclinic or triclinic, space group \( Fmmm \), \( Fm2m \), \( F222 \), or \( Fmmm \). The strongest X-ray lines (19 given) are 5.92(60)(111), 4.78(30)(040,440), 4.44(40)(131,311), 2.94(100)(3.51,531).

H 5–5 ½. Fracture conchooidal. Under the microscope, biaxial, negative, 2V < 10°; birefringence very low, extinction slightly undulatory, ns 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 \( As_{99.9}S \), a new polymorph of AsS. Insoluble in water, conc. HCl, HNO₃, or H₂SO₄, reacts with 40% KOH to give a dark brown precipitate.

X-ray study shows the mineral to be monoclinic, space group \( Pc \) or \( P2/c \): \( a = 9.929, b = 9.691, c = 8.503 \AA, \beta = 97.06°, Z = 16 \), \( D \) calc. 3.499, meas. 3.52. The strongest lines (24 given) are 5.56(111), 5.14(100), 3.75(78), 3.28(9), 3.025(51), 2.79(71), 2.21. The strongest X-ray lines (33 given) are 8.97(10), 7.25(70), 6.09(100), 4.10(220), 2.92(100), 2.40(241).

Color greenish-yellow, luster vitreous. Cleavages {110} perfect, {101} very good, {001} distinct; fracture subconchoidal. H 5–5 ½. Optically biaxial, positive, \( n_s (Na) = 1.565, \beta = 1.565, \\gamma = 1.632, 2V = 29° \), calc. 28°, dispersion, \( r < v \) weak. Pleochroic, Y 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, cataleptite, 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.

**Petarasite***


Five electron microprobe analyses (range and av.) gave SiO₂ 42.4–43.3, 42.9; ZrO₂ 29.1–30.1, 29.5; TiO₂ 0.06–0.21, 0.07; CaO 0.65–1.15, 0.88; Na₂O 17.2–17.4, 17.3; K₂O 0.17–0.29, 0.25; H₂O 7.06–7.12, 7.09; Cl 2.01–2.07; sum 99.30–100.69, 100.03 – (0=Cl₂ 0.45–0.47, 0.46) = 98.84–100.23, 99.57%. Corresponding to \( (Na_{0.67}Ca_{0.13}K_{0.03})(Zr_{2.01}Ti_{0.01})Si_{6}O_{18}(OH)_{0.67}Cl_{0.48}) \cdot 3.01H₂O \). The structural study shows 2H₂O, the excess being adsorbed or in open channels; the formula is therefore \( Na_5Zr_2Si_6O_{18}(OH,Cl) \cdot 2H_2O \).


X-ray study showed the mineral to be monoclinic, space group \( P2_1/m \): \( a = 10.7956, b = 14.4928, c = 6.6229\AA, \beta = 113.21°, Z = 2 \), \( D \) calc. 2.88, meas. 2.915. The strongest X-ray lines (42 given) are 7.25(70), 4.49(60), 1.91(100), 1.15(220), 0.92(140), 0.55(241).

Color greenish-yellow, luster vitreous. Cleavages {110} perfect, {101} very good, {001} distinct; fracture subconchoidal. H 5–5 ½. Optically biaxial, positive, \( n_s (Na) = 1.565, \beta = 1.565, \\gamma = 1.632, 2V = 29° \), calc. 28°, dispersion, \( r < v \) weak. Pleochroic, Y 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, cataleptite, and zircon in a xenolith in nepheline syenite, Demix quarry, Mont St.-Hilaire, Quebec.

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.

**Sabinaite***


Analysis by neutron activation gave CO₂ 27.1, ZrO₂ 39.1, H₂O 0.47, TiO₂ 12.0, Na₂O 20.7, CaO 0.2, sum 99.57, corresponding to \( (Na_{2.79}Ca_{0.02})(Zr_{6.01}Hf_{0.01})Ti_{1.04}CO_{3}I_{0.03} \). 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 ZrO₂.

Electron diffraction patterns indicate sabinaite to be monoclinic, \( a = 6.605, b = 10.186, c = 37.94\AA, \beta = 90°, Z = 8 \), \( D \) calc. 3.41, meas. 3.36. The strongest X-ray lines (33 given) are 8.97(10), 7.29(10), 6.09(036), 2.017(5), 1.847(6), 1.664(5).

The mineral occurs as fine-grained white, powdery coatings and chalky aggregates in a dawsonite-rich sill associated with calcite, quartz, wehènogite, and cryolite, St. Michel, Montreal Island, Quebec. Platy, max. dimensions 0.01 × 0.01 mm. Cleavages {001} perfect, {100} good. Optically biaxial, negative, \( n_s = 1.74, \beta = 1.80, \gamma = 1.85, 2V = 85° \), 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 SiO2 39.33, MnO 40.13 (total Mn), Fe2O3 0.36 (total Fe), CaO 0.25, V2O3 6.60, As2O3 0.29, Na2O 4.53, loss in TGA analysis 5.00, sum 96.49%. The 2 zones were similar in composition except for V2O3 (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 is calculated to be MnO 37.24, Mn2O3 6.44. Formula Na2(3)(Mn2+3Mn5+3)(Si11V4O34(OH)).

X-ray study showed the mineral to be triclinic, α = 9.74 ± 0.005, β = 9.974 ± 0.007, γ = 9.108 ± 0.005 Å, α = 92.70°, β = 117.11°, γ = 105.30°, Z = 1. The strongest X-ray lines (29 given) are 3.06(111), 3.01(321), 2.98(231), 2.83(213); 2.70(220), 2.62(322), 2.20(341); 1.67(433); 1.43(105); 1.50(605). Color bright orange, luster resinous to greasy, D 3.47. Cleavage perfect in 2 directions. Optically biaxial, negative, -ZV < 0.1°, X: b, Z = c, dispersion r > v very strong. Strongly pleochroic, X: deep orange, Y: lemon-yellow, Z: yellow-orange, extinction oblique, maximum about 15°.

The mineral occurs in veins in Mn ores of Val Grevegilia, Italy, associated with quartz, barite, caryopilit, and galophyllite. 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.

**Stibiobetafite**


Electron microprobe analyses (Al, Pb, Na, H2O, F by ion microprobe) gave ranges and a selected grain gave, resp.: Nb2O5 20.4–26.3, 21.6; Ta2O5 9.0–20.0, 19.3; TiO2 14.5–21.9, 16.5; Al2O3 2.5–4.99; Sb2O3 22.6–27.6; PbO 0.013; SnO2 2.7–3.8, 2.9; FeO 0.5–0.7, 0.6; MnO 0.5–0.8, 0.6; CaO 12.4–14.9, 14.5; Na2O 0.30, H2O 0.44, F2 0.15, sum 100.71 – (Ο = F2 + 0.06 = 100.66%. This corresponds to (Ca1.11,Sb0.33,Sn0.06,Fe0.01,Al0.04,Mn0.04)O6(Sb0.76,Sn0.04,Ta0.36,Al0.04,O6)(O4,0.76(OH)0.21,F0.05).

The strongest X-ray lines (18 given) are 2.98(10)(222), 2.58(9)(3004), 1.830(4)(044), 1.561(4)(226), cubic a = 10.356 Å, space group Fd3m. After heating to 700°C in air, the pattern showed no OH or H2O. Analysis gave Sb2O3 79.31, VO2 22.01, sum 101.32%, corresponding to Sb2.34,V0.66O5. The possibility that V+5 was present was disproved by the structure analysis. Insoluble in cold conc. HCl or HNO3, dissolved by aqua regia.


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, senarmontite, 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 (Li2O by AAS, H2O by TGA) gave P2O5 50.1, Al2O3 18.3, Na2O 20.0, Li2O 5.2, CaO 0.5, sum 100.0%, corresponding to HNa2LiAl(PO3)3(OH). The TGA curve shows 1% loss in wt. at 337–429°C, 5.2% at 429–472°C, and 6.6% at 472–542°C. The DTA curve shows 3 small endothermic peaks at 452°C, 615°, and 650°C (fusion). The IR spectrum is given. The mineral is dissolved by dilute HNO3 or HCl.

X-ray study shows tancoite to be orthorhombic, space group Cmcm, Cm2a, or C2ma, a = 7.041, b = 14.130, c = 6.975 Å, Z = 4, D calc. 2.724, meas 2.752. The strongest X-ray lines (49 given) are 4.672(100), 3.413(90), 3.150(100), 041, 220, 201, 2.479(90), 042(202), 2.029(302), 2.765(30), 1765(30), 1760(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 4–4.5. Optically biaxial, negative, Sb2O3 0.5, Ta2O5 0.5, V2O5 0.4, Na2O 0.4, CaO 0.4, SnO2 0.4, O6(OH)21F3O5.

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 4–4.5. Optically biaxial, negative, Sb2O3 0.5, Ta2O5 0.5, V2O5 0.4, Na2O 0.4, CaO 0.4, SnO2 0.4, O6(OH)21F3O5.


The mineral described as unnamed tetragonal natrolite from
Ilimaussaq, Greenland (Andersen et al., 55, 534 (1970)) is now named Tetranatrolite. A complete description is given with analysis, TGA curve, X-ray data, infra-red study. Tetragonal, 142d or I4I,md, a = 13.098, c = 6.635Å, Z = 4. M.F.

Yarrowite*, Spionkopite*


Microprobe analyses of yarrowite (8) gave (range and averages) 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 P3m1, or P321, a = 22.952, c = 41.429, Z = 1E (Cu3eS4), D calc. = 4.89. The strongest X-ray lines (44 given) are 3.061(55)(108), 2.767(35)(1.0.13), 1.899(100)(110). The X-ray pattern of spionkopite is indexed as hexagonal, space group P3m1, or P321, a = 22.962, c = 41.429Å., Z = 18 (Cu3eS2s), D calc. = 5.13. The strongest X-ray lines (42 given) are 3.076(E5X6, 0.5), 2.777(30)(6.0.8), 2.297(25)(6.0.13), 1.910(100)(6.6.0), 1.820(30)(6.0.19).

The minerals were previously called “blaubleibend covellite” (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 (15 g load). Spionkopite is anisotropic in orange-red, reflectances at 546 nm, O 15.5, E 20.6%. Microhardness 63–93 kg/sq.mm (15 g load).

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

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 [using metals and troilite (for S)] 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 I Ll0, 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 given), 100.12 and Ru, Fe, n.d. The authors propose generalized formulae of (IrO,95CuO,95Pto,4RhO,40HbO,3H2O)6 and (IrO,95Pto,95RhO,1,4HbO,6)4 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 (10-60 µm) in a matrix of Pt–Fe alloys grains (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)2Sr and Ir2S3. 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 (SeO2), 62, 316–320 (1977), and 5 unnamed minerals, identified by X-ray and microprobe analyses. They are (1) As2Se3, monoclinic, dark-red clusters of tabular crystals up to 3 mm long; (2) Ge2S2 ortho., white fibers on ottmanite; (3) KAlF4, tetragonal, colorless lath-like crystals generally about 100 microns wide, some exceeding 1 mm in length; (4) KAl(SeO3)2, tetragonal, colorless laths and white branching rods; (5) (NH4)2Al(SeO3)2, hexagonal, as an earthy white powder or yellowish-white to gray stalactitic masses up to 20 cm in length; (6) Al2(SeO3)3, hex., white earthy masses, n = 1.468. M.F.

Unnamed Minerals


Analysis (av. of 7) gave SiO2 38.09, Al2O3 2.11, V2O5 7.44, MnO 49.94, FeO 0.31, CaO 1.30, sum 99.19% corresponding to (MnO,77CaO,90FeO,0.05) (V2O5,105Al2O3SiO2OH). X-ray study shows it to be monoclinic, P21/a, a = 6.71, b = 28.94, c = 7.57Å., β = 95.4°. The strongest X-ray lines (50 given) are 3.332(83)(122,042,210); 3.181(63)(180); 3.137(91)(112,171); 2.894(99)(190,250); 2.737(68)(241,191); 2.632(73)(202,162,172); 2.603(74)(207,212); 2.450(100)(280,092,033); 2.428(59)(103,113).

The mineral occurs at Molinello, Italy (compare tiragallolite, 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, Bi 64.1, Cl 6.43, sum 99.15 and a formula of (PdO1.5,BiO1.85)F0.05 (V2O5,105Al2O3SiO2OH). X-ray data shows it to be monoclinic, P21/n, a = 6.71, b = 28.94, c = 7.57Å., β = 95.4°. The strongest X-ray lines (50 given) are 3.332(83)(122,042,210); 3.181(63)(180); 3.137(91)(112,171); 2.894(99)(190,250); 2.737(68)(241,191); 2.632(73)(202,162,172); 2.603(74)(207,212); 2.450(100)(280,092,033); 2.428(59)(103,113).

The mineral occurs at Molinello, Italy (compare tiragallolite, 65, 947–952 (1980)) as small brown grains in quartz veins with braunite. M.F.
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 extremely 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
valleriite. One distinct, fracture-free micro-indentation gave
VHNro: 114.

Discussion
A probable new mineral species requiring X-ray data for
confirmation. 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
Trosti-Ferroni (1980) Alteration minerals in sulfide ores of
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 = 11.245Å, β = 100.3°. The strongest X-ray lines (16 given)
are 10.68(100)(200), 5.34(60)(400), 3.56(44)(600). Optically biaxial,
neg., 2V = −51°, ns (Na) n = 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 Igigtut, South Greenland.

Three probably new minerals occur in these ores. Mineral B,
Ag4TeS6, occurs in association with arcubisite. Mineral C occurs
in galena or intergrown with hessite, 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,
97.5, 94.6, suggesting the formula Ag5Sb(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)PbBi3S8. Color
and reflectance similar to those of galena. Anisotropy distinct.
M.F.

NEW DATA

Calderite
569–571.

Microprobe analysis of garnet from Otosundu, 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, 24G305 (1%6)) from Labrador confirm the validity of
the garnet end-member calderite, Mn12Fe63 (SiO4)6. M.F.

Jungite (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
Koslowski. The University of Michigan Press, Ann Arbor,
Michigan, 1981. xiv + 352 pages. $10.00.
TURBULENCE IN THE FREE ATMOSPHERE, second
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.

0003-004X/81/1112-1280$00.50