

## NEW MINERAL NAMES

MICHAEL FLEISCHER

### Gagarinite

A. V. STEPANOV AND E. A. SEVEROV, Gagarinite, a new rare-earth mineral. *Doklady Akad. Nauk. S.S.R.*, **141**, 954–957 (1961) (in Russian).

Analyses of a cryptocrystalline variety by A. V. Bykova and of a crystalline variety by I. A. Sokolova gave, respectively, RE 54.00, 54.80; ThO<sub>2</sub> 0.50, –; CaO 14.00, 14.18; Na<sub>2</sub>O 7.70, 7.50; K<sub>2</sub>O none, 0.10; P<sub>2</sub>O<sub>5</sub> and S not found; F 36.00, 33.00; Cl none, 3.79; H<sub>2</sub>O<sup>+</sup> 2.38, –; H<sub>2</sub>O<sup>-</sup> none, 0.07; SiO<sub>2</sub> 0.23, 0.15; TiO<sub>2</sub> none, trace; Al<sub>2</sub>O<sub>3</sub> trace, 0.60; Fe<sub>2</sub>O<sub>3</sub> 0.50, 0.15; sum 115.31, 114.34, -(O=F<sub>2</sub>,Cl<sub>2</sub>) 15.10, 14.73=100.20, 99.61%. These correspond to Na<sub>2</sub>Ca<sub>2</sub>Y<sub>3</sub>F<sub>15</sub>·H<sub>2</sub>O and Na<sub>2</sub>Ca<sub>2</sub>Y<sub>3</sub>(F,Cl)<sub>15</sub>. The second sample gave a weak infra-red absorption band at 3.0 m $\mu$ , indicating the presence of a little hydroxyl. X-ray spectrographic analyses of the rare earths by R. L. Barinskii and L. A. Yuzvak gave, resp., La 1.5, 1.2; Ce 7.7, 5.3; Pr 2.0, 1.0; Nd 6.7, 6.1; Sm 5.7, 4.8; Eu 0.7, –; Gd 7.4, 6.1; Tb 1.7, 2.2; Dy 12.0, 18.2; Ho 2.8, 3.6; Er 8.2, 10.6; Tu 1.2, 1.4; Yb 5.7, 10.1; Lu 1.8, –; Y~35.0, 29.4%, Av. Atomic weights 133.27, 138.43.

The mineral is decomposed by water, most of the Na going into solution. It is easily decomposed by HNO<sub>3</sub>, HCl, and concentrated H<sub>2</sub>SO<sub>4</sub>. The DTA curve shows a large endothermal break at 720–750° and a small exothermal break at about 900°. When heated the mineral loses water and part of the fluorine above 500°.

Gagarinite has a creamy, in some cases yellowish or rosy color. Luster dull to vitreous, streak white. Brittle, H 4½. Microhardness 370 kg/mm<sup>2</sup> (about 4.6). G 4.21 (by hydrostatic suspension). Non-luminescent in UV. light. Magnetism close to that of aegirine or riebeckite.

Colorless in thin section, uniaxial positive, with  $\epsilon$  1.492,  $\omega$  1.472; sometimes anomalously biaxial, 2V up to 20°. Extinction parallel to the fair prismatic cleavage. Elongation positive.

Indexed x-ray powder data (40 lines) by N. G. Shumyatskaya and by A. E. Shalamov agree well; the strongest lines are given, resp., as: 1.717 (broad) (10), 2.086 (9), 3.00 (5), 2.92 (5), and 1.709 (10) (1231), 1.726 (9) (3031), 2.085 (9) (2021), 1.129 (10) (doublet, 1450, 2351), 0.9967 (8) (5051), 2.980 (7) (1120), 1.012 (7) (3360). The powder data correspond to a hexagonal cell with  $a$   $5.99 \pm 0.02$ ,  $c$   $3.53 \pm 0.02$  Å.

The mineral occurs in albitized granites and associated quartz-microcline veins of “one of the granitic massifs of Kazakhstan” and in “analogous rocks of other regions of the U.S.S.R.” These rocks contain riebeckite and as accessories pyrochlore, zircon and bastnaesite. The mineral alters easily and is replaced by aggregates of tengerite, synchisite and yttrifluorite.

The name is for the first cosmonaut, Yuri Alekseevich Gagarin.

DISCUSSION.—The unit cell content is not given, but from the data given, Z=0.39 and 0.38 for the unit cell and formulas given, so that the unit cell contains (Y, Ca, Na)<sub>2.8</sub>F<sub>6</sub>. The magnetic properties, evidently due to the rare earths, are interesting.

### Innelite

S. M. KRAVCHENKO, E. V. VLASOVA, M. E. KAZAKOVA, V. V. ILOKHIN AND K. K. ABRA-SHEV, Innelite, a new barium silicate. *Doklady Akad. Nauk. S.S.R.*, **141**, 1198–1199 (1961) (in Russian).

The name, without description, was noted in a previous abstract (*Am. Mineral.*, **46**, 769, 1961). Analysis by M.E.K. gave SiO<sub>2</sub> 18.78, TiO<sub>2</sub> 18.50, Al<sub>2</sub>O<sub>3</sub> 0.23, Fe<sub>2</sub>O<sub>3</sub> 0.66, FeO 0.57, MgO 0.83, MnO 1.04, CaO 0.72, BaO 44.16, Na<sub>2</sub>O 5.63, K<sub>2</sub>O 0.72, SO<sub>3</sub> 7.19, F 0.40,

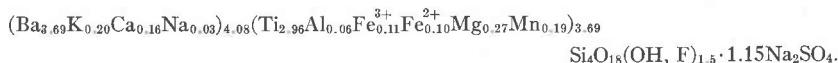
$\text{H}_2\text{O}^+$  0.88,  $\text{H}_2\text{O}^-$  0.09, sum 100.40 ( $0=\text{F}_2$ ) 0.17 = 100.23%. Spectrographic analysis showed 0.n% Nb and Sr, 0.0n% Zr and V, and 0.00n% Cu. Yu. A. Bashalov found 0.77% rare earths, with La predominant (about twice Ce). The analysis gives:  $(\text{Na}_{2.33}\text{Ca}_{0.16}\text{Mg}_{0.27}\text{Fe}_{0.11}^{3+}\text{Fe}_{0.10}^{2+})_{2.97}(\text{Ba}_{3.69}\text{K}_{0.20}\text{Mn}_{0.19})_{4.08}(\text{Ti}_{2.96}\text{Al}_{0.06})_{3.02}\text{Si}_4\text{O}_{24}(\text{OH}_{1.25}\text{F}_{0.27})_{1.62}\cdot 1.15\text{ S}$ . It is suggested that this might be put in the form  $(\text{Ba}, \text{K})_4(\text{Ca}, \text{Mg}, \text{Fe})(\text{Ti})\text{Si}_4\text{O}_{18}(\text{OH}, \text{F})_{1.5} \cdot n \text{Na}_2\text{SO}_4$  with  $n$  variable (= 1.15 in above analysis, M.F.). The mineral is nearly insoluble in  $\text{HCl}$ ,  $\text{HNO}_3$  and  $\text{H}_2\text{SO}_4$ . The DTA curve shows a strong endothermal effect at 915–945°.

Innelite occurs as plates a few mm to some cm in size. Crystal faces are rare; only (001), (010) and some poorly developed faces in the [100] zone were noted. Shows poly-synthetic Manebach twinning. Triclinic, with  $a 5.38 \pm 0.02$ ,  $b 7.14 \pm 0.03$ ,  $c 14.76 \pm 0.10 \text{ \AA}$ ,  $\alpha \sim 99^\circ$ ,  $\beta 95^\circ$ ,  $\gamma \sim 90^\circ$ . The unit cell contains 1 formula weight. A piezo effect was noted, so the space group is  $P\bar{1}$ . The strongest lines of the x-ray pattern (13 unindexed lines given) by N. D. Pinevich are 3.92 (10), 3.04 (6), 2.95 (6), 1.964 (6), 1.845 (6), 1.735 (6), 6.31 (5), 5.36 (5), 2.69 (5), 1.480 (5), 1.346 (5). Color pale yellow to brown, luster vitreous on cleavages, slightly oily on fracture. Cleavages perfect (010), (110), (101), medium on (001). Brittle. H 4.75 (microhardness 435 kg/sq.mm). G 3.96. Slightly electro-magnetic. Optically biaxial, positive, with  $\alpha 1.726$ ,  $\beta 1.737$ ,  $\gamma 1.766$ , all  $\pm 0.001$ ,  $2V 82 \pm 2^\circ$ . Dispersion  $r > v$ , strong. Pleochroic from light yellow on X and Y to pale brownish-yellow on Z. Sections perpendicular to (001) show anomalous bluish interference colors. The plane of the optic axes is at  $\sim 12^\circ$  to the plane (001).  $\gamma$  is nearly parallel to [100].  $P_{(001)}:\gamma = 88^\circ$ ,  $P_{(001)}:\beta = 12^\circ$ ,  $P_{(001)}:\alpha = 77^\circ$ .

Occurs associated with natrolite-albite nests, often in miaroles and with ramsayite and batissite, in aegirine-eckermannite-microcline pegmatites of the Inagli massif, southern Yakutia. It has also been found in pulaskites of Inagli and in shonkinite of the Yakutotsk massif.

The name is from Inneli, the Yakut name for the Inagli River.

DISCUSSION.—The first formula given does not balance. A more reasonable grouping by ionic radii would appear to be



### Laitakarite

ATSO VORMA, Laitakarite, a new Bi-Se mineral. *Bull. Comm. Geol. Finlande* 188, 1–10 (1960).

Analysis by Päävo Väänänen gave Bi 78.28, Pb 0.78, Ag 0.71, Cu 0.26, Zn 0.14, Se 15.50, S 3.28, insol. 0.93, sum 99.88%. After deducting a little (total 4%) of galena, sphalerite, and chalcopyrite, this gives for the unit cell content  $\text{Bi}_{3.90}\text{Se}_{2.04}\text{S}_{0.92}$  or  $\text{Bi}_4(\text{Se}, \text{S})_3$ . Spectrographic data by Arvo Löfgren showed also Fe, Si, Al, Mg, and traces of Te.

Weissenberg photographs showed the mineral to have space group  $R\bar{3}m$ ,  $R32$ , or  $R3m$ , with unit cell  $a 4.225 \pm 0.002$ ,  $c 39.93 \pm 0.02 \text{ \AA}$ , or  $a_{rh} 13.53 \pm 0.007 \text{ \AA}$ ,  $\alpha 17^\circ 58' \pm .04'$ . This is close to the telluride joseite. Indexed x-ray powder data are given; the strongest lines are 3.072 (vvs)(322); 2.246 (vs)(554); 2.112 (vs)(10I); 1.741 (s)(331), 4.425 (ms)(333); 3.586 (ms)(110); 1.538 (ms)(644); 1.410 (ms)(876); 1.341 (ms)(421).

Occurs as foliated plates and sheets, with excellent basal cleavage. Color galena white, luster high metallic, old surfaces are lead gray. The folia are soft, flexible, and inelastic. Vickers microhardness 50 kg/sq.mm. G  $7.93 \pm 0.08$ ; corrected for impurities 8.12. Color on polished surface white, grayish with respect to native Bi. Moderately anisotropic; dark brownish gray under crossed Nicols. Reflectivity in air: green 48%, orange or red 46%.

Occurs at Orijärvi, Finland, in veinlets in quartz-anthophyllite-cordierite-biotite rocks, in grains of 0.5-2mm diameter. Associated minerals include chalcopyrite, native Bi, sphalerite, molybdenite, Ag, pyrite and galena.

The name is for Aarne Laitakari, Director, Geological Survey of Finland.

**DISCUSSION.**—A preliminary report was abstracted in *Am. Mineral.*, **44**, 908 (1959). The mineral ikunolite (see *Am. Mineral.*, **45**, 477-478, 1960) is the analogous compound with S greatly predominant over Se. The mineral has since been reported in Pb deposits of northeastern U.S.S.R. by Godovikov and Feryanchich, (*Geol. Geofiz. Akad. Nauk S.S.R., Sibir. Otdel.*, 1960, **10**, 19-26; *Chem. Abs.*, **55**, 11195, 1961) with  $a$  4.22,  $c$  39.8 kX,  $G$  7.49.

### Stishovite

E. C. T. CHAO, J. J. FAHEY, JANET LITTLER AND D. J. MILTON, Stishovite,  $\text{SiO}_2$ , a very high pressure new mineral from Meteor Crater, Arizona. *Jour. Geophys. Research*, **67**, 419-421 (1962).

In a recent report (*Geokhimiya* 1961 (10), 837-839) Stishov and Popova (S. and P.) reported the synthesis of a new form of  $\text{SiO}_2$  at 1200-1400° C. and pressures above 160 kilobars. The x-ray data given agree closely with those of natural material isolated from coesite-bearing Coconino sandstone from Meteor Crater. A sample was concentrated by removal of quartz and coesite in HF, which scarcely attacks the stishovite. Spectrographic analysis by Claude Waring showed it to be essentially  $\text{SiO}_2$ . Indexed x-ray powder data are given; the strongest lines are 2.959 (100)(110), 1.530 (50)(211), 1.981 (35) (111), 1.235 (25)(301), 2.246 (18)(101), 1.478 (18)(220). These are indexed with space group  $P_4/mnm$  (rutile type),  $a$  4.1790,  $c$  2.6649, both  $\pm 0.0004$  Å.  $G$  (calc.) 4.28, measured on synthetic (S. and P.) 4.35, 46% denser than coesite. The natural material occurs in aggregates of submicron size showing low to moderate birefringence, but  $ns$  could not be measured. The synthetic material (S. and P.) had  $N_p$  1.799,  $N_g$  1.826, both  $\pm 0.002$ . Stishovite may also occur in the coesite-bearing material of the Ries Crater, Germany; x-ray patterns show a weak line at 2.96 Å.

The name is for S. M. Stishov, of the Moscow State University, who first synthesized the material.

**DISCUSSION.**—This is the first mineral reported to contain silicon in octahedral (6-fold) co-ordination.

### Eardleyite

BARBARA J. ANDERSON AND J. A. WHELAN. Nickel-bearing minerals in the southern Quirrh Mountains, Utah (abs.): *Geol. Soc. Am. Special Paper* **68**, 83 (1962).

Eardleyite occurs with nickeloan smithsonite ( $Zn:Ni=3:1$ ) in a fracture zone in limestone. It occurs with calcite in small veins traversing limonite; the color of the mixture with calcite ranges from light to dark green. X-ray and infra-red data (not given) indicate it to be an analogues of hydrotalcite; the formula is given as  $(\text{Ni}, \text{Zn})_6\text{Al}_2(\text{OH})_{16}\text{CO}_3 \cdot 4\text{H}_2\text{O}$  with  $\text{Ni}:Zn=11:1$ . An analogous nickel compound was synthesized hydrothermally at 250° and 16,000 lbs./sq in. Eardleyite is uniaxial, negative, with  $ns$  close to 1.60.

Presumably name for A. J. Eardley, Professor of Geology, University of Utah.

**DISCUSSION.**—Names should not be published without adequate data.

### Calciocopiaite, Tusiite

M. A. KASHKAI AND R. M. ALIEV. The new mineral calciocopiaite (tusiite) of the coiapite group and the general characteristics of this group. *Akad. Nauk Azerbaidjan S.S.R., Trudy Azerbaidjan Geograph. Obshch.* 1960, 49-76 (Russian with English summary).

The mineral was found as powdery crusts, grayish- to brownish-yellow, as a supergene product of weathering of magnetite ores containing pyrite and calcite at Dashkesan, Middle Caucasus, Azerbaijan. Associated minerals are hydrous Fe oxides, chalcanthite, and malachite. Analysis gave CaO 4.85, Mg 0.32,  $\text{Fe}_2\text{O}_3$  26.25,  $\text{SO}_3$  39.00,  $\text{H}_2\text{O}$  29.30, insol. 0.40, sum 100.12%, corresponding to  $\text{CaFe}^{3+}(\text{SO}_4)_6(\text{OH})_2 \cdot 19\text{H}_2\text{O}$ . The DTA curve by I. A. Vabaev shows a large endothermal break with a double peak at 157° and 205°, moderately large endothermal breaks with peaks at 406° and 676°, a moderate exothermal break with peak at 434°, and a small exothermal break with peak at 521°. X-ray powder data (41 lines) by D. G. Alieva are given; the strongest lines are: 3.108 (10), 3.027 (10), 2.809 (10), 1.860 (10), 3.458 (9), 1.304 (9), 1.267 (9), 1.244 (9), 2.043 (8), 1.986 (8), 1.914 (8), 1.696 (8), 1.156 (8), 1.043 (8).

The name is for the Azerbaijan astronomer and naturalist of the 13th century, Mohammed Nasreddin Tusi.

### Strontium-apatite

A. S. EFIMOV, S. M. KRAVCHENKO, AND Z. V. VASIL'eva. Strontium-apatite, a new mineral. *Doklady Akad. Nauk S.S.R.*, 142, 439-442 (1962) (in Russian).

Analysis of the mineral (by Z.V.V.) gave  $\text{P}_2\text{O}_5$  30.44,  $\text{SiO}_2$ , 0.90,  $\text{SO}_3$  none,  $\text{Al}_2\text{O}_3$  0.40,  $\text{CaO}$  10.80,  $\text{SrO}$  46.06,  $\text{BaO}$  2.70,  $\text{MnO}$  none,  $\text{MgO}$  1.64,  $\text{TiO}_2$  none,  $\text{ThO}_2$  0.60,  $\text{RE}_2\text{O}_3$  3.73,  $\text{Fe}_2\text{O}_3$  0.15,  $\text{Na}_2\text{O}$  0.64,  $\text{K}_2\text{O}$  0.10,  $\text{H}_2\text{O}$  0.61,  $F$  1.67, sum 100.44 - ( $O = F_2$ ) 0.70 = 99.74%. This corresponds to  $(\text{Sr}_{5.91}\text{Ca}_{2.56}\text{Ba}_{0.23}\text{Mg}_{0.54}\text{RE}_{0.3}\text{Na}_{0.3}\text{Th}_{0.03}\text{Fe}_{0.03})_{9.90}(\text{P}_{5.7}\text{Si}_{0.20}\text{Al}_{0.10})_6\text{O}_{24}(\text{OH}_{1.10}\text{F}_{0.8})_{2.06}$ , or nearly  $(\text{Sr}, \text{Ba})_6(\text{Ca}, \text{RE}, \text{Mg}, \text{Na})_4(\text{PO}_4)_6(\text{F}, \text{OH})_2$ . The rare earths consist of La 26.15, Ce 53.9, Pr 5, Nd 13.8, Sm 0.63, Eu 0.1, Gd 0.31, Tb -, Dy 0.06, Er 0.06, Yb 0.13%. The mineral is easily soluble in acids.

The mineral is pale green to yellowish-green, colorless and transparent in small crystals. Luster vitreous, on the fracture greasy. H 5, G 3.84 (by G. G. Prokhova by hydrostatic suspension). Optically uniaxial, negative,  $\omega$  1.651,  $\epsilon$  1.637.

The x-ray powder diagram (24 lines) shows spacings larger than for apatite. The strongest lines are (in  $k\bar{X}$ ) 2.89 (10), 3.167 (7), 2.78 (7), 2.005 (7), 1.909 (7), 1.467 (6), corresponding to  $a$  9.66,  $c$  7.19 (both  $\pm 0.01$ )  $k\bar{X}$ ,  $c/a = 0.744$ .

The mineral occurs in poorly formed oval crystals  $0.2 \times 1$  cm in longitudinal section and as small crystals with corroded faces. Only the prism (1010) and dipyramid (1011) were observed. The mineral occurs in sugary albite filling interstices between crystals of aegirine and eckermannite in veins in alkalic pegmatites that cut the dunite core of the concentrically zoned Inagil massif of ultrabasic-alkalic rocks, southern Yakutia. It is locally intergrown with microlime and eckermannite. Other associated minerals include batelite, innelite, ramsayite and rare eudialyte.

**DISCUSSION.**—The authors suggest that the name strontium-apatite (taken from the artificial compound) be used for all members of the group with more than 50% (atomically) of Sr. The mineral belovite (see *Am. Mineral.*, 40, 367, 1955) has Sr 47%, rare earths 22% of the cations. It would have been simpler perhaps to use belovite for all Sr-dominant apatites.

### Kmaite

A. A. ILLARIONOV, Green mica, a new mineral of the iron-bearing quartzites of the Midai-lov deposit, K.M.A. *Akad. Nauk S.S.R., Voprosy Razrabotki Mestorozhzh. Kurskoi Magnitnoi Anomalii*, 1961, 250-60 (in Russian).

Analysis by V. Ya. Shebtsova and S. Ya. Trebukova gave  $\text{SiO}_2$  43.80,  $\text{TiO}_2$  0.12,  $\text{Al}_2\text{O}_3$  3.64,  $\text{Fe}_2\text{O}_3$  29.74,  $\text{FeO}$  2.75,  $\text{MnO}$  0.07,  $\text{CaO}$  0.64,  $\text{MgO}$  3.79,  $\text{K}_2\text{O}$  9.55,  $\text{Na}_2\text{O}$  0.20,  $\text{H}_2\text{O}$  4.20, loss on ignition 0.98, total 99.38%. Spectrographic analysis by A. S. Dudykin

showed also Be 0.004–0.006, Cu 0.004–0.006, Ni 0.001–0.006%. This gives the formula  $(K_{0.94} Ca_{0.05} Na_{0.03})(Mg_{4.43} Fe^{2+}_{1.18} Fe^{3+}_{1.43} Ti_{0.01}) (Si_{3.33} Al_{0.33} Fe^{3+}_{0.29}) O_{10} (OH)_2$  (NOTE—the formula given in the original has two serious misprints). The mineral is optically negative,  $2V$  5–8°,  $N_p'$  1.625–1.638,  $N_g'$  1.657–1.696, birefringence 0.031–0.034, G 3.08–3.09. X-ray powder data are given: the strongest lines are 3.36 (10), 2.61 (7), 1.66 (7), 2.15 (5), 1.52 (5) (no lines are given with spacings above 4.56 Å.M.F.). From these,  $a=5.265$ ,  $b=9.12$  kX. DTA by A. I. Tsevtkov showed a large endothermal effect at 980–1020° and small endothermal effects at 330–390° and 520–610°.

The mineral is classified, on the basis of the x-ray data, as trioctahedral with some dioctahedral (even though the analysis gives 2.05 for the sum of the octahedral positions. M.D.F.). Similar material from this locality had been classified by Foster in 1959 as belonging to the celadonite group; the author considers that the x-ray and DTA characteristics justify a special name.

The name presumably is for the abbreviation of Kursk Magnetic Anomaly.

**DISCUSSION.**—An unnecessary name for a member of the celadonite group, higher than usual in  $Fe_2O_3$  and  $K_2O$ .

Margaret D. Foster and M. F.

### Gelzircon

E. I. SEMENOV, Gelzircon in alkalic pegmatites. *Akad. Nauk S.S.S.R., Inst. mineral., geokhim. i kristallogr. redkikh elementov, Trudy*, 4, 85–89 (1960) (In Russian).

Gelzircon occurs as white, floury material, resembling clay, in nepheline syenite pegmatites of the Tatar massif, Yenisei Range, in irregular masses up to  $3 \times 2$  cm and in platy masses (pseudomorphs after catapleite?) in microcline. Analysis by Z. P. Kataeva gave  $SiO_2$  23.96,  $ZrO_2$  47.60,  $Nb_2O_5$  0.17,  $Ta_2O_5$  0.03, RE 0.27,  $Al_2O_3$  5.49,  $Fe_2O_3$  1.65,  $MgO$  0.10,  $CaO$  2.11,  $H_2O^-$  9.60,  $H_2O^+$  9.67, sum 100.65%, corresponding to  $ZrSiO_4 \cdot 1.7 H_2O$ . Spectrographic analysis by N. V. Lizunov showed traces of Be, P, Sr, Ba, Mn; by L. I. Sosnovskaya showed  $HfO_2$  1.30%. The material is soluble in HCl. The DTA curve shows a broad endothermal break at 20–300°; most of the water is lost in this interval.

The material can be pulverized by the fingers. G 2.8, 2.9. Optically isotropic,  $n$  1.655  $\pm 0.003$  (calculated additively from zircon+water, 1.66). The x-ray pattern (not given) is stated to give about ten weak, diffuse lines, all of which correspond to the principal lines of zircon. When heated 2 hours at 1100°, the material gives a distinct zircon pattern plus some extra lines.

**DISCUSSION.**—Compare Arshinovite, *Am. Mineral.*, 44, 210 (1959). An unnecessary name, as are other names listed by the author, gelbertrandite, gelthorite, gelgoethite (limonite), gelcassiterite (arandisite), and gelcristobalite (opal).

### Unnamed

A. D. GENKIN AND N. V. KOROLEV, On methods of determining small grains of minerals in ores. *Geol. Rudnykh Mestorozhdenii* 1961 (5) 64–79 (in Russian)

The paper is concerned mainly with x-ray and spectrographic methods applied to small grains, but includes preliminary descriptions of two new minerals from copper-nickel sulfide ores (Noril'sk?).

### Platinum telluride, $PtTe_2$

Occurs as very small, mostly hundredths of a mm, max. 0.2 mm, white grains amidst chalcopyrite. X-ray powder data agree with those of Grønvold, Haraldsen and Kjekshus, *Acta Chem. Scand.* 14 (9) (1960) for synthetic  $PtTe_2$ . Strongest lines 2.93 (10) (1011), 2.11 (9)(1012), 1.106 (8)(1124), 2.03 (7)(1120), 1.282 (7)(2131), 5.28 (6)(0001), 1.575 (6)(1013), 1.462 (6)(2022), 1.182 (6) (2132), corresponding to hexagonal,  $a$  4.042,  $c$  5.26 Å. Cleavage

(0001). Anisotropic. Four microspectrographic analyses of material containing michenerite ( $PdBi_2$ ) gave (in micrograms) Pt 4.0, 4.5, 0.30, 0.20; Te 7.0, 5.5, 0.63, 0.36; Pd 1.25, 1.50, 0.08, 0.03; Bi 5.7, 4.9, 0.15, 0.06.

#### Pd-Bi Mineral ( $Pd_3Bi$ ?)

Occurs as small grains in chalcopyrite, mostly intergrown with  $PtTe_2$  and michenerite. Characterized in reflected light by its cream color; higher reflectivity and rather strong anisotropy with color effects from brown to grayish-white. The x-ray pattern differs from those of michenerite, froodite, and other compounds found in the system Pb-Bi. The strongest lines are 3.05 (10), 2.24 (9), 2.09 (9), 1.236 (8), 1.175 (8), 3.36 (7), 1.528 (7), 1.336 (7), 1.210 (7). Microspectrographic analysis gave in micrograms: Pd 0.55, Bi 0.44, Te 0.78.

#### Vulcanite

E. N. CAMERON AND I. M. THREADGOLD, Vulcanite, a new copper telluride from Colorado. *Am. Mineral.*, **46**, 258-268 (1961).

#### Neighborite

E. C. T. CHAO, H. T. EVANS, JR., B. J. SKINNER AND C. MILTON, Neighborite, a new mineral from the Green River formation in Utah. *Am. Mineral.*, **46**, 379-393 (1961).

#### Norsethite

MARY E. MROSE, E. C. T. CHAO, J. J. FAHEY AND C. MILTON, Norsethite,  $BaMg(CO_3)_2$ , a new mineral from the Green River formation, Wyoming. *Am. Mineral.*, **46**, 420-429 (1961).

#### Kimzeyite

C. MILTON, B. L. INGRAM AND L. V. BLADE, Kimzeyite, a Zr garnet from Magnet Cove. *Am. Mineral.*, **46**, 533-548 (1961).

#### Nobleite

R. C. ERD, J. F. MCALLISTER AND A. C. VLISIDIS, Nobleite, a new hydrated calcium borate. *Am. Mineral.*, **46**, 560-571 (1961).

#### Novakite

Z. JOHAN AND J. HAK, Novakite, a new mineral. *Am. Mineral.*, **46**, 885-891 (1961).

## NEW DATA

## Lillianite

VLADIMÍR KUPČÍK, MIKULÁS MATHERNÝ, AND CYRIL VARČEK, The problem of the structure of the mineral "lillianite." *Geol. Sborník (Bratislava)*, 12, 103–113 (1961) (Czech with English summary).

Lillianite, supposedly  $Pb_3Bi_2S_6$ , was shown to be a mixture containing galenobismutite by Berry (1940) (see *Dana's System*, 7th Ed., v. I, 404–405). The authors describe a mineral that contains Pb 49.37, Bi 34.88% (microchemical analysis on 20 mg) in good agreement with the formula above. G 7.10. X-ray powder data are given; the strongest lines, in kX, are 2.94 (100), 2.07 (90), 2.84 (70), 1.779 (70), 3.51 (60), 3.39 (60), 3.24 (60), 0.9584 (60). From these the unit cell is calculated to be  $a$  15.84,  $b$  19.02,  $c$  4.10 kX,  $Z=4$ , space group  $Pbnm(?)$ , G (calc.) 6.58.

DISCUSSION.—The poor agreement of calc. and measured G indicates something wrong with either the chemical composition or the unit cell. Further study is needed.

## DISCREDITED MINERALS

## Wathlingenite (=Kieserite)

KUNIBERT FRIEDRICH, ROBERT KÜHN AND HUGO STRUNZ. Identität von Wathlingenit mit Kieserit. *Kali u. Steinsalz*, 3, 221–227 (1961).

The name wathlingenite or wathlingite was given in 1923 by C. Prager to a supposed sulfate of Ca and Mg (perhaps  $CaSO_4 \cdot MgSO_4 \cdot H_2O$ ), but no account of it appears to have been published. It is listed in Hey, 2nd Ed., 1955, p. 278.

Study of material from Wathlingen, including chemical analysis, optical data, and x-ray study, show it to be kieserite with complex polysynthetic twinning.

## Shattuckite (=Plancheite) (?)

C. GUILLEMIN AND R. PIERROT. Nouvelles données sur la plancheite. Identité de la plancheite et de la "shattuckite." *Bull. soc. franç. mineral. et crist.* 84, 276–281 (1961).

Thirteen samples, including several from the type localities, were examined. X-ray powder data are given for 3; the remainder are stated to give the same diagram or that of bisbeeite. Two new analyses lead to the formula  $6CuO \cdot 5SiO_2 \cdot 1.5 \cdot 2H_2O$ . A new determination of density (locality not given) gave  $3.95 \pm 0.02$ . Optical study from Tantara, Katanga, gave biaxial, positive,  $2V 80 \pm 5^\circ$ ,  $\alpha 1.743 \pm 0.005$ ,  $\gamma 1.795 \pm 0.005$ . It is concluded that the minerals are identical. Plancheite (Lacroix, 1908) has priority over shattuckite (Schaller, 1915).

DISCUSSION.—The new data are in much better agreement with the data previously given for shattuckite than those given for plancheite. There remain to be explained the optical data given by Larsen (*U. S. Geol. Survey Bull.* 679, 121, 1921) for plancheite: (1) minute, interwoven blue fibers,  $\alpha 1.640$ ,  $\gamma 1.697$ , both  $\pm 0.005$  (2) coarser needles, optically pos.,  $2V$  medium,  $\alpha 1.645$ ,  $\beta 1.660$ ,  $\gamma 1.715$ , all  $\pm 0.005$ . G. and P. dismiss these as "not concerning the mineral described by Lacroix." But Larsen states that his material was type material from the Congo procured by W. T. Schaller from Prof. Lacroix. Further study is needed.

## Deweylite (=mixture of clinochrysotile or lizardite with stevensite)

G. T. FAUST AND J. J. FAHEY, The serpentine-group minerals. *U. S. Geol. Survey Prof. Paper* 384-A, 1–92 (1962).

Chemical, x-ray and DTA show that samples marked deweylite are mixtures of a

serpentine-group mineral (usually clinochrysotile, but in some samples lizardite) with stevensite.

**Vernadskite (=Antlerite)**

MARY E. MROSE, Vernadskite discredited; pseudomorphs of antlerite after dolerophanite. *Am. Mineral.*, **46**, 146-154 (1961).

**Wiikite, Nuolaite**

A. A. BEUS AND A. P. KALITA, New data on the so-called wiikite. *Doklady Akad. Nauk S.S.S.R.*, **141**, 705-708 (1961) (in Russian).

Analyses,  $\alpha$ -ray data and DTA study of material from the type locality (Nuolainniemi and Lokansaari) show that material corresponding to wiikite (See *Dana's System*, 7th Ed., v. I, p. 801) was in part euxenite, in part obruchevite (the Y member of the pyrochlore group). Some of the older analyses do not correspond with these and may refer to titanian fergusonite or betafite. The obruchevite was found commonly replacing columbite; it is suggested that the analysis of nuolaite may have been made on a mixture of columbitetantalite and obruchevite. Loraaskite (see *Dana*, p. 767) from the same locality is very dubious.