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NEW MINERAL NAMES*

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Cyanophillite*

Kurt Walenta (1981) Cyanophillite, a new mineral from the Clara Mine, near Oberwolfach, Central Black Forest. Chem. der Erde, 40, 195–200 (in German).

Analyses gave CuO 36.3, 32.5; Al_2O_3 8.5, –; Sb_2O_3 36.5, 38.3; H_2O 19.8; sum 101.1%, corresponding to $10CuO \cdot 2Al_2O_3 \cdot 3Sb_2O_3 \cdot 25H_2O$. The mineral is dissolved readily by cold 1:1 HCl, partly dissolved by 1:1 HNO_3. 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 = 9.64Å, Z = 1, D 3.10 meas., 3.12 calc. The strongest X-rays lines (30 given) are 9.67(6)(001), 4.84(10)(002), 2.59(6)(041,420,232), 2.44 (5)(240,412,313).

Color greenish-blue, luster pearly to silky. H about 2. Optically biaxial, negative, *ns* α = 1.640, β = 1.664, γ = 1.675 (all ±0.002), 2V = 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 aggregates of minute tabular crystals. Associated minerals are chalcophyllite, chrysocolla, brochantite, and tripuhyite 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*

B. D. Sturman and P. J. Dunn (1980) Gaitite, $H_2Ca_2Zn(AsO_4)_2(OH)_2$, a new mineral from Tsumeb, Namibia (South West Africa). Can. Mineral., 18, 197–200.

Electron microprobe analysis (H_2O by DTA-TGA) gave As_2O_5 50.2, CaO 24.2, ZnO 15.3, MgO 1.2, FeO 0.2, MnO 0.2, H_2O 7.8, sum 99.1%, corresponding to $H_2Ca_2(Zn_{0.84}Mg_{0.14}Fe_{0.01}Mn_{0.01})(AsO_4)_2(OH)_2$, 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, a = 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)($\bar{1}11$), 2.781(100) ($2\bar{2}1$,111), 2.750(70)($1\bar{1}2$), 1.721 (60).

Colorless to white, luster vitreous. Cleavages {010}, {001}, {$0\bar{1}1$} 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}, {$0\bar{1}1$}, 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.**

Geerite*

R. J. Goble and George Robinson (1980) Geerite, $Cu_{1.60}S$, a new copper sulfide from Dekalb Township, New York. Can. Mineral., 18, 519–523.

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 $F\bar{4}3m$, a = 5.410Å, Z = 4 ($Cu_{1.60}S$), 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, cervantite, hemimorphite, tetrahedrite, and chalcopyrite.

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

Gittinsite*

H. G. Ansell, A. C. Roberts, A. G. Plant, and B. D. Sturman (1980) Gittinsite, a new calcium zirconium silicate from the Kipawa agpaitic syenite complex, Quebec. Can. Mineral., 18, 201–203.

Electron microprobe analysis gave SiO_2 40.8, ZrO_2 40.3, CaO 18.4, sum 99.5%, corresponding closely to $CaZrSi_2O_7$. The X-ray pattern was indexed, by analogy with thortveitite, as monoclinic,

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* Minerals marked with asterisks were approved before publication by the Commission on New Minerals and Mineral Names of the International Mineralogical Association.

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probably $C2/m$, $a = 6.878$, $b = 8.674$, $c = 4.697$ Å, $\beta = 101.74°$, Z = 2, D calc. 3.624. The strongest X-ray lines (38 given) are 5.32(6)(110), 3.232(8)(111), 3.155(10)(021), 3.026(8)($\bar{2}$01), 2.660(8)(220), 1.677(7)(150,132).

The mineral occurs as fibrous to radiating masses, associated with apophylite and commonly with vlasovite. Color chalky white. The fibers of gittinsite have max length about 0.1 mm. H 3½–4. Optically biaxial, negative, *ns* $\alpha = 1.720$, $\beta = 1.736$, $\gamma = 1.738$, 2V = 30°, $X \angle c$ 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*

P. J. Dunn, D. R. Peacor, Nancy Newberry, and R. A. Ramik (1980) Goosecreekite, a new calcium aluminum silicate hydrate, possibly related to brewsterite and epistilbite. Can. Mineral., 18, 323–327 (1980).

Electron microprobe analysis (H_2O by DTA/TGA) gave SiO_2 59.3, Al_2O_3 17.2, CaO 9.3, H_2O 15.0, sum 100.8%, corresponding to $Ca_{1.01}Al_{2.05}Si_6O_{16.09} \cdot 10.12H_2O$. The sample lost 2.7% H_2O 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 $P2_1/m$, $a = 7.52$, $b = 17.56$, $c = 7.35$Å, $\beta = 105.71°$, Z = 2, D calc. 2.16, meas. 2.21. The strongest X-ray lines (25 given) are 7.19(50)(100), 5.59(50)($\bar{1}$20), 4.91(50)($\bar{1}$21), 4.53(100)($\bar{1}$30, 031), 3.350(40)($\bar{2}$21, $\bar{2}$20).

Goosecreekite is colorless to white, luster vitreous. H ~ 4½. Cleavage perfect and easy {010}. Optically biaxial, neg., $\alpha = 1.495$, $\beta = 1.498$, $\gamma = 1.502$, dispersion not discernible, $Y = b$, $Z \angle c = 46°$.

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 Royal Ontario Museum, Toronto; the Am. Museum of Natural History, N.Y.; the British Museum, and at Harvard University. **M.F.**

Jamesite*

Paul Keller, Heinz Hess, and P. J. Dunn (1981) Jamesite, $Pb_2Zn_2Fe_5{}^{+3}O_4(AsO_4)_5$, a new mineral from Tsumeb, Namibia. Chem. Erde, 40, 105–109 (in German).

Microprobe analysis (standards hornblende for Fe, ZnO for Zn, PbO for Pb, synthetic $Cu_2(OH)(AsO_4)$ for Cu and As) gave As_2O_5 36.2, SO_3 trace, Fe_2O_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, $P1$, $a = 5.622$, $b = 9.593$, $c = 10.279$Å. $\alpha = 109.80$, $\beta = 90.54$, $\gamma = 97.69°$, Z = 1, D = calc. 5.10. The strongest X-ray lines (47 given) are 9.67(8)(001); 4.70(8)(101); 3.40(10)(1$\bar{2}$2,12$\bar{1}$); 3.26(8)(1$\bar{1}$2,120); 3.04(9)(03$\bar{2}$); 2.92(6)(1$\bar{3}$1,11$\bar{3}$); 2.04(6)(02$\bar{5}$,203,01$\bar{5}$).

Color reddish-brown, luster subadamantine. H ~ 3. Optically biaxial, neg., *ns* $\alpha = 1.960$, $\beta = 1.995$, $\gamma = 2.020$, 2V ~ 75°, r > v. Strongly pleochroic, *X* and *Y* pale brown, *Z* deep reddish-brown. $Y \angle a$ on (001) ~ 5°, $Y \angle a$ on (010)15°. Crystals are tabular, elongated *a*, up to 0.5 × 0.2 × 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*

L. J. Cabri, J. F. Rowland, J. H. G. Laflamme, and J. M. Stewart (1979) Keithconnite, telluropalladinite, and other Pd-Pt tellurides from Stillwater complex, Montana. Can. Mineral., 17, 589–594.

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 100.4, 99.02, 99.26, 99.43%. This corresponds to $Pd_{3-x}Te$ with x − 0.42–0.27.

Keithconnite is rhombohedral, space group $R\bar{3}$, $a = 11.45$, $c = 11.40$Å., Z = 7, very similar to synthetic $Pd_{20}Te_7$. 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), 0.791(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.

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 0–0.07, Sb 0–0.12, Pb 0–0.30, Hg 0–0.6, sum 99.82–100.17, corresponding closely to Pd_9Te_4.

X-ray study shows the mineral to be monoclinic, space group $P2_1/c$, $a = 7.45$, $b = 13.95$, $c = 8.82$Å, $\beta = 91.9°$, Z = 4, D calc. 10.68. These data agree well with those for synthetic Pd_9Te_4. The strongest X-ray lines (30 given) are 2.237(10)(152), 2.094(4)($\bar{3}$22); 1.306(5)(2.10.0).

Color cream with a yellowish tint. Anisotropy moderate to strong in air, 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*

P. J. Dunn, D. R. Peacor, J. S. White, and R. A. Ramik (1979) Kingsmountite, a new mineral isostructural with montgomeryite. Can. Mineral., 17, 579–528.

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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 $(Ca_{3.15}Mn_{0.85})(Fe_{0.56}Mn_{0.50}Mg_{0.06})(Al_{3.88}Fe^{+3}_{0.12})(PO_4)_6(OH)_4 \cdot 12H_2O$, the Fe^{+2} analogue of montgomeryite.

The X-ray pattern (33 lines) has strongest lines 12.28(50)(020), 5.15(100)(111), 2.950(40)(311), 2.624(60)(190). The powder data, indexed by analogy with montgomeryite, gave a unit cell with $a = 10.029$, $b = 24.46$, $c = 6.258$Å, $\beta = 91.16°$, space group probably $C2$. D calc 2.58, meas. 2.51.

Color white to very light brown, streak white. H 2½. Optically biaxial, neg., 2V = 62°, *ns*, $\alpha = 1.575$, $\beta = 1.581$, $\gamma = 1.583$, *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*

G. Donnay, M. Betournay, and G. Hamill (1980) McGillite, a new manganous hydroxy-chlorosilicate. Can. Mineral., 18, 31–36.

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_2)1.44 = 100.85%, corresponding to $Mn_8Si_6O_{15}(OH)_8Cl_2$. The mineral is decomposed by HCl.

Precession and Laue photographs, show the mineral to be rhombohedral, space group probably $R\bar{3}m$, $a = 13.498$, $c = 85.657$Å., D calc. 3.071, meas. 2.98. The strongest X-ray lines (26 given) are 7.16(7)(00.12), 2.888(6)(40.4), 2.560(10)(40.16).

Color light to dark pink, luster pearly. Cleavages {0001} easy and good, {10$\bar{1}$1} difficult but fair. Optically uniaxial, negative, *ns* (Na) $\omega = 1.6685$, $\varepsilon = 1.6415$; 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, 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*

R. C. Erd, F. P. Cesbron, F. E. Goff, and J. R. Clark (1981) Mcguinessite, a new carbonate from California. Mineralog. Record, 12, 143–147.

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 $a = 9.398$, $b = 12.011$, $c = 3.379$Å., $\beta = 93.28°$. 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 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, *ns* $\alpha = 1.596$–1.607, $\beta = \gamma = 1.724$–1.740 (increasing with Cu content); *ns* (Na) $\alpha = 1.602$, $\beta = 1.730$, $\gamma = 1.732$. Elongation negative, max. extinction $X \angle c = 11°$. 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.

The name is for Albert L. McGuiness, mineral dealer, San Mateo, Cal. Type material is at the U.S. National Museum, Washington, and the Pierre and Marie Curie Univ., Paris. **M.F.**

O'Danielite*

Paul Keller, Heinz Hess, P. J. Dunn, and D. Newbury (1981) O'Danielite, $NaZn_3H_2(AsO_4)_3$, a new mineral from Tsumeb, Namibia. Neues. Jahrb. Mineral., Monatsh 4, 155–160 (in English).

A previous abstract is in 66, 218-219 (1981). Additional data are given below. Microprobe analysis gave As_2O_5 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 $(Na_{0.95}Ca_{0.03})(Zn_{2.60}Mg_{0.45}Mn_{0.05}Fe_{0.02})H_{1.96}(As_{2.96}O_{12})$. Refined cell constants are $a = 12.113$, $b = 12.445$, $c = 6.793$Å., $\beta = 112.87°$, 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) (11$\bar{2}$); 2.78(8b)(02$\bar{2}$,400,041,04$\bar{1}$,330);2.72(8)(240,42$\bar{1}$);1.830(5)(24$\bar{3}$,332); 1.687(7) (64$\bar{1}$,20$\bar{4}$); 1.664(6) (171,64$\bar{2}$,460,550).

Color pale violet, luster vitreous H ~ 3. Cleavages {010} and {100}, perfect, also {001}. Optically biaxial, positive, *ns* $\alpha = 1.745$, $\beta = 1.753$, $\gamma = 1.778$, 2V = 60°, $Z = b$, $Y \angle c = +18°$, dispersion not observed. Associated minerals were cuprian adamite, koritnigite, prosperite. The name is for Herbert O'Daniel, 1903–1977, professor of mineralogy at Univ. Münich. Type material is at the Univ. of Stuttgart and the Smithsonian Institute. **M.F.**

Paranatrolite*

G. Y. Chao (1980) Paranatrolite, a new zeolite from Mont St.-Hilaire, Quebec. Can. Mineral., 18, 85–88.

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 epitactic 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.

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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 $Na_2Al_2Si_3O_{10} \cdot 3H_3O$.

X-ray study shows the mineral to be pseudo-orthorhombic, monoclinic or triclinic, space group *Fmm*2, *Fm*2*m*, *F*222, or *Fmmm*, $a = 19.07$, $b = 19.13$, $c = 6.580$Å, 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, $2V < 10°$, 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*

A. G. Roberts, H. G. Ansell, and M. Bonardi (1980) Pararealgar, a new polymorph of AsS, from British Columbia. Can. Mineral., 18, 525–527.

The average of 2 electron microprobe analyses from Mount Washington gave As 69.81, S 29.97, sum 99.78%, corresponding to $As_{0.997}S$, a new polymorph of AsS. Insoluble in H_2O, conc. HCl, HNO_3, or H_2SO_4, reacts with 40% KOH to give a dark brown precipitate.

X-ray study shows the mineral to be monoclinic, space group *Pc* or *P*2/*c*, $a = 9.929$, $b = 9.691$, $c = 8.503$Å, $\beta = 97.06°$, Z = 16, D calc. 3.499, meas. 3.52. The strongest lines (24 given) are 5.56(91) ($\bar{1}11$), 5.14(100) (111), 3.75 (78) ($\bar{1}12$), 3.299(50) ($\bar{2}21$), 3.025 (51) (202), 2.795 (71) ($\bar{2}22$).

Color bright yellow to orange-yellow and orange-brown, luster vitreous to resinous, streak bright yellow. H 1–1½. Brittle, fracture uneven.

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, α-AsS, and other minerals at Mount Washington, Vancouver Island, British Columbia, and with stibnite, realgar, and α 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*

G. Y. Chao, T. T. Chen, and Judith Baker (1980) Petarasite, a new hydrated sodium zirconium hydroxychlorosilicate from Mont St.-Hilaire, Quebec. Can. Mineral., 18, 497–502.

Subrata Ghose, Che'ng Wan, and G. Y. Chao (1980) Petarasite, $Na_5Zr_2Si_6O_{18}(Cl,OH) \cdot 2H_2O$, 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_2O 17.2–17.4, 17.3; K_2O 0.17–0.29, 0.25; H_2O 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, 046) = 98.84–100.23, 99.57%, corresponding to $(Na_{4.69}Ca_{0.13}K_{0.05})(Zr_{2.01}Ti_{0.01})Si_6O_{18}[(OH)_{0.60}Cl_{0.48})] \cdot 3.01H_2O$. The structural study shows $2H_2O$, the excess being adsorbed or in open channels; the formula is therefore $Na_5Zr_2Si_6O_{18}(OH,Cl) \cdot 2H_2O$. TGA curves show loss of weight 25–830°C 6.17–6.39, av. 6.24%; 25–1100°, 9.13–9.81, av. 9.43%.

X-ray study showed the mineral to be monoclinic, space group $P2_1/m$, $a = 10.7956$, $b = 14.4928$, $c = 6.6229$Å, $\beta = 113.214°$, Z = 2, D 2.88 meas., 2.915 calc. The strongest X-ray lines (42 given) are 7.25(70)(020) 6.09(40)(001), 4.10(100)(220), 2.924(100) (240, $24\bar{1}$).

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

The mineral occurs as irregular grains up to 10 mm across, associated with biotite, apatite, catapleiite, 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*

J. L. Jambor, B. D. Sturman, and G. C. Weatherly (1980) Sabinaite, a new anhydrous zirconium-bearing carbonate mineral from Montreal, Quebec. Can. Mineral., 18, 25–29.

Analysis by neutron activation gave CO_2 27.1, ZrO_2 39.1, HfO_2 0.47, TiO_2 12.0, Na_2O 20.7, CaO 0.2, sum 99.57, corresponding to $(Na_{8.79}Ca_{0.05})(Zr_{4.17}Hf_{.03})Ti_{1.98}(CO_3)_{8.1}O_9$, or $Na_9Zr_4Ti_2O_9(CO_3)_8$. 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, $a = 6.605$, $b = 10.186$, $c = 37.94$Å, $\beta = 90°$, Z = 8, D calc. 3.41, meas. 3.36. The strongest X-ray lines (33 given) are 8.97(10) (012), 2.991(6)(036), 2.017(5)(240), 1.847(6), 1.646(5).

The mineral occurs as fine-grained white, powdery coatings and chalky aggregates in a dawsonite-rich sill associated with calcite, quartz, weloganite, and cryolite, St. Michel, Montreal Island, Quebec. Platy, max. dimensions 0.01 × 0.001 mm. Cleavages {001} perfect, {100} good. Optically biaxial, negative, *ns* $\alpha = 1.74$, $\beta = 1.80$, $\gamma = 1.85$, 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*

L. Cortesogno, G. Lucchetti, and A. M. Penco (1979) Manganese mineralization of Ligurian ophiolites: mineralogy and genesis. Rend. Soc. Ital. Mineral. Petrol., 35, 151–197 (in Italian).

R. Basco and A. Della Giusta (1980) The crystal structure of a new manganese silicate. Neues Jahrb. Mineral., Abhandl 138, 333–342.

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G. Lucchetti, A. M. Penco, and R. Rinaldi (1981) Saneroite, a new natural hydrated Mn-silicate. Neues. Jahrb. Mineral., Monatsh 4, 161–168.

Microprobe analyses of 2 zones of different color gave an average composition SiO_2 39.33, MnO 40.13 (total Mn), Fe_2O_3 0.36 (total Fe), CaO 0.25, V_2O_5 6.60, As_2O_5 0.29, Na_2O 4.53, loss wt. in TGA analysis 5.00, sum 96.49%. The 2 zones were similar in composition except for V_2O_5 (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, Mn_2O_3 6.44%. Formula $Na_{2.29}(Mn^{+3}_{0.71}Mn^{+2}_{9.29})(Si_{11}V)O_{34}(OH)_4$.

X-ray study showed the mineral to be triclinic, $P\bar{1}$, $a = 9.741 \pm 0.005$, $b = 9.974 \pm .007$, $c = 9.108 \pm .005$Å, $\alpha = 92.70°$, $\beta = 117.11°$, $\gamma = 105.30°$, Z = 1. The strongest X-ray lines (29 given) are 3.06(s)($1\bar{3}1,2\bar{2}1$); 3.01(m)($\bar{3}21$), 2.98(m)($\bar{2}31$), 2.83(s) ($2\bar{1}3$); 2.70(s)(220,112); 2.62(m)($\bar{2}32$); 2.20(m)($\bar{3}41$); 1.678(m) ($\bar{4}\bar{3}3$); 1.433(m)($105,\bar{6}05$).

Color bright orange, luster resinous to greasy, D 3.47. Cleavage perfect in 2 directions. Optically biaxial, negative, −2V 40–48°, *ns* $\alpha = 1.720$, $\beta = 1.740–1.745$, $\gamma = 1.745–1.750$, 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 quartz, barite, caryopilite, 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.**

Stibiobetafite*

P. Cerny, F. C. Hawthorne, J. H. G. Laflame, and J. R. Hinthorne (1979) Stibiobetafite, a new member of the pyrochlore group from Vezna, Czechoslovakia. Can. Mineral., 17, 583–588.

Electron microprobe analyses (Al, Pb, Na, H_2O, F by ion microprobe) gave ranges and a selected grain gave, resp.; Nb_2O_5 20.4–26.3, 21.6; Ta_2O_5 9.0–20.0, 19.3; TiO_2 14.5–21.9, 16.5; Al_2O_3 .2–.5, 0.49; Sb_2O_3 22.6–27.6; PbO 013; SnO 2.7–3.8, 2.9; FeO 0.5–0.7, 0.6; MnO 0.5–0.8, 0.6; CaO 14.2-14.9, 14.5; Na_2O 0.30, H_2O 0.44, F_2 0.15, sum 100.71 − $(0{=}F_2)$0.06 = 100.66%. This corresponds to $(Ca_{1.11}Sb^{+3}_{0.69}Sn_{0.09}Fe_{0.04}Mn_{0.04}Na_{0.04})(Ti^{+4}_{0.89}Nb^{+5}_{0.70}Ta^{+5}_{0.38}Al_{0.04})O_6(O_{0.76}(OH)_{0.21}F_{0.03})$.

The strongest X-ray lines (18 given) are 2.989(10)(222), 2.589(3)(004), 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 gives $a = 10.351$Å.

The mineral occurs in a pegmatite at Vezna, Czechoslovakia, as anhedral grains and poorly developed octahedra up to 8 mm. Color dark brown to black-brown, streak pale brown to creamy, luster vitreous. The mineral turns pale orange when heated in air to 700°C. H ~ 5, brittle. D 5.30 meas. 5.19 calc. Isotropic, n > 1.78, calc. from Gladstone-Dale 2.2. The mineral is intergrown with columbite, niobian rutile, cassiterite, and zircon.

The name indicates its position in the pyrochlore group, betafite subgroup, **M.F.**

Stibivanite*

S. Kaiman, D. C. Harris, and J. E. Dutrizac (1980) Stibivanite, a new mineral from the Lake George antimony deposit, New Brunswick. Can. Mineral., 18, 329–332.

J. T. Szymanski (1980) A redetermination of the structure of Sb_2O_5, stibivanite, a new mineral. Can. Mineral., 18, 333–337.

Electron microprobe analysis showed only Sb and V; IR study showed no OH or H_2O. Analysis gave Sb_2O_3 79.31, VO_2 22.01, sum 101.32%, corresponding to $Sb^{+3}_{2.01}V^{+4}_{0.98}O_5$. 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*, $a = 17.989$, $b = 4.7924$, $c = 5.500$Å, $\beta = 95.15°$, Z = 4. D calc. 5.27. The strongest lines (36 given) are 4.646(6)(110); 3.502(7)(111); 3.173(7)($\bar{3}11$); 2.996(10)($\bar{3}11$,600).

Color yellow-green to deep yellow-green, luster adamantine. Micro-indentation hardness 148–286, av. 232 = Mohs 4.3. Optically biaxial, neg., $\alpha > 1.87$, $\gamma < 1.89$, 2V = 85°, $X = b$, $Z = c$, dispersion r > v very strong. Strongly pleochroic, *X* emerald green with olive tint, *Y* emerald green, *Z* olive green.

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*

R. A. Ramik, B. D. Sturman, P. J. Dunn, and A. S. Povarennykh (1980) Tancoite, a new lithium sodium aluminum phosphate from the Tanco pegmatite, Bernic Lake, Manitoba. Can. Mineral., 18, 185–190.

Electron microprobe analysis (Li_2O by AAS, H_2O by TGA) gave P_2O_5 50.1, Al_2O_3 18.3, Na_2O 20.0, Li_2O 5.2, CaO 0.5, sum 100.9%, corresponding to $HNa_2\ LiAl\ (PO_4)_2(OH)$. The TGA curve shows 1% loss in wt. at 337–429°C, 5.2% at 429–472°, and 0.6% 472–542°. The DTA curve shows 3 small endothermic peaks at 452°C, 615°, and 650° (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*, $a = 7.041$, $b = 14.130$, $c = 6.975$Å, 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),1760(40) (400).

The mineral occurs as isolated crystals up to 1 mm long and as druss 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–$4\frac{1}{2}$. Optically biaxial, neg., ns (Na) $\alpha = 1.541$, $\beta = 1.563$, $\gamma = 1.564$, 2V = −23° (24° calc.), r < v weak, $X = a$, $Y = b$.

The mineral occurs in the Tanco spodumene-bearing pegmatite, associated with lithiophosphate and pink apatite and a hydrous sodium phosphate, $Na_2HPO_4 \cdot 2H_2O$. 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*

T. T. Chen and G. Y. Chao (1980) Tetranatrolite from Mont St.-Hilaire, Quebec. Can. Mineral., 18, 77–84.

The mineral described as unnamed tetragonal natrolite from

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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, $I\bar{4}2d$ or $I4_1md$, a = 13.098, c = 6.635Å., Z = 4. **M.F.**

Yarrowite*, Spionkopite*

R. J. Goble (1980) Copper sulfides from Alberta: yarrowite, Cu_9S_8, and spionkopite, $Cu_{39}S_{28}$. Can. Mineral., 18, 511–518.

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 $P3m1$, $P\bar{3}m1$, or $P321$, a = 3.800, C = 67.26Å, Z = 3 (Cu_9Se), 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 $P\bar{3}m1$, $P3m1$, or $P321$, a = 22.962, c = 41.429Å., Z = 18 ($Cu_{39}S_{28}$), D calc. = 5.13. The strongest X-ray lines (42 given) are 3.076(85)(6.0.5), 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, reflectances at 546 nm, 0 15.5, E 20.6%. Microhardness 63–93 kg/sq.mm (15 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 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

V. V. Zhdanov and N. S. Rudashevskii (1980) A new type of gold–platinum mineralization in metasomatites after basites. Dokl. Akad. Nauk. SSSR, 252, 1452–1456 (in Russian).

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 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 given), 100.12 and Ru, Pd n.d. The authors propose generalized formulae of $(Ir_{0.97}Cu_{0.89}Pt_{0.45}Rh_{0.58})_{\Sigma=3}S_4$ and $(Ir_{1.54}Pt_{0.93}Rh_{1.41})_{\Sigma=3}S_4$ 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: $(Rh,Ir)_2S_3$ and Ir_2S_3. The stoichiometry proposed by Zhdanov and Rudashevskii is unknown in the Ir–S system. **L.J.C.**

Unnamed Minerals

M. Lapham, J. H. Barnes, W. F. Downey, Jr., and R. B. Finkelman (1980) Mineralogy associated with burning anthracite deposits of eastern Pennsylvania. Pa. Topogr. Geol. Survey, Mineral Resour. Rept. 78, 1–82.

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_2Se_3, monoclinic, dark-red clusters of tabular crystals up to 3 mm long; (2) GeS_2, orth., white fibers on ottemannite; (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) $(NH_4)Al(SO_4)_2$, hexagonal, as an earthy white powder or yellowish-white to gray stalactitic masses up to 20 cm in length; (6) $Al_2(SO_4)_3$, hex., white earthy masses, n = 1.468. **M.F.**

Unnamed $(Mn,Ca)_6(V,As)Si_5O_{18}(OH)$

C. M. Gramaccioli, W. L. Griffin, Guiseppe Liborio, and Annibale Moltane (1980) Another interesting mineral from the Molinello Mine (Genova). Rend. Soc. Ital. Mineral. Petrol., 36, 159–163 (in Italian).

Analysis (av. of 7) gave SiO_2 38.09, As_2O_5 2.11, V_2O_5 7.44, MnO 49.94, FeO 0.31, CaO 1.30, sum 99.19% corresponding to $(Mn_{5.77}Ca_{0.19}Fe_{0.035})$ $(V_{0.815}As_{0.185})Si_5O_{18}(OH)$. X-ray study shows it to be monoclinic, $P2_1/n$, a = 6.71, b = 28.94, c = 7.57Å., β = 95.4°. The strongest X-ray lines (50 given) are 3.332(83)($12\bar{2}$,042,210); 3.181(63)(180); 3.137(91)(112,171); 2.894(99)(190,250); 2.737(68)(241,$19\bar{1}$); 2.632(73)($20\bar{2}$,162,$17\bar{2}$); 2.603(74)(270,$21\bar{2}$); 2.450(100)(280,092,033), 2.428(59)($10\bar{3}$,$11\bar{3}$).

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

A. M. Karpenkov, N.S. Rudashevskii and N. I. Shumskaya (1981) A natural chloride of palladium and bismuth—the phase of composition $Pd_4Bi_5Cl_3$. Zapiski Vses. Mineralog. Obsh., 110, 86–91 (in Russian).

Average of 3 separate microprobe analyses (using metals and synthetic chlorapatite) gave Pd 24.5, 2.07, Fe 0.78, Ni 027, Bi 64.1, Cl 6.43, sum 98.15 and a formula of $(Pd_{3.81}Pt_{0.18}Fe_{0.24}Ni_{0.06})_{\Sigma=4.29}Bi_{5.07}Cl_{3.00}$ for an empirical formula of $Pd_4Bi_5Cl_3$. The mineral occurs as very small rounded to anhedral inclusions, not larger than 30 × 30 μm in cross-section, in a matrix of insizwaite-geversite and paolovite. This occurrence is in the massive pyrrotite ores of the Oktyabr Cu–Ni deposit also containing chalcopyrite, pentlandite, and magnetite. Minor and rare minerals are hisingerite (Cl-bearing), sphalerite, pyrite, marcasite, argentopentlandite, cubanite, mackinawite, galena,

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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 extemely 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 $VHN_{20} = 114$.

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 Campiglia Mariltima, Tuscany. Rend. Soc. Ital. Mineral. Petrol., 36, 295–308 (in Italian).

Analysis (not given) gives the formula $Mn(Cu,Zn)_4(SO_4)_2(OH)_6 \cdot 4H_2O$ (microprobe analysis, H_2O calc. to fit unit cell). Monoclinic, *C2/m* or *Cm* or *C2*, $a = 21.707$, $b = 6.098$, $c = 11.245$Å., $\beta = 100.3°$. 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) $\alpha = 1.589$, $\beta = 1.645$, $\gamma = 1.659$, 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 associated ore minerals from the cryolite at Ivigtut, South Greenland. Medd. Grønland, Greenland Geoscience, 2, 1–25.

Three probably new minerals occur in these ores. Mineral B, Ag_4TeS, 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 $Ag_8Sb(S,Te)_6$. 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 $(Ag,Cu)PbBi_2S_5$. Color and reflectance similar to those of galena. Anisotropy distinct. **M.F.**

NEW DATA

Calderite

P. J. Dunn (1979) On the validity of calderite. Can. Mineral., 17, 569–571.

Microprobe analysis of garnet from Otjosundu, S.W. Africa, analyzed by Vermaas (1952) gave SiO_2 35.16, TiO_2 0.28, Al_2O_3 9.04, Fe_2O_3 (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, spessartine 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, $Mn_3^{+2}Fe_2^{+3}(SiO_4)_3$. **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 Stokes. Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1982. xiv + 577 pages. Price not given.

SILVER: AN INSTRUCTIONAL GUIDE TO THE SILVERSMITH'S ART. By Ruel O. Redinger. Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1981. viii + 159 pages. $14.95.

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 edition. By N. K. Vinnichenko, N. Z. Pinus, S. M. Shmeter, and G. N. Shur. Consultants Bureau, New York, 1980. xiii + 310 pages. $49.50.

PETROLEUM AND HARD MINERALS FROM THE SEA. By Fillmore C. F. Earney. John Wiley & Sons, New York, 1980. 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. Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1980. xvii + 782 pages. Price not given.

A BIBLIOGRAPHY OF THE MINERAL RESOURCES OF TANZANIA. By Odd Nilsen. The Scandinavian Institute of African Studies, Uppsala, Sweden, 1980. 92 pages. Price not 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 Hicks. McGraw-Hill, New York, 1982. xiv + 490 pages. Price not given.

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