

NEW MINERAL NAMES*

MICHAEL FLEISCHER, ADOLF PABST AND LOUIS J. CABRI

Baratovite*

V. D. DUSMATOV, E. I. SEMENOV, A. P. KHOMAYAKOV, A. V. BYKOVA AND N. KH. DZHARFAROV (1975) Baratovite, a new mineral. *Zapiski Vses. Mineralog. Obshch.*, **104**, 580-582 (in Russian)

Analysis by A.V.B. gave SiO₂ 50.46, TiO₂ 9.55 ZrO₂ 2.28, Nb₂O₅ 0.72, Fe₂O₃ 0.50, MnO 0.12, CaO 30.36, Na₂O 0.70, K₂O 2.96, Li₂O 2.05, F 1.05, sum 100.75 - (O = F₂) 0.44 = 100.31 percent. Calculated to unit cell content of Si = 48, this gives K_{3.69}Na_{1.11}Ca_{31.0}Li_{7.84}Zr_{1.06}Ti_{6.83}Si₄₈O₁₄₈F_{3.16} or approximately 4(KCa₉Li₂Si₁₂O₃₇F). The infrared spectrum has maxima of absorption at 1085, 950, 470, and 445 cm⁻¹.

X-ray study by N.Kh. D. and A.D. Khalilov show baratovite to be monoclinic, probably pseudohexagonal, space group C2/c or Cc, *a* 16.90 ± 0.02, *b* 9.73 ± 0.01, *c* 20.91 ± 0.02 Å, β 112°30'. The strongest X-ray lines (21 given) are 3.22 **100 006**, 2.41 **20 008**, 1.92 **17 0 0 10**.

The mineral occurs as mother-of-pearl white platy deposits up to 5 × 2 × 0.5 cm in size. H 3.5, brittle, sp gr 2.92. Cleavage {001} perfect. Basal sections are isotropic. Optically biaxial, positive, 2*V* 60°, β 1.672, γ 1.673, dispersion *r* > *v* strong, *X* ⊥ normal to {001} = about 50°.

The mineral occurs as an accessory mineral, associated with miserite, ekanite, and sphene, in quartz-albite-aegirine veinlets and in albitites in syenites of the Dara-Pioz alkalic massif, Tadzhikistan.

The name is for the petrographer Rauf Baratovich Baratov of Tadzhikistan. Samples are preserved in the Mineralogical Museums of the Academy of Science, USSR and the Institute of Mineralogy, Geochemistry, and Crystal Chemistry of Rare Elements, both in Moscow. **M. F.**

Baričite*

B. D. STURMAN AND J. A. MANDARINO (1976) Baričite, a new mineral from the Yukon. *Mineral. Assoc. Canada, Abstr. Annu. Meet.* p.65.

Analysis (not given) gives the formula (Mg_{1.69}Fe_{1.22}Fe_{0.15}³⁺(PO₄)₂(OH)_{0.15}·7.85 H₂O, the Mg analog of vivianite. It is monoclinic, C2/m, *a* 10.075, *b* 13.416, *c* 4.760 Å, β 104°52', *Z* = 2. The strongest X-ray lines are 6.71 **100 020**, 3.196 **40 130**, 2.956 **60 311**, **201**, 2.699 **70 221**, 2.526 **50 241**, 2.418 **35 401**.

Colorless to pale blue, H 1½-2, sp gr 2.42 (2.44 calcd). Cleavage {010} perfect. Optically biaxial, positive, 2*V* 59 ± 2°, *n*_s α 1.554, β 1.564 γ 1.595, *r* < *v* weak, *X* = *b*, *Z* ⊥ *c* = +32°.

The mineral occurs as large plates up to 12 cm in maximum dimension and up to 5 cm thick. It occurs in fractures in a siderite iron formation in the Big Fish River-Blow River area, north-eastern Yukon Territory.

The name is for Professor Ljudevit Barič, mineralogist of the University of Zagreb, Yugoslavia. **M.f.**

Barrerite*

E. PASSAGLIA AND D. PONGILUPPI (1974) Sodian stellerite from Capo Pula, Sardegna. *Lithos*, **7**, 69-73.

E. PASSAGLIA AND D. PONGILUPPI (1975) Barrerite, a new natural zeolite. *Mineral. Mag.* **40**, 268.

The "sodian stellerite" described has the composition (Ca_{0.84}Mg_{0.17}Na_{5.46}K_{1.06}) [(Al_{8.10}Fe_{0.10}³⁺)Si_{27.72}] O₇₂·25.78H₂O. It crystallizes in the space group *Amma*, whereas that of stellerite is *Fmmm*; *Z* = 2, sp gr (calc) 2.11, sp gr (meas) 2.13(1). The *ns* are: α 1.4791(5), β 1.4851(5), γ 1.4891(5), *X* → *a*, *Y* → *b*, *Z* → *c*.

This "sodian stellerite" has now been named barrerite in honor of Richard M. Barrer for his outstanding contributions in the field of the chemistry of molecular sieves. **A. P.**

Carlfriesite*

S. A. WILLIAMS AND R. V. GAINES (1975) Carlfriesite, H₄Ca(TeO₃)₃, a new mineral from Moctezuma, Sonora, Mexico. *Mineral. Mag.* **40**, 127-130.

Carlfriesite occurs as botryoidal crusts and less frequently as tiny sprays of euhedral crystals at the Bambollita (now La Oriental) mine in the Sierra La Huerta. It is relatively abundant, occurring with cerussite and chlorargyrite in an oxidized assemblage derived from hessite, galena, and bornite.

The color is primrose yellow with a pale yellow streak, H = 3½, sp gr (meas) 6.3, sp gr (calc) 5.93. Fair cleavage on (010). Monoclinic with *a* 12.585, *b* 5.658, *c* 9.985 Å, β 115° 35'; space group Cc or C2/c. The strongest lines of a powder pattern are: 3.167 **10**, 3.082 **9B**, 5.063 **6**, 2.832 **6**, 3.369 **4**, 4.825 **3**, 2.698 **3** and 4.089 **2**. Feeble pleochroism in pale yellow with *Z* > *X* = *Y*; α = 1.982, β = 2.095, γ = 2.19.

Type specimens are at the British Museum (Natural History) and the University of Paris. The name is for the late Carl Fries of the U. S. Geological Survey and the Instituto de Geologia of the National University, Mexico. **A. P.**

Darapiosite*

E. I. SEMENOV, V. D. DUSMATOV, A. P. KHOMAYAKOV, A. A. VORONKOV AND M. E. KAZAKOVA (1975) Darapiosite, a new mineral of the milarite group. *Zapiski Vses. Mineralog. Obshch.* **104**, 583-585 (in Russian).

Analysis by M.E.K. gave SiO₂ 63.65, ZrO₂ 5.00, Nb₂O₅ 0.90, Fe₂O₃ 1.85, MnO 8.25, ZnO 7.85, Li₂O 1.74, RE₂O₃ 0.96, CaO 0.57, Na₂O 2.96, K₂O 5.14, loss on ignition 0.58, sum 99.45 percent. This gives (K_{1.23}Na_{1.08}Ca_{0.11}Li_{0.88})Li_{0.73}(Zn_{1.10}Mn_{1.31})(Zr_{0.46}Fe_{0.26}Nb_{0.07})Si₁₂(O,OH)₃₀ or (K,Na)₃Li(Mn,Zn)₂ZrSi₁₂O₃₀. Partial analysis of a brownish sample by A. V. Bykova gave ZnO 8.75, MnO 11.35, Fe₂O₃ 2.78, Al present. The infrared spectrum is given.

X-ray study (A.A.V) showed the mineral to be hexagonal, space

group probably $P6/mcc$, a 10.32, c 14.39 Å. The strongest lines (48 given) are 7.09 **6 002**, 4.13 **5 1122**, 3.26 **10 1231**, 2.93 **6.5 1124**, 2.56 **5.5 2240**.

The mineral is colorless, white, rarely brownish or bluish. H 5, sp gr 2.92. Optically uniaxial, negative, ω 1.580, ϵ 1.575 (both \pm 0.002). A blue variety is pleochroic, with O violet, E blue. The mineral occurs in masses up to 0.5 cm in diameter in the alkalic massif of Dara-Pioz, northern Tadzhikistan, associated with aegirine and quartz, as well as sogdianite (vol. 54, p. 1221), eudialyte, schizolite, and polyolithionite.

The name is for the locality. Type material is at the Mineralogical Museums of the Academy of Science, USSR and Institute of Mineralogy, Geochemistry and Crystal Chemistry of Rare Elements, both in Moscow. **M. F.**

Francoanellite*

F. BALENZANO, L. DELL'ANNA, AND M. DIPIERO (1976) Francoanellite, $H_6K_3Al_3(PO_4)_8 \cdot 13H_2O$, a new mineral from the caves of Castellana, Puglia, southern Italy *Neues Jahrb. Mineral., Monatsch.* 1976, 49–57.

Analyses of 2 samples selected under the binocular microscope gave P_2O_5 45.09, 44.94; Al_2O_3 18.03, 18.43; Fe_2O_3 2.97, 2.68; CaO trace, $(NH_4)_2O$ trace, Na_2O 1.00, 0.96; K_2O 9.80, 9.69; H_2O 22.75, 22.72, sum 99.64, 99.42 percent, corresponding to $H_6(K_{2.6}Na_{0.4})(Al_{4.5}Fe_{0.5})(PO_4)_8 \cdot 13H_2O$. The mineral is insoluble in water, readily soluble in dilute HCl or HNO_3 . When the mineral is heated, about 19 percent is lost up to 200°, and about 4 percent more slowly 200–550°. The DTA curve shows a large endothermic peak at 175° and a smaller exothermic peak at 575°. The original X-ray pattern is maintained up to 200°, at 200–575° the mineral is amorphous; at 600° the pattern of $AlPO_4$ is given. The mineral hydrates to taranakite.

X-ray powder data (36 lines) are given for 2 natural compounds and 2 synthetics. The strongest lines of natural material are 13.83, 13.75 **100**; 7.44, 7.44 **60, 35**; 6.86, 6.86 **50, 38**, 3.40, 3.41 **65, 53**, 2.799, 2.808 **62, 49**. The synthetic material is, according to Smith and Brown (*Am Mineral.* **44**, 138–142, 1959), rhombohedral, $R3c$ or $R3c$, a 8.71, c 82.8 Å.

The mineral occurs as small nodular aggregates, 0.1–0.2 mm diameter, or as earthy pulverulent masses, very soft. Color yellowish white. Sp gr 2.26 \pm 0.02. Optically uniaxial positive, ω 1.510, ϵ 1.515 (both \pm 0.002). It occurs at the contact of "terra rossa" with bat guano in the karst cave "Grotte di Castellana," Puglia, Italy. The name is for Franco Anelli, formerly Professor of Geography University of Bari, Italy, eminent speleologist, who discovered the cave. **M. F.**

Iraqite*

A. LIVINGSTONE, D. ATKIN, D. HUTCHISON AND H. M. AL-HERMEZI (1976) Iraqite, a new rare-earth mineral of the ekanite group. *Mineral. Mag.* **40**, 441–445.

Iraqite occurs in granite in contact with dolomitic marble. It has the composition $[(La,Ce)_{1.33}Th_{0.66}X_{0.15}](K_{1.07}Y_{0.93})[Ca_{3.49}(La,Ce)_{0.35}Nd_{0.16}](Si_{15.69}Al_{0.27})(O_{39.93}F_{0.07})$ where $X = U, Pb, Zr, Fe, Mg,$ and Cu , and Y is presumed to represent vacant sites. The color is greenish yellow; H 4½; sp gr (calc) 3.28 and sp gr (Berman balance) 3.27. Iraqite is uniaxial negative with ω 1.590 and ϵ 1.585. The space group is $P4/mcc$ with a 7.61(1) and c 14.72(2) Å. The strongest lines of the powder pattern are: 5.28 **100**, 3.31 **100**, 2.64 **100**, 7.36 **80**, 3.38 **80**, 3.40 **60**, 2.17 **40**, 7.62 **30**.

The name is for the country of origin. **A. P.**

Moissanite-5H

R. G. GEVORKYAN, G. A. GURKINA AND F. V. KAMINSKII (1974) New polytype of natural moissanite from Armenia. *Zapiski Arмянan Otdel. Vses. Mineralog. Obshch.* **7**, 106–110 (in Russian). *Chem. Abstr.* **84**, no. 2, 7536 (1976)

Material from the heavy fraction of an alluvium sample from the Dzoraget River in the Sevan-Amasii ophiolite zone gave by Laue study a 3.03, c 12.37 Å, corresponding to SiC-5H. **M. F.**

Sobolevskite*

T. L. EVSTIGNEEVA, A. D. GENKIN AND V. A. KOVALENKER (1975) A new bismuthide of palladium, sobolevskite, and the nomenclature of minerals of the system PdBi–PdTe–PdSb. *Zap. Vses. Mineral. Obshch.* **104**, 568–579 [in Russian].

Microprobe analyses gave Pd 35.5, 36.0, 34.4; Bi 64.0, 64.0, 66.2; sums 99.5, 100.0, 100.6 percent, corresponding to $Pd_{1.08}Bi$, $Pd_{1.10}Bi$, $Pd_{1.01}Bi$, or PdBi. Small amounts of Pt, Pb, Sb, and Te were sometimes detected.

The X-ray powder pattern (21 lines) was indexed as hexagonal, $a = 4.23$, $c = 5.69$ Å though it contains 5 weak unindexable lines; strongest lines are 3.07 **10 1011**, 2.26 **10 1012**, 2.11 **9 1120**, 1.690 **5 1073**, 1.122, 1.182 **5 1124**.

The mineral occurs as grains, usually less than 0.1 mm in size, in massive (mainly) and disseminated mooihokite–chalcopyrite, troilite–pyrrhotite, and chalcopyrite–cubanite ores of the Oktyabr deposit. It is most frequently observed in intergrowths with paolovite and sperrylite and rarely with native silver, polarite, and other platinum-group minerals. In reflected light, sobolevskite is grayish-white with a creamy tint, very similar to kotulskite. Birefringence in air is distinct and pleochroism of birefringence not observed. The mineral is strongly anisotropic under crossed nicols with distinct color effects in reddish-lilac and pale-cream shades. Reflectance (percent, R_g' and R_p'): 480nm 52.2, 46.7; 500nm 53.6, 48.3; 520nm 56.1, 50.4; 540nm 57.7, 52.4; 560nm 59.7, 54.3; 580nm 61.0, 55.5; 600nm 62.0, 56.5; 620nm 63.5, 57.8; 640nm 65.0, 59.3; 660nm 66.2, 60.2; 680nm 67.5, 60.5; 700nm 68.3, 60.8; 720nm 68.7, 61.0; 740nm 68.0, 61.3. Determined to be biaxial negative. $VHN_{80} = 236 \pm 28 \text{ kg/mm}^2$.

The mineral is named after P. G. Sobolevski (1781–1841). Polished sections of sobolevskite are preserved in Mineralogical Museum of the Academy of Sciences, U.S.S.R. and in the Mineralogical Museum of I.G.E.M., Academy of Sciences, U.S.S.R.

Discussion

Sobolevskite is apparently polymorphous with polarite [*Am Mineral.* **55**, 1810 (1970)]. Single-crystal study desirable to confirm the symmetry and explain the five unindexed reflections of the powder pattern. **L. J. C.**

Sodium boltwoodite

A. A. CHERNIKOV, D. P. SHASKIN AND I. N. GAVRILOVA (1975) Sodium boltwoodite, *Doklady Akad. Nauk S.S.S.R.* **221**, 195–197 [in Russian].

Analyses by N. N. Kuznetsova were made of two samples. The first was made on earthy material containing kaolinite, quartz, and small amounts of gypsum, calcite, and feldspar. The second was made on radiating-fibrous aggregates containing calcite and quartz. These gave UO_3 44.00, 59.57; P_2O_5 0.40, not determined;

SrO 0.09, —; CaO 0.90, 4.35; PbO 0.51, —; K₂O 2.50, 3.10; Na₂O 4.07, 4.21; H₂O ± 10.50, 8.70; SiO₂ 29.70, 14.70; Al₂O₃ 7.50, 0.1; Fe₂O₃ 0.50, 0.45; sum 100.77, 100.71 percent. After deducting impurities, these yield the formula: (H₃O) (Na_{0.7}K_{0.3})(UO₂) (SiO₄)·H₂O *i.e.* the sodium analog of boltwoodite, K(UO₂) (SiO₃) (OH)·2.5 H₂O.

Laue, oscillation, and rotation diagrams showed the mineral to be orthorhombic, Laue class *mmm*, *a* 27.40 ± 0.05, *b* 7.02, *c* 6.65 ± 0.02 Å, *Z* = 8, sp gr (calc) 4.4, measured by flotation 4.1. Space group *D*₂⁸ = *P*2₁2₁2₁. The strongest X-ray lines (37 given) are 6.92 7 400, 6.71 10 001, 110, 4.70 8 111, 3.49 8 120, 3.37 8 701, 3.10 8 021, 2.92 10 212, 1.920 7731.

The mineral occurs in very small amounts in near-surface areas of "arid regions of the USSR" as powdery pale yellow crusts and platy radiating fibrous aggregates. Cleavage {010} perfect, {001} imperfect. Optically biaxial, negative, *n*_s α1.613–1.645, γ 1.645–1.672, 2*V* large. Anomalous interference colors. Pleochroic, *X* colorless, *Z* pale yellow.

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

Unnamed Minerals

S. E. HAGGERTY (1975) The chemistry and genesis of opaque minerals in kimberlites. *Phys. Chem. Earth*, **9**, 295–307.

The first mineral, enclosed in phlogopite and mantled by ilmenite + perovskite, occurs in the DeBeers mine. Analysis (presumably microprobe) gave TiO₂ 53.16, Cr₂O₃ 17.98, V₂O₅ 8.46, Al₂O₃ 0.27, FeO 11.28, MgO 3.66, MnO 0.14, CaO 0.39, BaO 4.07, SiO₂ 0.20, sum 99.61 percent.

The second mineral forms mantles on "picroilmenite" (it is not clear whether this unnecessary name refers to magnesian ilmenite or to geikielite) in samples from the Kao kimberlite pipe, Lesotho. Analysis gave TiO₂ 36.31, Fe₂O₃ 33.22, Al₂O₃ 1.09, Cr₂O₃ 0.36, MgO 3.96, MnO 0.33, CaO 23.78, SiO₂ 0.18, sum 99.23 percent **M.F.**

Unnamed Ag₂Pb₁₁Sb₁₀S₂₇

M. S. NAIK (1975) Silver sulphosalts in galena from Espeland, Norway. *Norsk Geol. Tidsskr.*, **55**, 185–189.

Electron microprobe analyses gave Pb 49.26, 50.23; Ag 4.73, 4.89; Cu 0.52, 0.26; Sb 26.62, 26.56; S 10.09, 18.78; sum 100.22, 100.81 percent. The mineral occurs as blebs up to 0.7 × 0.2 mm., associated with freibergite and (Ni,Co)SbS in wall rock. It shows distinct bireflection with colors from olive green to bright yellowish green. Reflectivity is equal to that of galena, polishing hardness is lower. **M.F.**

Unnamed Cu₄BiS₄

S. D. BULGAZINA, E. I. KUZENTSOVA AND A. P. SLYUSAREV (1975) Composition of two bismuth copper sulfosalts from skarn deposits of the Sayak group *Doklady Akad. Nauk SSSR*, **222**, 183–185 [in Russian].

Electron microprobe analysis gave Cu 44.5 ± 1, Bi 34.0 ± 0.5, Ag 0.3, S 21.5 ± 1, sum 100.3 percent (Fe, Co, Zn, Sb, As not found), corresponding to Cu_{3.9}Bi_{0.9}S_{9.7}. The mineral occurs in veinlets cutting recrystallized garnet skarns and as irregular to elongated inclusions in chalcopyrite, associated with hessite, gold,

aikinite, and a zincian bismuthian tetrahedrite, (Cu_{11.66}Zn_{1.12}Co_{0.07}Fe_{0.03}) (Sb_{2.19}Bi_{1.05}As_{0.19})S₁₃. Color steel-gray, luster metallic, microhardness with 20 g load ranges from 210–220 kg, av. 222.5 kg/sq mm (sic!). At 30 g load this increases to 223 kg/sq mm. In reflected light pale gray with a blue or lilac tint, birefringence distinct with color effects from pale rose-yellow to dark greenish-gray. Anisotropy strong. **M.F.**

New data

Curtisite, Idrialite, Karpaitite

MAX BLUMER (1975) Curtisite, idrialite, and pendletonite, polycyclic aromatic hydrocarbon minerals: their composition and origin. *Chem. Geol.* **16**, 245–256.

Chromatographic separations, followed by ultraviolet and mass spectrometry, on material from the type localities show that karpaitite ["pendletonite," *Am. Mineral.* **54**, 329, (1969)] is nearly pure coronene, but that curtisite and idrialite are complex mixtures of polycyclic aromatic hydrocarbons. They are not identical as previously supposed [*Am. Mineral.* **41**, 168, (1956), **50**, 2109 (1965), **55**, 1073 (1970)]. Curtisite is suggested to consist mainly of picene and dibenzofluorene, also chrysene, benzofluorene, naphthenochrysene, and tetrabenzothiophene; idrialite is suggested to consist mainly of naphthenopencene and tribenzofluorene, also benzopencene, naphthenobenzopencene, pentabenzothiophane, and others. **M.F.**

Tacharanite

G. CLIFF, J. A. GARD, G. W. LORIMER AND H. F. W. TAYLOR (1975) Tacharanite. *Mineral. Mag.* **40**, 113–126.

Tacharanite, described in 1961, was reported in *Am. Mineral.* **47**, 173 (1962) with the comment "Structural study is needed before this can be accepted as a mineral species." In the meantime, material corresponding to tacharanite has been reported from two and more localities in Scotland in addition to the original locality at Portree, from one locality in Ireland, and one in Germany. Specimens from the type locality and from Huntly, Scotland, and Bramburg, Germany, have now been examined by electron and X-ray diffraction, and the latter two have been analyzed by microprobe. The composition approximates to Ca₁₂Al₂Si₁₈O₆₉H₃₆, and X-ray powder and fiber rotation patterns can be referred to an *A*-centered monoclinic pseudo-cell with *a* 17.07, *b* 3.65, *c* 27.9 Å, β 114.1°, *Z* = 1. In the true cell *b* is certainly, and *a* and *c* probably, doubled. Small, reversible changes in the pseudo-cell parameters occur on heating below 200° C. Tacharanite shows some resemblances to tobermorite, but there are also significant differences.

Discussion

It appears that tacharanite is now well established as a valid species, but identification may be expected to be a difficult matter. **A.P.**

"Winchite"

V. K. NAYAK AND B. E. LEAKE (1975) On "winchite" from the original locality at Kajlidongri, India. *Mineral. Mag.* **40**, 395–399.

A new analysis of the violet amphibole from the original locality for winchite agrees with another analysis in differing substantially from the original winchite composition and is $(K_{0.17}Na_{2.10}Ca_{0.23})(Al_{0.19}Ti_{0.00}Fe^{2+}_{1.27}Fe^{3+}_{0.01}Mn_{0.07}Mg_{3.34})Si_{8.01}O_{22.05}(OH)_{1.95}$. It is essentially a magnesio-arfvedsonite. Although it is possible that the original analysis was unreliable, evidence is given

to support the alternative view that there is a wide range of blue alkali and Na-Ca amphibole compositions at Kajlidongri, and the name winchite should be restricted to compositions between ferriwinchite $CaNaMg_5Fe^{3+}Si_8O_{22}(OH,F,Cl)_2$ and aluminowinchite $CaNaMg_3AlSi_8O_{22}(OH,F,Cl)_2$. X-ray, density, and optical data on the analyzed mineral are given. **A.P.**