NEW MINERAL NAMES*

LOUIS J. CABRI, MICHAEL FLEISCHER AND ADOLF PABST

Aldermanite*

I. R. Harrowfield, E. R. Segnit and J. A. Watts (1981) Aldermanite, a new magnesium aluminum phosphate. Mineral. Mag. 44, 59–62.

Aldermanite occurs as minute, very thin, talc-like crystallites with fluellite and other secondary phosphates in the Moculta rock phosphate deposit near the base of Lower Cambrian limestone close to Angaston, *ca.* 60 km NE of Adelaide. Microprobe analysis, supplemented by gravimetric water determination gave MgO 8.4, CaO 1.2, Al_2O_3 28.4, P_2O_5 25.9, H_2O 36.1%, (total 100), leading to the formula $Mg_5Al_{12}(PO_4)_8(OH)_{22} \cdot nH_2O$, where $n \simeq 32$. The powder diffraction pattern, taken with a Guinier camera, can be indexed on an orthorhombic cell with $a = 15.000(7)$, $b = 8.330(6)$, $c = 26.60(1)$Å, $Z = 2$, D calc. 2.15 from assumed cell content, 2.00 from Gladstone–Dale relation and average n of 1.500, using data of Mandarino (1976). Principal lines of the powder pattern are 13.40(100)(002), 7.98(80)(011), 5.55(60)(210), 2.841(50)(317,503). Aldermanite is colorless, has low birefringence and average n 1.500(5); H is probably no more than 2; crystals are generally no more than 0.1 mm across and only *ca.* 0.1–0.2 μm thick. The mineral is soluble in mineral acids.

The name is for the late Arthur Richard Alderman, Professor of Geology and Mineralogy at the University of Adelaide from 1953 to 1966. **A.P.**

Alumopharmacosiderite*

K. Schmetzer, W. Horn, and H. Bank (1981) Alumopharmacosiderite, $KAl_4(OH)_4(AsO_4)_3 \cdot 6\ 1/2H_2O$, a new mineral. Neues Jahrb. Mineral., Monatsh, 97–102 (in German).

Analysis on 7 mg gave H_2O 20.3%. Water was lost during probe analysis; the results of 4 probe analyses were therefore normalized to 79.7%. The average of 4 analyses gave As_2O_5 44.3, Fe_2O_3 3.9, Al_2O_3 24.0, K_2O 7.5%; the mineral is therefore the Al analogue of pharmacosiderite. It is dissolved by hot acids.

X-ray study shows the mineral to be cubic, space group $P\bar{4}3m$, $a = 7.745$Å. The strongest lines (20 given) are 7.77(100)(100); 4.48(50)(111), 3.87(40)(200), 3.16(50)(211), 2.739(60)(220), 2.335(40)(311). When heated to 800°, the mineral is transformed to $AlAsO_4$, orthorhombic, $a = 7.16$, $b = 7.15$, $c = 7.11$Å.

The mineral is white. Optically isotropic, n 1.565. D calc. 2.676. The mineral occurs as a white incrustation on a sample from near Guanaco, NE Chile, associated with blue ceruleite, green schlossmacherite and olivenite, and white mansfieldite. The name is for the composition and analogy to pharmacosiderite. **M.F.**

Choloalite*

S. A. Williams (1981) Choloalite, $CuPb(TeO_3)_2 \cdot H_2O$, a new mineral. Mineral. Mag. 44, 55–57.

Choloalite was probably first found in Arabia, then at the Mina La Oriental, Moctezuma, Sonora (the type locality), and finally at Tombstone, Arizona. Only the Tombstone material provides paragenetic information. In this material choloalite occurs with cerussite, emmonsite and rodalquilarite in severely brecciated shale that has been replaced by opal and granular jarosite. Wet chemical analysis of choloalite from the type locality gave CuO 11.0, PbO 33.0, TeO_2 50.7, H_2O 3.4, total 98.1%, corresponding closely to the formula in the title. Powder patterns of the mineral from the three localities can be indexed on the basis of a cubic cell with $a = 12.519$Å for the material from Mina La Oriental, $Z = 12$, D calc. 6.41, D obs. 6.4(1), and $a = 12.576$ for Tombstone, 12.586Å for Arabia, these larger dimensions being attributable to minor Sb. Choloalite is green with adamantine luster. Habit of the crystals (up to 1 mm at Tombstone) is invariably octahedral; $H = 3$, there is no cleavage. The refractive index is 2.04. Strongest lines in the powder pattern are 7.223(5)(111), 3.472(4)(320), 3.343(6)(321), 3.036(10)(410), 2.454(5)(510).

The name derives from the Nahua word choloa, meaning evasive, in allusion to the fact that the mineral escaped detection for many years. **A.P.**

Colquiriite*

K. Walenta, B. Lehmann, and M. Zwiener (1980) Colquiriit, ein neues Fluoridmineral aus der Zinnlagerstätte von Colquiri in Bolivien. Tschermaks Mineralog. Petrog. Mitt., 27, 275–281.

Colquiriite occurs at the Colquiri tin deposit in Bolivia in association with ralstonite, gearksutite, sphalerite, madocite and pyrite. In the single specimen examined ralstonite appears to replace colquiriite and gearksutite is present as veinlets so that colquiriite appears to be the oldest of the fluorides. Chemical analysis (method not reported) yielded Li 3.1, Na 0.34, Mg 0.55, Ca 22.8, Al 13.4, F 58.0, ig. loss 0.5, sum 98.69%. Another analysis yielded: Ca 21.0, Al 15.1%. The small amounts of Na and Mg may be attributed to contamination with ralstonite. The formula indicated is $LiCaAlF_6$ for which the theoretical values are Li 3.69, Ca 21.32, Al 14.35, F 60.64%.

Colquiriite is trigonal, space group $P\bar{3}1c$ or $P31c$, with cell dimensions $a = 5.02$, $c = 9.67$Å; $Z = 2$, D calc. 2.95 obs. 2.94. Principal lines of the powder pattern are 3.98(7)(10$\bar{1}$1), 3.23(10)(10$\bar{1}$2), 2.22(9)(11$\bar{2}$2), 1.736(8)(11$\bar{2}$4). Colquiriite forms anhedral translucent to transparent white grains up to 1 cm in size; it is uniaxial or weakly biaxial, negative with $\varepsilon = 1.385(2)$, $\omega = 1.388(2)$, and shows no fluorescence in ultraviolet light. Heating leads to the breakdown of the structure between 800° and 900°C.

The name is for the well known tin-mining locality, Colquiri, about 150 km SE of La Paz. **A.P.**

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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.

Kuznetsovite*

V. I. Vasil'eva and Yu. G. Lavrent'ev (1980) Kuznetsovite, $Hg_6As_2Cl_2O_9$, a new mercury mineral. Doklady Akad. Nauk S.S.S.R. 255, 963–968 (in Russian).

Electron microprobe analyses gave on material from Arzaks (7 grains) and Khaidarkan (3 grains), resp. Hg 77.62, 77.97; As 8.75, 8.87; Cl 4.50, 4.55; O 8.97, 9.33, or $Hg_{6.16}As_{1.86}Cl_{2.03}O_{8.95}$ and $Hg_{6.07}As_{1.84}Cl_{2.00}O_{9.09}$. The mineral is partly decomposed under the electron beam. Br is present (0.0X%). The mineral is blackened by KOH, decolorized and decomposed by HCl, does not react with 1:1 HNO_3.

X-ray study shows it to be cubic, space group $Pm3m$, $P432$, or $P\bar{4}3m$, $a = 8.40\pm0.02$Å, $Z = 2$, D calc. 8.786, meas. 8.64 to 8.82 (native Hg present in some samples). The strongest lines (48 given) (Arzaks) are 4.86(6)(111), 4.21(5)(200), 3.77(5)(210), 3.43(6)(211), 2.81(7)(300,221), 2.66(5)(310), 2.53(10)(311), 1.834(6)(421).

The mineral is pale brown to honey-color, the color deepening on exposure, powder orange-yellow, luster vitreous to adamantine. Fracture uneven to conchoidal, brittle, H. 2.5–3. Isotropic, n considerably higher than that of the "highest liquid of the standard set". Reflectances at 460 nm 17.6, 546 nm 16.9, 590 nm 16.2%. Internal reflections pale brown.

The mineral occurs at the Arzaks ore showing Tuva A.S.S.R., in the oxidation zone of nests of rich cinnabar ore, associated with calomel, eglestonite, corderoite, and native mercury. It also occurs in the Khaidarkan deposit, Kirgiz S.S.R., in oxidized cinnabar-livingstonite ore, associated with the same minerals as the Arzaks plus montroydite and the new mineral shahovite (see below).

The name is for Academician V. A. Kuznetsov, student of mercury deposits. Type material is in the geology museum, Inst. of Geology, Novosibirsk. **M.F.**

Roaldite*

V. F. Buchwald and H. P. Nielsen (1981) Roaldite, a new nitride in iron meteorites. Lunar and Planetary Science 12, 112–114.

Electron microprobe analyses of samples from the Jerslev and Youndegin meteorites gave, resp., Fe 89.8, 88.6; Ni 5.58, 6.35; Co n.d., 0.53; N 6.3, 7.6%, corresponding to $(Fe_{0.94}Ni_{0.055}Co_{0.005})_4N$ and $(Fe_{0.931}Ni_{0.064}Co_{0.005})_4N$.

Electron diffraction patterns have been indexed on a cubic cell, space group $Pm3m$, $a = 3.79 \pm 0.04$Å. Strongest lines are not given. The mineral is white in reflected light. Opaque. Hardness (Vickers) estimated to be between 600 and 900; significantly more ductile than schreibersite.

The mineral occurs as elongated platelets 1–2 microns thick in the kamacite of the meteorites, in which it occurs with cohenite, schreibersite, carlsbergite, and daubreelite. The mineral is named for Roald Norbach Nielsen, electron microprobe expert of the Dept. of Metallurgy, Lyngby, Denmark. **M.F.**

Sacrofanite*

F. Burragato, G. C. Parodi, and P. F. Zanazzi (1980) Sacrofanite, a new mineral of the cancrinite group. Neues Jahrb. Mineral, Abhandl. 140, 102–110.

Analysis by X-ray fluorescence (Na by at. absorption, C and H in a Perkin–Elmer microanalyzer, H_2O also by TGA.) gave SiO_2 33.06, Al_2O_3 24.94, Fe_2O_3 0.35, CaO 8.76, Na_2O 16.50, K_2O 5.56, H_2O 2.47, CO_2 1.00, SO_3 7.77, Cl 0.59, sum 100.00 − (O=Cl_2) 0.13

= 99.87%. This gives the formula $(Na_{6.25}Ca_{1.83}K_{1.39})(Si_{6.26}Al_{5.74})O_{24}(OH)_{2.69}(SO_4)_{1.14}(CO_3)_{0.27}Cl_{0.20} \cdot 0.27H_2O$. Infra-red analysis shows a strong absorption band at 995 cm^{-1} (Si–O–Si) and one at 3500 cm^{-1} (OH). The mineral belongs to the Cancrinite group.

X-ray study shows the mineral to be hexagonal, space group $P6_3mc$, $P\bar{6}2c$, or $P6_3/mmc$, $a = 12.865$, $c = 72.240$Å, $Z = 14$, D calc. 2.446, meas. 2.423. The strongest X-ray lines (43 given) are 11.12(12)(100), 3.74(25)(219), 3.73(100)(300), 3.685(26)(10.19), 3.483(43)(2.1.12), 2.648(30)(00.28), 2.149(18)(330). Cleavage {0001} very perfect, {0$\bar{1}$10} perfect.

The mineral occurs as colorless, transparent, flattened hexagonal prisms in a cavity of an ejected block, Sacrofano volcanic area, Latium, Italy, associated with sanidine, andradite, fassaite pyroxene, leucite, and haüyne. Optically uniaxial, negative, ns, $\omega = 1.505$, $\varepsilon = 1.486$ (both ±0.001). H 5.5–6.

The name is for the locality. Type material is at the Mineralogical Museum, University of Rome, Italy. **M.F.**

Sergeevite*

L. K. Yakhontova, I. I. Ilyusnina, T. I. Stolyarova, Yu. K. Egorov-Tismenko, and L. V. Kuleshevich (1980) Sergeevite, a new hydrous carbonate of magnesium and calcium, Zapiski Vses. Mineral. Obsh., 109, 217–223 (in Russian).

Analysis gave MgO 33.20, FeO 1.08, CuO 0.64, CaO 7.80, CO_2 43.17, $H_2O^{\pm}$ 12.88, SiO_2 0.73, Al_2O_3 0.21, sum 99.71%. After deducting 1.3% chrysocolla, this corresponds to $(Ca_{0.14}Mg_{0.84}Fe_{0.02})CO_3 \cdot 0.73H_2O$, or $CaMg_6(CO_3)_7 \cdot 5H_2O$ = (huntite, $Ca_2Mg_6(CO_3)_8$, − $CaCO_3$ + $5H_2O$). The mineral is decomposed by cold 10% HCl.

The DTA curve shows three endothermic breaks at 120°, 580°, and 800°C, corresponding to losses in weight of 13%, 37%, and 6%.

The strongest X-ray lines of sergeevite (14 given) are 7.14(30)(101), 3.58(30)(022), 2.87(30)(241,421), 2.821(100)(402,042), 1.965(27)(622), 1.755(20)(443). These are indexed on a trigonal cell, with $a = 19.01$, $c = 7.82$Å, $Z = 3$ $(Ca_2Mg_{11}(CO_3)_{13} \cdot 10H_2O)$, D calc. 2.64. The unit cell has 2a, c of huntite.

The infra-red spectrum shows the presence of carbonate ions in two structural positions, the presence of bicarbonate (intense bands at 1550–1510 and 1140–1110 cm^{-1} and a band at 3400), the presence of molecular water, and the presence of hydroxyl. Accordingly the formula is written as $Ca_2Mg_{11}(CO_3)_9(HCO_3)_4(OH)_4 \cdot 6H_2O$.

The mineral is white, luster dull, fracture of aggregates uneven to conchoidal. H about 3.5. Under the microscope very fine-grained, average n 1.581, birefringence not more than 0.010–0.012. Attempts to measure D by flotation in Clerici solution failed because of reaction with the liquid; 2.55–2.87 was obtained. By the method of hydrostatic suspension, results 2.22 to 2.35 were obtained.

The name is for Professor E. M. Sergeev, geologist, Moscow University. Type material is in the Fersman Mineralogical Museum, Acad. Sci. USSR, Moscow.

Discussion

As the authors state, the formula, with bicarbonate, carbonate, and hydroxyl groups coexisting, is most unusual. Further study is desirable. **M.F.**

Shabynite*

N. N. Pertsev, S. V. Malinko, V. A. Vakhrushev, B. P. Fitsev, E. V. Sokolova, and I. B. Nikitina (1980) Shabynite, a new hydrated borate-chloride of magnesium. Zapiski Vses. Mineral. Obsh., 109, 569–573.

Analyses by I.B.N. and by S. P. Purusova gave B_2O_3 8.08, 7.52; MgO 50.20, 50.40; MnO 0.34, 0.18; CaO 0.40, 0.73; Na_2O 0.29, 0.10; K_2O 0.03, 0.34; SiO_2 0.05, trace; TiO_2 0.01, none; Al_2O_3 none, trace; Fe_2O_3 (total Fe) 0.18, 0.32; H_2O^- 3.00, 1.18; H_2O^+ 27.18, 27.99; F 0.06, 0.16; Cl 13.06, 13.30; CO_2 none, 1.12; sum 102.78, 103.34; $-(O=Cl_2,F_2)$ 2.95, 3.07 = 99.93, 100.27%. The DTA curve showed two endothermal peaks at 470° (loss of OH) and 530° (loss of Cl); total loss of wt to 650° about 42%. The infrared spectrum showed bands of H_2O, OH, and BO_3. After subtracting a little dolomite the formula obtained is $Mg_5(BO_3)(Cl,OH)_2(OH)_5 \cdot 4H_2O$. Readily dissolved by acids.

Single crystal study was unsuccessful. The mineral is probably monoclinic. The strongest lines of fibrous, uncrushed material (22 given) are 9.27(10), 5.47(6), 4.21(5), 3.69(7b), 2.439(8), 2.377(6), 1.798(5).

The mineral is snow-white, fine, elastic fibrous. H 3, D. 2.32. Optically biaxial, negative, $\alpha = 1.543 \pm 0.002$, $\beta = 1.571 \pm 0.003$, $\gamma = 1.577 \pm 0.002$, $\gamma - \alpha = 0.034$. Extinction parallel, X parallel elongation. In preparing sections the mineral cannot be boiled or ground, as these destroy it.

The mineral was found in a drill core of the Korshunov skarn magnetite deposit, Angaro-Ilim iron-ore region Siberian platform as veinlets in brecciated dolomitic marble.

The name is for L. I. Shabynin, Russian geologist. Type material is at the Fersman Mineralogical Museum, Acad. Sci. USSR, Moscow. **M.F.**

Shahovite*

V. I. Vasil'ev, Yu. G. Lavrent'ev, and N. A. Pal'chik (1980) Shahovite, $Hg_8Sb_2O_{13}$, a new supergene mineral. Geol. i Geofiz. 128–132 (in Russian).

Electron microprobe analyses (average of many) from the Kelyan and Khaidarkan deposits gave Hg 77.25, 77.57; Sb 11.53, 11.93; O 9.88, 9.67, sum 98.66, 99.17%, corresponding to $Hg_{8.06}Sb_{1.99}O_{12.94}$ and $Hg_{8.18}Sb_{2.07}O_{12.76}$, yielding the title formula. Tests for Cl, Cu, As, and S were negative. The mineral is attacked by 1:1 HCl, turning gray; etched instantly by conc. HNO_3; not acted on by KOH. Heated in a closed tube, the mineral is decolorized and decomposed with the formation of globules of mercury.

X-ray study showed the mineral to be triclinic, $a = 5.47$, $b = 4.85$, $c = 16.5\text{Å}$, $\alpha = 101°$, $\beta = 75°$, $\gamma = 82°$, $V = 406.8\text{Å}^3$, $Z = 1$, D calc. 8.39, meas. 8.34 to 8.51 (variation partly due to inclusions of native Hg), av. 8.38. The strongest lines (45 given) are 3.88(10), 3.33(8), 2.69(6), 2.63(5), 2.552(5).

The mineral occurs with kuznetsovite (see above) in the Kelyan deposit, Buryat ASSR, and the Khaidarkan deposit, Kirgiz SSR, in the oxidation zone of cinnabar-stibnite ore (Kelyan) and cinnabar-livingstonite ore (Khaidarkan) associated with native mercury, calomel, eglestonite, montroydite, terlinguaite, and corderoite. Color bright lettuce-green to olive-green, darkening on exposure, powder yellowish. Luster strong to adamantine. Brittle, H 3–3.5 (microhardness, 20g. load, 285–362, av. 317 kg/sq.mm).

Strongly anisotropic, high birefringence, $ns > 2.03$. Slightly pleochroic from olive-green to colorless. In reflected light, grayish-white, max. and min. reflectances; 420 nm, 22.5, 17.6; 546 nm. 20.2, 15.8; 590 nm, 20.3, 15.6; 656 nm, 18.2, 13.4%. The mineral polishes well. Cleavages in two directions parallel to elongation.

The name is for F. N. Shahov "for his dedicated study of ore deposits". Type material is in the Central Siberian Museum. **M.F.**

Suessite*

Klaus Keil, J. L. Berkley, and L. H. Fuchs (1980) Suessite, Fe_3Si, a new mineral in the North Haig ureilite. Meteoritics 15, 312–313 (abs.).

Analysis of 67 grains by EMX gave (range and average) Fe 81.7–87.0, 83.9; Ni 0.4–6.4, 2.18; Co 0.16–0.40, 0.33; Cr < 0.02–0.25, 0.11; Si 12.8–16.4, 14.6; P < 0.01–0.25, 0.19. These yield the formula (average) $(Fe,Ni)_{2.94}Si$. X-ray study shows a structure similar to those of kamacite and the solid solution alloy Fe_3Si, $a = 2.84 \pm 0.002\text{Å}$, with lines 2.005(10), 1.41(1), 1.160(3). The mineral occurs as vein fillings in interstitial cracks in silicates and in intergranular carbonaceous material, as 1 μm blebs to grains up to 30 × 150 μm. In reflected light cream white, isotropic, ferromagnetic, no cleavage. Reflectances (measured by G. A. Desborough) on 2 grains: 470 nm, 48.5, 49.7; 546 nm, 51.6, 53.4; 589 nm, 53.5, 54.5; 650 nm, 50, 52. The name is for Professor Hans E. Suess, geochemist, Univ. Calif. San Diego. **M.F.**

Taneyamalite*

S. Matsubara (1981) Taneyamalite, (Na,Ca) $(Mn^{2+}, Mg,Fe^{3+},Al)_{12}Si_{12}(O,OH)_{44}$, a new mineral from the Iwaizawa mine, Saitama Prefecture, Japan. Mineral. Mag. 44, 51–53.

Microprobe analysis gave SiO_2 43.42(12), Al_2O_3 (0.41), TiO_2 (0.16), Fe_2O_3 6.39 (1.33) total Fe, MnO 30.97(7.20) total Mn, CaO 0.02(0.01), Na_2O 1.80(0.96), K_2O 0.00(0), H_2O 7.61(calculated)(14.02) total 98.46%; figures in brackets are "molecular numbers on the basis of Si = 12 and O + OH = 44", leading to the formula given in the title. Taneyamalite is the Mn^{2+}-dominant analogue of howieite and has been found in a metamorphosed bedded manganese ore deposit. It occurs in association with minor bannisterite as small seams or as a fissure mineral cutting a hematite–quartz mass. It is triclinic with cell dimensions $a = 10.198(1)$, $b = 9.820(1)$, $c = 9.485(1)\text{Å}$, $\alpha = 90° 30(1)'$, $\beta = 70°32(1)'$, $\gamma = 108° 34(1)'$, $Z = 1$, D calc. 3.30. Cell dimensions are based on a powder diffraction pattern indexed by analogy to howieite. Principal lines in the pattern are 9.29(80)(010), 4.62(50)(020), 3.65(40)(120), 3.273(100)($\bar{1}30$), 3.081(50)(1$\bar{3}$1), 2.790(35)($\bar{2}$31), 2.216(35)(014,4$\bar{2}$3). Taneyamalite is vitreous, greenish grey-yellow with a light yellow streak, H = ca. 5, {010} cleavage is perfect; refractive indices are $\alpha = 1.646(2)$, $\beta = 1.664(2)$, $\gamma = 1.676(2)$, $2V - 70°$, extinction nearly parallel with positive elongation; pleochroism is distinct with $\alpha = \beta$ nearly colorless and γ pale yellow. According to the definition of taneyamalite, some howieite from Yugoslavia and from several localities in California is to be included in the compositional range of taneyamalite.

The name is taken from the Taneyama mine, Kumamoto Prefecture, where the mineral had been recognized earlier (Aoki & Isono, 1968 and Aoki & Akasako, 1978). **A.P.**

Viitaniemiite

S. I. Lahti (1981) The granite pegmatites of the Eräjärvi area in Orivesi, southern Finland. Geol. Survey Finland Bull. 314, 1-82 (esp. p. 51–56).

Analysis by Pentti Ojanperä gave P_2O_5 28.3, Al_2O_3 22.4, FeO 0.70, MnO 10.5, MgO 0.38, CaO 14.7, Na_2O 11.6, K_2O 0.27, Li_2O none, F 12.3 H_2O^+ 4.9, H_2O^- 0.03, sum 105.98 − (0=F_2) 5.14 = 100.84%. This corresponds to $(Na_{0.91}K_{0.01})(Ca_{0.64}Mn_{0.36}^{+2}Fe_{0.02}^{+2}Mg_{0.02})Al_{1.07}P_{0.97}O_{4.11}F_{1.57}(OH)_{1.33}$, or $Na(Ca,Mn)Al(PO_4)(F,OH)_3$ with Ca > Mn and F > OH. The mineral is readily dissolved by HNO_3 or H_2SO_4.

Precession photographs show the mineral to be monoclinic, space group $P2_1$ or $P2_1/m$, $a = 6.832$, $b = 7.143$, $c = 5.447$Å (all ±0.003), $\beta = 109°22'±5'$, $Z = 2$, D calc. 3.240, meas. 3.245. The strongest X-ray lines (22 given) are 4.885(33)(10$\bar{1}$); 3.223(46)(200); 2.937(50)(210); 2.883(100)(12$\bar{1}$); 2.569(35)(002); 2.160(40)(031).

The mineral is gray to white, luster vitreous. H 5. Cleavage {10$\bar{1}$} well-developed. In section colorless, sometimes fan-shaped tabular crystals 0.02 to 0.2 mm wide. Not fluorescent in short- or long-wave UV. Optically biaxial neg., ns $\alpha = 1.557$, $\beta = 1.565$, $\gamma = 1.571$ (all ±0.001), $2V = 81°$ meas. 81.4° calc., Y = b, optic axial plane = (010).

The mineral occurs in the Viitaniemi granite pegmatite as an inclusion in eosphorite. Associated minerals include apatite, crandallite, and montebrasite. It also occurs as a rim around a grain of morinite.

The name is for the locality. Type material is in the Mineralogical Museum, Geol. Survey of Finland, Helsinki.

The powder data for viitaniemiite are close to those reported for an unnamed mineral from Greifenstein Saxony (JCPDS card 13-587); data on this card had earlier been referred to as lacroixite but was shown by Mrose (Am. Mineral., 57, 1914, 1972) to be distinct from Lacroixite, and probably a new mineral. **M.F.**

Unnamed HgI₂

V. I. Manichev, O. M. Ivantishina, and L. M. Egorova (1979) Occurrence of mercury iodide in the Ukrainian Carpathians. Dopovidi Akad. Nauk Ukr.R.S.R., Ser. B, 9, 701–703 (in Ukrainian).

Orange-black grains of HgI_2, associated with bitumens, were found in Flysch rocks of the eastern Ukrainian Carpathians. Crystals are tabular, 0.02–0.1 mm. Hardness low. Cleavage (001). Uniaxial, pleochroic orange yellow on α, dark blackish on γ. The X-ray pattern agrees with the Natl. Bur. Standards data (1969). The strongest lines (20 given) are 4.150(10), 3.570(9), 2.770(6), 2.190(10), 1.264(5). **M.F.**

Unnamed palladium-copper sulfotelluride

V. D. Begizov and E. V. Batashev (1978) Platinum minerals of the Lukkulaisvaara massif. Dokl. Akad. Nauk SSSR, 243, 1265–1268 (in Russian).

Microprobe analyses (using synthetic FeS, PdTe, Bi_2Te, Pd(Bi, Te) PdBi, PdCuSn and metals Pt, Cu, Fe, Ag) on two grains of the unnamed mineral gave Pd 41.3, 41.4; Te 21.6, 21.3; Pt 2.6, 3.1; S 4.7, 4.7; Sn 9.6, 9.3; Cu 17.4, 16.8; Fe 2.7, 2.6; sums 99.9, 99.2. The authors propose the following formulae, based on seven atoms: $(Pd_{2.43}Cu_{1.71}Sn_{0.51}Fe_{0.30}Pt_{0.08})_{\Sigma 5.03}(Te_{1.06}S_{0.92})_{\Sigma 1.98}$ and $(Pd_{2.46}Cu_{1.67}Sn_{0.50}Fe_{0.29}Pt_{0.10})_{\Sigma 5.02}(Te_{1.06}S_{0.93})_{\Sigma 1.99}$.

An unindexed power X-ray pattern with chalcopyrite (*) impurity gave: 3.04(10)*, 2.47(5), 2.26(5), 2.05(1), 2.02(2), 1.872(4*), 1.861(5*), 1.594(3*), 1.576(1*), 1.454(1), 1.432(1), 1.361(1), 1.242(1), 1.208(3*), 1.173(1), 1.130(1), 1.077(1*), 1.070(1*).

The mineral was found, as elongated grains, as intergrowths with moncheite and telargpalite, but more often at chalcopyrite-silicate boundaries. The grains do not exceed 80 μm and average 35 μm in size. They occur with Cu–Ni mineralization in veins of coarse-grained pegmatitic gabbro-norite associated with the peridotite-gabbro-norite Lukkulaisvaara massif. The sulfide mineralization consists of interstitial disseminations of bornite-chalcopyrite and millerite-chalcopyrite with minor or rare pentlandite, violarite, sphalerite, pyrite, magnetite, telargpalite, kotulskite, moncheite, and sperrylite. The mineral is rose-yellow with distinct pleochroism from pale rose to yellowish-cream and is strongly anisotropic (from dark bluish-white to white), shows platy structure and twinning. The hardness is estimated to be close to chalcopyrite. Reflectance data (R_1, R_2 in %) are: 34.8, 34.8 (400 nm); 37.0, 38.4 (420 nm); 37.1, 39.5 (440 nm); 37.7, 42.0 (460 nm); 37.8, 43.6 (480 nm); 38.5, 45.1 (500 nm); 39.4, 46.3 (520 nm); 40.3 47.9 (540 nm); 41.4, 49.2 (560 nm); 42.1, 50.7 (580 nm); 42.5, 52.0 (600 nm); 42.2, 52.4 (620 nm); 43.1, 53.4 (640 nm); 43.3, 52.6 (660 nm); 43.4, 53.6 (680 nm); 43.9, 55.3 (700 nm). **L.J.C.**

NEW DATA

Bergenite

Paul Piret and Michel Deliens (1981) New data on holotype bergenite Bull. Mineral. 104, 16–18 (in French).

Microprobe analyses by J. Wautier of holotype bergenite gave (av. of 5) (H_2O by difference), P_2O_5 10.96, UO_3 62.54, BaO 13.96, CaO 2.44, H_2O 10.06, sum 99.96%, corresponding to the formula $(Ba_{1.33}Ca_{0.67})(UO_2)_3(PO_4)_2(OH)_4 \cdot 5.5H_2O$.

X-ray study shows the mineral to be monoclinic, space group $P2_1/c$, $a = 22.32$, $b = 17.19$, $c = 20.63$A, $\beta = 93.0°$, $Z = 18$, D calc. 4.09. The strongest lines (37 given) are 7.73(100)(300); 3.837(80)(33$\bar{3}$,600); 3.054(60)(306,053), 2.874(50)(35$\bar{3}$,640); 2.826(50)(353).

The mineral fluoresces pale green in short-wave U.V.; non-fluorescent in long-wave U.V. **M.F.**

Khademite

Bernard Bachet, Fabien Cesbron, and Raymond Chevalier (1981) Crystal structure of khademite, $Al(SO_4)F \cdot 5H_2O$ Bull. Mineral. 104, 19–22 (in French).

Khademite was originally described from Iran, Am. Mineral. 60, 486 (1975), as a new mineral, $Al(SO_4)(OH) \cdot 5H_2O$, but was later, 64, 1331 (1979), thought to be identical with the mineral described as Lapparentite by Rost, later named Rostite.

The present paper describes the structure of the Iranian material, which is orthorhombic, Pcab, $a = 11.181$, $b = 13.048$, $c = 10.885$Å. The structural data are considered to require the presence of F and to make it impossible for an OH group to occupy that position.

Discussion

The original analysis gave H_2O 41.7% (by T.G.A. on 3.5 mg), and showed a large endothermic effect at 178° (loss of H_2O). No

mention is made in either paper of any test for the presence of F (amount of material available was very small). **M.F.**

Metavivianite

Jean-Louis Dormann and Jean-Francois Poullen (1980) Study of oxidized natural vivianites by Mössbauer spectroscopy. Bull Mineral 103, 633-639 (in French).

A preliminary report was abstracted in 65, 1070 (1980). Examination of 8 samples of vivianite of various stages of oxidation showed them to consist of two recognizable phases, monoclinic vivianite and triclinic metavivianite. Mössbauer determinations indicated that the monoclinic phase was stable up to the oxidation of 40% of the Fe^{+2} present. According to these results, vivianite and metavivianite are not dimorphs, vivianite being $Fe_3^{+2}(PO_4)_2 \cdot 8H_2O$ and metavivianite perhaps $Fe_x^{+3}Fe_{3-x}^{+2}(PO_4)_2$

$(OH)_x \cdot (8 - x)H_2O$. Kerchenite and oxykerchenite from the USSR (Dana System 7th Ed. v. 2, p. 744) are metavivianite. **M.F.**

Telargpalite

V. D. Begizov and E. V. Batashev (1978) Platinum minerals of the Lukkulaisvaara massif. Dokl. Akad, Nauk SSSR, 243, 1265–1268 (in Russian).

Several formulae have been proposed for telargpalite; $(Pd, Ag)_{4+x}Te$ being used while awaiting structural study (Am. Mineral. 60, 489). Analyses from a second locality (Lukkulaisvaara massif) suggest yet another formula. Probe analyses using synthetic FeS, PdTe, Bi_2Te, Pd(Bi, Te) PdBi, PdCuSn and metals Pt, Cu, Fe, Ag on three grains of the unnamed mineral gave Pd 42.3, 41.4, 40.0; Te 26.9, 27.0, 23.5; Bi 2.3, 2.1, 7.4; Ag 28.4, 29.8, 29.4; sums 99.9, 100.3, 100.3. The authors suggest the following formulae: $(Pd_{1.79}Ag_{1.19})_{\Sigma2.98}(Te_{0.95}Bi_{0.05})_{\Sigma1.00}$, $(Pd_{1.76}Ag_{1.25})_{\Sigma3.01}(Te_{0.95}Bi_{0.05})_{\Sigma1.00}$, and $(Pd_{1.71}Ag_{1.25})_{\Sigma2.96}(Te_{0.84}Bi_{0.16})_{\Sigma1.00}$. **L.J.C.**