NEW MINERAL NAMES

Blixite

Olof Gabrielson, Alexander Parwel, and Frans E. Wickman. Blixite, a new lead-oxyhalide mineral from Långban. *Arkiv Mineralog. Geol.*, **2**, 411–415 (1960).

Analysis by A. P. gave $PbCl_2$ 30.16, PbO 69.50, CaO 0.30, H_2O 0.79, sum 100.75%. Spectrographic analysis also showed traces of As, Sb, Bi, Mg, Mn, Fe, and the alkali metals. No fluorine was detected (less than 0.02% F). The formula is probably $Pb_{16}Cl_8(O, OH)_{16-x}$ with x approximately 2.6, if the water is assumed to be essential; if it is not essential, the formula becomes $Pb_{16}Cl_8O_{12}$ or $Pb_4Cl_2O_3$. In either case, there is probably a defect oxygen lattice such as has been found for similar compounds such as nadorite. A study of dehydration showed losses of water (in %): 100° 0, 125° 0.04, 150° 0.04, 175° 0.07, 200° 0.15, total 0.29%. The material heated at 200° showed small but distinct changes in the x-ray pattern. The water is believed to be constitutional. The compound $Pb_4Cl_2O_3$ was synthesized by fusion of PbO and $PbCl_2$; its powder pattern differed from that of the mineral.

Blixite is soluble in dilute mineral acids.

No single crystals were found. The x-ray powder pattern (35 lines) was indexed by analogy with nadorite, which gives a similar pattern. This gives an orthorhombic unit cell, a 5.832±0.003, b 5.694±0.005, c 25.47±0.02 Å. The space group could not be determined. The strongest lines are 2.93 (10) (116, 200); 3.88 (8) (112); 1.660 (8) (308, 11.14, 136); 2.83 (6) (020); 2.12 (6) (00.12); 2.04 (6) (220). One distinct cleavage.

Blixite is pale yellow, streak pale yellow, luster vitreous, sometimes dull. H. about 3, G. 7.35. Not fluorescent with UV. radiation. Optically biaxial, positive, 2V 80°, *ns* $\alpha \sim 2.05$, $\gamma \sim 2.20$. The extinction is parallel to the distinct cleavage; the optic axial plane is perpendicular to this cleavage plane.

Blixite is a very rare mineral occurring in the "Amerika" stope, Långban, Sweden, as thin crystalline coatings on fissures in dolomite impregnated with hausmannite and sometimes associated with native copper. Also found as a coating of a fissure in manganophyllite skarn.

The name is for Ragnar Blix, 1898–——, chemist of the Department of Mineralogy, Swedish Museum of Natural History.

Discussion.—Presumably to be classed with the lead oxyhalides, Dana's System, 7th Ed., vol. 2, pp. 56–69.

Michael Fleischer

Batisite

S. M. Kravchenko and E. V. Vlasova. Rare-metal mineralization associated with nepheline syenites of the alkalic province of Central Aldan. *Doklady Akad. Nauk S.S.S.R.*, **128**, No. 5, 1046–1049 (1959) (in Russian).

Chemical analysis by A. V. Bykova gave SiO_2 39.00, TiO_2 22.00, Nb_2O_5 0.36, ZrO_2 1.90, Al_2O_3 0.9, Fe_2O_3 1.80, MgO trace, MnO 0.09, CaO 0.27, SrO 0.03, BaO 22.00, Na_2O 8.40, K_2O 2.60, H_2O^+ 0.50, loss on ignition 0.10, sum 99.95%. Separate photometric determinations gave Na_2O 9.03, K_2O 2.67%, and a separate sample had F 0.07%. The analysis corresponds to $Na_2BaTi_2(Si_2O_7)_2$. Melts at 1005° C.

The mineral occurs as elongated (up to 10 cm.) crystals showing (010), (001), (110), (031), (150), (011), and (310). Presumably orthorhombic. The axial ratio $a:b:c = 0.755:1:0.584$. Cleavage average on (100). Color dark brown, in powder rosy. Hardness 5.9, microhardness 764 kg/mm². Sp. gr. 3.432 (mean of 2 determinations by suspension). Optically biaxial, positive, *ns* α 1.727, β 1.732, γ 1.789, 2V 8°, $Z=c$, $Y=b$, $X=a$. Elongation positive. Dispersion strong, r<v. Pleochroic with X colorless, Y yellow-brown, Z reddish-brown. The strongest x-ray lines are at 2.615, 4.009, 3.023, 1.947, and 1.482 Å.

Batisite occurs in the Inaglina nepheline syenite pegmatite with interstitial crystals of microcline; rarely with miaroles. Other minerals present are nepheline (zeolitized), aegirine, arfvedsonite, uranothorite, ramsayite, eudialyte, apatite containing more than 1% BaO, and adularia-like orthoclase containing 2.5% BaO.

The name is for the composition.

A fuller report will be published.

Discussion.—Similar in composition, but distinct from benitoite and shcherbakovite.

M. F.

Bergenite

Hans W. Bültemann and Günter H. Moh. Bergenit, ein neues Mineral der Phosphuranylit-Gruppe. *Neues Jahrb. Mineral., Monatsh.* **1959**, No. 10, 232–233.

The mineral was found on a dump at Streuberg near Bergen on the Trieb, Vogtland, Saxony, associated with much uranocircite, some torbernite, renardite, autunite, barium uranophane, and unidentified secondary U minerals. It is yellow, thin tabular, orthorhombic, biaxial negative, *ns* α 1.660, $\beta \sim 1.690$, $\gamma \sim 1.698$, 2V>45°, G>4.1 (Clerici soln.). Fluorescent weak orange-brown in short- and long-wave ultraviolet light. It is stated that x-ray fluorescence, spectrographic, and chemical data (not given) show it to be the barium analogue of phosphuranylite, $Ba(UO_2)_4(PO_4)_2(OH)_4 \cdot 8H_2O$. Indexed x-ray powder data are given (27 lines); the strongest are 7.78 st, 3.883 st, 3.076 st, 2.976 st-m, 3.437 m, 2.074 m, 1.974 m.

The compound was synthesized by Virginia Ross (*Am. Mineral.*, **41**, 818–920 (1956)), who called it barium-phosphuranylite. She found it to be orthorhombic, probable space group *Bmmb*, *a* 16.2, *b* 17.7, *c* 13.9 Å, biaxial, negative, *ns* α 1.660, β 1.690, γ 1.695.

The authors reject the name barium-phosphuranylite on the ground that this might be taken to mean not the barium-analogue, but a phosphoruranylite containing a little barium. The name bergenite is for the locality.

M. F.

Lead hydroxyapatite

A. K. Temple. The Leadhills-Wanlockhead lead and zinc deposits. *Trans. Roy. Soc. Edinburgh,* **63,** 85–114 (1955–56) (Publ. 1957).

$Pb_5(PO_4)_3(OH)$ occurs rarely at Whyte's Cleuch with polysphaerite (var. pyromorphite), pseudomorphous after galena. Identified by comparison with x-ray data of A.S.T.M. file. *X*-ray spacings or other data not given.

M. F.

Unnamed

A. K. Temple. The Leadhills-Wanlockhead lead and zinc deposits. *Trans. Roy. Soc. Edinburgh,* **63,** 85–114 (1955–56) (Publ. 1957).

The mineral occurs at the Hopeful Vein, Leadhills, as bright red elongated crystals. The x-ray pattern is similar to but not identical with that of lanarkite, $Pb_2(SO_4)O$, but with a larger unit cell. Spectrographic analysis showed Cr 6–15%; this may be a chromatian lanarkite. *X*-ray powder data (65 lines) are given; the strongest are 3.38 vs, 2.98 vs., 2.86 s., 1.87 s., 2.48 fs., 2.39 fs., 2.26 fs., 2.1 fs.

M. F.

Tangaite (new data on Redondite)

Duncan McKie. Notes on some minerals from Tanganyika. *Records Geol. Survey Tanganyika*, **5**, 81–94 (1955) (Publ. 1958).

Analysis by Bassett (*Records Geol. Survey Tanganyika*, **3**, 100–103 (1953) (Publ. 1956) of material from gneiss, Gerevi Hill, Tanga District, Tanganyika gave P_2O_5 42.50, Al_2O_3 29.25, Fe_2O_3 3.54, Cr_2O_3 1.11, CuO 0.93, H_2O^- 19.52, H_2O^+ 3.18, sum 100.03%, corresponding to (Al, Fe, Cr)$PO_4 \cdot 2H_2O$. McKie finds this material to have *ns* α 1.58, γ 1.60, birefringence 0.015, 2V neg., moderate. He gives an *x*-ray powder pattern which is stated to differ from those of the series variscite-strengite, but to correspond to that of type redondite (plus a few lines of turquoise). On this basis, redondite is not an intermediate member of that series; it is suggested that the Al end-member be named *tangaite* for the locality, "if the difference in structure between redondite and the variscite-strengite isomorphous series is substantiated by future single-crystal *x*-ray work."

Discussion.—The evidence is unconvincing and the mineral should not have been named.

M. F.

NEW DATA

Bolivarite

R. Van Tassel. Bolivarite restudied. *Mineralog. Mag.*, **32**, 419–420 (1960).

Type bolivarite (Navarro and Barea, 1921; Dana's System, 7th Ed., **2**,, 872) was re-examined. It is amorphous to *x*-rays, optically very weakly birefringent, *n* 1.506±0.001, G. 2.04±0.01; strongly fluorescent bright green. Analysis give Al_2O_3 3.62, P_2O_5 24.9, loss on ignition 39.5, sum 100.6%. $H_2O^- = 25.5\%$. The water content is much higher than in the original analysis; the analysis gives $Al_2O_3 : P_2O_5 : H_2O = 2:1:12.5$. The material is compared with evansite and vashegyite.

M. F.

Scarbroite, Hydroscarbroite, Meta-scarbroite

W. J. Duffin and J. Goodyear. A thermal and *x*-ray investigation of scarbroite. *Mineralog. Mag.*, **32**, 353–362 (1960).

G. W. Brindley and J. J. Comer. Electron-optical data for crystals of scarbroite. *Ibid.*, 363–365.

The preliminary report (see *Am. Mineral.*, **43**, 384–385 (1958)) that scarbroite is a valid mineral is confirmed. Analysis by R. A. Chalmers gave SiO_2 3.2, Al_2O_3 45.7, MgO 0.1, Na_2O 1.7, K_2O 0.2, H_2O 37.9, SO_3 1.8, CO_2 7.9, sum 98.5%. S. Melmore in 1930 found SiO_2 6.48, 5.69, 5.88%; Al_2O_3 44.19, 44.32 44.02%. If SiO_2 is deducted as quartz and minor constituents are considered to be due to impurities, the formula obtained is $Al_2(CO_3)_3 \cdot 12.9Al(OH)_3 \cdot 15.6H_2O$. A weight-loss curve shows a loss of nearly 17% up to 100° and a further loss of weight of about 23% up to 300°. On standing in air, or when heated to 40°, the material shows some changes in *x*-ray pattern; the fully hydrated mineral is called *hydroscarbroite;* the dehydrated material, perhaps ideally $Al_2(CO_3)_3 \cdot 12Al(OH)_3$ is called *scarbroite*. At 130°, the *x*-ray pattern changes completely; this material is called *meta-scarbroite*. Heating to higher temperatures causes shifts in lines and progressive diffuseness; above 230° no measureable lines remain. Infra-red absorption curves are in accord with loss of H_2O to 100°, loss of hydroxyl 100–245°, and loss of CO_2 below 490°.

Electron photographs show scarbroite to be thin plates about 1 μ in size, thickness about 0.01–0.05 μ. The edge angles are 66±1° and 113±1°. The *x*-ray data were indexed as corresponding to a triclinic cell with *a* 9.94, *b* 14.88, *c* 26.47, α 98.7°m β 96.5°, γ 89.0°. Assuming the formula $Al_2(CO_3)_3 \cdot 12Al(OH)_3$, Z=4, G. calcd. 2.03, measured after heating to 100° 2.17.

M. F.