NEW MINERAL NAMES

Boltwoodite

CLIFFORD FRONDEL and JUN ITO, Boltwoodite, a new uranium silicate. *Science*, 124, No. **3228,** p. 931 (1956).

Analysis of a small sample containing brochantite and small amounts of unidentified impurities gave SiO_2 12.74, UO_3 58.68, K_2O 8.03, Na_2O 0.33, CuO 9.61, SO_3 2.12, H_2O 7.33, insol. 0.19, not detd., (Al_2O_3, CaO, MgO, PbO, V_2O_5) 0.34, sum 99.37% (given as 99.88% in original M. F.). This yields, after deducting brochantite, $K_2(UO_2)_2(SiO_3)_2(OH)_2 \cdot 5H_2O$. The mineral is yellow, fibrous. Optically biaxial, neg. nX 1.668, nY 1.696?, nZ 1.703. Extinction parallel. Pleochroism weak, X colorless, Y and Z yellow. Orthorhombic or monoclinic with the fiber elongation along the *b*-axis. G. about 3.6. Weakly fluorescent in dull green under both long- and short-wave excitation. The *x*-ray pattern suggests a structural relation to sklodowskite. The strongest lines are (in Å) 6.81 10, 3.39 8, 2.94 8, 3.53 7, 2.89 6. The mineral occurs at the Delta Mine (Pick's Mine), Emery County, Utah, in wartlike aggregates of fibers coating fractures in sandstone. It is an oxidation product of primary black ores. Associated minerals are brochantite, becquerelite, gypsum, and coarse golden fibers of an unidentified uranyl silicate.

The name is for Bertram B. Boltwood (1870–1927), pioneering radiochemist, of Yale University.

MICHAEL FLEISCHER

Lodochnikite (Lodochnikovite), Ufertite (Uferite), Obruchevite

On p. 825 of vol. **6** (published 1956) of the *Conference on Peaceful Uses of Atomic Energy, Geneva, 1955,* are remarks by Mr. Melkor of the U.S.S.R. delegation, in which he gives a list of new uranium minerals. Some of these were previously abstracted (*Am. Mineral.*, **41,** 816 (1956)). The following additional names are given by Melkor (M.) and are also mentioned in a paper on Uranium Minerals by V. I. Gerasimovsky (G.) in *Atomnaya Energiya* No. **4,** 118–130 (1956).

Lodochnikovite (G.), Lodochnikite (M.)—2 $(U, Th)O_2 \cdot 3UO_3 \cdot 14TiO_2$. In hydrothermal veins. Names for the Soviet petrographer B. N. Lodochnikov.

Note: This is not the same mineral as that previously described under the name lodochnikovite, see *Am. Mineral.*, **40,** 551 (1955), **41,** 672 (1956).

Ufertite (M), Uferite (G.)—20 $FeO \cdot 8\ Fe_2O_3 \cdot 4\ TR_2O_3 \cdot UO_2 \cdot 74\ TiO_2$.

Obruchevite—$(Y, U, Na_2)Ta_2O_6$ (OH,F) Named for the Soviet geologist V. A. Obruchev.

The names given in the French publication abstracted in *Am. Mineral.*, **41,** 816 (1956) agree with those listed in the English brochure describing the Soviet exhibit. The two more recent publications show two changes:

The name prjevalskite is spelled przhevalskite and the name priguinite is spelled iriginite. The composition of orlite, previously given as $3PbO \cdot 3UO_3 \cdot 4SiO_2 \cdot 6H_2O$ is given by G. as $Pb_3(UO_2)_3Si_2O_7 \cdot 6H_2O$ with 43.57% UO_3 (formula doesn't balance. M. F.).

M. F.

Smolianinovite

L. K. YAKHONTOVA, A new mineral—smolianinovite. *Doklady Akad. Nauk S.S.S.R.*, **109,** 849–850 (1956) (in Russian).

The name is given to a yellow, earthy oxidation product of nickel and cobalt arsenides. Four analyses led to the formula $(Co, Ni, Ca, Mg)_4(Fe^{III}, Al)_2(AsO_4)_4O \cdot 11H_2O$ (which could

be written (Co, Ni, Ca, Mg)$_4$(Fe,Al)$_2$(AsO$_4$)$_4$·10H$_2$O—M.F.). In the analyses, CoO ranges from 8.01 to 9.02, NiO 6.17 to 9.19, CaO 3.44 to 4.81, MgO 2.16 to 3.22%. (The formula as given includes only H_2O^+; if the H_2O^- is included, the first formula above would have 15H$_2$O. M.F.). A dehydration curve shows continuous loss of water up to about 320°. The mineral is in earthy to dense aggregates of finely fibrous material. Luster silky. Hardness about 2. Sp. gr. 2.43–2.49. Extinction parallel, elongation positive, birefringence about 0.006–0.008, mean n 1.625±0.005. X-ray powder patterns showed only 3 broad lines at 10.87, 3.16, and 2.88 Å, with intensities 10, 7, and 6.

The mineral is widely distributed as an oxidation product of smaltite, safflorite, and rammelsbergite. The only locality mentioned is Bou-Azzer, Morocco.

The name is for Professor N. A. Smolianinov, Russian mineralogist.

Discussion—If all the Fe$_2$O$_3$ is calculated as FeO, the analyses give R$_3$(AsO$_4$)$_2$·7½H$_2$O, which suggests that the mineral may be an oxidation product of annabergite-erythrite that contained some FeO. However, no analyses of annabergite or erythrite show this much FeO.

M. F

Vinogradovite

E. I. Semenov, E. M. Bohnshtedt-Kupletskaya, V. A. Moleva, and N. N. Slud'skaya, Vinogradovite—a new mineral. *Doklady Adak Nauk S.S.S.R.*, **109**, No. **3**, 617–620 (1956).

Analyses from Takhtarvumchorr, Khibina, and from Nepkha, Lovozero, gave SiO$_2$ 40.70, 40.83; TiO$_2$ 33.60, 35.86; Al$_2$O$_3$ 6.20, 4.88; MgO 0.36, 0.42; CaO 1.00, 0.66; Na$_2$O 12.00, 10.39; K$_2$O 1.78, 2.10, H$_2$O (total) 4.80 (H_2O^- 0.66), 5.50, sum 100.44, 100.64% (V.A.M., analyst). Nb was found by x-ray spectroscopic analysis; a sample from Mannepakhk contained 3.52% Nb$_2$O$_5$. Spectrographic analysis showed the presence of 0.08% BeO; other samples contained up to 0.2% BeO. Qualitative spectrographic analysis showed also Fe, Mn, Sr, Ga, and Zr (weak lines). The analyses yield approximately the formula Na$_5$Ti$_4$AlSi$_6$O$_{24}$·3H$_2$O. (They give more closely (Na, Ca, K)$_4$Ti$_4$AlSi$_6$O$_{23}$(OH)·2H$_2$O. M. F.). The mineral dissolves in acids on heating. A dehydration curve is given; most of the water is given off at 200–500°.

Vinogradovite occurs in spherulites and in aggregates of fibrous crystals, less commonly in cavities as fine prismatic crystals showing the faces b (010), m (110), n (410), d (101), and D ($\bar{1}$01). Goniometric data gave approximate measurements (poor signals) yielding $a:b:c$=1.18:1:0.76, beta 91°58′. The monoclinic, pseudo-orthorhombic character was verified by Laue diagrams. X-ray powder data are given for the analyzed samples; the strongest lines (d in Å and intensities) are 3.21, 3.20, (10,10); 3.07, 3.05 (10,10); 1.614, 1.618 (8,8); 2.72, 2.71 (7,7); 1.558, 1.562 (7,6); 1.494, 1.494 (7,6); 1.434, 1.438 (7,6); 2.48, 2.47 (6,7); 2.56, 2.58 (6,6).

Vinogradovite is colorless to white with vitreous luster. Brittle, cleavage (010) perfect, fracture uneven. Hardness about 4. Specific gravity 2.878. Before the blowpipe fuses easily (about 800° C.) to a bluish-gray opaque bead. Optically biaxial, negative, with Ns alpha 1.745, beta 1.770, gamma 1.775, 2V 41°, c: gamma 7°, elongation positive; the plane of the optic axis is perpendicular to (010). Sometimes weakly pleochroic from colorless on X to brownish on Z. Dispersion $r>v$.

Found at 12 localities in nepheline syenite pegmatites of the Khibina and Lovozero massifs, Kola Peninsula, in cavities of natrolite or analcime in the central part, or replacing ramsayite and lamprophyllite in the contact zone.

The name is for Alexander Pavlovich Vinogradov, Russian geochemist.

M. F.