

NEW MINERAL NAMES

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Humberstonite

G. E. ERICKSEN, J. J. FAHEY, AND M. E. MROSE (1967) Humberstonite, $\text{Na}_7\text{K}_3\text{Mg}_2(\text{SO}_4)_6(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$, a new saline mineral from the Atacama Desert, Chile (abstr.). *Geol. Soc. Amer., Program Ann. Meet.* 1967, p. 59.

Analysis gave SO_3 42.99, N_2O_5 9.14, Na_2O 18.43, K_2O 12.17, MgO 7.47, H_2O^+ 9.78, H_2O^- 0.40, sum 100.38%. The mineral is soluble in water, insoluble in acetone and ethyl alcohol. Trigonal, $R\bar{3}$, a 10.895 \pm 0.005, c 24.415 \pm 0.015Å, $Z=3$. G . calc. 2.251, meas. 2.252 (pycnometer). The strongest X-ray lines are 3.393 (100)(20.5), 2.724 (70)(22.0), 8.137 (60)(00.3), 8.802 (35)(10.1), 4.527 (35)(11.3), 2.583 (35)(22.3). Precession photographs and the powder pattern indicate a structural relation to ungemachte.

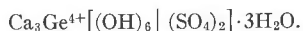
Humberstonite occurs as aggregates of thin, colorless, hexagonal-shaped crystals up to 0.2 mm. in diameter. Crystals are flattened [0001]; observed forms are c {0001} and r {10.1.1}. Cleavage {0001} perfect. Uniaxial, negative, with ω 1.474, ϵ 1.436. It occurs at several places in the nitrate fields, associated with astrakhanite (bloedit) and sodanite.

The name is for the chemist James Thomas Humberstone (1850-1939), who worked on the saline minerals of the Chilean nitrate deposit. The mineral and name have been approved by the Commission on New Minerals and Mineral Names, IMA.

Schaurteite

H. STRUNZ AND CH. TENNYSON (1967) Schaurteite, ein neues Germanium-Mineral von Tsumeb/SW-Afrika und seine Paragenese. In *Festschrift Dr. Werner T. Schaurte*, Bauer & Schaurte, Neuss/Rhein, Germany (BRD), p. 33-47.

Analysis (Fresenius) gave CaO 31.7, GeO 18.2, SO_3 29.5, H_2O (105°C) 0.2, H_2O (800°C) 19.9; sum 99.5%. As expected from DTG-investigation and later proved by synthetic work of H. Otto, Ge is present in the quadrivalent state. Therefore the analysis must be corrected: GeO_2 21.5, sum 102.8%. This gives the formula



X-ray study shows the mineral to be hexagonal, space group $P6_3/mmc$, $P6_3mc$, or $P62c$, a 8.525, c 10.803, $Z=2$. Indexed powder data are given, the strongest lines are (Cu $K\alpha$ radiation) 3.34 (10)(11 $\bar{2}2$), 4.26 (7)(11 $\bar{2}0$), 2.139 (6)(22 $\bar{4}0$), 7.40 (5)(10 $\bar{1}0$), 3.49 (5)(20 $\bar{2}1$), 2.579 (5)(20 $\bar{2}3$). The mineral forms very fine fibrous to needlelike crystals up to 2 mm in length. Color white, with silky luster. H not determinable. G meas. \sim 2.65, G calc. 2.64. Optically uniaxial, positive; ϵ 1.581, ω 1.569.

Type of formula as well as cell dimensions show a very close analogy to fleischerite [Abstr. *Amer. Mineral.* 45, 1313(1960)]. When heated, fleischerite yields a powder pattern similar to that of anglesite; corresponding to this reaction schaurteite gives after heating to about 600°C a powder pattern like that of anhydrite. The formula of fleischerite (Ge^{2+} ?) and the assumed dehydration mechanism are open for reexamination.

Schaurteite occurs as alteration product of Ge-bearing ores of the Tsumeb mine, SW-Africa.

The name is for Dr. Werner T. Schaurte; the mineral was approved before publication by the Commission on New Minerals and Mineral Names, IMA.

Stanfieldite

L. H. FUCHS (1967) Stanfieldite, a new phosphate mineral from stony-iron meteorites. *Science*, **158**, 910–191.

Electron probe analysis of the mineral from the *Estherville* mesosiderite meteorite gave P_2O_5 46.6, CaO 24.6, MgO 12.9, FeO 13.8, MnO 1.4, sum 99.3%. The average and ranges (in parentheses) of analyses from *Santa Rosalia*, *Albin*, *Finnmarken*, *Imilac*, *Mount Vernon*, and *Newport* pallasites were P_2O_5 50.4 (50.3–50.5), CaO 26.6 (26.2–27.2), MgO (20.1–21.6), FeO 2.5 (2.2–2.7), MnO 0.4 (0.4–0.5), sum 100.9%. These correspond to $Ca_4(Mg, Fe, Mn)_3(PO_4)_6$; the *Estherville* material is much richer in Fe and Mn than the others. The mineral has been synthesized by heating an appropriate mixture (iron-free) in a Pt crucible at 800°C for several days in air; the X-ray pattern of the product is identical with that of the mineral.

Weissenberg photographs of the *Estherville* material showed it to be monoclinic, space group *Pc* or *P2/c*, a 17.16±0.03, b , 10.00±0.02, c , 22.88±0.04 Å., β 100° 15' ±10', Z = 8; *G. calc.* (for Mg/Fe=3:2) 3.15, meas. 3.15±0.01. The strongest lines are 8.31 (5), 6.01 (5), 3.845 (6), 3.747 (8), 2.187 (10), 2.505 (8).

The mineral is reddish to amber; under the microscope clear and transparent. Optically biaxial, positive, ns α 1.619, β 1.622, γ 1.631 (all ±0.002), $2V$ 50±2° (*Estherville*); α 1.594, γ 1.604 (*Santa Rosalia*). *H.* 4–5, nearer to 5.

The mineral occurs as irregular grains up to 1 mm in diameter along the walls of cracks in *Estherville*, and as thin veinlets less than 1 mm in width cutting olivine in the pallasites.

The name is for the late Stanley Field, former chairman of the board of trustees of the Field Museum of Natural History, Chicago, who helped to build the museum's collection of meteorites. The name was approved before publication by the Commission on New Mineral and Mineral Names, IMA.

Brianite

L. H. FUCHS, E. OLSON, AND E. P. HENDERSON (1967) On the occurrence of brianite and panethite, two new phosphate minerals from the Dayton meteorite. *Geochim. Cosmochim. Acta*. **31**, 1711–1719.

The average of electron microprobe analyses of 6 grains (C. Knowles and E. Olsen, analysts) gave Na_2O 22.1, MgO 12.6, FeO 0.5, CaO 18.8, P_2O_5 46.9, sum 100.9%, very close to $Na_2CaMg(PO_4)_2$. The mineral was synthesized by heating stoichiometric amounts of CaO, MgO, and $Na_2HPO_4 \cdot H_2O$ at 650°C to expel water, then at 1150°, followed by grinding, and heating at 800°C for 2 months. The product gave an X-ray pattern identical with that of the mineral. Heating experiments indicated that the compound melts incongruently between 800° and 1000°C. Insoluble in water.

Weissenberg photographs show brianite to be orthorhombic, space group probably *P222*, a 13.38±0.02, b 10.50±0.02, c 18.16±0.06 Å., Z = 16. The strongest X-ray lines are 3.734 (9), 3.344 (7) 3.158 (6), 2.718 (8), 2.679 (9), 2.625 (10), 2.594 (6), 2.311 (6), 2.230 (7), 1.875 (9), 1.518 (6).

The mineral is colorless, transparent. Optically biaxial, negative, ns (Na) α 1.598, β 1.605, γ 1.608 (all ±0.001), $2V$ calc. 66°, meas. 63–65°. Fine lamellar structure is observed in polarized light, with extinction angles between lamellae 2–3°. *H.* 4–5, *G. calc.* 3.17, measured by sink-float between 3.0 and 3.3, measured on synthetic by pycnometer 3.10.

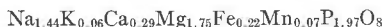
The mineral occurs in the *Dayton* octahedrite as grains up to 0.1–0.2 mm. in size in small pockets in the metallic phase; whitlockite, panethite, albite, and enstatite are associated minerals.

The name is for Dr. Brian Mason, Smithsonian Institution. The mineral was approved before publication by the Commission on New Minerals and Mineral Names, IMA.

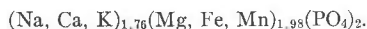
Panethite

L. H. FUCHS, E. OLSON, AND E. P. HENDERSON (1967) On the occurrence of brianite and panethite, two new phosphate minerals from the Dayton meteorite. *Geochim. Cosmochim. Acta*, **31**, 1711–1719.

The average of electron microprobe analyses of 6 grains (C. Knowles and E. Olsen, analysts) gave Na₂O 15.2, K₂O 0.9, MgO 24.1, FeO 5.3, MnO 1.7, CaO 5.6 P₂O₅ 47.7, sum 100.5%, yielding the formula (8 O)



or



The mineral was synthesized by a method like that used for brianite (Fe was omitted); the product gave the same powder pattern as the mineral, but with smaller *d*. Insoluble in water.

Weissenberg photographs showed the mineral to be monoclinic, space group $P2_1/n$, *a* 10.18 ± 0.01, *b* 14.90 ± 0.02, *c* 25.87 ± 0.03 Å., β 91.1°, unit cell content (Na₃₄K₂)(Mg₄₀Ca₇Fe₅Mn₂)(PO₄)₄₃. It may be isostructural with arrojadite. The strongest X-ray lines are 5.10 (6), 3.236 (5), 3.007 (10), 2.749 (5), 2.710 (7).

The mineral is pale amber, transparent. *G.* (sink-float) between 2.9 and 3.0, calc. 2.99. Optically biaxial, neg., *ns* (Na) α 1.567, β 1.576, γ 1.579, all ± 001, 2*V* = 51°. Panethite lacks the lamellar structure shown by brianite, but often shows simple twinning.

Occurrence—see brianite.

The name is for Friedrich Adolf Paneth, 1887–1958, Director of the Max Planck Institut für Chemie, Mainz, Germany, who made many important contributions to the study of meteorites.

The name was approved before publication by the Commission on New Minerals and Mineral Names, IMA

Metaliebigite

J. KISS (1966) Constitution mineralogique, propriétés, et problèmes de gènesè du gisement uranifère de la Montagne Mecsek. *Ann. Univ. Sci. Budapest Rolando Eötvös Nominat., Sec. Geol.* **9**, (1965) 139–161.

The name metaliebigite is provisionally given to a uranium mineral occurring with abundant liebigite (x-ray identification) on pitchblende in the Mecsek Mts., Hungary. It occurs in bluish-green efflorescences resembling liebigite. It contains Ca, Mg, and U, and traces of sulfate. Only slightly soluble in hot water. Microscopic study shows it to consist of filiform terminated crystals with curved faces. Probably monoclinic, shows inclined extinction at 30°. Biaxial, positive, 2*V* medium, *ns* not given. One cleavage. The X-ray pattern is distinctive (53 lines given); the strongest lines are 10.67 (vs), 8.35 (vs), 6.70 (s), 5.62 (m), 5.05 (m), 4.17 (m), 3.93 (m), 2.69 (m), 2.49 (m).

DISCUSSION—Insufficient data.

Dhanrasite

S. R. N. MURTHY (1967) 'Dhanrasite', the tin garnet. *Current Sci. (India)* **1967**, No. 11, p. 295.

Garnet-cassiterite rock occurs at Dhanras Hill about 6 km. north of Charkabandha, Gaya district, Bihar, India. The garnets occur in pockets in sericite-sillimanite-schists as

prophyroblasts varying in size from small grains to as large as an apple. Color dark brown to deep red, *G.* 3.88, 3.97. X-ray powder data indicate to be of pyrope-almandine type. Spectrographic analysis of 4 samples of garnet (purity not stated) gave 450, 2,000, 10,800, and over 20,000 ppm Sn. The name dhanrasite, for the locality, is suggested for garnets containing appreciable tin.

DISCUSSION.—Unnecessary name for a variety inadequately characterized.

Magadiite, Kenyaite

H. P. EUGSTER (1967) Hydrous sodium silicates from Lake Magadi, Kenya: precursors of bedded chert. *Science* **157**, 1177–1180.

Analyses by O. von Knorring gave: magadiite, SiO₂ 77.62, TiO₂ 0.06, Al₂O₃ 0.79, Fe₂O₃ 0.55, MgO 0.26, MnO 0.01, CaO 0.14, Na₂O 5.55, K₂O 0.35, H₂O⁺ 5.28, H₂O⁻ 9.32 sum 99.93%; for kenyaite SiO₂ 83.50, TiO₂ 0.02, Al₂O₃ 0.22, Fe₂O₃ 0.09, MgO 0.04, MnO trace, CaO 0.11, Na₂O 3.96, K₂O 0.04, H₂O⁺ 4.90, H₂O⁻ 7.10, sum 99.98%. These give ratios, Na₂O:SiO₂:H₂O⁺:H₂O⁻=1.00:14.43:3.275:5.78 (magadiite), 1.00:21.75:4.26:6.17 (kenyaite); approximate formulas are NaSi₇O₁₃(OH)₃·3H₂O (magadiite), Na₂Si₂₂O₄₁(OH)₃·6H₂O (kenyaite). Small amounts of clays or chlorites were present.

Treatment of both minerals with dilute acid at room temperature yields a hydrous form of silica, near 6SiO₂·H₂O, with distinctive x-ray pattern. Treatment of this phase with concentrated solutions of Na₂CO₃ or NaOH give magadiite.

X-ray patterns are given. The unit cell of magadiite, from the powder pattern, is indexed on a tetragonal cell with *a* 12.62±0.02, *c* 15.573±0.079 Å. The strongest lines are 15.41 (100)(001), 5.181 (19)(003), 5.007 (16)(202), 4.464 (18)(220), 3.435 (80)(321), 3.296 (35)(303), 3.146 (50)(400). The unit cell for kenyaite, from the powder pattern, is indexed on a tetragonal cell with *a* 12.81±0.054, *c* 19.875±0.094 Å. The strongest lines are 19.68 (100)(001), 9.925 (50)(002), 4.965 (35)(004, 212), 4.689 (28)(104), 3.428 (85)(313), 3.320 (45)(006), 3.198 (400).

Magadiite occurs as white putty-like laminae, varying in thickness from a few inches to 2 feet, in brown silts of the High Magadi beds deposited over a large area from saline brines of the precursor of Lake Magada, Kenya. Rosettes of calcite are present in some samples. Kenyaite occurs in nodular concretions, sometimes with cores of chert, in the magadiite beds, and was evidently formed by the leaching of magadiite. Both minerals have average *ns* 1.48.

The names are for the locality. Both were approved before publication by the Commission on New Minerals and Mineral Names, IMA.

Cavansite

L. W. STAALES, H. T. EVANS, JR., AND J. R. LINDSAY (1967) Cavansite, a new calcium vanadium silicate mineral (abstr.). *Geol. Soc. Amer. Program Ann. Meet.* **1967**, p. 211–212.

Analysis by X-ray fluorescence on 20 mg. gave CaO 11.50 V₂O₄ 17.1, SiO₂ 49.4 H₂O (gravimetric) 21.0%, corresponding to Ca(VO)Si₄O₁₀·6H₂O. Orthorhombic, space group *Pcmm* or *Pc2₁n*, with *a* 9.792±0.002, *b* 13.644±0.003, *c* 9.629±0.002 Å, *Z*=4. *G.* calc. 2.516, meas. 2.25–2.36. The strongest X-ray lines are 7.95 (100)(110), 6.85 (50)(101), 6.13 (35)(111), 3.932 (35)(022), 3.409 (70)(040), 3.054 (35)(141), 2.783 (35)(123). The mineral occurs as radiating clusters up to 25 mm. in diameter and in single crystals up to 0.2 mm. long. Habit needle-like prismatic parallel to *c*, with {110} dominant.

Color brilliant greenish-blue. Optically biaxial, negative, α 1.539, β 1.546, γ 1.548, $2V=51^\circ$, dispersion strong $r>v$, $X=a$, $Y=b$, pleochroism strong with *X* and *Y* blue, *Z* colorless.

The mineral occurs in veinlets, closely associated with calcite, heulandite, and thomsonite, in a tuff near Owyhee Dam, Malheur County, Oregon, and in basalt and breccia near Goble, Columbia County, Oregon. The name is for the composition; it was approved by the Commission on New Minerals and Mineral Names, IMA.

NEW DATA

Ureyite

A. NEUHAUS (1967) Über Kosmochlor (Ureyit). *Naturwissenschaften* **54**, 440–441.

Ureyite was described in 1965 by Frondel and Klein [abstr. *Amer. Mineral.* **50**, 2096 (1965)] from the Toluca meteorite. These authors mentioned the possibility that the material described by Laspeyres in 1897 from the same meteorite under the name Kosmochlor might be the same mineral. X-ray study of material from the Bonn collection with a label "Kosmochlor" in Laspeyres' handwriting gave a 9.54₃, b 8.76₄, c 5.26₅Å., β 107.4°, in good agreement with the data of Frondel and Klein.

Stellerite

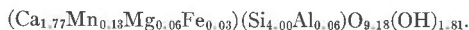
R. C. ERD, G. D. EBERLEIN, AND ADOLF PABST (1967) Stellerite: a valid orthorhombic end member of a continuous series with monoclinic stilbite (abstr.). *Geol. Soc. Amer., Program Ann. Meet.* **1967**, 58–59.

Re-examination of type material from Commander Islands, Bering Sea, shows that stellerite, $\text{CaAl}_2\text{Si}_7\text{O}_{18} \cdot 7\text{H}_2\text{O}$, which has been considered to be a variety of stilbite, differs in having orthorhombic symmetry, space group $Fmmm$, $F222$, or $Fmm2$. It also differs from stilbite in having lower ns , lack of twinning, parallel extinction, and tendency toward higher variable values of $2V$, but positive identification requires single crystal X-ray study.

Truscottite

HIDEO MINATO AND AKIRA KATO, Truscottite from the Toi Mine, Shizuoka Prefecture: *Mineralog. J. (Tokyo)* **5**, 144–156 (1967).

Semi-micro analysis on 60 mg. by H. M. gave SiO_2 63.56, TiO_2 0.08, Al_2O_3 0.81, FeO 0.66, MnO 2.41, MgO 0.70, CaO 26.24, H_2O^- 0.48, H_2O^+ 4.31, sum 99.25%, corresponding to



H. 3.5, G. 2.48, uniaxial neg., $\epsilon = 1.530$, $\omega = 1.552$, $a = 9.720$, $c = 18.84\text{Å}$. X-ray powder data are given. The data agree well with those of Chalmers and others [abstr. *Amer. Mineral.* **50**, 260 (1965)], but do not solve the problem of whether truscottite and reyerite are identical [*Amer. Mineral.* **44**, 470 (1959)].