**Sekaninaite**


Chemical analyses of blue and violet-blue samples agreed closely: the former gave SiO₂ 45.10, TiO₂ 0.04, Al₂O₃ 30.63, Fe₂O₃ 0.91, FeO 17.85, MgO 1.69, MnO 0.92, CaO 0.39, Na₂O 0.68, K₂O 0.03, H₂O 1.84, H₂O 0.12, sum total 100 percent. The strongest lines of the natural material (18 given) were 12.5 (100) (003), 6.2 (70) (006), 4.16 (100) (009), 2.87 (70) (121), 2.87 (100) (110). The mineral is trigonal, space group R₃₃, a 6.737 ± 0.005, c 37.59 ± 0.05 Å, Z = 3, sp gr calcd. 1.9. The 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 R₃₃, a 6.737 ± 0.005, c 37.59 ± 0.05 Å, Z = 3, sp gr calcld. 1.95, sp gr measured (synthetic) 1.9. The synthetic crystals had a 5.747 ± 0.001, c 37.64 ± 0.01 Å.

The DTA curve shows endothermic breaks at 131, 181, and 226 °C, and a sharp exothermic break at 990 °C. The loss of weight curve shows a loss of 4H₂O to 138 °C, 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, mellile, garnet, thomsonite, gismondine, ettringite, and hydrocalumite, and a white unidentified incrustation.

The name is for W. Stretling, 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.
Thalcosite

Electron microprobe analyses were made, using as standards Cu, Fe, FeS₂, synthetic Cu₅Tl₅Fe₁₅S₂₅, and synthetic Tl₅Fe₅S₁₂. These gave Ti 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 CuₓTlₓFe₁₋ₓS₄ and CuₓTlₓFe₁₋ₓS₄, so that x in the formula above = 0.21-0.49. Analyses considered less reliable, of 8 smaller grains, gave Ti 41.9-56.4, Cu 16.6-20.1, Fe 9.3-10.6 percent.

This was indexed by comparison with its Se analog, bukovite Cur₂₋ₓTlₓFe₁₋ₓS₄, so that J in the formula above: 0.214'49 0.005'100.3 percent, corresponding to Cur₂₋ₓTlₓFe₁₋ₓS₄ and Cu₂₋ₓTlₓFe₁₋ₓS₄.

The mineral occurs in platy deposits, rarely elongated, mostly as grains 10-15 microns in diameter. Cleavage parallel to elongation. Brittle. Microhardness, 82, 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, and Rsp are resp: 460, 31.3', 3.96, no cleavage. Optically biaxial, negative, 2V large, r _ u

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.

Ytfitite

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 Y₂O₃ 36.82, Tr₂O₃ 13.89, ThO₂ 1.43, TiO₂ 9.69 SiO₂ 13.24, F 8.93, H₂O 7.07. The rare earths were Lu 0.9, Ce 8.5, Pr none, Nd 7.6, Sm 5.1, Eu 0.4, Gd 5.5, Tb 0.8, Dy 20.8, Er 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 Ti, Cu, S. Type material is at the Mineralogical Museum, Academy of Science, USSR, Moscow. M.F.

Derbylite

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 Sb₂O₅ 22.4, SiO₂ 8.0, Al₂O₃ 10.9, 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 7.079", β 101°23', Z = 2 formula units of the formula above.

It is suggested that yeatmanite is closely related to cotoprtite and that its formula can be given as (Mn⁺³Sb⁺²)(Mn⁺³Zn⁺²SiO₄). M.F.

It is stated that Yu. M. Shipovaolov in 1965 reported a similar mineral from Kazakhstan with a 14.90, b 10.60, c 7.084", which differed somewhat from the Kola mineral in composition, sp gr and refractive indices (not given). Shipovaolov used the name yfitite 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 7.043A. 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,REE,FeO,Sn)O₂(SiO₄)₂ or possibly (Y,REE,Fe₂⁺O,Sn)O₂(SiO₄)₂.

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

Cotoprtite, Yeatmanite

A structural study of material from the type locality showed it to be identical with type material, were studied. A microprobe analysis by A. J. Irving gave Sb₂O₅ 22.4, SiO₂ 8.0, Al₂O₃ 10.9, MgO 3.7, FeO 2.5, ZnO none, CaO < 0.05, sum 101.8 percent. It is monoclinic, C2/m, a 5.627', b 23.02', c 7.079", β 101°23', Z = 2 formula units of the formula above.

It is suggested that yeatmanite is closely related to cotoprtite and that its formula can be given as (Mn⁺³Sb⁺²)(Mn⁺³Zn⁺²SiO₄). M.F.

Derbylite

A structural study of material from the type locality showed it to be monoclinic, space group P2₁/m, a 7.160, b 14.347, c 4.970", β 104.61°, Z = 2 formula units of the formula above (not Fe⁺² and Sn⁺² as previously given). M.F.

Eglestonite

Study of the crystal structure of eglestonite showed it to be cubic, space group Ia3d, a = 16.036A. This gave for the cell content Hg₃Sn₄O₈, not compatible with the presence of Hg₂ groups, indicating a pure Hg⁺⁺ compound. The mineral was synthesized by heating calomel with KOH solution at 160°. Analysis of the product for H₂O by Penfield method gave H₂O 0.62, 0.75, 0.74 percent (theory for Hg₃Sn₄O₈ = 0.67%).
Goongarrite


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) "warthaithe" from Vasko, 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 a mixture from what was originally heyrovskyite. Similar intergrowths are present in material described originally as "goongarrite" (Simpson, 1924) and "warthaithe" (Krenner and Loczka, 1926), the bulk compositions of which also correspond well with heyrovskyite. Both goongarrite and warthaithe have been long recognized as 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 heyrovskyite has been used for the well-known synthetic homogeneous phase Pb,Bi,S which corresponds to Simpson's theoretical goongarrite formula. They also point out that Geoivikov 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 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±0.02 Å, 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 rein-

Weibullite, Wittite


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

Weibullite is orthorhombic, space group P21/n or Pcmn, a 15.39±0.02, b 4.068±0.004, c 53.8±0.5 Å, Z = 4. The strongest X-ray lines (45 given) are 3847 (10)(400), 0.14, 3.268 (8)(217), 0.380 (9)(291,0,14), 0.309 (7)(4,11,3014), 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,Bi,Se,Sn or perhaps Pb,Bi,Se,Sn.

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,Bi,Se,Sn.

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±0.003, b 4.040±0.002, c 17.530±0.003 Å. (Ed. note: see also Am. Mineral., 61, 839-852, 1976).

Unnamed (Ce,La,Nd)NbO₆ = Brocenite [Beta-fergusonite-(Ce)]


Analysis of the mineral gave Nb₂O₆ 41.78, Ta₂O₆ 1.00, TiO₂ 0.05, Fe₂O₃ 0.66, RF₂O₃ 51.12, CaO 1.20, loss on ignition 2.55, (MgO+ZrO₂+ThO₂+UO₂) 1.89, total 100.25 percent. Spectrographic analysis by V. G. Tepljakova of the rare earths gave La 23.0, Ce 29.0, Pr 1.0, Nd 33.5, 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 (Re₂O₆, Ca₂O, Ta₂O₆) (Nd₂O₆, Ta₂O₆, Fe₂O₃)O₆. 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 3450 cm⁻¹) characteristic of molecular H₂O.

The mineral is metamict, X-ray amorphous. After being heated at 700°, it gave an X-ray pattern identical with those of synthetic CeNb₂O₆, NdNb₂O₆, PrNb₂O₆ (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)(321,314), 1.679 (9)(330), 1.605(9)(414,117), 1.258(6)(417). This is indexed on a monoclinic cell, a = 5.170, b 0.617, c 5.497 Å, 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.