

NEW MINERAL NAMES

Karrenbergite

ECKART WALGER. Inaug. Diss., Univ. Freiburg, 1958, p. 52-54; from an abstract by K. F. Chudoba in *Hintze's Handb. Mineralogie, Ergänzungsband II*, Lief. 10, 737-738 (1959).

A preliminary description. Analysis gave SiO_2 40.90, Al_2O_3 5.25, Fe_2O_3 14.43, FeO 8.24, MgO 4.37, CaO 1.73, Na_2O 0.81, K_2O 0.20, H_2O 18.42, ign. loss 6.18, sum 100.53 per cent. This is calculated to the montmorillonite-type formula $(\text{Mg}_{0.53}\text{Fe}''_{0.62}\text{Fe}'''_{0.97}\text{Al}_{0.19})_{2.36}(\text{Si}_{3.64}\text{Al}_{0.36}) \cdot \text{Ca}_{0.16}\text{Na}_{0.14}\text{K}_{0.02}$, intermediate between nontronite and saponite.

X-ray powder data are 15.23 vs, 4.57 m, 3.05 w, broad, 2.06 w, broad, 1.53 m. Indices of refraction: α ' 1.510, γ ' 1.528, X brownish-yellow, Z dark olive-green. Fibrous, greenish-brown, transparent.

The mineral occurs in a geode in hyalo-dacite, on scalenohedral calcite that is partly replaced by chalcedony and is associated with yellow transparent opal and yellow fibrous cristobalite (lussatite). It is covered by fine reddish natrolite. The occurrence is in the Karrenberg, near Reichweiler, Pfalz.

The name is for the locality.

MICHAEL FLEISCHER

Norsethite

CHARLES MILTON, M. E. MROSE, E. C. T. CHAO, AND J. J. FAHEY, Norsethite, $\text{BaMg}(\text{CO}_3)_2$, a new mineral from the Green River formation, Wyoming, *Bull. Geol. Soc. Am.*, **70**, 1646 (1959) (abs.)

The mineral occurs as clear to milky white circular plates or flattened rhombohedral crystals 0.2-2 mm. across. Forms observed: $c\{001\}$, $a\{11\bar{2}0\}$, $m\{10\bar{1}0\}$, $r\{10\bar{1}1\}$. Probably space group $R32-D_3^7$, a_0 5.02, c_0 16.75 Å, a_{rh} 6.29, α 47°02'; $Z=1$ in the rhombohedral cell. The strongest x-ray lines are 3.015 (100), 3.860 (35), 2.656 (35), 2.512 (35), 2.104 (35), 1.931 (35), 1.864 (35). Cleavage rhombohedral good, fracture hackly. Analysis made on 0.1 g. gave BaO 52.9, CaO 0.5, MnO 0.1, MgO 13.9, Fe_2O_3 (total Fe) 0.4, CO_2 31.2, SiO_2 0.3, insol. 0.5, total 99.8%. Infusible. Insoluble in water, decomposed by cold dilute HCl.

Luster vitreous to pearly, H. $3\frac{1}{2}$, G. 3.837 (measured), 3.84 (calcd.). Optically uniaxial, negative ω 1.694, ϵ 1.519.

Norsethite occurs in black dolomitic oil shale below the main trona bed in the Westvaco trona mine, Sweetwater County, Wyoming, associated with shortite, labuntsovite, searlesite, loughlinitite, pyrite, and quartz. It also occurs in similar association and with northupite in gray shale.

The name is for Keith Norseth, geologist of the Westvaco trona mine.

M. F.

Fenaksite

M. D. DORFMAN, D. D. ROGACHEV, Z. I. GOROSHCHENKO, AND A. V. MOKRETSOVA. *Trudy Mineralog. Muzeya Akad. Nauk S.S.S.R.* No. 9, 152-157 (1959) (in Russian).

Analyses of two samples from the same pegmatite (by A. V. M. and Z. I. G., resp.) gave SiO_2 60.14, 60.54; TiO_2 0.06, 0.04; Al_2O_3 1.10, 0.66; Fe_2O_3 1.32, 1.54; FeO 12.45, 12.49; MgO 0.46, 0.70; MnO 2.34, 2.49; CaO 0.64, 0.74; Na_2O 6.77, 7.51; K_2O 11.48, 11.71; H_2O^- 0.76, 0.78; H_2O^+ 2.40, 0.67; F 0.23, 0.47, sum 100.15, 100.34 - ($\text{O}=\text{F}_2$) = 100.06, 100.14%. Determinations on a third sample gave H_2O^- 1.12, H_2O^+ 0.91%. Spectrographic analysis by N. N. Kolesnikov showed, in addition to the elements listed Ba—trace, Cu,

Zr, Sr—faint lines. After subtraction of a small amount of adularia (calculated from Al_2O_3), these analyses correspond to the formula $(\text{K}, \text{Na})_4(\text{Fe}'', \text{Mn})_2(\text{Si}_4\text{O}_{10})_2(\text{OH}, \text{F})$ with K:Na nearly 1:1. Fenaksite is decomposed by acids with the deposition of silica. It fuses easily before the blowpipe to a green glass; in the reducing flame, the powder becomes magnetic. From the composition, it may be referred either to the apophyllite group or to the mica group.

The mineral occurs in grains up to 2–4 cm, in diameter.

It is light rose in color, luster pearly on the two cleavages, which are at an angle of 122° to one another. Hardness $5-5\frac{1}{2}$. G. 2.744 (pycnometer). It is optically biaxial, positive; $n_s(\text{Na}) \alpha 1.541, \beta 1.560, \gamma 1.567, 2V 84^\circ, Z=b$, plane of optic axes (001), Z: cleavage I = 20° , Y: cleavage II = 49° , X: cleavage II = 8° .

Laue and rotation photographs show the mineral to be monoclinic, space group $C 2/m, C2$, or Cm , $a_0 14.95, b_0 6.98, c_0 9.79$ (not stated whether Å or kX), $\beta 112^\circ, Z=2$. X-ray powder data by N. N. Sludsko are given; the strongest lines are 3.03 (10), 2.46 (7), doublet 3.55, 3.44 (7), 2.88 (6), 2.71 (6), 1.875, 1.835 (6), 1.752 (6).

The name is for the composition.

DISCUSSION.—There must be an error in the optical data; the indices of refraction given indicate an optically negative mineral with $2V 61^\circ$. Perhaps β should be 1.550, which would give $2V 74^\circ$?

The name is unfortunate because it is so easily confused with phenakite. This may be the Mineral No. 5 of Dorfman (see *Am. Mineral.* 44, 910 (1959)).

M. F.

Canasite

M. D. DORFMAN, D. D. ROGACHEV, Z. I. GOROSHCHENKO, AND E. I. USPENSKAYA. Canasite, a new mineral. *Trudy Mineralog. Muzeya Akad. Nauk S.S.S.R.*, No. 9, 158–166 (1959) (In Russian).

Chemical analyses of two samples from the same pegmatite, by E.I.U. and Z.I.G., respectively, gave SiO_2 56.08, 55.71; TiO_2 0.10, 0.06; Al_2O_3 0.55, 0.20; Fe_2O_3 1.41, 0.72; FeO 0.71, 0.36; MgO 0.05, 0.26; MnO 0.38, 0.41; CaO 20.95, 20.39; Na_2O 8.01, 7.08; K_2O 8.47, 10.63; H_2O^- 0.49, 0.60; H_2O^+ 1.11, 1.25, F 2.21, 2.17; Cl 0.22, —; CO_2 0.20, —; P_2O_5 0.04, 0.08; sum. 100.98, 99.92—($0=\text{F}_2$) 0.96, 0.91 = 100.02, 99.01%.

A footnote to the first analysis states that “the determination of Na provokes doubts.” Spectrographic analysis shows, in addition to the elements listed above, Sr-medium, Ni, Cu-weak, Be insignificant traces. After deducting small amounts of magnetite (calculated from Fe_2O_3) and adularia (calculated from Al_2O_3), these analyses give the formula: $(\text{Na}, \text{K})_5 \text{Ca}_4 (\text{Si}_2\text{O}_5)_5(\text{OH}, \text{F})_5$. The mineral is decomposed by acids with the separation of silica. Easily fusible to a transparent glass in the blowpipe or alcohol flame.

Canasite occurs in grains up to 3 cm. in diameter. Transparent and translucent, color greenish-yellow, streak colorless. Luster vitreous. The mineral has a perfect cleavage and a very perfect cleavage at an angle of 118° to the first. Brittle, fracture splintery, breaks into long acute-angled or wedge-shaped pieces. When ground, gives a felty mass. G. (pycnometer) 2.707.

The mineral is optically biaxial, negative, $n_s(\text{Na}) \alpha 1.534, \beta 1.538, \gamma 1.543, 2V 58^\circ$. The optic axial plane is (010), $Y=b$, Z: less perfect cleavage = 2° . Polysynthetic twinning was observed, with the twinning plane at an angle of 8° to the less perfect cleavage.

Laue, rotation, and DeJong photographs showed canasite to be monoclinic, space group $C2/m, C_2$, or Cm , $a_0 18.87, b_0 7.24, c_0 12.60\text{Å}$, $\beta 112^\circ$. Unindexed x-ray powder data are given; the strongest lines are 3.074 (broad)—10, 1.814—9, 2.901—8, 1.638—8, 4.68—7, 4.80—6, 2.354—6.

The mineral occurs with fenaksite (see preceding abstract). Lamprophyllite occurs in fractures in canasite. The name is for the chemical composition.

DISCUSSION.—Presumably to be classed as a phyllosilicate. This may be Mineral No. 6 of Dorfman (see *Am. Mineral.* **44**, 910 (1959)). The indices of refraction given do not correspond to the figure given for 2V.

M. F.

Metakahlerite

KURT WALENTA. Die sekundären Uranminerale des Schwarzwaldes. *Jahresheft geol. Landesamt Baden-Württemberg*, **3**, 17–51 (1958).

The mineral was found as sulfur-yellow rare scaly aggregates in the Sophia Shaft, Baden. Microchemical tests showed Fe, U, As. Composition presumably $\text{Fe}(\text{UO}_2)_2(\text{AsO}_4)_2 \cdot 8\text{H}_2\text{O}$. Cleavage (001) excellent, (100) good. Luster pearly on (001). Optically uniaxial to biaxial, negative with 2V up to 22° , $n_s \epsilon$ 1.608, ω 1.642, both ± 0.002 , weakly pleochroic, E nearly colorless, O pale yellow. Not fluorescent. The x-ray powder diagram indicates this to be a meta-form; the strongest lines are 3.59 (10), 8.55 (9), 4.29 (6), 5.11 (5), 2.15 (5), 2.11 (5).

M. F.

Meta-uranospinite

KURT WALENTA. Die sekundären Uranminerale des Schwarzwaldes. *Jahresheft geol. Landesamt Baden-Württemberg*, **3**, 17–51 (1958).

Name given to the dehydration product of uranospinite from the Clara shaft, Wittichen, Baden, characterized by higher indices of refraction than uranospinite, $\gamma = 1.618$. Weakly pleochroic, X colorless, Z pale yellow. Readily rehydrates to uranospinite. Formula presumably $\text{Ca}(\text{UO}_2)_2(\text{AsO}_4)_2 \cdot 8\text{H}_2\text{O}$.

M. F.

Unnamed Ca, Sr, U oxides

J. PROTAS. Contribution à l'étude des oxydes d'uranium hydratés. *Bull. soc. franc. mineral. crist.*, **82**, 239–272 (1959).

Pseudo-hexagonal reddish-orange crystals, up to 0.5 mm., were found in geodes and in fissures in gummite on altered pitchblende from the Margnac II Mine. Microchemical tests and spectrographic analysis showed Ca, Sr, and U. Analysis gave UO_3 83.9, H_2O 7.4%. Phosphate, sulfate, carbonate, and silicate were absent. The crystals showed (001) (dominant), (010), (110), (111), and rarely (101). $G \cdot 5.29 \pm 0.05$. Orthorhombic with a_0 14.06 ± 0.05 , b_0 24.12 ± 0.10 , c_0 $14.16 \pm 0.05 \text{ \AA}$. Cleavage (001) good. Biaxial, negative, β 1.94, γ 1.96, 2V $38 \pm 3^\circ$. The x-ray powder pattern has strongest lines 3.11 (vs), 3.47 (s-vs), 6.82 (s), 3.53 (s), 3.17 (ms), 1.966 (ms).

When the mineral is heated in water at 100° , it is transformed into material giving a powder pattern identical with that given by pale yellow spherulites associated with the orange mineral. The strongest lines are 7.09 (vs), 3.49 (s), 3.13 (s), 1.951 (ms).

M. F.

Unnamed ("Mineral X")

W. T. EPPRECHT, W. T. SCHALLER, AND A. C. VLISIDIS. Über Wiserit, Sussexit, und ein weiteres Mineral aus den Managanerzen vom Gonzen (bei Sargans). *Schweiz mineralog. petrog. Mitt.*, **39**, 85–104 (1959).

An unknown fibrous mineral associated with wiserite (see page 256) gave x-ray powder data and fiber diagrams that were indexed on a monoclinic cell with a_0 11.55 ± 0.05 ,

b_0 3.4 ± 0.3 , c_0 8.18 ± 0.05 kX, β 109.5° . The fiber axis is parallel to b . The strongest lines are (in kX) 10.75 s, 5.4 s, 3.68 s, 2.93 s, 1.791 s. Optical data were uncertain because of intergrowth with wiserite; α ranged from 1.690–1.710, γ was about 1.76. Extinction inclined, up to 5° . Spectrographic analyses of mixtures with wiserite showed the same elements as in wiserite, so the mineral is probably a manganese borate.

M. F.

Unnamed

JEAN PAPAGEORGAKIS. Ein neues Bariummineral der Marmore von Candoglia in der unteren Val d'Ossola. *Schweiz. mineralog. petrog. Mitt.* **39**, 333–335. (1959).

The mineral occurs in clefts between barite layers and calcium silicate rock in the Candoglia marble, associated with barite, barium feldspar, quartz, epidote, and calcite. It forms bright gray columns up to 5 cm. long and 1 cm. thick. Luster vitreous to pearly, somewhat greasy on fractures. Brittle, H. = 6. G. (pycnometer) 3.13. Cleavage prismatic, parting pinacoidal. Optically uniaxial to biaxial, negative, $2V$ $0-10^\circ$, $n_s \omega$ 1.595, ϵ 1.589.

Analysis by H. Schwander of material picked under the binoculars gave SiO_2 31.5, Al_2O_3 19.5, CaO 12.0, BaO 23.5, Na_2O 0.6, K_2O 0.8, SO_3 9.9, H_2O 2.4, Cl tr., sum 100.2%. This gives $5\text{BaO} \cdot 8\text{CaO} \cdot 7\text{Al}_2\text{O}_3 \cdot 19\text{SiO}_2 \cdot 4\text{SO}_3 \cdot 5\text{H}_2\text{O}$ (Recalculation gives $\text{Na}_{0.7}\text{K}_{0.6}\text{Ba}_{8.5}\text{Ca}_{7.7}\text{Al}_{13.7}\text{Si}_{18.8}\text{O}_{72}(\text{SO}_3)_4 \cdot 5\text{H}_2\text{O}$ M.F.). The SO_3 would correspond to 29.2% barite, but microscopic and x -ray study, which showed only faint lines of barite, indicated that no more than 5% barite could be present. The mineral may be related to scapolite, but the indices of refraction are low for the high content of BaO.

M. F.

Dixeyite

VLADI MARMO. Dixeyite—a new natural hydrous aluminium silicate. *Schweiz. mineralog. petrog. Mitt.*, **39**, 125–132 (1959).

The mineral was found in a small outcrop of amphibolite 1 mile north of the village of Belihun, Kangari Hills, central Sierra Leone. The amphibolite is believed to occupy a very narrow zone along the margin of ultrabasic rock at its contact with granodiorite. The rock consists of hornblende, quartz, magnetite, and an unknown isotropic colorless mineral; a chemical analysis, but no mode, of the rock is given. Separation by heavy liquid gave a concentrate "Predominantly containing the unknown isotropic mineral." Analysis of this concentrate by Aulis Heikinen gave SiO_2 51.72, TiO_2 0.55, Al_2O_3 21.15, Fe_2O_3 2.68, FeO 2.76, MnO 0.15, MgO 2.17, CaO 2.56, Na_2O 0.34, K_2O 0.32, P_2O_5 0.45, CO_2 none, H_2O^+ 10.26, H_2O^- 5.03, sum 100.14%. From this, an unstated amount of hornblende and magnetite is deducted, leaving (in moles) SiO_2 730, Al_2O_3 166, K_2O 3.5, CaO 2, H_2O 570, or approximately $\text{Al}_2\text{O}_3 \cdot 4-5 \text{SiO}_2 \cdot 3-4 \text{H}_2\text{O}$. Some quartz was present. Analysis of "a few mg. of reasonably pure material" gave SiO_2 63.14, Al_2O_3 23.65, Fe traces, CaO 0.05%, confirming the above formula. ($\text{Al}_2\text{O}_3:\text{SiO}_2=1:4.5$.)

X -ray powder data showed some variation; 2 patterns gave a_0 7.55, 7.7Å; "this suggests that the lattice may not be exactly cubic." Calculations gives 22.55 O atoms per unit cell, which suggests that a_0 should be doubled to 15.2Å. The strongest x -ray lines are 3.32, 3.40 (s), 3.09, 3.19 (s), 2.27 (s).

G. approximately 2.51–2.52, n 1.5057. The mineral is perfectly isotropic.

The name is for F. Dixey, Director, British Overseas Geological Surveys, first government geologist of Sierra Leone.

DISCUSSION.—An unsatisfactory description.

M. F.

Dneprovskite

M. N. IONOV. Cassiterite and wood tin from the Omchug placers. *Trudy Vses. Magadansk N.-I. Inst.*, **19**, 9-16 (1957); from an abstract by E. M. Bonshtedt-Kupletskaya in *Zapiski Vses. Mineralog. Obshch.*, v. **88**, 311-312 (1959).

The name was proposed in 1944 by P. I. Skornyakov for wood tin of radiating fibrous structure from the Dnepropetrovsk deposits, northeastern U.S.S.R.

DISCUSSION.—As the abstractor states, an unnecessary name.

M. F.

Khovakhsite, Tuvite

N. N. SHISHKIN AND V. A. MIKHAILOV. Study of the composition of ores of the Khovakh cobalt deposits. *Sborn. mater. tekhn. inform.*, **6**, 5-23 (1956).

YAKHONTOV, L. K. Initial products of the weathering of safflorite. *Vestnik Mosk. Univ.* **1958**, No. 2, 147-156; from abstracts by E. M. Bonshtedt-Kupletskaya in *Zapiski Vses. Mineral. Obshch.* **88**, 317 (1959).

These are names used in the literature of economic geology for oxidation products of smaltite and safflorite. Khovakhsite is light to dark brown, earthy, luster waxy or resinous, H. $2\frac{1}{2}$ -3, G. 2.81. The composition ranges from $\text{Fe}_2\text{O}_3 \cdot 2(\text{Ca}, \text{Co})\text{O} \cdot \text{As}_2\text{O}_5 \cdot 3-6\text{H}_2\text{O}$ to $\text{Fe}_2\text{O}_3 \cdot 4-8(\text{Ca}, \text{Co}, \text{Ni})\text{O} \cdot 2-4\text{As}_2\text{O}_5 \cdot n\text{H}_2\text{O}$. Fine lamellar to fibrous, extinction parallel, birefringence low, n variable 1.65-1.73. Mostly amorphous to x -rays.

Tuvite is a name applied to material constituting a further stage of the oxidation; it is yellow, brittle. The names are for the Khovakh deposits of the Tuva Autonomous Region, U.S.S.R.

DISCUSSION.—As the abstractor states, it is impossible to determine whether these are minerals or mixtures. They should not have been named.

M. F.

Parbigite

YU. V. MIRTOV. Parbigite, a new mineral of the collinsite group. *Vestnik Zap.-Sib. and Novosib. geol. Upr.* **1958**, No. 1, 72-75; from an abstract by E. M. Bonshtedt-Kupletskaya, *Zapiski Vses. Mineral. Obshch.*, **88**, 318-319 (1959).

The mineral was found in drill core from a depth of 236 m. in the Parbig region, Tomsk oblast, in cavities in sandstone, associated with calcite and sphaeroiderite. It forms radial-fibrous aggregates, rarely pyramidal or prismatic crystals (0.5-1 mm). White, pale yellow, or colorless. Cleavage in one direction very perfect; under the microscope 4 cleavages were noted at angles: $C_1-C_2=88^\circ$, $C_1-C_3=72^\circ$, $C_1-C_4=56^\circ$, $C_3-C_4=49^\circ$. Luster silky to vitreous, H. about 3, G. 3.08. Optically biaxial, negative, $ns \alpha 1.633$, $\beta 1.658$, $\gamma 1.670$, $2V 70-74^\circ$, $C:\gamma=18-23^\circ$. Easily fusible to a brown slag. Spectrographic analysis showed major Ca, Fe, P, Mg, minor Sr and Ba.

DISCUSSION.—The difference in optical sign is insufficient basis for giving a new name. The mineral is presumably messelité.

M. F.

Pallite

LAURENT CAPDECOMME AND RENÉ PULOU. Sur la radioactivité des phosphates de la région de Thiès (Sénégal). *Compt. rend. acad. sci. France*, **239**, 298-290 (1954).

EDMOND LATRILHE. Contribution à l'étude des phosphates alumineux de la région de Thiès (Sénégal). *Haut Comm. Repub. Afrique occidentale franc.*, *Bull. service geol. et prospection minière* No. **25**, 1-84 (1959).

Chemical analyses and x -ray data show that the principal minerals present in the

aluminum phosphate zone are crandallite and pallite (=ferrian millisite), with minor augelite and rare wavelite and turquoise. Analyses of two samples estimated to contain 95% pallite+5% crandallite gave, resp., P_2O_5 26.28, 27.36; Al_2O_3 25.74, 30.50; sol. Fe_2O_3 11.97, 9.86; CaO 6.94, 6.63; MgO 0.42, 0.53; Na_2O 1.95, 1.86; K_2O none, none; loss on ign. 15.98, 16.22; SiO_2 5.36, 3.57; TiO_2 (insol.) 2.14, 1.63; Fe_2O_3 (insol.) 1.14, 2.19; MnO_2 0.47, 0.00; F 0.46, 0.55; sum 98.85, 100.90%. Uranium is present in amounts up to 140 ppm U in pallite and four times as much in crandallite.

The name is for the village of Pallo.

DISCUSSION.—Unnecessary name for ferrian millisite.

M. F.

Hormites

R. C. MACKENZIE. The classification and nomenclature of clay minerals. *Clay Minerals Bull.*, 4, No. 21, 52–66 (1959).

The name hormites is suggested by R. H. S. Robertson as a group name for the sepiolite-palygorskite group. The name is from the Greek for chain.

DISCUSSION.—This is another example of the deplorable practice of cluttering the literature with unnecessary names (see *Am. Mineral.* 41, 536 (1956)). I have urged repeatedly that such suggestions should be circulated privately for comment and should not be put into print until there is near unanimity on their desirability.

See note on page 244 of this issue.

M. F.

NEW DATA

Sterrettite, Kolbeckite

M. E. MROSE AND BLANCA WAPPNER. New data on the hydrated scandium phosphate minerals: sterrettite, "eggonite," and kolbeckite. *Bull. Geol. Soc. Am.*, 70, 1648–1649 (1959) (abs.).

X-ray fluorescence analysis of sterrettite from Fairfield, Utah, of "eggonite" from Altenberg, Belgium (?), and of kolbeckite from Schmeideberg, Saxony (type localities) showed that scandium is a major constituent. X-ray study (unit cells given) showed that the structure is of the metavariscite type and the formulas should be of the type $AXO_4 \cdot 2H_2O$. Sterrettite, supposedly $Al_6(PO_4)_4(OH)_6 \cdot 5H_2O$ (Dana's system, 7th Ed., vol. 2, p. 965) is probably $ScPO_4 \cdot 2H_2O$; the unit cell is nearly the same as for synthetic $ScPO_4 \cdot 2H_2O$. The identity of eggonite with sterrettite is confirmed. Kolbeckite, supposedly a silicate-phosphate of Be, Ca, and Al (Dana's system, 7th Ed., vol. 2, p. 1015–1016) may be $(Sc, Be, Ca)(PO_4, SiO_4) \cdot 2H_2O$.

DISCUSSION.—This doubles the number of minerals known to contain more than 1% Sc_2O_3 .

M. F.

Iriginite

G. YU. EPSHTEIN. On the molybdates of uranium—moluranite and iriginite. *Zapiski Vses. Mineral. Obshch.*, 88, 564–570 (1959) (in Russian).

Data available previously were summarized in *Am. Mineral.*, 43, 379 (1958). Additional data: Color canary-yellow, luster vitreous. Fracture uneven. Hardness 1–2, higher in aggregates. G. 3.84 (probably too low because of impurities). Indices of refraction, α 1.730 \pm 0.003, β \sim 1.82, γ \sim 1.93. Extinction parallel. The mineral does not fluoresce. It is soluble in acids on heating. Analysis by M. M. Stukalova gave MoO_3 38.62, UO_3 41.92, CaO 0.46, loss on ignition 9.70, insol. 9.04, sum 99.74%, corresponding to $MoO_3:UO_3:H_2O = 1.84:1:3.70$ or $UO_3 \cdot 2MoO_3 \cdot 4H_2O$. A potentiometric pH determination by N. I. Koma-

rova gave pH 4.4, so the formula is given as $H_2(UO_2)(MoO_4)_2 \cdot 3H_2O$. A D.T.A. curve shows a large and broad endothermic effect at 100–400°, a sharp exothermic effect at 480°.

X-ray powder patterns (more than 50 lines) were obtained by Yu. V. Kazitsyn in 1952 and A. I. Komkov in 1959. The former found strongest lines: 3.222 (10), 1.129 (8), 2.625 (6), 2.142 (6), 1.836 (6), 1.249 (6), 1.206 (6), 1.188 (6), 1.165 (6), 6.4 (5), 1.533 (5). The latter found 6.19 (10), 3.20 (9), 1.628 (9), 2.14 (8), 1.127 (8), 1.529 (7), 2.61 (6), 2.07 (6), 1.688 (6), 3.30 (5), 3.09 (5), 1.962 (5), 1.185 (5).

M. F.

Moluranite

G. Yu. EPSHTEIN. On the molybdates of uranium—moluranite and iriginite. *Zapiski Vses. Mineral. Obshch.*, **88**, 564–570 (1959) (in Russian).

Data available previously were summarized in *Am. Mineral.*, **43**, p. 380 (1958). Additional data: Isotropic, n 1.97–1.98. G. about 4. Soluble in acids on heating. Light gray in reflected light, reflecting power about the same as that of pitchblende. Amorphous to x-rays. X-ray powder data on heated material correspond to those of U_3O_8 . Analysis by M. M. Stukalova gave MoO_3 38.50, UO_2 10.30, UO_3 32.35, SiO_2 4.56, loss on ignition 14.03, sum 99.74%, corresponding to $UO_2 \cdot 3UO_3 \cdot 7MoO_3 \cdot 20H_2O$. A D.T.A. curve shows a large and broad endothermic effect (40–400°) and small exothermic effects at 500°, 800°, and 980°.

M. F.

REDEFINITION OF MINERAL

Wiserite

W. T. EPPRECHT, W. T. SCHALLER, AND A. C. VLISIDIS. Über Wiserit, Sussexit, und ein weiteres Mineral aus den Manganerzen von Gonzen (bei Sargans). *Schweiz. mineralog. petrog. Mitt.*, **39**, 85–104 (1959).

The mineral wiserite, described in 1842 as a manganese oxide-carbonate and later discredited as pyrochroite, was shown by Epprecht in 1944 to give a distinctive x-ray pattern (see *Am. Mineral.* **32**, 485 (1947)). Restudy shows that the previously published analyses were in error; the mineral is a hydrous borate, not an oxide or carbonate. The CO_2 reported was present as rhodochrosite.

Two samples were purified, and new analyses by A.C.V. gave: B_2O_3 17.58, 16.32; MgO 2.79, 3.00 (spec. detn. by H. J. Rose); FeO tr., tr.; MnO 63.13, 65.23 (total Mn as MnO ; a little MnO_2 was present); CaO 3.23, 0.75; H_2O^+ 7.85, 8.00 (total H_2O); H_2O^- 0.35, n.d.; Cl 3.02, 2.95; F none (<0.1), n.d.; CO_2 tr., tr.; Al_2O_3 (+tr. Fe) 1.00, 0.45; insol. 1.20, 3.60; P_2O_5 , SO_3 not present; total 100.15, 100.30—($O=Cl_2$) 0.68, 0.67=99.47, 99.63%; G. 3.42, n.d. These lead to the formula 4 (Mn, Mg, Ca) $O \cdot B_2O_3 \cdot 2H_2O$, with Cl replacing part of the H_2O (Better— $Mn_4B_2O_6(OH, Cl)_4$; M.F.). Spectrographic analysis of a mixture of wiserite and an unknown mineral (Mineral X, see pg. 254) showed also traces of As, Bi, Cu, Ni, Pb, Sb, Sn, Sr, and Zn.

Rotation diagrams show wiserite to be tetragonal with a_0 14.27 ± 0.01 , c_0 3.31 ± 0.01 kX, $Z=4$. c is parallel to the fibers. Cleavage is perfect across the fibers. Indexed x-ray powder photographs of 4 samples are given. The strongest lines (in kX) are 14.2 vs, 2.53 s, 6.40 ms, 3.36 ms, 2.87 ms, 2.35 ms.

Indices of refraction are somewhat variable: α 1.700–1.717, γ 1.753—about 1.76. Extinction parallel. Z is perpendicular, X parallel to the fiber direction. Uniaxial to slightly biaxial, negative. Weakly pleochroic with X bright—to dark orange-brown, Z colorless to bright orange-brown.

Wiserite occurs in fibers, intimately intergrown with pyrochroite, an unidentified mineral (see page 254), and sussexite (near the end member, optical and x-ray data given).

M. F.