

## NEW MINERAL NAMES

### Yoderite

DUNCAN MCKIE AND A. J. RADFORD. Yoderite, a new hydrous magnesium iron aluminosilicate from Mautia Hill, Tanganyika. *Mineralog. Mag.*, **32**, 282-307 (1959).

Analysis of purified material (by A. J. R., FeO by J. H. Scoon) gave  $\text{SiO}_2$  36.12,  $\text{TiO}_2$  0.35,  $\text{Al}_2\text{O}_3$  41.06,  $\text{Fe}_2\text{O}_3$  0.50, FeO 4.82, MnO 0.32, MgO 12.23, CaO 1.48,  $\text{Na}_2\text{O}$  0.01,  $\text{K}_2\text{O}$  0.05,  $\text{H}_2\text{O}^+$  3.20,  $\text{H}_2\text{O}^-$  0.05, total 100.19%. Cu, Pb, Co, Ni, B, and P were looked for and found not to be present in significant amounts; Cu, Co, F, and B were looked for spectrographically and not found. The analysis corresponds to  $(\text{Mg}_{2.0}\text{Ca}_{0.2}\text{Fe}_{0.5}\text{Al}_{5.3})_{2.0}\text{Si}_{4.0}\text{O}_{17.6}(\text{OH})_{2.4}$ , i.e. to a substituted  $\text{Al}_3\text{Si}_4\text{O}_{20}$  (kyanite, andalusite, sillimanite). The mineral is markedly insoluble.

The mineral occurs in purple anhedral grains, up to  $\frac{1}{2} \times \frac{1}{4} \times \frac{1}{8}$  inches. H. 6, G. 3.39. Optically biaxial, positive,  $n_s$  (20° C.)  $\alpha$  1.689,  $\beta$  1.691,  $\gamma$  1.715 (all  $\pm 0.002$ ),  $2V$  ( $\gamma$ ) =  $25 \pm 2^\circ$ . Optic axial plane {010}, X:  $a \sim 9^\circ$ , Z:  $c \sim 7^\circ$ . Strongly pleochroic, X pale Prussian blue, Y indigo, Z light olive green; absorption  $Y > X > Z$ .

Weissenberg and oscillation photographs show yoderite to be monoclinic, space group  $P2_1$  or  $P2_1/m$ , more likely the former, as a positive pyroelectric effect was obtained. The unit cell has  $a$  8.10,  $b$  5.78,  $c$  7.28, all  $\pm 0.05$  Å.,  $\beta$   $106 \pm 1^\circ$ ,  $a:b:c = 1.402:1:1.259$ ; the unit cell contains  $\text{X}_2\text{Si}(\text{O}, \text{OH})_6$ . Parting [001] moderately good and {100} poor. Unindexed x-ray powder data are given (112 lines); the strongest lines are 3.50 Å. (vvs), 3.03 (vs), 2.61 (s), 2.00 (s), 1.82 (s), 3.23 (ms), 3.19 (ms), 2.91 (ms), 2.58 (ms), 2.46 (ms).

Extra weak reflections were observed on  $b$ - and  $c$ -, but not on  $a$ -axis oscillation photographs; they disappear on long heating at 700-800°. The data are discussed in some detail.

Yoderite becomes unstable at  $840 \pm 20^\circ$ ; the color turns to yellow and mullite is formed, at  $1040^\circ$  indialite is formed, at about  $1100^\circ$  sapphirine; the latter two predominate to  $1345^\circ$  where incongruent melting begins; above  $1415^\circ$  only sapphirine and mullite are present. DTA curves by R. C. Mackenzie in oxygen and nitrogen gave, resp., endothermic peaks at  $500^\circ$ ,  $486^\circ$  and  $917^\circ$ ,  $888^\circ$ , and a strong exothermic peak beginning at above  $950^\circ$ , above  $900^\circ$ . Thermogravimetric analysis by J. R. Butler showed  $< 0.1\%$  loss in weight to  $1050^\circ$ , 2.96% from  $1050^\circ$  to  $1125^\circ$ , no further loss to  $1200^\circ$ .

The mineral, previously thought to be glaucophane or dumortierite, occurs in quartz-yoderite-kyanite-talc schist at Mautia Hill, Central Province, Tanganyika Territory. Yoderite invariably separates talc from kyanite, rims kyanite, and includes relicts of kyanite. The paragenetic relations of the mineral assemblage are discussed in detail.

The name is for H. S. Yoder, Jr., petrologist, Geophysical Laboratory, Washington, D. C.

MICHAEL FLEISCHER

### Orcelite

SIMONNE CAILLÈRE, JACQUES AVIAS, AND JEAN FALGUEIRETTES. Découverte en Nouvelle-Calédonie d'une minéralisation arsenicale sous forme d'un nouvel arsénure de nickel  $\text{Ni}_2\text{As}$ . *Compt. rend.*, **249**, 1771-1773 (1959).

Analysis by Patureau gave As 31.50, S 1, Ni 57,  $\text{SiO}_2$  4,  $\text{Fe}_2\text{O}_3$  0.85, MgO 3.80,  $\text{H}_2\text{O} \pm 1.50$ , sum 99.65%. After deducting 9.15% antigorite, 0.85%  $\text{Fe}_2\text{O}_3$ , and 0.30%  $\text{H}_2\text{O}$ , this gives  $\text{Ni}_2\text{As}$ . (Ratio Ni/As = 2.3 M.F.) G measured 6.15, corrected for antigorite 6.5. X-ray powder data are given (24 lines); the strongest lines are 1.977 (10), 1.918 (10), 1.810 (4), 1.737 (4), 1.383 (4), 1.650 (3), 1.630 (3), 1.296 (3). D.T.A. study showed an exothermic break about  $600^\circ$  ( $400^\circ$  for niccolite,  $575^\circ$  for maucherite). A thermogravimetric study

showed no loss in weight for the mineral (temperature not stated), 30% for NiAs, 16% for Ni<sub>3</sub>As<sub>2</sub>. The mineral has a rose bronze color, browner than that of niccolite. Reflecting powers were measured; the pleochroism is weaker than that of niccolite or maucherite. The mineral was found in drill cores in serpentinized harzburgite, Tieboghi massif, New Caledonia.

The name is for Professor Jean Orcel.

DISCUSSION.—Dr. Gunnar Kullerud has kindly called my attention to a paper on synthetic nickel arsenides by R. D. Heydring and L. D. Calvert, *Canadian Journ. Chem.*, **35**, 1205–1215 (1957). They found in this region of composition a compound Ni<sub>1-x</sub>As<sub>2</sub> ( $x=0-0.38$ ). The powder pattern given for  $x=0.23$  agrees closely with that of orcelite except that the spacings for orcelite are smaller (0.02–0.05 Å). The pattern for material with  $x=0.23$  was indexed as hexagonal (or rhombohedral),  $a$  6.815 ± 0.003,  $c$  12.498 ± 0.007 Å,  $G$ . 8.55,  $G$ . calcd. 8.50. Orcelite would therefore appear to be Ni<sub>1-x</sub>As<sub>2</sub>, but note the great discrepancy in  $G$ .

M.F.

#### Bafertisite

PENG CH'I-JUI. The discovery of several new minerals of rare elements. *Ti-chih K'o-hsueh*, **10**, 289 (1959) (in Chinese).

Partial analysis of the mineral gave SiO<sub>2</sub> 23.68, TiO<sub>2</sub> 15.39, Nb<sub>2</sub>O<sub>5</sub> 0.84, FeO 22.56, BaO 29.98%, corresponding to BaFe<sub>2</sub>TiSi<sub>2</sub>O<sub>9</sub>. It occurs in aggregates of acicular crystals 1.5 cm. long. Orthorhombic,  $a$  7.55 ± 0.01,  $b$  10.98 ± 0.02,  $c$  5.36 ± 0.01 Å. One distinct and one poor cleavage. The mineral is bright red, yellowish-red to light brown in color.  $G$ . 3.96–4.25,  $H$ . about 5. Optically negative,  $n_s \alpha$  1.808,  $\gamma$  1.860,  $2V$  54°. Pleochroic with X yellow red, Z pale yellow, absorption X > Z. The mineral occurs in hydrothermal veins; it is associated with aegirine, fluorite, barite, and bastnaesite.

The name is presumably for the composition.

DISCUSSION.—Apparently distinctly different from taramellite (*Am. Mineral.* **44**, 470 (1959)), which is of somewhat similar composition. Assuming  $Z=2$ ,  $G$ . calculated for the given composition and unit cell is 3.8.

MICHAEL FLEISCHER AND E. C. T. CHAO

#### Pao-t'ou-k'uang

PENG CH'I-JUI. The discovery of several new minerals of rare elements. *Ti-chih K'o-hsueh*, **10**, 289 (1959) (in Chinese).

Analysis gave SiO<sub>2</sub> 14.17, TiO<sub>2</sub> 29.33, Nb<sub>2</sub>O<sub>5</sub> 11.5, Fe<sub>2</sub>O<sub>3</sub> 3.07, BaO 37.55, Cl 2.01, sum (not given) = 97.63 – (0 = Cl<sub>2</sub>) 0.45 = 97.18%. This corresponds to Ba(Ti, Nb, Fe)<sub>2</sub>SiO<sub>7</sub>. The mineral occurs in tetragonal crystals up to 8–10 cm. in size. Two cleavages. Tetragonal,  $a$  19.2,  $c$  5.98 Å., space group  $I$  4<sub>1</sub>/a. Color light brown to black, luster vitreous.  $G$ . 4.42,  $H$ . 6. Uniaxial, positive,  $n_s \omega$  1.94,  $\epsilon$  2.16. Strongly pleochroic with  $\theta$  colorless, E dark brownish to light greenish-yellow. The mineral occurs with galena and pyrite in a quartz vein in Proterozoic strata; the wall of the vein contains sodic feldspars and alkali amphiboles. The vein is related to Hercynian alkali granite and syenite.

DISCUSSION.—Assuming  $Z=16$ , the calculated  $G$ . for the given composition and unit cell is 4.69.

M.F. AND E.C.T.C.

#### Feng-huang-shih

PENG CH'I-JUI. The discovery of several new minerals of rare elements *Ti-chih K'o-hsueh*, **10**, 289 (1959) (in Chinese).

This is a brief news note.

The mineral occurs with melanite and aegirine in urtite as aggregates of hexagonal prisms. Single crystals are about 0.1 mm. long. Analysis gave  $\text{SiO}_2$  13.76,  $\text{P}_2\text{O}_5$  6.32,  $\text{CO}_2$  2.62,  $\text{ThO}_2$  19.64,  $\text{CeO}_2$  12.98,  $\Sigma(\text{Ce})_2\text{O}_3$  20.07,  $\text{CaO}$  10.43,  $\text{H}_2\text{O}^+$  5.49, sum (not given) 91.31%, corresponding to  $(\text{Ca}, \text{Ce}, \text{La}, \text{Th})_5 [(\text{Si}, \text{P}, \text{C})\text{O}_4]_3(\text{O}, \text{OH})$ . Strongly radioactive, metamict. Color yellowish brown, luster greasy. H. 4.5, fracture conchoidal. G. 3.327. Mostly isotropic, partly anisotropic, uniaxial negative,  $n$  variable 1.65–1.75. Interference color grayish-yellow, extinction parallel, elongation negative. After ignition for 2 hours at  $800^\circ\text{C}$ ., the mineral gave an  $x$ -ray powder pattern corresponding to a unit cell with  $a$  9.58,  $c$  7.01; systematic extinctions for 001 with  $l=2n+1$ , possible space groups  $\text{P}6_3$  or  $\text{P}6_3/m$ .

DISCUSSION.—Evidently a thorian variety of britholite (apatite structure). The name is unnecessary. The specific gravity is evidently much too low.

M. F. AND E. C. T. C.

### Shen-t'u-shih

PENG CH'I-JUL. The discovery of several new minerals of rare elements. *Ti-chih K'o-hsueh*, 10, 289 (1959) (in Chinese).

Partial analysis gave  $\text{SiO}_2$  15.83,  $\text{P}_2\text{O}_5$  5.16,  $\text{As}_2\text{O}_5$  3.62,  $\text{CO}_2$  1.85,  $\text{ThO}_2$  52.79,  $\text{Fe}_2\text{O}_3$  8.21,  $\text{CaO}$  2.71,  $\Sigma\text{Ce}_2\text{O}_3$  2.06,  $(\text{Nb}, \text{Ta})_2\text{O}_6$  1.16,  $\text{H}_2\text{O}^+$  3.38%, said to correspond to  $(\text{Th}, \text{Fe}, \text{Ca}, \text{Ce}) [(\text{Si}, \text{P}, \text{As})\text{O}_4, (\text{CO}_3)(\text{OH})]$ , a variety of thorite. Strongly radioactive. Mostly metamict, isotropic, partly anisotropic,  $n$  ranges from 1.68 to 1.78. The  $x$ -ray pattern of material heated to  $800^\circ$  resembles that of thorite and corresponds to  $a$  7.08,  $c$  6.25 Å. Blocky or short prismatic, color chocolate. G. 4.25, H. 4.5. Occurs in quartz veins related to alkalic rock.

DISCUSSION.—An unnecessary name for a variety of thorite or thorogummite.

M.F. AND E.C.T.C.

### Jiningite

CHENG-CHI KUO. Jiningite, a new variety of thorite. *Kexue Tongbao (Scientia)* 1959, No. 6, p. 206–207 (from an abstract kindly prepared by E. C. T. Chao).

Analysis gave  $\text{SiO}_2$  7.13,  $\text{P}_2\text{O}_5$  6.08,  $\text{V}_2\text{O}_5$  0.97,  $\text{ThO}_2$  44.83,  $\text{U}_3\text{O}_8$  0.46,  $\text{ZrO}_2$  0.95, rare earth oxides 1.84,  $\text{PbO}$  0.52,  $\text{CaO}$  7.43,  $\text{MgO}$  0.49,  $\text{MnO}$  trace,  $\text{Fe}_2\text{O}_3$  17.28,  $\text{Al}_2\text{O}_3$  1.48,  $\text{H}_2\text{O}^+$  7.05,  $\text{H}_2\text{O}^-$  2.84, sum 99.35%. The mineral is reddish-brown, turning yellow when heated. Soluble in hot phosphoric acid. G. 4.0108. It was found in muscovite granite, Inner Mongolia, associated with zircon, microcline, quartz, muscovite, garnet, and thorianite. Apparently given a name because of the high  $\text{Fe}_2\text{O}_3$  and  $\text{V}_2\text{O}_5$  content. The origin of the name is not stated; Dr. Chao suggests that it may be a locality name.

DISCUSSION.—An unnecessary name for a variety of thorite or thorogummite.

M.F.

### Delrioite

M. E. THOMPSON AND A. M. SHERWOOD. *Am. Mineral.*, 44, 261–264 (1959).

### Hellyerite

K. L. WILLIAMS, I. M. THREADGOLD AND A. W. HOUNSLOW. *Am. Mineral.*, 44, 533–538 (1959).

### Ningyoite

T. MUTO, R. MEYROWITZ, A. M. POMMER, AND T. MURANO. *Am. Mineral.*, 44, 633–650 (1959).

**Haiweeite**

T. C. MCBURNEY AND J. MURDOCH. *Am. Mineral.*, **44**, 839-843 (1959).

**Unnamed (Cobalt analogue of Pentlandite)**

OLAVI KOUVO, MAIJA HUHMA, AND YRJO VUORELAINEN. *Am. Mineral.*, **44**, 897-900 (1959).

**Gowerite**

R. C. ERD, J. F. McALLISTER, AND H. ALMOND. *Am. Mineral.*, **44**, 911-919 (1959).

**Honessite**

A. V. HEYL, CHARLES MILTON, AND J. M. AXELROD. *Am. Mineral.*, **44**, 995-1009 (1959).

**Schuetzteite**

E. H. BAILEY, F. A. HILDEBRAND, C. L. CHRIST, AND J. J. FAHEY. *Am. Mineral.*, **44**, 1026-1038 (1959).

**Yavapaiite**

C. O. HUTTON. *Am. Mineral.*, **44**, 1105-1114 (1959).

**Wurtzite-10H, Wurtzite-8H**

H. T. EVANS, JR. AND E. T. MCKNIGHT. *Am. Mineral.*, **44**, 1210-1218 (1959).

## DISCREDITED MINERALS

**Delorenzite (= Tanteuxenite)**

J. R. BUTLER AND P. G. EMBREY. Delorenzite is tanteuxenite. *Mineralog. Mag.*, **32**, 308-313 (1959).

Analysis of material from the type locality shows that the original analysis published by Zambonini (1908) (Dana's System, 7th ed., Vol. I, p. 808) is incorrect,  $Ta_2O_5$  36.4 and  $Nb_2O_5$  4.45% having been reported as  $TiO_2$ . The newly determined sp. gr. (5.68) and the composition are close to those of tanteuxenite and an x-ray powder photograph is stated to be virtually the same as that of tanteuxenite.

M. F.

**Uigite (= Thomsonite)**

JESSIE M. SWEET. A re-examination of uigite. *Mineralog. Mag.*, **32**, 340-342.

Optical and x-ray study of type uigite (Heddle, 1855; Dana's System, 6th Ed., p. 532) shows it to be thomsonite. Heddle's analysis was probably made on a mixture of thomsonite and gyrolite.

M. F.

**Manganomossite (= metamict Columbite)**

C. O. HUTTON, *Am. Mineral.*, **44**, 9-18 (1959).

**Revoredite**

C. MILTON AND B. INGRAM. *Am. Mineral.*, **44**, 1070-1076 (1959).