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NEW MINERAL NAMES*

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Schreyerite*

O. MEDENBACH AND K. SCHMETZER (1976) Schreyerite ($V_2Ti_3O_9$), ein neues Vanadium Mineral aus Kenya. *Naturwissenschaften, 63,* 293–294.

The mineral occurs in highly twinned unmixed grains up to 30 microns in size in vanadium-bearing rutile that occurs as idiomorphic crystals in kornerupine-bearing quartz–biotite–sillimanite gneiss in the Kwale district, Kenya. Associated minerals include kyanite, muscovite, apatite, tourmaline, graphite, pyrrhotite, chalcopyrite, and pentalandite.

Microprobe analysis (not given) gave the formula $(V_{0.93}Cr_{0.06}Al_{0.01})_2Ti_3O_9$, with traces of Mg and Fe. Single-crystal study could not be made because of the twinning. Debye and Gandolfi films were indexed on a monoclinic cell with *a* 7.06, *b* 5.01, *c* 18.74Å., β119.4°. The strongest lines (private communication from O. Medenbach, given erroneously in the paper) are 4.075 (m) (004), 3.381 (m) ($\bar{2}04$), 2.874(s)($\bar{2}13$), 2.737(vs) (015), 2.432 (w)(211). In part the lamella are oriented after (101) of rutile. The mineral is black. H 1100–1200 kg/sq mm. Reflectance at 589 nm = 21 percent, leading to *n* 2.7. In section shows pleochroism from white to brownish. Insoluble in acids.

The name is for Professor Werner Schreyer of Ruhr University, Bochum, Germany. **M.F.**

Sekaninaite*

J. STANEK AND J. MISKOVSKY, (1975) Sekaninaite, a new mineral of the cordierite series, from Dolni Bory, Czechoslovakia. *Scr. Fac. Sci. Nat. Ujep Brun., geol. 1,* no. 5, 21–30.

Chemical analyses of blue and violet-blue samples agreed closely; the former gave SiO_2 45.10, TiO_2 0.04, Al_2O_3 30.63, Fe_2O_3 0.91, FeO 17.85, MgO 1.69, MnO 0.92, CaO 0.39, Na_2O 0.68, K_2O 0.03, H_2O^+ 1.84, H_2O^- 0.12, sum 100.20 percent, giving $(Na_{0.14}Ca_{0.05})(Fe^{2+}_{1.63}Mg_{0.28}Mn_{0.09})(Al_{1.94}Fe^{3+}_{0.08}Si_{0.93})Al_2Si_4O_{18} \cdot 0.67H_2O$, the Fe-analog of cordierite. Traces of Zn, Cr, Be, Ga, Ag, Cu, and Ni were found spectroscopically. The infrared absorption spectrum is given. DTA and TGA curves are given. The water is lost continuously up to 500°. A small exothermic reaction (oxidation of Fe?) was observed at 780°.

X-ray powder data were indexed on a cell with *a* 17.186, *b* 9.827, *c* 9.298Å, space group probably *Cccm.* The strongest lines (38 given) are 8.583 (100) (200,110), 4.081 (83) (112), 3.386 (100) (312), 3.376 (100) (022), 3.143 (64) (222), 3.076 (74) (511, 421), 3.043 (57) (131).

The mineral occurs as poorly developed crystals up to 60–70 cm in size, usually twinned on {110} and {310}, simulating hexagonal symmetry. Color blue to violet blue, luster vitreous. H 7–7½; cleavage {100} imperfect, parting {001}; sp gr 2.77. Optically biaxial, negative, α 1.561, β 1.572, γ 1.576, 2*V* 66°, $r < v$ weak; pleochroic with *X* colorless, *Y* blue, *Z* pale blue, $Y > Z > X$, orientation $X = c$, $Y = b$.

The mineral occurs near Dolni Bory, western Moravia, in the albite zone of pegmatites in granulites and genisses.

The name is for Professor Josef Sekanina, who first found the mineral in 1928. **M.F.**

Strätlingite*

G. HENTSCHEL AND H.-J. KUZEL (1976) Strätlingite, $2\ CaO \cdot Al_2O_3 \cdot SiO_2 \cdot 8H_2O$, a new mineral. *Neues Jahrb. Mineral., Monatsh.* 326–330 (in German).

H.-J. KUZEL, (1976) Crystallographic data and thermal decomposition of synthetic gehlenite hydrate, $2\ CaO \cdot Al_2O_3 \cdot SiO_2 \cdot 8H_2O$. *Neues Jahrb. Mineral., Monatsh.* 319–325 (in English).

Qualitative microprobe analysis showed Ca, Al, and Si as major constituents, with less than 1 percent Fe, but a quantitative analysis could not be made because the mineral dehydrated in the electron beam to a powdery residue unsuitable for probe analysis. Easily decomposed by dilute HCl.

The mineral was synthesized in single crystals by the slow hydration of calcium aluminum silicate glasses in saturated solutions of $Ca(OH)_2$ at 20°C for 120 days. X-ray patterns of natural and synthetic material were essentially identical. The strongest X-ray lines of the natural material (18 given) were 12.5 (100) (003), 6.2 (70) (006), 4.16 (100) (009), 2.87(70) (110). The mineral is trigonal, space group *R*3, or $R\bar{3}$, a 6.737 ± 0.005, c 37.59 ± 0.05Å., *Z* = 3, sp gr calcd. 1.95, sp gr measured (synthetic) 1.9. The synthetic crystals had *a* 5.747 ± 0.001, *c* 37.64 ± 0.01Å.

The DTA curve shows endothermic breaks at 131, 181, and 226°, and a sharp exothermic break at 990°C. The loss of weight curve shows a loss of $4H_2O$ to 138°, when an abrupt decrease in *a* and *c* occurs. The exothermic break corresponds to the crystallization of gehlenite.

The mineral is colorless to light green. Cleavage basal perfect. Uniaxial, negative, ω 1.534; synthetic material had ω 1.519.

The mineral occurs in a metamorphosed limestone inclusion within the basaltic lava flow at Bellerberg, Mayen/Eifel, as plates 0.1–0.5 mm in diameter. It is associated with nepheline, melilite, garnet, thomsonite, gismondine, ettringite, and hydrocalumite, and a white unidentified incrustation.

The name is for W. Strätling, who synthesized the mineral ("Strätling's compound") in 1938. Type material is at the University of Erlangen, Nürnberg, Germany.

Note. This is the second "gehlenite hydrate" mineral, compare bicchulite [*Am. Mineral., 59,* 1330 (1974).] **M.F.**

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* Minerals marked with an asterisk after the name were approved before publication by the Commission on New Minerals and Mineral Names of the International Mineralogical Association

Thalcusite*

V. A. KOVALENKER, I. P. LAPUTINA, T. L. EVSTIGNEEVA AND V. M. IZOITKO (1976) Thalcusite, Cu_{3-x}, $Tl_2Fe_{1+x}S_4$, a new thallium sulfide from copper–nickel ores of the Talnakh deposits. *Zap. Vses. Mineral. Obshch., 105,* 202–206 (in Russian).

Electron microprobe analyses were made, using as standards Cu, Fe, FeS_2, synthetic $Cu_3Tl_2FeS_4$, and synthetic $TlSbS_2$. These gave Tl 52.2, 53,4; Cu 22.6, 20.5; Fe 9.1, 9.9; S 16.3, 16.5; sum 100.3 percent, corresponding to $Cu_{2.79}Tl_{2.01}Fe_{1.28}S_4$ and $Cu_{2.51}Tl_{2.03}Fe_{1.37}S_4$, so that x in the formula above = 0.21–0.49. Analyses considered less reliable, of 8 smaller grains, gave Tl 51.9–56.4, Cu 16.6–20.1, Fe 9.3–10.6 percent.

The X-ray pattern has strongest lines (14 given): 3.73 (8) (101), 2.91 (10) (103), 2.53 (10)(112), 1.941 (5) (200), 1.717 (5)(116). This was indexed by comparison with its Se analog, bukovite [*Am. Mineral., 57,* 1910(1972)], as tetragonal, a 3.882±0.005, c 13.25±0.02Å. The space group is $I\bar{4}m2$, $I\bar{4}2m$, $I4mm$, $I422$, or $I4/mm$. Sp gr calc. 6.54 ($Z=1$), measured for synthetic material 6.15.

The mineral occurs in platy deposits, rarely elongated, mostly as grains 10–15 microns in diameter. Cleavage parallel to elongation. Brittle. Microhardness, 82–92, av. 88 kg/sq mm at 10 g load. In reflected light weakly birefringent with color change from pale gray with brownish-lilac tint to dark gray. Reflectances are given at 16 wave lengths (440 to 740 nm); Rg^1 and Rp^1 are, resp: 460, 31.3, 30.4; 540, 29.9, 28.4; 580, 30.3, 27.9; 660, 33.7, 30.6 percent. Anisotropic with colors from light yellowish to very dark gray.

The mineral occurs in pentlandite–cubanite–chalcopyrite ores, Talnakh deposit, associated with minerals of Pt and Pd and also with altaite, galena, sphalerite, and djerfisherite.

The name is for the constituents Tl, Cu, S. Type material is at the Mineralogical Museum, Academy of Science, USSR, Moscow. **M.F.**

Yftisite

N. I. PLETNEVA, A. P. DENISON and N. A. ELINA (1971) A new variety in the group of rare-earth fluosilicates. *Mater. Mineral. Kol'sk Poluostr. 8,* 176–179 (in Russian).

V. P. BALKO AND V. V. BAKAKIN (1975) The crystal structure of the natural yttrium and rare-earth fluorotitanosilicate, $(Y,TR)_4(F,OH)_6TiO[SiO_4]_2$, (yftisite). *Zh. Strukt. Khim., 16,* 837–842.

The first paper describes an unnamed mineral from the Kola Peninsula, USSR, an accessory mineral in silicified alkali granites near the contact with gabbro–anorthosite. Partial analysis gave Y_2O_3 36.82, TR_2O_3 13.89, ThO_2 1.43, TiO_2 9.69 SiO_2 13.24, F 8.93, H_2O^+ 7.07. The rare earths were La 0.9, Ce 8.5, Pr none, Nd 7.6, Sm 5.1, Eu 0.4, Gd 5.5, Tb 0.8, Dy 24.6, Ho 3.4, Er 20.8, Tm 2.1, Yb 18.2, Lu 2.1 percent, *i.e.*, heavy lanthanides dominate.

The mineral occurs as prismatic crystals up to 6–7 mm long, transparent yellowish, luster vitreous to greasy, H 3.5–4, Sp gr 3.96, no cleavage. Optically biaxial, negative, 2V large, $r > v$ distinct, α1.690, β1.705, γ1.710–1.712, has anomalous blue interference color.

X-ray data were indexed on an orthorhombic cell, a 15.04 ±0.01, b 10.63±0.01, c 7.052±.003Å. The strongest lines (62 given) are 3.727(7)(221), 3.526(7)(002), 3.099(10)(131), 2.667(10)(040), 1,821(9)(640), 1.766(10)(641,004), 1.714(10)(552β,352), 1.559(8)(005β552), 1.442 (8)(643), 1.104(7)(426), 1.091(7)(10.6.2).

It is stated that Yu. M. Shipovalov in 1965 reported a similar mineral from Kazakhstan with a 14.90, b 10.60, c 7.08Å., which differed somewhat from the Kola mineral in composition, sp gr and refractive indices (not given). Shipovalov used the name yftisite for this mineral.

Balko and Bakakin have studied the Kola mineral and find it to be orthorhombic, space group *Cmcm*, with a 14.949, b 10.626, c 7.043Å. Deriving a formula from the incomplete analysis above is difficult. With some assumptions such as partial replacement of Ti by Sn (private communication from Pletneva, *et al.*) the formula proposed is $(Y,Re)_4(F,OH)_6(Ti,Sn)O(SiO_4)_2$ or possibly $(Y,Re,Ca)_4(F,OH,H_2O)_6(Ti,Sn)O[(SiO_4)_{2-x}(OH)_{4x}]$, and for the Kazakhstan mineral (for which no analytical data are given): $(Y,TR)_4[F_3(O,F)_3]Al(Ti,Fe,Al)O(SiO_4)$.

The name is apparently for the composition.

Discussion. This appears to be a new mineral, but it should not have been named until better chemical data were available and the data for the Kazakhstan mineral were available. **M.F.**

NEW DATA

Catoptrite, Yeatmanite

P. B. MOORE, TAKAHARU ARAKI AND G. D. BRUNTON (1976) Catoptrite, $(Mn^{2+}_5Sb^{5+}_2)$ $(Mn^{2+}_8Al_4Si_2)O_{28}$, a novel close-packed oxide sheet structure. *Neues Jahrb. Mineral., Abh., 127,* 47–61.

Single crystals from Långban, Sweden, shown by X-ray study to be identical with type material, were studied. A microprobe analysis by A. J. Irving gave Sb_2O_5 22.4, SiO_2 8.0, Al_2O_3 10.9, MnO 54.3, MgO 3.7, FeO 2.5, ZnO none, CaO < 0.05, sum 101.8 percent. It is monoclinic, *C2/m*, a 5.617, b 23.02, c 7.079Å, β 101°23′, Z = 2 formula units of the formula above.

It is suggested that yeatmanite is closely related to catoptrite and that its formula can be given as $(Mn^{2+}_5Sb^{5+}_2)(Mn^{2+}_2Zn_8Si_4)O_{28}$. **M.F.**

Derbylite

P. B. MOORE AND TAKAHARU ARAKI, (1976) Derbylite, $Fe^{3+}_4Ti^{4+}_3Sb^{3+}O_{13}(OH)$, a novel close-packed oxide structure. *Neures Jahrb. Mineral., Abh., 126,* 292–303.

A structural study of material from the type locality showed it to be monoclinic, space group $P2_1/m$, a 7.160, b 14.347, c 4.970Å, β 104.61°, Z = 2 formula units of the formula above (not Fe^{2+} and Sb^{5+} as previously given). **M.F.**

Eglestonite

K. MEREITER AND J. ZEMANN (1976) Restudy of the mercury mineral eglestonite: crystal structure, chemical composition, and synthesis. *Tschermaks Mineral. Petrogr. Mitt., 23,* 105–115 (in German).

Study of the crystal structure of eglestonite showed it to be cubic, space group *Ia3d*, a = 16.036Å. This gave for the cell content $Hg_{96}Cl_{48}O_{32}$, not compatible with the presence of Hg_2 groups, indicating a pure Hg^{1+} compound. The mineral was synthesized by heating calomel with KOH solution at 160°. Analysis of the product for H_2O by Penfield method gave H_2O 0.62, 0.75, 0.74 percent (theory for $Hg_6Cl_3O_2H$ = 0.67%). The formula $Hg_6Cl_3O_2H$ (Z = 16) is confirmed by the presence of a short O–O distance, characteristic of a hydrogen bond. **M.F.**

Goongarrite

N. N. Mozgova, Yu. S. Borodaev, L. E. Syritso and D. P. Romanov (1976) New data on goongarrite (warthaite) and about the identity of heyrovskyite with goongarrite. *Neues Jahrb. Mineral. Abh., 127,* 62–83.

The authors give microprobe analyses, X-ray data (both powder and single crystal), reflectivities, microhardness determinations, *etc.*, which are in good agreement with the properties of heyrovskyite, as is recognized by the authors. The new results were obtained from material from 2 localities: (1) "platy lillianite" from Spokoinoye, Transbaikal; originally described by Syritso and Senderova in 1964; (2) "warthaite" from Vaskö, Hungary. These specimens consist predominantly of galena–cosalite intergrowths, with minor areas of heyrovskyite. The galena–cosalite–heyrovskyite intergrowths appear to be pseudomorphs after heyrovskyite. Crystals consisting of intimate intergrowths of cosalite and galena, but with the heyrovskyite morphology, give bulk compositions appropriate for heyrovskyite; it is likely, therefore, that the intergrowths represent unmixing from what was originally heyrovskyite. Similar intergrowths are present in material described originally as "goongarrite" (Simpson, 1924) and "warthaite" (Krenner and Loczka, 1926), the bulk compositions of which also correspond well with heyrovskyite. Both goongarrite and warthaite have long been recognized to be mixtures and were discredited on the basis of microscopic and powder X-ray diffraction studies (Thompson, 1949).

Mozgova *et al.* argue that the name goongarrite should be used for the mineral now called heyrovskyite. They seem to agree that the original descriptions and analyses were undoubtedly based on mixtures. However, they point out that the name goongarrite has been used for the well-known synthetic homogeneous phase $Pb_4Bi_2S_7$ which corresponds to Simpson's theoretical goongarrite formula. They also pointed out that Godovikov *et al.* (1967) recognized that the synthetic phase was similar to the natural "platy lillianite" of Syritso and Senderova (1964), and concluded that the "platy lillianite" was a natural occurrence of goongarrite.

Discussion. Heyrovskyite was named in 1971 (Kloninsky *et al.*) after receiving IMA approval. The literature is replete with references to obscure, discarded, or newly-coined mineral names without supporting data. Goongarrite is no exception. The identity of the synthetic phase (hypothetical goongarrite = synthetic heyrovskyite) with "platy lillianite" was established by Godovikov *et al.* solely on the basis of their similar powder X-ray patterns and a very crude similarity in composition. Mozgova *et al.* have reexamined the "platy lillianite" of Syritso and Senderova and conclude that the original analysis was made on a mixture of galena and cosalite in exsolution intergrowths and of "platy lillianite" = heyrovskyite (which they prefer to call goongarrite). Cell dimensions of the "platy lillianite" are a = 13.71±0.02, b = 31.24±0.05, c = 4.10±0.02Å, in excellent agreement with those of natural and synthetic heyrovskyite. Cell dimensions of "platy lillianite" were stated by Syritso and Senderova to be b = 12.8±0.1, a = 31.0±0.1, c = 4.15±0.02, presumably erroneous.

In conclusion, the mineral which was named heyrovskyite entailed the first complete description of a natural occurrence of this compound. Presumably the authors could have chosen to apply to it the ill-defined and discredited name goongarrite. There now seems to be no justification in discrediting heyrovskyite and reinstating redefined goongarrite. Instead, the data presented in this paper should be considered as substantiating heyrovskyite, particularly the formula $Pb_{10}AgBi_5S_{18}$ as extending its compositional range. **J.J.**

Weibullite, Wittite

Zdenek Johan and Paul Picot (1976) Definition nouvelle de la weibullite et de la wittite. *C. R. Acad. Sci. Paris, Ser. D., 282,* 137–139.

Restudy was made of material from the type locality, Falun, Sweden, on specimens in the Ecole des Mines, Paris.

Weibullite is orthorhombic, space group $Pc2_1n$ or $Pcmn$, a 15.39 ± 0.02, b 4.068 ± 0.004, c 53.8 ± 0.5Å, $Z = 4$. The strongest X-ray lines (45 given) are 3.847 (10)(400,0.0.14), 3.268 (8)(217), 3.080 (9)(219,3.0.14), 3.019 (7)(4.0.11, 3014), 2.811 (7)(319,2.1.12).

Microprobe analyses gave Pb 29.7, 28.2; Bi 46.6, 46.8; As 0.8, –; Se 15.3, 15.3; S 9.6, 9.8; sum 102.0, 100.1 percent; corresponding to $Pb_5Bi_8Se_7S_{11}$ or perhaps $Pb_5Bi_8Se_7S_{10}$.

Probe analyses of wittite gave Pb 33.2, 33.2; Bi 45.7, 45.3; Se 10.0, 9.4; S 11.4, 12.0; sum 100.4, 99.9 percent, corresponding to $Pb_9Bi_{12}Se_7S_{20}$.

The X-ray pattern of wittite corresponds to that published by Peacock and Berry (*Univ. Toronto Studies, Geol. Ser. 44,* 48–69, 1950), who gave a 18.034 ± .003, b 4.040 ± 0.002, c 17.530 ± 0.003Å. (Ed. note: see also *Am. Mineral., 61,* 839–852, 1976).

Unnamed $(Ce,La,Nd)NbO_4$=Brocenite [Beta-fergusonite-(Ce)]

A. I. Chaska and E. Ya. Marchenko (1976) A new rare-earth niobate from carbonatities. *Geol. Geofiz.*, no. 4, p. 141–143 (in Russian).

Analysis of the mineral gave Nb_2O_5 41.78, Ta_2O_5 1.00, TiO_2 0.05, Fe_2O_3 0.66, RE_2O_3 51.12, CaO 1.20, loss on ignition 2.55, $(MgO+ZrO_2+ThO_2+U_3O_8)$ 1.89, total 100.25 percent. Spectrographic analysis by V. G. Teplyakova of the rare earths gave La 23.0, Ce 29.0, Pr 1.0, Nd 35.0, Sm 0.7, Eu 0.1, Gd 0.2, Er 0.3, Tm 0.62, Yb 0.1, Y 0.4 percent, Tb, Dy, Lu not found. The formula is $(RE_{0.95}Ca_{0.06}U_{0.01}Th_{0.01})(Nb_{0.96}Ta_{0.01}Fe_{0.03})O_4$. The mineral is insoluble in acids. DTA study showed exothermic breaks at 365° and 675°, the latter marking transition from metamict to crystalline. The infrared spectrum shows bands (1620 and 3450cm^{-1}) characteristic of molecular H_2O.

The mineral is metamict, X-ray amorphous. After being heated at 700°, it gave an X-ray pattern identical with those of synthetic $CeNbO_4$, $NdNbO_4$, $PrNbO_4$ (ASTM nos. 14-501, 14-596, 14-597). The strongest lines (31 given) are 3.21 (10)(113), 3.04 (10)(212), 2.84 (6)(220), 1.977(5)(400), 1.904 (6)(323,314), 1.679 (9)(330), 1.605(9)(414,117), 1.258(6)(417). This is indexed on a monoclinic cell, a 5.170, b 11.372, c 5.497A, β 85°20′.

The mineral is red to dark red, streak pale rose. Sp gr 5.44. Brittle, fracture conchoidal. Isotropic, n 2.155. It occurs in a carbonatite, locality not stated. It is not named, but is stated to be a mineral not previously found.

Discussion. This is clearly identical with brocenite [better referred to as beta-fergusonite-(Ce)]; see *Am. Mineral., 60,* 485 (1975). **M.F.**