American Mineralogist, Volume 67, pages 854–860, 1982

NEW MINERAL NAMES*

MICHAEL FLEISCHER, G. Y. CHAO AND J. A. MANDARINO

Arsenocrandallite*

Kurt Walenta (1981) Minerals of the beudantite-crandallite group from the Black Forest: Arsenocrandallite and sulfate-free weilerite. Schweiz. Mineralog. Petrog. Mitt., 61, 23–35 (in German).

Microprobe analysis gave As_2O_5 22.9, P_2O_5 10.7, Al_2O_3 28.7, Fe_2O_3 1.2, CaO 6.9, SrO 6.0, BaO 4.3, CuO 1.8, ZnO 0.3, Bi_2O_3 2.4, SiO_2 3.2, H_2O (loss on ignition) 11.7, sum 100.1% corresponding to $(Ca_{0.61}Sr_{0.29}Ba_{0.14}Bi_{0.05})_{1.09}(Al_{2.79}Cu_{0.11}Fe^{+3}_{0.07}Zn_{0.02})_{2.99}(As_{0.99}P_{0.75}Si_{0.26})_{2.00}H_{6.44}O_{13.63}$, or $(Ca,Sr)Al_3H[(As,P)O_4]_2(OH)_6$. Spectrographic analysis showed small amounts of Na, K, and Cl. A second sample is nearly free of Ba and P. The mineral is partly dissolved by cold 1:1 HCl or HNO_3, dissolved slowly by hot 1:1 HCl.

The strongest X-ray lines (21 given) are 5.84($10\bar{1}1$,111), 3.55(9)($11\bar{2}0$,$10\bar{1}4$), 2.99(10d)($02\bar{2}1$,$11\bar{2}3$,$01\bar{1}5$), 1.919 (5)($1\bar{2}35$,$02\bar{2}7$,0009), 1.769(6)($22\bar{4}0$,$20\bar{2}8$). Calculated cell constants are: hexagonal setting a = 7.08, c = 17.27Å., Z = 3; rhombohedral setting a = 7.06Å, α 60.18°, Z = 1, the second sample had a = 7.06, c = 17.22Å., or a = 7.04Å, α 60.19°.

The mineral forms reniform crusts and spherulitic aggregates up to 0.1 mm. Color blue to bluish-green, luster vitreous. No cleavage, fracture conchoidal, H ~ 5½, D meas. 3.25±0.1, calc. 3.30. Isotropic to weakly birefringent, n (average) = 1.625±0.01, but rarely down to 1.600 and up to 1.650. Under the microscope may show triangular sectors.

The mineral was found on old dumps in the Neubulach mining district, Black Forest, Germany, associated with brochantite, chalcophyllite, parnauite, arseniosiderite, mansfieldite, and corroded tennantite.

The name is for the composition and relation to crandallite. **M.F.**

Burtite*

P. M. Sonnet (1981) Burtite, calcium hexahydroxostannate, a new mineral from El Hamman, central Morocco. Can. Mineral., 19, 397–401.

The mineral occurs as octahedra (up to 2 mm across) with an earthy, yellow surface caused by alteration to varlamoffite. Burtite is colorless, has a vitreous luster, is very brittle with H about 3. It is non-fluorescent in ultraviolet light and has a good cubic cleavage. D meas. 3.28(1), calc. 3.22. Optically, burtite appears to be isotropic with n = 1.633 but thick grains are very weakly birefringent and show uniaxial positive interference figures.

Although single-crystal X-ray diffraction study showed no departure from cubic symmetry, the burtite unit cell is considered to be rhombohedral with space group $R\bar{3}$, a_{rh} = 8.128Å, α = 90°, Z = 4 (a = 11.49, c = 14.08Å in hexagonal setting). The strongest lines in the X-ray powder diffraction pattern are (in Å, for Co$K\alpha$, indexing is based on the pseudo-cubic cell): 4.06(vs)(200), 1.814(s)(420), 1.657(s)(422), 0.9850(s)(820,644) and 0.9576(s)(822,660).

Electron microprobe analysis (with H_2O calculated to provide the stoichiometric quantity of OH) gave SnO_2 56.3, CaO 20.6, MgO 0.3, H_2O 20.2, total 97.4 wt.%. These data give an empirical formula of $(Ca_{0.982}Mg_{0.020})_{\Sigma 1.002}Sn_{0.999}(OH)_6$ or, ideally, $CaSn(OH)_6$.

Burtite occurs in a garnetite in a tin skarn at 33°31′26″ Long., 5°49′50″ Lat. on the west bank of the Beht River in central Morocco. Associated minerals are: wickmanite, stokesite, datolite, pectolite, a member of the apophyllite group, varlamoffite, andradite, wollastonite, malayaite, clinopyroxene and loellingite.

The name is for Prof. Donald M. Burt, Arizona State University. Type material is preserved at the Université catholique de Louvain, Louvain-la-Neuve, Belgium. **J.A.M.**

Caswellsilverite*

A. Okada and Klaus Keil, Caswellsilverite (1981) $NaCrS_2$, a new mineral in the Norton County enstatite achondrite. Meteoritics, 16, 370–371 (abs.).

Electron microprobe analysis gave S 46.3, Cr 37.4, Ti 0.18, Mn 0.08, Na 15.7, total 99.7%, corresponding to $NaCrS_2$. X-ray study shows it to be trigonal, space group $R\bar{3}m$, a = 3.55, c = 19.5Å. (hexagonal setting). The strongest X-ray lines are 6.49(7)(003), 2.60(10)(014), 2.07(8)(017), 1.910(8)(108), 1.779(8)(110), 1.465(6)(204), 1.134(6)(0.1.16).

The mineral occurs in anhedral grains up to 1 mm in size, associated with daubreelite, titanian troilite, alabandite, perryite, and another Na-Cr sulfide. Yellowish-gray to light gray, luster metallic. Pleochroic, O pale yellow, E gray in air; O pale greenish yellow, E dark gray in oil.

The name is for Caswell Silver, U. S. Geologist. **M.F.**

Chromium*

Yue Suchin, Wang Wenying and Sun Sujing (1981) A new mineral—native chromium. Kexue Tongbao, 26, 959–960 (in Chinese).

Analysis gave Cr 98.01, Fe 0.001, Cu 0.366, Zn 1.40, sum 99.78%, corresponding to Cr 98.59, Zn 1.12, Cu 0.28 atomic %. Cu and Zn are probably in substitution for Cr. The material is homogeneous, showing no evidence of exsolution, under reflecting and electron microscopes.

---

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

0003–004X/82/0708–0854$00.50

The mineral is white with a yellow tint under reflected light. It is isotropic without internal reflection. Reflectance data are 480 nm, 65.3; 546 nm, 67.9, 589 nm, 68.8, 656 nm, 70.0%.

The mineral occurs in artificial heavy sands of massive ores in the contact zone between ultrabasic rocks and siliceous marble in Sichuan, China. The mineral is finely granular (grain size about 20 μm), closely associated with another new mineral $CuZn_2$ (Cu 32.52, Zn 67.47, sum 99.99%, or $Cu_{1.00}Zn_{2.016}$). The mineral $CuZn_2$ forms rims around chromium. Other associated minerals are pyrrhotite, pentlandite chalcopyrite, pyrite sulfoarsenides and platinum group minerals. The name is for the composition. **G.Y.C.**

Gruzdevite*

E. P. Spiridonov, L. Ya, Krapiva, A. K., Gapeev, V. I. Stepanov, E. Ya. Prushinskaya, and V. Yu. Volgin (1981) Gruzdevite, $Cu_6Hg_3Sb_4S_{12}$, a new mineral from the Chauvai antimony-mercury deposit, Central Asia. Doklady Akad. Nauk SSSR, 261, 971–976 (in Russian).

Electron microprobe analyses by E.P.S. on 6 samples gave (range and average) S 20.29–20.91, 20.44; Sb 25.29–27.22, 26.21; As 0.06–0.57, 0.37; Hg 32.23–33.23, 32.73; Fe trace–0.40, 0.29; Cu 19.26–20.77, 19.99, sum 98.93–101.00, 100.03%. The average corresponds to $(Cu_{5.87}Fe_{0.10})Hg_{3.04}(Sb_{4.01}As_{0.09})S_{11.89}$. A complete series exists from gruzdevite to aktashite, $Cu_6Hg_3As_4S_{12}$ (58, 562 (1973)). Gruzedevite is isotypic with nowackiite.

X-ray study shows gruzdevite to be rhombohedral, $a = 13.90_2$, $c = 9.432$Å., Z = 3, a_{rh} 8.609Å., α 107°41′, Z = 1, D calc. 5.88. The strongest X-ray lines (50 given) are 3.16(10)(311,003), 1.929(9)(520,314), 1.645(8)(621,523,315), 1.251(5)(651,911,625,317), 1.113(6)(654,914,318,10.1.2).

In reflected light the mineral resembles aktashite, tetrahedrite, and metacinnabar. Anisotropy weak, $\Delta R \sim 0.06$. Reflectances are given at 8 wavelengths, R_{max} = 460 nm, 33.1; 540 nm, 32.8; 580 nm, 32.7; 660 nm, 31.9%. Microhardness 295±5 kg/sq. mm at 30 g load. Cleavage absent.

The mineral occurs in the Chauvai Sb–Hg deposit, southern Kirgizia, intergrown with well-formed tetrahedral crystals of aktashite, 0.2–4 mm in size, growing on stibnite and cinnabar in quality veinlets. It is associated with fluorite, calcite, barite, metacinnabar, and wurtzite. The aktashite crystals are zoned, with high Sb at the core, no Sb at the periphery.

The name is for V. S. Gruzdev, 1938–1977, Russian mineralogist. Type material is at the Fersman Mineralogical Museum, Acad. Sci. USSR, Moscow. **M.F.**

Ingodite*, (Grünlingite discredited)

E. N. Zav'yalov and V. D. Begizov (1981) The new bismuth mineral ingodite, Bi_2TeS. Zapiski Vses. Mineralog. Obsh., 110, 594–600 (in Russian). E. N. Zav'yalov and V. D. Begizov (1981) Once again on the problem of grünlingite Zapiski Vses. Mineralog. Obsh., 110, 633–635.

During the study of numerous museum samples labelled "grünlingite", all were found to consist of joseite-A or bismuthinite. A sample from the type locality, Brandy Gill, Cumberland, England, and one the Ingoda deposit, central Transbaikal, also contained a new mineral.

Electron microprobe analyses of 5 samples from the 2 localities gave Bi 68.8–73.3, Pb 0–1.2, Sb 0–0.15, Te 19.3–25.3, S 5.1–6.3, Se 0–0.4, sum 99.1–100.3%, giving the formula above.

X-ray study showed the mineral to be hexagonal, space group $P\bar{3}m$, $P3m1$, or $P321$, $a = 4.248$, $c = 23.22$Å, Z = 9, D calc. 7.88. Weak lines indicate that the value of c should be tripled. The strongest X-ray lines (35 given) are 3.11(10)($1.0.\bar{1}.12$), 2.28(6)($1.0.\bar{1}.24$), 2.13(5)($11\bar{2}0$), and 1.942(4)(0.0.0.36).

Ingodite is silver-white, luster metallic, cleavage perfect, nonmagnetic, brittle, soft. H on 2 samples 64.6 and 60.9 kg/sq. mm. In reflected light white, birefringence noticeable in air (creamy to grayish-white), moderately anisotropic. Reflectances are given at 15 wave lengths (R_g and R_p): (av. of 2) 460 nm, 55.5, 51.4; 540 nm, 57.7, 52.5; 580 nm, 57.8, 52.4; 660 nm, 56.9, 51.6%.

The name is for the locality. **M.F.**

Kamaishilite*

Etsuo Uchida and J. T. Iiyama (1981) On kamaishilite, $Ca_2Al_2SiO_6(OH)_2$, a new mineral (tetragonal), dimorphous with bicchulite, from the Kamaishi Mine, Japan. Proc. Japan Acad., 57B, 239–243.

Microprobe analysis (H_2O by wet chemical analysis) gave SiO_2 20.03, Al_2O_3 34.15, FeO 0.21, MgO 0.02, CaO 37.42, H_2O^+ 6.1, H_2O^- 0.2, sum 98.13%, corresponding to $(Ca_{1.99}Fe_{0.01})Al_{2.00}Si_{0.99}O_{5.98}(OH)_{2.02}$ or $Ca_2Al_2SiO_6(OH)_2$, a dimorph of bicchulite.

X-ray powder data are indexed on a tetragonal cell with $a = 8.850$, $c = 8.770$Å., Z = 4. The strongest X-ray lines (28 given) are 3.607(100)(211,112), 2.799(85)(310,301), 2.777(40)(103), 2.547(40)(222), 2.085(30)(330,411), 1.557(35)(404).

The mineral occurs as grains about 0.1 mm in diameter. Colorless and transparent. No cleavage was observed. Optically nearly isotropic, $n = 1.629$, close to that of bicchulite. No conoscopic interference figure was observed.

The mineral occurs in vesuvianite skarn, associated with vesuvianite, "hydrograndite", and small amounts of perovskite, calcite, magnetite, and chalcopyrite. It is apparently an alteration product of vesuvianite.

The name is for the Kamaishi mine. **M.F.**

Kyzylkumite*

I. G. Smyslova, A. I. Komkov, V. V. Pavshukov, and N. V. Kuznetsova (1981) Kyzylkumite, $V_2Ti_3O_9$, a new mineral of vanadium and titanium of a group of complex oxides. Zapiski Vses. Mineralog. Obsh., 110, 607–612 (in Russian).

Electron microprobe analysis (by V.V.P.) gave TiO_2 61.7, V_2O_3 36.2, Cr_2O_3 1.2, Fe_2O_3 0.7, sum 99.8%, corresponding to $(V^{+3}_{1.90}Cr_{0.01}Fe_{0.04})Ti_{3.05}O_{9.09}$, or $V_2Ti_3O_9$. Titration with $KMnO_4$ and with Mohr's salt showed that V^{+4} and V^{+5} were absent. The mineral is insoluble in acids. The IR absorption spectrum is given. When heated to 320–390° C, the mineral is transformed into rutile.

Laue and oscillation studies showed the mineral to be monoclinic, $a = 33.80° \pm 0.05$, $b = 4.578 \pm 0.005$, $c = 19.99 \pm 0.03$Å., $\beta = 93.40 \pm 0.05°$, Z = 18, D calc. 3.77, meas. 3.75±0.1. The strongest X-ray lines (23 given) are 3.70(80)(511), 2.92(100)(713), 2.60(50)($71\bar{5}$), 2.192(48)(018), 1.692(50)($12.2.\bar{4}$), 1.682(65)(028). The mineral is therefore a dimorph of schreyerite (63, 1182 (1978)).

0003–004X/82/0708–0855\$00.50

The mineral is black, luster vitreous to resinous, opaque. Reflectances, R_g and R_p are given at 12 wave lengths: 480 nm, 15.7, 14.5; 540 nm, 16.05, 14.7; 580 nm, 16.2, 14.85; 640 nm, 16.5, 15.2%. Birefringence not noticeable visibly, anisotropy distinct, without color tints.

The mineral was found in fine veins cutting siliceous schists in "a deposit of Central Asia", associated with chlorite, pyrite, and rutile. Grains are 0.01–0.2 mm long and have prismatic habit, sometimes with pyramidal terminations and striations along the elongation. The name is for the locality (Kyzyl–Kum) (Uzbekistan). **M.F.**

Mcnearite*

Halil Sarp, Jacques Deferne, and B. W. Liebich (1981) Mcnearite, $NaCa_5H_4(AsO_4)_5\cdot4H_2O$, a new hydrous arsenate of calcium and sodium. Schewiz. Mineral. Petrog. Mitt., 61, 1–6 (in French).

Analysis by atomic absorption (H_2O by thermogravimetry) gave As_2O_5 60.59, 57.80; CaO 25.27, 26.16; Na_2O 3.40, 3.40, H_2O 11.32, 11.32, sum 100.58, 100.68, giving $Na_{1.09}Ca_{4.99}H_{3.91}(AsO_4)_5\cdot4.32H_2O$. Dissolved by acids.

Precession and Weissenberg photographs showed the mineral to be triclinic, $P1$ or $P\bar{1}$, $a = 13.50$, $b = 14.10$, $c = 6.95$Å., $\alpha = 90°$, $\beta = 92°$, $\gamma = 119°$, Z = 2 D calc. 2.85, meas. 2.60 (difference probably due to fibrous nature). The strongest X-ray lines (37 given) are 12.33(100)(010), 6.94(50)(001), 3.92(60)(300,$12\bar{1}$); 3.122(60)($1\overline{22}$,$1\overline{22}$).

The mineral occurs as radiating fibers, length up to 1–2 mm. Color white, luster pearly. H. could not be measured. Optically biaxial, positive, $2V$ +60°, *ns* $\alpha = 1.559$, $\beta = 1.562$, $\gamma = \bar{1}.572$ (calc.), $Y \wedge c = 6$–22°, dispersion rather strong, elongation positive. Cleavage perfect, parallel to the elongation.

Mcnearite was found in specimens from Sainte-Marie-aux-Mines, Vosges, France, associated with picropharmacolite, pharmacolite, guerinite, and haidingerite. The name is for Miss Elizabeth McNear, mineralogist and crystallographer, University of Geneva. Type material is at the Museum of Natural History, Geneva. **M.F.**

Muchuanite

Zhang Rubo, Gong Xiasheng, Zhou Zhendong, Fan Liangming and Shuai Dequan (1981) Muchuanite, a new water-bearing molybdenum sulphide mineral. Geochimica, 120–127 (in Chinese with English abstract).

Electron microprobe and chemical analyses gave Mo 54.20, 52.88; S 36.00, 37.34, Fe 2.20, —; Si 0.50, —; H_2O^+ 5.95, 6.03; H_2O^- 1.00, 2.07; sums 99.85, 98.32%, corresponding to $(Mo_{1.01}Fe_{0.07})S_2\cdot0.59H_2O$ and $Mo_{0.95}S_2\cdot0.58H_2O$, or ideally $MoS_2\cdot0.5H_2O$. Electron microprobe analysis shows the presence of 0.26% Re and a homogeneous distribution of Mo. Infra-red analysis shows a distinct absorption band at 3380 cm^{-1} (OH stretching) and an indistinct band at 1620 cm^{-1} (OH bending).

The strongest X-ray lines (25 including β-lines given) are 6.098(10)(007), 2.704(9)(0.0.16), 2.280(8)(1.0.10), 1.579(7)(112), 1.536(6)(0.0.28), 1.362(5)(200), 1.0961(1.1.28), 1.0325(7)(0.0.42), 1.0048(7)(0.1.40,2.1.10). Most lines are broad and diffuse. The indexing was based on a trigonal cell, $P3m1$, $a = 3.16$, $c = 43.60$Å, Z = 7, derived from two molybdenite-$2H_1$ layers and one 3R layer stacked according to the sequence $A_1B_2A_1B_1C_1A_1B_2$. The mineral is intermediate between molybdenite and jordisite with H_2O molecules between MoS_2 layers.

DTA curve shows a weak endothermic reaction at 315° C (dehydration) an exothermic reaction above 580° C (oxidation of S). Infra-red spectrum shows an absorption band at 3380 cm^{-1} (OH stretching) and an indistinct band near 1620 cm^{-1}.

The mineral occurs as black flakes (0.05–0.5 mm) with organic matter, minor chlorite and kaolinite in the matrix of a lenticular Middle Jurassic sandstone bed near Muchuan County, Sichuan, China. The flakes are apparently aggregates of fine-grained particles (1 to several μm). The mineral is grayish white under reflected light, strongly anisotropic. It is uniaxial negative. Reflectance $R_g = 26.6$–29.5, $R_p = 12.3$–14.2%. Color index $X = 0.3125$, $Y = 0.3754$, $\lambda_d = 568.5$ nm, $P_e = 17.6\%$ Dispersion $v > r$. VHN = 16–35 kg/mm^2, D meas. 5.01, calc. 5.10.

The name is for the locality.

Discussion

The mineral is most likely an altered molybdenite-$2H_1$, perhaps mixed with jordisite (amorphous MoS_2). All X-ray lines can be indexed on the molybdenite-$2H_1$ cell except two weak lines at 3.287(1) and 1.442(1) which may be due to impurities in view of its occurrence. The poor crystallinity of the material and the use of a 57.3 mm camera with unfiltered radiation may have contributed to the difficulties in the interpretation of data. The indexing based on the large cell is not as satisfactory as is claimed. A seven-layered structure cannot be reconciled with the space group $P3m1$. The c-dimension derived from $2c(2H_1) + c(3R)$ does not allow space for interlayer water molecules. **G.Y.C.**

Nahpoite*

L. C. Coleman and B. T. Robertson (1981) Nahpoite Na_2HPO_4, a new mineral from the Big Fish River area, Yukon Territory. Can. Mineral., 19, 373–376.

The mineral occurs as a fine-grained white material filling fractures in marićite. The fine-grained nature of nahpoite prevented single-crystal studies as well as precise determination of optical properties. Hardness could not be measured, but the mineral appears to be very soft. It is extremely soluble in water and, to a much lesser extent, in concentrated HCl. Nahpoite grains are elongate with a maximum dimension of 4 μm. Optically, they are length fast with nearly parallel extinction and have minimum and maximum refractive indices of about 1.490 and 1.505.

The X-ray powder diffraction data are essentially the same as those obtained from synthetic Na_2HPO_4 (JCPDS PDF No. 10-184). The strongest lines in the pattern for Cu$K\alpha$ radiation are: 3.97(45)(011,110), 3.84(55)(110), 3.41(25)(020), 2.868(30)($10\bar{1}$), 2.803(100)(021,120), and 2.720(70)(201,102) all in Å (a total of 17 indexed lines are listed down to 1.913Å). The data on PDF Card 10-184 are indexed on a B-centered cell and refinement of the unit cell parameters from the powder data of nahpoite based on this indexing gives: $a = 9.26(1)$, $b = 6.82(1)$, $c = 5.75(1)$Å, $\beta = 90.3°$, V = 363.13Å^3, Z = 4. The authors give the following refined cell parameters based on a primitive cell: $a = 5.47(1)$, $b = 6.84(1)$, $c = 5.45(1)$Å, $\beta = 116° 20(5)'$, V = 182.75Å^3, Z = 2. (However, an error must have occurred in these calculations because the b and c parameters of the two cells must remain the same and the volume of the primitive cell should be ½ that of the centered cell; the abstractor calculated $a = 5.463$, $b = 6.82$, $c = 5.75$, $\beta = 122.05°$, $V = 181.58\text{Å}^3$, $Z = 2$.) The possible space groups for the primitive cell are $P2_1/m$ or $P2_1$.

Chemical analysis (Na by AA spectrometry, P by colorimetry, H_2O calculated to produce neutrality) gave: Na_2O 43.67, P_2O_5 49.54, H_2O 6.32, total 99.53 wt.%. These data compare to Na_2O 43.66, P_2O_5 49.99, H_2O 6.35 wt.% for stoichiometric Na_2HPO_4. (The analysis yields an empirical formula, based on four oxygen ions, of $Na_{2.013}H_{1.002}P_{0.997}O_{4.000}$; J.A.M.). (The D calc. from the cell parameters and the empirical formula is 2.600. J.A.M.).

In addition to mariĉite from which it appears to have formed, nahpoite occurs with another sodium phosphate which gave an X-ray powder diffraction pattern corresponding to that of $Na_2HPO_4 \cdot 7H_2O$ (PDF 12-445). However, subsequent attempts to isolate this material yielded only data for nahpoite. Synthetic nahpoite when exposed to air for several weeks takes on water and changes to dorfmanite ($Na_2HPO_4 \cdot 2H_2O$). The natural compound, under the same conditions, remained unchanged. Nahpoite was found in four mariĉite nodules in the Big Fish River area, Yukon.

The name is for the composition. Type material is preserved in the Department of Geological Sciences, University of Saskatchewan, Saskatoon, Saskatchewan. **J.A.M.**

Namibite*

Oleg v. Knorring and Th. G. Sahema (1981) Namibite, a new copper-bismuth-vanadium mineral from Namibia. Schweiz. Mineralog. Petrog. Mitt., 61, 7–12, (in English).

Microprobe analyses gave (8 determinations range and av.): Cu 10.0–10.4, 10.2; Bi 65.8–67.0, 66.5; V 8.0–8.2, 8.1, corresponding to Cu_2O 11.5, Bi_2O_3 74.1, V_2O_5 14.5, sum 100.1%, $CuBi_2O_6$. The mineral is easily soluble in cold dilute acids. The infra-red spectrum showed no H_2O or OH.

Precession photographs showed namibite to be monoclinic, space group $C2/m$, Cm, or $C2$, $a = 11.864 \pm .008$, $b = 3.696 \pm .004$, $c = 7.491 \pm .005\text{Å}$, $\beta = 109°42' \pm 0.06$, $Z = 2$, D calc. 6.76, meas. (Berman balance on 11.9 mg) 6.86±0.03. The strongest X-ray lines (23 given) are 5.58(70)(200), 3.574(75)$(\bar{2}02)$, 3.284(50)$(\bar{1}11)$, 3.018(100)(111), 2.672(60)$(\bar{4}02)$.

Color dark green, streak pistachio-green. Microindentation gave hardness 473 (= 4½–5 Mohs). Not fluorescent. Biaxial, negative, 2V moderate for red, very small for blue light. Pleochroic, X yellowish-green, Y pistachio green, Z dark green, $Z > Y > X$. $Z = b$, $X \wedge a \sim 12°$, ns well above 2.10. Cleavage {100} good. Commonly twinned by interpenetration on (011), often polysynthetic.

The mineral occurs as platy crystals up to 2 mm in cavities in drusy quartz veins of a copper occurrence near Khorixas (forerly Welwitschia), NW Namibia. Associated minerals are beyerite, Bi, bismite, bismutite, and oxidized Cu minerals.

The name is for the Namib Desert. Type material is at Leeds University, England, and the University of Helsinki, Finland. **M.F.**

Nastrophite*

A. P. Khomyakov, M. E. Kazakova, G. N. Popova, and Yu. A. Malinovskii (1981) Nastrophite, $Na(Sr,Ba)PO_4 \cdot 9H_2O$, a new mineral. Zapiski Vses. Mineralog. Obsh., 110, 604–607, (in Russian).

Analysis by M.E.K. (K, Na, and Ca by flame photometry by G.N.P.) gave P_2O_5 19.04, SrO 22.19, BaO 8.17, CaO 0.41, Na_2O 8.21, K_2O 40.52, insol. (= inclusions of acicular aegirine) 1.64, H_2O 40.52, sum 100.23%. Thermal analysis on unground material gave 43.5% for the loss in weight; this is taken as the better determination because the mineral partly dehydrates under natural conditions. This gives $(Na_{0.982}K_{0.004})(Sr_{0.794}Ba_{0.198}Ca_{0.027})P_{0.995}O_{4.000} \cdot 8.96H_2O$, or $Na(Sr_{0.77}Ba_{0.20}Ca_{0.03})PO_4 \cdot 9H_2O$. The DTA curve shows a sharp endothermic break at about 150°. The mineral dissolves completely in cold 1% HCl. It is partly decomposed by hot water, giving a solution alkaline to phenolphthalein. The infra-red spectrum shows bands characteristic of the phosphate group and H_2O.

Laue and oscillation photographs show the mineral to be cubic, space group $P2_13$, $a = 10.559\text{Å}$., $Z = 4$, D calc. 2.12, meas. by suspension 2.05. The strongest X-ray lines (96 given) are 5.21(8)(200), 4.67(9)(210), 3.49(5)(221), 2.54(10)(410,322), 1.953(5)(432,520).

Colorless, luster vitreous, fracture conchoidal, H about 2, brittle. The mineral occurs as crystals, mostly 0.2–0.5 but up to 2–3 mm and as deposits of irregular form up to 1 cm in diameter. It occurs on Alluaiv Mt., Lovozero massif, Kola Peninsula in pegmatitic veins and veinlets in cancrinite syenites and on Karnasurt Mt., Lovozero massif, in veinlets cutting nepheline syenites. Associated minerals include cancrinite, aegirine, vuonnemite, epistolite, mountainite, villiaumite, kogarkoite, and thermonatrite.

The name is for the composition. Type material is at the Fersman Mineralogical Museum, Acad. Sci. USSR, Moscow, and at the Geological Museum, Kola Branch, Acad. Sci. USSR, Apatite. **M.F.**

Nullaginite*

E. H. Nickel and L. G. Berry (1981) The new mineral nullaginite and additional data on the related minerals rosasite and glaukosphaerite. Can. Mineral., 19, 315–324.

Nullaginite occurs as ovoid to irregular nodules up to 2 mm in diameter and as cross-fiber veinlets. It is bright green with a luster varying from dull (nodules) to silky (veinlets). $VHN_{20} = 34.4$, D meas. 3.528 to 3.606, av. 3.56. Optically, the mineral is biaxial, pale green and weakly pleochroic with slightly greater absorption normal to c than parallel to it, $\alpha = 1.67$, $\beta \sim \gamma = 1.78$, extinction $X \wedge c = 6°$, $b \sim Y$ or Z.

The mineral is monoclinic, space group $P2_1/m$ or $P2_1$ cell parameters refined from the powder data are a 9.236(3), b 12.001(6), c 3.091(2)Å, β 90.48(7)°, $Z = 4$. The strongest lines in the Guinier powder pattern (in Å for $CuK\alpha$) are: 7.302(30b)(110), 5.038(30)(120), 4.619(40)(200), 3.660(40)(130,220), 2.579(100)$(\bar{2}01)$, 2.557(90)(201), 1.545(30)(002) and 1.541(30)(600). These data are similar to those given by rosasite and glaukosphaerite.

Electron microprobe analysis gave: Ni 49.4, Mg 0.56, Cr 0.23, Fe 0.15, Cu 0.07, Si 1.88, OH(calc.)14.44, CO_3(calc.) 22.70, total 89.43 wt.%. The Si and some of the Ni was attributed to admixed pecoraite. Infrared absorption analyses indicated the presence of OH, CO_3 and H_2O. On the basis of the chemical data and the crystallographic similarity to rosasite and glaukosphaerite, nullaginite is considered to be, ideally, $Ni_2(OH)_2CO_3$ with some admixed water (13.34 wt.%). D (including admixed H_2O) 3.660.

Nullaginite occurs with millerite, polydymite, pecoraite, ga-

0003-004X/82/0708-0857$00.50

spéite, otwayite, parkerite, shandite and breithauptite in serpentinized peridotite in the Nullagine district of Western Australia.

The name is for the district.

Discussion

Even if the analysis is expressed in oxide form, the actual total determined is only 68.43 wt.%. **J.A.M.**

Nyböite

Luciano Ungaretti, D. C. Smith, and Giuseppe Rossi (1981) Crystal-chemistry by X-ray structure refinement and electron microprobe analysis of a series of sodic-calcic to alkali-amphiboles from the Nybö eclogite pod, Norway. Bull. Mineral, 104, 400–412 (in English).

The name nyböite is proposed for the amphibole of ideal composition $NaNa_2Mg_3Al_2(Si_7Al)O_{22}(OH)_2$. Analyses of the crystal nearest to this composition by electron microprobe gave SiO_2 53.84, 52.63; TiO_2 0.16, 0.15; Al_2O_3 12.92, 13.87; MgO 14.21, 13.12; FeO 5.03, 5.75; MnO 0.02, 0.08; NiO 0.11, 0.11; CaO 2.33, 2.75; Na_2O 9.26, 8.55; K_2O 0.14, 0.11; Cl 0.01, 0.02, sum 98.03, 97.14%. This corresponds to $(Na_{0.72}K_{0.02})$ $(Na_{1.67}Ca_{0.33})$ $(Mg_{1.82}Fe^{+2}_{0.18})$ $(Mg_{0.32}Fe^{+3}_{0.24}Ti_{0.02}Al_{1.43})$ $(Mg_{0.8}Fe^{+2}_{0.2})$ $(Si_{7.24}Al_{0.76})O_{22}(OH)_2$.

The unit cell has a = 9.665(1), b = 17.752(2), c = 5.303(1)Å, β = 104.11(1)°.

Discussion

It is to be regretted that publication of the new name was not delayed until the IMA Commission could consider the name. **M.F.**

Ogdensburgite*

P. J. Dunn (1981) Ogdensburgite, a new calcium-zinc-ferric iron arsenate from Sterling Hill, New Jersey. Mineralog. Record, 12, 369–370.

Microprobe analyses gave As_2O_3 39.2, 37.3; Fe_2O_3 1.0, 1.0; Al_2O_3 1.0, 1.0; CaO 10.5, 11.1; ZnO 3.1, 3.1; MnO 2.1, 2.2; MgO 0.5, 0.5, SiO_2 0.5, 0.5, H_2O (12.4) (by difference), sum 100%. The average of these gives $(Ca_{2.81}Mn_{0.45}Zn_{0.56}Mg_{0.18})(Fe^{+3}_{5.73}Al_{0.29})$ $(As_{4.86}Si_{0.12})O_{19.92}(OH)_{11.00} \cdot 4.64H_2O$, or $Ca_4Fe^{+3}_6(AsO_4)_5(OH)_{11} \cdot 5H_2O$. The mineral gave a strong microchemical test for Fe^{+3} and a very weak one for Fe^{+2}.

X-ray powder data are given. The strongest lines (41 given) are 14.8(100), 7.47(20), 5.70(20), 5.32(20), 4.52(30), 3.284(20), 2.793(25), 2.734(25), 2.656(30).

The mineral occurs as thin (0.1) mm incrustations of dark brownish-red platelets. The true color is bright reddish-orange, streak light orange, luster resinous on cleavage surfaces. H ~ 2, D 2.92. One perfect cleavage. Optically biaxial, positive, *ns* (all ±0.005), $\alpha = 1.765$, $\beta = 1.775$, $\gamma = 1.800$. Pleochroism moderate $X < Y = Z$. Not fluorescent in UV radiation.

The mineral occurs with parasymplesite, köttigite, and other iron arsenates in the Sterling Hill mine, Ogdensburg, N.J. Type material is at the Smithsonian Institution, cotype material in the Spex-Gerstmann collection, Franklin, N.J. The name is for the locality. **M.F.**

Pääkkonenite

Yu. S. Borodaev, N. N. Mozgova, N. A. Ozerova, N. S. Bortnikov, P. Oivanen, and V. Iletuinen (1981), Pääkkonenite, Sb_2AsS_2, a new mineral from the Seinäjoki ore region in Finland. Zapiski Vses. Mineral. Obsh., 110, 480–487 (in Russian).

Five microprobe analyses gave (range and average) Sb 65.3–69.5, 66.9; As 17.0–18.9, 18.6; S 15.1–16.2, 15.5, sum 99.1–102.7, 101.0, the average corresponding to $Sb_{2.14}As_{0.97}S_{1.89}$. The phase had previously been reported in the system Cu–Sb–As–S (Econ. Geol. 72, 1977).

X-ray data are indexed on a monoclinic cell with a = 5.372±0.007, b = 3.975±0.007, c = 11.41±.01Å, β = 89.71±0.15°, Z = 2, D calc. 5.21. The strongest X-ray lines (17 given) are 3.90(4)$(10\bar{2})$, 3.13(4)(103), 2.87(10)(004), 2.68(3)$(\bar{2}00)$.

Color dark gray, streak gray with a slight brownish tint, luster metallic. Readily scratched by a Cu needle, brittle, one cleavage. Fine polysynthetic twinning present. H 66–87, av. 77 kg/sq.mm. In reflected light pale gray, strongly anisotropic, birefringence weak. Reflectances: 460 nm, 39.8–51.7; 540, 37.2–47.8; 580, 36.7–46.3; 640, 36.4–45.3. Internal reflections bright red.

The mineral occurs in irregular grains up to 0.4 mm in size in the Kalliosalo deposit, associated with arsenopyrite and loellingite. The name is for the late Viekko Pääkkonen, who studied ore deposits of the region. Type material is at the Fersman Mineralogical Museum, Acad. Sci. USSR, Moscow. **M.F.**

Palarstanide*

V. D. Begizov, E. M. Zav'yalov, and E. G. Pavlov (1981) Palarstanide, $Pd_8(Sn,As)_3$, a new mineral. Zapiski Vses. Mineral. Obsh., 110, 487–492 (in Russian).

Analyses by electron probe gave Pd 64.5, 66.5, 65.0, 64.4; Pt 5.3, 4.7, 4.9, 4.0; Au 1.9, 1.9, –, –; Cu-, 0.5, –, –; Sn 14.9, 14.0, 12.6, 11.3; As 7.2, 6.9, 7.5, 7.3; Pb 2.9, 2.2, 5.5, 7.9; Sb 1.9, 4.2, 1.0.0.8; Bi 0.7, –, 1.6, 1.5; sums 99.3, 100.9, 98.1, 97.2. A general formula approximates $(Pd,Pt,Au,Cu)_8(Sn,As,Pb,Sb,Bi)_3$ or more simply $Pd_8(Sn,As)_3$.

X-ray powder study gives a pattern indexed as hexagonal a = 6.784(5), c = 14.80(1)Å. The strongest X-ray lines (31 and 21 given) are 2.50(4)(114), 2.22(10)(115,210), and 1.986(4)(107).

Palarstanide only occurs as intergrowths in massive cubanite-talnakhite and cubanite-chalcopyrite ores of the Talnakh deposit, U.S.S.R. It is most often intergrown with minerals such as rustenburgite-atokite, Pt-Fe alloy, polarite, sperrylite, majakite, "mertieite", and Au–Ag–Cu alloys with an intergrowth size range from 0.05 to 1.5 mm. The palarstanide grains usually exhibit elongated forms with rectangular, rarely sinuous outlines. Under the binocular, the mineral is steel-gray with a metallic luster and it is nonmagnetic. Palarstanide has medium hardness, with VHN_{50} = 470(30), and it is brittle. Under reflected light palarstanide is grayish-white with a slight rose tint. Bireflection in air is barely perceptible but is distinct in oil immersion. The mineral is slightly anisotropic, dark gray to brownish-gray, and it is optically uniaxial positive. Reflectance measurements (R_1%, R_2%, nm) gave 45.6, 48.8(430); 48.1, 51.1 (460); 50.0, 52.4(490); 52.1, 53.5(520); 53.3, 54.7(550); 55.1, 56.4 (580); 56.7, 57.2(610); 58.5, 59.3(640); 58.7, 60.0(670); and 60.0, 61.0(700). Palarstanide is negative to conc. and dil. HCl and

0003–004X/82/0708–0858$00.50

H_2SO_4 but conc. HNO_3 etches in 90 sec. and aqua regia in 30 sec.

The name is for the principal elements. Samples are preserved at the Fersman Mineralogical Museum, Academy of Sciences USSR, and in the Mineralogical Museum of the Moscow Geological-Exploration Institute.

Discussion

The characterization of this mineral is ambiguous. One analysis has As > Sn but no data are provided whether that grain has the same structure as those for which Sn > As. In solid solutions of this kind it is essential to clearly demarcate the compositional range and ideal end-member, and, if not possible from natural samples, a certain amount of synthesis is required. The X-ray powder pattern has very few strong lines. **L.J.C.**

Panasqueiraite*

A. M. Isaacs and D. R. Peacor (1981) Panasqueiraite, a new mineral: the OH-equivalent of isokite. Can. Mineral., 19, 389–392.

Panasqueiraite is a fine grained pink mineral which occurs in aggregates several centimeters in diameter. Individual anhedral grains are about 1 mm in size. It has a poor {010} cleavage, vitreous luster, white streak, H 5. It is non-fluorescent under ultraviolet light, but emits a blue cathodoluminescence in an electron beam at 12 kV. The mineral is biaxial (+), 2V = 51(2)° meas. $\alpha = 1.590(2)$, $\beta = 1.596(2)$, $\gamma = 1.616(2)$, nonpleochroic; orientation Z = b, $X \wedge c = +22°$. D meas. 3.27(1); calc. 3.22. (Using the cell parameters and empirical formula, D calc. is 3.213, J.A.M.).

Single-crystal X-ray study showed that panasqueiraite is monoclinic, *Cc* or *C2/c*, $a = 6.535(3)$, $b = 8.753(4)$, $c = 6.919(4)$ Å, $\beta = 112.33(4)°$, Z = 4 (V = 366.09Å^3, J.A.M.). The strongest lines in the diffractometer pattern (in Å for Cu$K\alpha$ radiation) are: 3.20(67)(002), 3.02(86)(200), 2.783(31)$(20\bar{2})$, 2.626(100)(130), 2.584(45)$(13\bar{1},022)$, 1.722(33)$(24\bar{2},222)$ and 1.658(3)(330) (a total of 35 indexed spacings down to 1.346 are given). The powder data are essentially identical to those given by isokite and on this basis and the similar chemical compositions, the minerals are considered isostructural.

An electron microprobe analysis gave: CaO 31.0, MnO 0.0, FeO 0.4, MgO 22.9, P_2O_5 39.6, F 3.1, OH (calculated assuming P:(OH + F) = 1:1) 6.7, total 103.7, less O = F + OH 4.4, sum 99.3 wt.%. No Cl or As were detected. The empirical formula derived from these data by the abstractor is $(Ca_{0.99}Fe_{0.01})_{\Sigma 1.00}Mg_{1.01}P_{1.01}O_{4.01}(OH)_{0.70}F_{0.29})$. Ideally, the formula is $CaMgPO_4(OH,F)$ with OH > F. It is the hydroxyl analogue of isokite, $CaMgPO_4F$.

Panasqueiraite occurs with thadeuite fluorapatite, wolfeite, topaz, muscovite, sphalerite, quartz, chalcopyrite, pyrrhotite, siderite, arsenopyrite, chlorite, vivianite and althausite in vein selvages at Panasqueira, Portugal.

The name is for the locality; type material is preserved at the Department of Geological Sciences, University of Michigan and at the Smithsonian Institution.

Discussion

While there is no doubt in the abstractor's mind that OH is present, it is unfortunate that H_2O was not determined. **J.A.M.**

Pehrmanite*

E. A. J. Burke and W. J. Lustenhouwer (1981) Pehrmanite, a new beryllium mineral from Rosendal pegmatite, Kemiö Island, southwestern Finland. Can. Mineral., 19, 311–314.

Pehrmanite occurs as subhedral hexagonal tabular crystals (up to 250 μm across and 40 μm thick) and as oriented overgrowths on nigerite. It is light green, has a vitreous luster, is very brittle with $VHN_{100} = 1700$ (Mohs H = 8–8½). D calc. 4.07. Reflectance values are: 8.34% at 470 nm, 8.11(546 nm), 8.01(589 nm), 7.86(650 nm); the mean refractive index calculated from these data is 1.79. The mineral is uniaxial (−) and weakly to distinctly dichroic with O pale greenish and E pale greyish-brown. The birefringence is distinctly higher than that of nigerite.

The X-ray powder diffraction pattern is very similar to that of taaffeite-9R and by analogy to that mineral, pehrmanite is rhombohedral, $R\bar{3}m$, $a = 5.70$, $c = 41.16$Å Z = 9 ($a_{rh} = 14.11$, $\alpha = 23.32°$). The strongest lines in the X-ray powder diffraction pattern are (in Å for Fe$K\alpha$ radiation): 2.856(8)$(11\bar{2}0)$, 2.666(4)$(1.0.\bar{1}.13)$, 2.422(10)$(11\bar{2}9)$, 2.063(4)$(2.0.\bar{2}.11)$ and 1.426(5)$(22\bar{4}0)$.

Electron microprobe analysis with confirmation of Be by ion probe (BeO given by difference) gave: Al_2O_3 64.40, FeO 23.30, MnO 0.30, MgO 1.875, ZnO 5.225, BeO 4.9, total 100.00. Based on 8 oxygen ions, these data give an empirical formula of $(Be_{0.62}Zn_{0.20}Mg_{0.15})_{\Sigma 0.97}(Fe^{2+}_{1.03}Mn_{0.01})_{\Sigma 1.04}Al_{3.99}O_{8.00}$ or, ideally, $BeFe^{2+}Al_4O_8$. Thus, pehrmanite is the ferrous iron analog of taaffeite and a new member of the högbomite group.

The mineral occurs with quartz, plagioclase (An_5–An_{27}), sillimanite, muscovite, spessartine-almandine, chlorite, biotite, epidote, allanite and calcite in the wall zone of the Rosendal pegmatite, Kemiö Island, southwestern Finland.

The name is for Gunnar Pehrman, Professor Emeritus at the University "Åbo Akademi", Turku, Finland. Type material is at the Free University, Amsterdam, The Netherlands. **J.A.M.**

Philipsbornite*

Kurt Walenta, Martina Zwiener, and P. J. Dunn (1982) Philipsbornite, a new mineral of the crandallite series from Dundas, Tasmania. Neues. Jahrb. Mineral., Monatsh., 1–5 (in German).

Electron microprobe analysis gave As_2O_5 28.6, CrO_3 6.3, SO_3 1.3, Al_2O_3 22.3, Fe_2O_3 0.6, PbO 32.0, ZnO 1.1, CuO 0.9, MnO 0.3, H_2O 9.4, sum 102.8%, corresponding to $(Pb_{0.90}Mn_{0.03})(Al_{2.76}Zn_{0.09}Cu_{0.07}Fe^{+3}_{0.05})(As_{1.57}Cr_{0.40}S_{0.10})H_{6.58}O_{14}$, or $PbAl_3H(AsO_4)_2(OH)_6$ or $PbAl_3(AsO_4)_2(OH)_5 \cdot H_2O$. The method of determination of H_2O is not stated.

The strongest X-ray lines (30 given) are 5.82(9)$(10\bar{1}1)$, 3.56(8)$(11\bar{2}0)$, 3.02(10)$(02\bar{2}1,11\bar{2}3)$, 2.26(5)$(10\bar{1}7)$, 1.931(5)$(30\bar{3}3)$. These are indexed on a trigonal cell, $a_{rh} = 7.01$Å., $\alpha = 60.94°$, Z = 1; in hexagonal setting $a = 7.11$, $c = 17.05$Å., Z = 3. Space group $R\bar{3}m$ or $R3m$. D calc. 4.33, meas. > 4.1.

The mineral occurs as massive to earthy crusts, composed of fine-grained aggregates, associated with crocoite at the Dundas district, Tasmania. No cleavage, fracture conchoidal. H probably about 4½. Color grayish-green. Optically isotropic, $n = 1.790 \pm 0.003$.

The name is for Hellmut von Philipsborn, emeritus professor of mineralogy, University of Bonn. **M.F.**

0003–004X/82/0708–0859$00.50

Poyarkovite*

V. I. Vasil'ev, Yu. G. Lavrent'ev, and N. A. Pal'chik, (1981) Poyarkovite Hg_3ClO, a new natural mercury oxyhalide. Zapiski Vses. Mineralog. Obsh., 110, 501–506 (in Russian).

Microprobe analysis by Y.G.L. gave (av. of 10) Hg 91.30, Cl 5.30, O 2.36, sum 98.36%, corresponding closely to Hg_3ClO or $HgO \cdot 2HgCl$. The mineral is instantly blackened by KOH, decomposed by HNO_3, does not react with HCl. When heated in a closed tube, turns brown, red, then yellow (formation of montroydite) and finally sublimes completely as Hg + calomel.

X-ray study showed it to be monoclinic, space group *C2/m*, *C*2, *Cm*, *C2/c*, or *Cc*, a = 18.82, b = 9.02, c = 16.79Å., β = 112°24′, Z = 24, D. calc. 9.88, D meas. 9.50 (for porous grains) to 9.80 (dense grains). The strongest X-ray lines (48 given) are 3.09(5)($313,51\bar{4},11\bar{5}$), 2.38(10)($13\bar{2}$), 2.74(8)(115), 2.60(6)($11\bar{6}$), 1.799(6-7)(911). Under the microscope, shows twinning. Polishes well.

Color deep raspberry- to cherry-red, turns darker and finally black on exposure. Streak red, luster vitreous to adamantine. Very brittle, fracture irregular to conchoidal, hardness 173–201, av. 188 kg/sq.mm (=2–2.5 Mohs). In transmitted light poorly translucent, deep red or brownish red, n above 2.0. Strongly anisotropic, colors varying with orientation, but always including azure to blue. Reflectances (max. and min.). 460 nm, 31.0, 24.5; 546, 28.2, 22.2; 590, 24.3, 20.5; 620, 22.1, 18.5%.

The mineral occurs in the Khaidarkan deposit, in irregular grains and aggregates, usually in close contact with eglestonite and calomel. Also present in the deposit are terlinguaite, montroydite, kuznetsovite, shakhovite, cordieriote, native Hg, and hypogene cinnabar and livingstonite.

The name, is for V. E. Poyarkov, "well-known investigator of mercury and antimony deposits". Type material is in the Central Siberian Geological Museum, Siberian Branch, Acad. Sci. USSR. **M.F.**

Shuiskite*

O. K. Ivanov, V. A. Arkhangel'skaya, L. O. Miroshnikova, and T. A. Shilova (1981) Shuiskite, the chromium analogue of pumpellyite, from the Bisersk deposit, Urals. Zapiski Vses. Mineral. Obsh., 110, 508–512 (in Russian).

Analysis by V.A.A. on material separated in heavy liquids and under the binoculars gave SiO_2 31.42, TiO_2 0.65, Cr_2O_3 19.34, Al_2O_3 12.75, Fe_2O_3 1.65, FeO none, MnO trace, MgO 5.07, CaO 21.00, Na_2O 0.19, K_2O 0.22, H_2O^+ 7.03, H_2O^- 0.50, sum 99.82%, corresponding to $(Ca_{3.82}K_{0.05}Na_{0.06})(Mg_{1.28}Fe_{0.21}Al_{0.51})(Cr_{2.60}Ti_{0.08}Al_{1.39})(Si_{5.34}Al_{0.61})O_{22}(OH)_{4.00} \cdot 1.97H_2O$, or $Ca_2(Mg,Al,Fe)(Cr,Al)_2[(Si,Al)O_4](Si_2O_7)(OH)_2 \cdot H_2O$, the Cr analogue of pumpellyite. The DTA curve shows exothermic breaks at 390° and 1000°, and an endothermic break at 830°.

The mineral is monoclinic, *A2/m*, a = 8.897, b = 5.843, c = 19.41Å, β = 98°, Z = 4, D 3.24 meas. The strongest X-ray lines (44 given) are 2.90(9)(115,300), 2.73(7)($20\bar{6}$), 2.64(5)(311), 2.52(5b)(024), 2.46(5)(117,2.0.10), 1.593(10)(0.0.12), 1.487(8).

Shuiskite is dark brown with a violet tint, luster vitreous, streak light greenish-brown. Optically biaxial, neg., *ns* α = 1.725–1.733, β = 1.762–1.772, γ = 1.769–1.775, birefringence 0.040–0.044, 2V = −40 − 50°, dispersion strong $r < v$, elongation positive, pleochroism strong, violet-blue on X, yellowish-green on Y, dark violet on Z. Elongation positive. Cleavage {001} perfect, H = 6.

Shuiskite occurs in prismatic and radiating-fibrous aggregates on the walls of fractures in chromitite, Gorozavod region, Perm province, Urals, commonly associated with uvarovite and rose-colored chlorite, rarely with green chromian titanite.

The name is for V. P. Shuisk, lithologist of the Ural Scientific Center, Sverdlosk. Type material is at the Mineralogical Museum, Acad. Sci. USSR, Moscow, and at the Ural Geol. Museum. **M.F.**

Spertiniite*

J. D. Grice and E. Gaspanini (1981) Spertiniite, $Cu(OH)_2$, a new mineral from the Jeffrey mine, Quebec. Can. Mineral., 19, 337–340.

Spertiniite occurs as discrete botryoidal aggregates (~100 μm in diameter) of minute lath-like crystals. Some aggregates consist of blade-like crystals in radial arrangement. The mineral is blue to blue-green and transparent, has a vitreous lustre. It is soft, shows no cleavage and is non-fluorescent in ultraviolet light. D meas. 3.93(2), calc. from ideal formula and cell parameters 3.94 (3.946 if the empirical formula is used. J.A.M.). Spertiniite is optically anisotropic with parallel extinction and positive elongation. Pleochroism is strong with X colorless and Z dark blue α = 1.720(2) and γ > 1.800.

The X-ray powder pattern is practically identical to that of synthetic $Cu(OH)_2$. On that basis, spertiniite is orthorhombic, space group *Cmcm*, a = 2.951(1), b = 10.592(3), c = 5.257(3)Å, V = 164.3(2)Å^3, Z = 4. The strongest lines in the Gandolfi powder pattern are (in Å for Cu$K\alpha$): 5.29(80)(020), 3.73(90)(021), 2.63(100)(002), 2.50(60)(111), 2.361(50)(041,022), 2.266(70)(130), 1.718(70)(150,132).

Electron microprobe analyses gave: Cu 66.9, Cl 0.1, OH not determined. The theoretical Cu content of $Cu(OH)_2$ is 65.1 wt.%. The ideal formula of spertiniite is $Cu(OH)_2$. (Assuming enough OH to balance charges, the empirical formula is $Cu_{1.000}(OH)_{1.997}Cl_{0.003}$, J.A.M.).

Spertiniite occurs with atacamite, chalcocite and copper in a rodingite dike composed of diopside, grossular and vesuvianite. The dike cuts the serpentinized dunite in the Jeffrey mine open pit, Asbestos, Shipton Township, Richmond Co., Quebec.

The name is for Mr. F. Spertini, Chief Geologist at the Jeffrey mine. Type material is preserved at the National Museum of Natural Sciences, Ottawa. **J.A.M.**

0003–004X/82/0708–0860$00.50