

## NOTICE

*New Mineral Names* has been prepared by Michael Fleischer for many years with extraordinary coverage and critical evaluation, and remains one of the most important sections of *The American Mineralogist*. Dr. Fleischer continues to find the task enjoyable but increasingly burdensome. This is a call for volunteers to assist him in combing and reviewing the literature for descriptions of new minerals and new mineral data. Mineralogists interested, please contact Dr. M. Fleischer, U. S. Geological Survey, Washington 25, D. C., and specify the language(s) and journals you can and are willing to cover. Especially helpful would be the services of three good mineralogists to cover *Mineralogical Magazine*, *Bulletin Société Française Minéralogie*, and *Neues Jahrbuch für Mineralogie* etc., Monatshefte.

## NEW MINERAL NAMES

### Farringtonite

E. R. DUFRESNE AND S. K. ROY. A new phosphate mineral from the Springwater pallasite: *Gochim. et Cosmochim. Acta*, **24**, 198-205 (1961).

The mineral was found in the Springwater pallasite, from near Springwater, Saskatchewan. It occurs as colorless to wax-white to yellow material peripheral to olivine nodules. The meteorite also contains metallic iron (kamacite) and troilite.

Spectrographic analyses were made on two 25 mg. samples; the first was cleaned magnetically, the second by gravity separation in a centrifuge as well. These gave:  $P_2O_5$   $37.6 \pm 0.6$ ,  $49.7 \pm 1.0$ ;  $MgO$   $49.2 \pm 0.2$ ,  $41.6 \pm 1.3$ ;  $SiO_2$   $11.1 \pm 0.2$ ,  $2.9 \pm 0.1$ ;  $Fe$   $5.4 \pm 0.1$ ,  $3.7 \pm 0.2\%$ . The final content of metallic iron in the samples was "quite negligible"; the Fe reported must be present as  $FeO$  or  $Fe_2O_3$  or both. Microscopic and x-ray study of the second sample showed no olivine; it is probable that at least some  $SiO_2$  was present in solid solution. The composition is therefore essentially  $Mg_3(PO_4)_2$ , but with Fe and Si present; it is known that synthetic  $Mg_3(PO_4)_2$  can take  $MgO$  into solid solution up to a composition  $MgO \cdot 3Mg_3(PO_4)_2$ . The mineral is virtually insoluble in water, attacked slowly by dilute  $HNO_3$ .

Farringtonite is monoclinic, cleavage "fair to good (100) and (010)," distinguished by "parallel partings along 100." Optically biaxial, positive,  $n_s \alpha$  1.540,  $\beta$  1.544,  $\gamma$  1.559, all  $\pm 0.002$ ,  $2V$  54-55°, birefringence "0.010-0.014," extinction inclined  $Z:c=16-17^\circ$  in  $\beta$  obtuse.  $G$ . approx. 2.80 (method of determination not stated).

X-ray powder data agree with those for synthetic  $Mg_3(PO_4)_2$ . The strongest of the 28 lines given are 3.83 (vs, d), 3.41 (vs), 2.39 (ms), 2.77 (m, d), 2.11 (m), 1.074 (m), 1.071 (m), 1.002 (m), 0.984 (m).

The name is for O. C. Farrington (1864-1933), for many years Curator of Geology, Field Museum, an authority of meteorites.

MICHAEL FLEISCHER

**Tin-tantalite (Olovotantalit)**

V. V. MATIAS. Tin-tantalite (olovotantalit), a new variety of tantalite: *Geol. Mestorozhd. Redkikh Elementov No. 9*, 30-41 (1961) (in Russian).

The mineral occurs in "one of the pegmatite deposits of the U.S.S.R." as brown, well-formed crystals 0.5-1 mm. in diameter. Analysis by K. A. Dorofeeva and T. A. Ukhina gave Ta<sub>2</sub>O<sub>5</sub> 62.53, Nb<sub>2</sub>O<sub>5</sub> 12.50, SnO<sub>2</sub> 9.06, TiO<sub>2</sub> 0.50, ZrO<sub>2</sub> none, Fe<sub>2</sub>O<sub>3</sub>+FeO 0.57, MgO none, MnO 13.06, UO<sub>2</sub> 0.03, rare earths 0.17, CaO 0.18, SiO<sub>2</sub> 0.20, H<sub>3</sub>O<sup>+</sup> 0.04, H<sub>2</sub>O<sup>-</sup> 0.06, sum 98.90%, corresponding to (Mn<sub>0.87</sub>Fe<sub>0.04</sub>TR<sub>0.01</sub>)<sub>0.92</sub> (Ta<sub>1.34</sub>Nb<sub>0.44</sub>Sn<sub>0.28</sub>Ti<sub>0.03</sub>)<sub>2.09</sub>O<sub>6</sub>. Spectrographic analysis showed also Sb, Al, Zr, each about 0.1%, Mg, Ga, Bi, La, Y, Zn, each about 0.01%, Cu, Yb, Ag each about 0.001%. The mineral is completely dissolved when heated with H<sub>2</sub>SO<sub>4</sub>+(NH<sub>4</sub>)SO<sub>4</sub>, so that cassiterite cannot be present.

The mineral is dark brown to black, opaque to translucent. Luster greasy on fracture, vitreous on crystal faces. H. 5½-6 (660 kg. sq. mm.), G. 7.4. Not luminescent in cathode rays. Optically biaxial, positive,  $n_s \alpha 2.19 \pm 0.02$ ,  $\gamma 2.28 \pm 0.02$ , 2V 30-40°. Pleochroism distinct X reddish-brown, Z yellowish, absorption X>Z. Reflecting power in polished section somewhat lower than for manganotantalite and much lower than that of stibiotantalite. Strongly anisotropic with yellow-brown internal reflections. Two cleavages were noted under the microscope, the less perfect one at 26-28° to X, the perfect cleavage parallel to X. Simple and polysynthetic twinning was observed. Dielectric constant 4.84. Infra-red spectra made by L. S. Ivanova are given for tin-tantalite, tantalite, thoreaulite, and cassiterite; that for tin-tantalite is similar to those for tantalite and thoreaulite but differs in showing absorption at 10-11 mμ.

The crystals appeared to be monoclinic, but Laue diagrams were not decisive. The x-ray powder diagram is given; the strongest lines are 1.468 (10), 1.780 (8), 2.95 (7), 2.51 (7), 1.743 (7), 1.723 (7), 1.917 (6-7). The pattern is similar to that of manganotantalite, but contains some additional lines.

The mineral occurs in small (0.5-1 mm. diameter) crystals of irregular form, also as pseudomorphs after simpsonite; in a strongly albitized pegmatite. It is associated with simpsonite, microlite, lepidolite, and spodumene; rarely stibiotantalite. The mineral is later than spodumene and simpsonite, earlier than stibiotantalite.

DISCUSSION.—An unnecessary name for stannian manganotantalite.

M. F.

**Alumobriholite**

M. A. KUDRINA, V. S. KUDRIN, AND G. A. SIDORENKO. Briholite and alumobriholite from alkalic pegmatites of Siberia: *Geol. Mestorozhdenii Redkikh Elementov No. 9*, 108-120 (1961) (in Russian).

Silicophosphates of the rare earths occur in abundance in "a large alkalic masif of Siberia"; briholite (an analysis is given of thorian briholite, ThO<sub>2</sub> 9.77%) in nepheline syenite pegmatites, alumobriholite in pegmatites of aegirine-riebeckite granites. Analyses of alumobriholite by T. I. Ivanova and Z. V. Vasil'eva gave SiO<sub>2</sub> 21.93, 19.02; P<sub>2</sub>O<sub>5</sub> 3.96, 1.87; B<sub>2</sub>O<sub>3</sub> —, 0.15; CaO 17.34, 22.55; rare earths 27.58, 32.32; ThO<sub>2</sub> 4.76, 9.25; VO<sub>3</sub> 0.63, 2.05; Al<sub>2</sub>O<sub>3</sub> 14.91, 9.45; Fe<sub>2</sub>O<sub>3</sub> 5.42, 0.42; FeO 0.32, —; ZrO<sub>2</sub> 0.98, —; MgO —, 0.34; K<sub>2</sub>O —, 0.06; Na<sub>2</sub>O 0.30, 0.13; H<sub>2</sub>O<sup>+</sup> 0.33, 1.15; H<sub>2</sub>O<sup>-</sup> 0.37, —; F 1.66, 1.44; sum 100.49, 100.20, -(O=F<sub>2</sub>) 0.69, 0.60=99.80, 99.60%. Calculation of the analyses on the basis of the apatite group formula, X<sub>5</sub>(ZO<sub>4</sub>)<sub>3</sub>F, gave unsatisfactory results with (Si+P)=3 or with (Si+P+Al)=3; the Al is therefore divided and the formula calculated is (Ca<sub>1.89</sub>Al<sub>1.36</sub>Fe<sub>0.44</sub>Ce<sub>1.09</sub>Th etc<sub>0.21</sub>)<sub>5.0</sub>(Si<sub>2.2</sub>P<sub>0.4</sub>Al<sub>0.4</sub>)<sub>3.0</sub>(F<sub>0.53</sub>OH<sub>0.22</sub>). X-ray spectrographic analysis by N. V. Turanskaya of the rare earths showed La 18.55, Ce 28.8, Pr 2.9, Nd 9.3, Sm 2.0,

Gd 1.8, Dy 2.5, Ho 0.7, Er 2.3, Tu 0.5, Yb 3.65, Lu 0.8, Y 26.2%; in containing both Y and Ce elements, the mineral is intermediate between britholite and abukumalite. DTA study showed an exothermic effect at 575° (transition to crystalline state?).

The mineral is yellowish-brown, slightly greenish; color nonuniform, deeper in the center of grains. Luster vitreous to greasy. Fracture conchoidal. Hardness 5.4, microhardness 471 kg./mm.<sup>2</sup>. Isotropic (metamict),  $n$  1.72. Slightly soluble in HCl.

Amorphous to  $x$ -rays; after being heated to 900° for 30 minutes gives a pattern corresponding to  $a$  9.45 ± 0.01,  $c$  6.91 ± 0.01 Å. The strongest lines (20 given) are 2.827 (10), 1.851 (7), 1.952 (6), 3.112 (5).

The mineral alters readily on weathering.

DISCUSSION.—The postulated replacement of Ca by Al is surprising. The name is an unnecessary one for aluminian britholite.

M. F.

### Calzirtite

T. B. ZDORIK, G. A. SIDORENKO, AND A. V. BYKOVA. A new calcium titanozirconate-calzirtite: *Doklady Akad. S.S.S.R.*, **137**, No. 3, 681–684 (1961) (in Russian).

YU. A. PYATENKO AND Z. V. PUDOVKINA. The crystal structure of calzirtite—a new derivative of the structural type of CaF<sub>2</sub>-CeO<sub>2</sub>: *Kristallografiya*, **6**, No. 2, 196–199 (1961) (in Russian).

The mineral occurs in metasomatic calcite-forsterite-magnetite rocks of an alkalic ultrabasic massif, Eastern Siberia. It forms tabular concretions 3×4×1 mm. in size, composed of complex trillings. Single crystals are tetragonal, prismatic, bipyramidal.

Analysis by A.V.B. gave CaO 11.26, TiO<sub>2</sub> 16.04, Nb<sub>2</sub>O<sub>5</sub> 0.10, ZrO<sub>2</sub> 70.12, HfO<sub>2</sub> 0.44, Fe<sub>2</sub>O<sub>3</sub> 1.64, SiO<sub>2</sub> 0.41, loss ign. 0.17, sum 100.18%. Spectrographic analysis showed Mn, Rb, Ce, Y, and Sr 0.0X, Sn and Sb 0.00X%. This corresponds very closely to CaZr<sub>3</sub>TiO<sub>9</sub>. The unit cell (see below) contains Ca(Ca<sub>0.81</sub>, Zr<sub>1.16</sub>)<sub>2</sub> Zr<sub>2</sub> (Ti, Fe)<sub>2</sub>O<sub>16</sub>. The mineral is infusible, but lightens in color before the blowpipe in O.F. Partly soluble when heated in concentrated H<sub>2</sub>SO<sub>4</sub>, H<sub>3</sub>PO<sub>4</sub>, or HCl.

The color is dark brown, nearly black. Luster semi-metallic to adamantine. Streak brown. Brittle, hardness varies with crystallographic direction from 626–1035 kg./mm.<sup>2</sup>, = 6–7.  $G$  5.01. Dielectric constant 5.03. Does not luminesce in UV light, gives a wavy red luminescence in cathode rays, after heating, a fiery red. Non-pleochroic. Optically uniaxial, positive,  $n_s$   $\omega$  between 2.19 and 2.27,  $\epsilon$  between 2.30 and 2.36,  $\epsilon - \omega$  0.07–0.08. In polished sections light gray. Reflecting power  $R_e$  16.4,  $R_o$  15.0. Birefringence distinct in immersion, not observed in air. Internal reflections strong, reddish-brown.

Indexed  $x$ -ray powder data are given by Z., S., and B. (50 lines). The strongest lines are 2.945 (10), 1.801 (10), 1.537 (9), 1.170 (7), 2.552 (6), 0.981 (6), 0.871 (6). Most of the reflections correspond to a cubic cell with  $a$  10.195 kX, but some lines did not; P. and P. find the mineral to be tetragonal, space group  $I4_1/acd$ ,  $a$  15.30 ± 0.06,  $c$  10.20 ± 0.04 Å.

Atomic co-ordinates are given.

The name is for the composition.

M. F.

### Yoshimuraite

TAKEO WATANABE, YOSHIO TAKEUCHI, AND JUN ITO. The minerals of the Noda-Tamagawa Mine, Iwate Prefecture, Japan. III. Yoshimuraite, a new barium-titanium manganese silicate mineral: *Mineralogical Jour. (Japan)*, **3**, 3, 15%–167 (1961) (in English).

A preliminary note was abstracted in *Am. Mineral.*, **45**, 479 (1960).

The mineral occurs in coarse-grained pegmatite along the boundary between massive Mn ore (tephroite with rhodonite, braunite, and hausmannite) and massive hornfels containing manganophyllite, richterite, and urbanite. The pegmatite contains K-Ba feldspar, quartz, richterite, urbanite, and rhodonite.

Analysis (by J. I.) of yoshimuraite gave  $\text{SiO}_2$  18.25,  $\text{TiO}_2$  10.00,  $\text{Fe}_2\text{O}_3$  1.32,  $\text{FeO}$  1.47,  $\text{MnO}$  17.64,  $\text{MgO}$  0.56,  $\text{ZnO}$  0.50,  $\text{BaO}$  33.51,  $\text{SrO}$  4.62,  $\text{Na}_2\text{O}$  0.16,  $\text{K}_2\text{O}$  0.03,  $\text{P}_2\text{O}_5$  3.98,  $\text{SO}_3$  5.40,  $\text{Cl}$  0.41,  $\text{H}_2\text{O} \pm 2.34$ , sum 100.19 - ( $\text{O} = \text{Cl}_2$ ) 0.09 = 100.10%. This corresponds to  $(\text{Ba}, \text{Sr})_{1.84}(\text{Ti}, \text{Fe}''')_{0.96}(\text{Mn}, \text{Fe}'', \text{Mg})_{1.97}(\text{SiO}_4)_2[(\text{P}_{0.76}\text{S}_{0.92})\text{O}_4](\text{OH}, \text{Cl})_{1.45}$  or  $(\text{Ba}, \text{Sr})_2(\text{Ti}, \text{Fe}''')\text{Mn}_2(\text{SiO}_4)_2[(\text{P}, \text{S})\text{O}_4](\text{OH}, \text{Cl})$ . The unit cell contains 2 formula weights.

The mineral occurs as blades or mica-like forms up to 5 cm. long. Hardness  $4\frac{1}{2}$  brittle,  $G_c$  (pycnometer) 4.13, calcd. 4.21. Optically biaxial, positive,  $n_s \alpha$  1.763,  $\beta$  1.777,  $\gamma$  1.785,  $2V$   $85-90^\circ$ ,  $r > v$ . Pleochroism with X bright yellow, Y orange-brown, Z brown, absorption  $X < Y \leq Z$ . The optical orientation could not be determined exactly;  $\alpha'$  is nearly parallel to  $a$ ,  $\gamma'$  nearly parallel to  $c$ . Polysynthetic twinning on (010) was observed.

Precession photographs showed yoshimuraite to be triclinic, space group PT,  $a$   $7.00 \pm .01$ ,  $b$   $14.71 \pm .02$ ,  $c$   $5.39 \pm .01$  Å,  $\alpha$   $93.5^\circ$ ,  $\beta$   $90.2^\circ$ ,  $\gamma$   $95.3^\circ$  (all  $\pm 0.2^\circ$ ), axial ratio  $a:b:c = 0.476:1:0.366$ . Tests for piezoelectricity were negative. Cleavages {010} perfect, {10 $\bar{1}$ } and {101} distinct. Indexed x-ray powder data (32 lines) are given. The strongest lines are 3.40 (10)(1 $\bar{3}$ 1), 2.94 (10)(041,  $\bar{2}$ 01), 4.90 (6)(011), 3.24 (6) ( $\bar{1}$ 30), 2.78 (6) ( $\bar{3}$ 21,  $\bar{1}$ 41).

A similar mineral has also been found at the Taguchi Mine, Aichi Prefecture, and will be described later.

The name is for Professor Toyofumi Yoshimura of Kyushu University, who first studied the Mn minerals of the mine.

M. F.

### Ekanite

B. W. ANDERSON, G. F. CLARINGBULL, R. J. DAVIS, AND D. K. HILL. Ekanite, a new metamict mineral from Ceylon: *Nature*, **190**, No. 4780, 997 (1961).

Several specimens, the largest about 44 g., of a green transparent-translucent mineral have reached Europe. It occurs in the gem pits of Eheliyagoda, Raknapura district, Ceylon. Analysis by D. I. Bothwell gave  $\text{SiO}_2$  55.6,  $\text{ThO}_2$  27.6,  $\text{UO}_2$  2.1,  $\text{Fe}_2\text{O}_3$  0.5,  $\text{CaO}$  13.7,  $\text{PbO}$  0.8,  $\text{Al}_2\text{O}_3$ ,  $\text{MgO}$ ,  $\text{MnO}$  traces, sum 100.3%, corresponding to  $(\text{Th}, \text{U})(\text{Ca}, \text{Fe}, \text{Pb})_2\text{Si}_3\text{O}_{20}$ .  $n$  1.5969,  $G_c$  3.280; after the mineral is heated at  $510^\circ$  for 24 hours,  $n$  is 1.5933,  $G_c$  3.276; after it is heated at  $1000^\circ$  C. for 24 hours,  $G_c$  is 3.313.

The mineral is metamict. At temperatures between  $650^\circ$  and  $1000^\circ$  C., it recrystallizes to a phase that can be indexed on a body-centered tetragonal cell with  $a$  7.46,  $c$  14.96 Å. "Heating at higher temperatures involving re-melting leads to the development of the thorium silicate huttonite. If the mineral is fully melted and then recrystallized at  $1000^\circ$  C., the product appears to be a thorium analogue of the britholite-cerite-lessingite group."

The mineral is named for Mr. F. L. D. Ekanayake, who first found it.

F. D.

### Alpha-fergusonite, Beta-fergusonite

S. A. GORSHEVSKAYA, G. A. SIDORENKO, AND I. E. SMORCHKOV. A new modification of fergusonite:  $\beta$ -fergusonite. *Geol. Mestorozhdenii Redkikh Elementov No. 9*, 28-29 (1961) (in Russian).

Nearly all fergusonites are metamict, but are transformed when heated at  $575-765^\circ$  to a tetragonal material, which in turn is transformed to monoclinic material at higher temperatures. Komkov, *Zapiski Vses. Mineral. Obshch.*, **87**, 432-444 (1957), described naturally crystalline tetragonal fergusonite with  $a$  5.15,  $c$  10.89 Å from Ural pegmatites.

This is now called alpha-fergusonite. When heated about 900°, the material becomes monoclinic,  $a$  5.05,  $b$  10.89,  $c$  5.27 Å,  $\beta = 85^\circ 30'$ .

The authors have now found natural monoclinic crystals in crystals 0.05–0.2 mm. in cross section from the apical parts of microcline granite stocks, Central Asia. It is light yellow,  $G$ . 5.65.  $X$ -ray spectrographic analysis showed much Y, Nb, U; Fe (about 2.5%), about 1% Ta and Th, about 0.5% Ca and Zr, about 0.2% Ti, and about 0.1% Pb. It is monoclinic,  $a$  5.12,  $b$  10.89,  $c$  5.20 Å,  $\beta = 88^\circ 10'$ . When heated at 950° for 1 hour, the unit cell became  $a$  5.06,  $b$  10.92,  $c$  5.30 Å,  $\beta = 85^\circ 48'$ . This natural monoclinic modification is called beta-fergusonite.

M. F.

### Unnamed

J. ZEMANN. Über den Botryogen vom Rammelsberg: *Fortschr. Mineral.*, **39**, 84 (1961).

Reddish-brown, poorly formed crystals up to a few mm. in size occur on zincian melanterite. Analysis of a few tenths of a gram selected under the binoculars gave MgO 1.6, ZnO 7.7, MnO 3.6, FeO 1.2, Fe<sub>2</sub>O<sub>3</sub> 18.4, SO<sub>3</sub> 36.1, H<sub>2</sub>O > 50° C. 30.9, sum 99.5%, a member of the botryogen group' M<sup>+2</sup> Fe<sup>+3</sup> (SO<sub>4</sub>)<sub>2</sub>(OH) · 7H<sub>2</sub>O, with Zn:Mn:Mg:Fe = 47:25:20:8.  $G$ . 2.19. Optical constants close to those of Bandy (Dana's System, 7th Edition, 2, 617) for the Mg member of the group.  $X$ -ray study shows it to be monoclinic,  $C$  P2<sub>1</sub>/n,  $a$  10.51 ± 0.02,  $b$  17.85 ± 0.03,  $c$  7.14 ± 0.02 Å,  $\beta$  100°00' ± 15',  $Z = 4$ . The crystals are prismatic with forms {110} and {101} dominant, also {120} and {010}.

DISCUSSION.—This is dominantly the zinc analogue of botryogen. Dr. Zemann (letter of Aug. 18, 1961) prefers that this not be given a name, the name botryogen being used as a group name.

M. F.

### Benstonite

FRIEDRICH LIPPMANN. Benstonit, Ca<sub>7</sub>Ba<sub>6</sub>(CO<sub>3</sub>)<sub>13</sub>, ein neues Mineral: *Naturwissenschaften*, **16**, 550–551 (1961).

The mineral occurs in white to ivory masses up to 1 cm. in size as fissure fillings, associated with quartz, barite, and calcite, in the barite mine near Magnet Cove, Hot Springs County, Arkansas. Analysis of material whose  $x$ -ray pattern showed the presence of some calcite gave CO<sub>2</sub> 31.35, BaO 43.05, SrO 4.02, CaO 19.52, MgO 1.69, MnO 0.35, sum 99.98%, corresponding to (Ca, Mg, Mn)<sub>7.419</sub> (Ba, Sr)<sub>6</sub> (CO<sub>3</sub>)<sub>13.419</sub>, or, deducting calcite (Ca, Mg, Mn)<sub>7</sub> (Ba, Sr)<sub>6</sub> (CO<sub>3</sub>)<sub>13</sub>, with Ca: Mg: Mn = 0.87:0.11:0.01, and Ba: Sr = 0.88:0.12.  $G$ . 3.596 (measured), 3.648 (calcd.). Optically uniaxial, negative,  $n_s$  (Na)  $\omega$  1.690<sub>5</sub> ± 0.0005,  $\epsilon$  1.527 ± 0.001.  $H$ . 3–4.

Weissenberg photographs show the space group to be probably R<sub>3</sub>, or perhaps R  $\bar{3}$ , with  $a_0$  18.28 ± 0.01,  $c_0$  8.67 ± 0.02 Å.

The mineral is named for O. J. Benston, metallurgist, of Malvern, Arkansas, who first called attention to the mineral.

M. F.

### Boleslavite

Cz. HARANCZYK. The PbS gel—boleslavite. *Bull. Acad. Polonaise Sci., Ser. sci. geol. et geogr.* **9**, No. 2, 85–89 (1961).

Colloform ZnS and PbS occur in colloform varieties with marcasite as impregnations in the Gogolin limestones in the "Boleslaw" mine near Olkusz. The colloform PbS is silvery with a strong bluish tint; hardness (by Vickers sclerometer PMT-3) 40–80 kg./sq. mm. It shows "a diffraction pattern characteristic for crystalline galena." The  $x$ -ray

powder data (by J. Kubisz) are given. Chemical analysis gave Pb 86.33, S 13.24; spectrographic analysis showed As 0.1, Fe 0.08, Zn 0.03, Sb 0.015, Mn 0.003, Tl 0.003, Mo 0.0006, Cu 0.0004, Ag 0.0004%, Ca and Ba present. A D.T.A. curve is given.

The name is for the mine.

DISCUSSION.—A useless and unnecessary name.

M. F.

### Geversite and Unnamed Pt Minerals and (Fe, Ni)<sub>2</sub>S

E. F. STUMPF. Some new platinoid-rich minerals, identified with the electron microanalyser. *Mineralog. Mag.*, **32**, 833–847 (1961).

Concentrates of Pt minerals were examined from the Driekop mine, eastern Transvaal. Geversite is light gray, reflectivity lower than that of Pt, but higher than that of sperrylite. Non-pleochroic, not anisotropic, presumably cubic. Hardness similar to that of Pt, perhaps slightly higher. Analysis by microprobe gave Pt 45.0, Sb 51.5%, corresponding to Pt Sb<sub>2</sub>, the antimony analogue of sperrylite. A variety with 7.2% Bi was also noted. Synthetic Pt Sb<sub>2</sub> is cubic with pyrite structure, a 6.428 Å, H. 4½–5, m.p. 1230° C. The name is for T. W. Gevers, geologist, of South Africa.

Other new minerals, not given names are:

*Pt(Sb, Bi)*. Color distinctly pinkish. Reflectivity lower than that of Pt, higher than that of geversite. Pleochroic from pink to light brown. Under crossed nicols, intense anisotropy effects. Hardness slightly less than that of Pt. The anisotropy suggests a hexagonal layer lattice. Microprobe analysis gave Pt 50.5, Sb 26.4, Bi 15.3%, corresponding to Pt<sub>7</sub>Bi<sub>2</sub>Sb<sub>6</sub> or approximately Pt(Sb, Bi).

*PtSb*. Color light brown with a touch of pink. Reflectivity lower than that of Pt(Sb, Bi), much higher than that of Pt. Analysis by microprobe gave Pt 50.5, Sb 34.7%. Synthetic PtSb is hexagonal (NiAs type), a 4.130, c 5.472 Å.

*(Pt, Ir)<sub>2</sub>*. Color grayish, reflectivity high, but lower than that of PtSb<sub>2</sub>. Non-pleochroic, no anisotropy, evidently cubic. Hardness higher than those of Pt or PtSb<sub>2</sub>, probably about 6. Microprobe analysis gave Pt 47.0, As 46.8, Ir 5.0%. Perhaps an iridian sperrylite.

*Pt(Ir, Os)<sub>2</sub>As<sub>4</sub>* (?). Color distinctly brownish in reflected light. Reflectivity similar to that of sperrylite, lower than that of (Pt, Ir)As<sub>2</sub>. Hardness higher than that of (Pt, Ir)As<sub>2</sub>. No anisotropy, presumably cubic. Contains lamellae of iridosmine. Microprobe analysis gave As 32.5, Pt 22.0%, much Ir and Os; the Ir and Os contents vary greatly in opposite directions within a few microns. Occurs in grains and as lamellae in Pt.

*Pt<sub>4</sub>Sn<sub>3</sub>Cu<sub>4</sub>*. Color pinkish, like PtSb. Reflectivity very high, lower than that of Pt, slightly lower than that of Pt(Sb, Bi)<sub>2</sub>. Anisotropy visible in oil immersion. Hardness near that of Pt, lower than that of PtSb<sub>2</sub>. Microprobe analysis gave Pt 51.7, Sn 22.0, Cu 16.8%. Very rare.

*Pd<sub>2</sub>CuSb*. Strong violet color. Reflectivity much lower than any other associated mineral. Under crossed nicols, good anisotropy effects with orange colors. Hardness near that of Pt. Microprobe analysis gave Pd 53.5, Sb 31.3, Cu 16.0%, corresponding to Pd<sub>2</sub>CuSb.

*Pd<sub>3</sub>CuSb<sub>3</sub>*. Intergrown or closely associated with the preceding mineral. Color pale yellow. Reflectivity slightly lower than that of PtSb<sub>2</sub>. Anisotropic. Hardness near that of Pt. Microprobe analysis gave Pd 62.0, Pt 6.0, Sb 30.0, Cu 5.0%, corresponding to (Pd, Pt)<sub>3</sub>CuSb<sub>3</sub>.

*Pd(Sb, Bi)*. Color light yellow. Reflectivity high. Non-pleochroic, anisotropy effects of medium intensity with gold-yellow colors under crossed nicols. Hardness distinctly less than that of sperrylite. Microprobe analysis gave Pd 43.6, Sb 25.2, Bi 32.2%, corresponding to  $Pd_3Sb_4Bi_3$ , or approximately Pd(Sb, Bi). Synthetic PdSb is reported to be hexagonal (NiAs type) with  $a$  4.070,  $c$  5.582 Å,  $G$  9.4; synthetic PdBi is reported to be orthorhombic with  $a$  7.203,  $b$  8.707,  $c$  10.662 Å.

$(Fe, Ni)_2S$ . In small grains resembling pyrrhotite in color, but with slightly higher reflectivity. Anisotropic under crossed nicols. Hardness comparatively low. Microprobe analysis gave Fe 51.0, Co 1.0, Ni 28.0, S 22.5%. An early mineral in this paragenesis.

Names are not given to these minerals pending further study.

M. F.

## REDEFINITION OF SPECIES

### Betafite

D. D. HOGARTH, A study of pyrochlore and betafite: *Canadian Mineral.*, **6**, 610–633 (1961).

A restudy of the group, with new analyses,  $x$ -ray study, and D.T.A., shows that betafite is a member of the pyrochlore group, with the general formula  $A_{18-x}B_{16}(O, OH)_{16}(F, OH)_8$ , with up to 67% of the A positions vacant ( $A=Na, K, Ca, Fe^{+2}, \Sigma Ce, \Sigma Y, Th, U, Pb, Ba, Sr, Bi; B=Nb, Ta, Ti, Zr, Sn, Fe^{+3}, W$ ). It is suggested that the name betafite be reserved for members of the pyrochlore group containing U 15% or more (2.5 or more U atoms per unit cell). Hatchettolite and ellsworthite then become intermediate members of the pyrochlore-betafite series and these names can be dropped.

M. F.

## NEW DATA

### Scholzite

H. STRUNZ AND CH. TENNYSON. Kristallographie von Scholzit,  $CaZn_2(PO_4)_2 \cdot 2H_2O$ : *Zeitschr. Krist.*, **107**, 318–330 (1956).

Analysis of material from Hagendorf-South gave  $P_2O_5$  35.99, ZnO 35.70, FeO 0.38, MnO 1.36, MgO 0.94, CaO 14.29,  $H_2O$  10.36, insol. 0.88, sum 99.90%, corresponding to  $CaZn_2(PO_4)_2 \cdot 2H_2O$ , with some substitution by Mn, Mg, and Fe. Oscillation photographs showed it to be orthorhombic, space group Pbcm, with  $a$  17.14,  $b$  22.19,  $c$  6.61 Å.  $Z=12$ . Unindexed  $x$ -ray powder data are given (56 lines); the strongest lines are 8.588 (10), 2.788 (9), 4.230 (7), 3.376 (6), 2.652 (6), 2.240 (6), 1.892 (6). Cleavage (100) fair. The mineral is colorless to white,  $H$ . 3–3½,  $G$ . 3.11. Optically biaxial, positive,  $n_s$  1.581,  $\beta$  1.586,  $\gamma$  1.596,  $2V70^\circ$ ,  $X=a$ ,  $Y=b$ .

DISCUSSION.—My attention was recently called to the fact that I had not abstracted this paper, which changes, without explanation, the composition, symmetry, unit cell, and  $2V$  given in the original description (see *Am. Mineral.*, **36**, 382 (1951)). I regret the oversight.

M. F.

## DISCREDITED MINERALS

### Dillnite (=Zunyite)

J. KONTA AND L. MRAZ. Dillnite and its relation to zunyite: *Am. Mineral.*, **46**, 629–636 (1961).

The name dillnite, first given in 1849 but long considered to apply to a mixture, was revived in 1955 (see *Am. Mineral.*, **41**, 673–674 (1956)). New study shows it to be zunyite,

higher in F content than any previously described. It is suggested that the name be kept for material of higher fluorine content and lower index of refraction.

DISCUSSION.—The limits of division are not specified. The analysis still show  $\text{OH} > \text{F}$ , so that the name is unnecessary.

M. F.

#### Henwoodite (=Turquoise)

E. FISCHER. Henwoodit, ein Glied der Türkis-chalkosiderit-Reihe: *Chem. der Erde*, **21**, 97–100 (1961).

Analysis (on 12.2 mg) of a sample labelled henwoodite from Redruth, Cornwall, obtained in 1878, gave  $\text{CaO}$  0.57,  $\text{CuO}$  8.81,  $\text{Al}_2\text{O}_3$  28.01,  $\text{Fe}_2\text{O}_3$  9.58,  $\text{P}_2\text{O}_5$  34.90,  $\text{H}_2\text{O}$  17.13, sum 99.00%, *i.e.* a ferrian turquoise. This was confirmed by the *x*-ray powder pattern.

DISCUSSION.—Hey, *Chemical Index of Minerals*, 2nd Ed., 1955, p. 449, lists henwoodite as a synonym of turquoise (F. A. Bannister, private communication).

M. F.

#### Gouréite (=Narsarsukite)

E. JÉRÉMIANE AND M. CHRISTOPHE-MICHEL-LÉVY. Un nouveau gisement de narsarsukite (Identification d'un minéral dénommé provisoirement "gouréite" par A. Lacroix en 1934): *Bull. soc. franc. mineral. crist.*, **84**, 191–194 (1961).

The name gouréite was given by A. Lacroix (*Acad. Sci. Paris, Mem. No. 61*, 318, 1934) to a mineral from an aegirine-riebeckite granite from Gouré, Sudan. Only optical data were obtained. *X*-ray study shows that the mineral is narsarsukite, with  $n_s \alpha$  1.610,  $\gamma$  1.632, positive (originally stated to be negative), values close to those for narsarsukite from Greenland. A qualitative test showed high Ti.

M. F.

#### Hjelmite (=Pyrochlore + Tapiolite (?))

V. V. MATIAS. Tin-tantalite, a new variety of tantalite: *Geol. Mestorozhdenii Redkikh Elementov No. 9*, p. 30–41 (1961) (in Russian).

Hjelmite (see Dana's System, 7th Ed., Vol. I, p. 779–780) was found by Nordenskiöld in 1860 and is supposed to be  $(\text{Fe}^{+2}, \text{Mn}, \text{U}, \text{Ca})(\text{Nb}, \text{Ta}, \text{Sn})_2\text{O}_6$ . Material from the type locality contained 6.56%  $\text{SnO}_2$ . There are no modern analyses and the mineral has long been considered dubious. Matias reports results obtained on a sample of hjelmite "from Norway," from the Mineralogical Museum, Academy of Sciences, U.S.S.R. Optical and *x*-ray studies showed it to be a mixture of tapiolite, pyrochlore, and an unidentified phase.

DISCUSSION.—The type material from the Kararfvet mine, Sweden, might well be such a mixture, but the mineral cannot be considered discredited since the work was done on a specimen, the locality and history of which are not given.

M. F.