NEW MINERAL NAMES

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Allemontite
Discredited; see Stibarsen. (B. F. Leonard)

Atheneite*
Palladium arsenide—antimonides from Itabira, Minas Gerais, Brazil. Mineral. Mag. 39, 528–543.

Electron microprobe analyses of 2 grains gave Pd 66.0, 65.6; Cu 0.1, 0.1; Hg 14.9, 16.1; Au 0.5, 0.3; As 19.0, 19.0; Sb 0.1, 0.3; sum 100.6, 101.4 percent, corresponding (av.) to (Pds,As,Cuts,1, IGe,et,a, As,an,SB,an) or (Pds,Hg), As.

The mineral is hexagonal, space group P6/mmm, a 6.799, c 3.483 A, Z = 2, G calc 10.16, meas 10.2. The strongest X-ray lines (48 given) are 2.423 (vvs) (1121), 2.246 (vs) (2021), 1.871 (ms) (2131), 1.371 (s) (2132), 1.302 (s) (3032), 1.259 (s) (3251), 1.034 (ms), (4152).

In reflected light white with a yellowish creamy hue, shows very weak reflectance pleochroism in oil, none in air. The mineral does not extinguish under crossed polars, showing bright anisotropic colors from purple-brown to dark gray. Microhardness (2 grains), 419, 442, av. 431. Reflectances are given for 2 grains in air and oil; av. values Rr and Rz: 470 nm, 45.23, 45.66; 546 nm, 52.67, 52.88; 589 nm, 55.82, 56.19; 650 nm, 55.35, 59.95 percent.

Reflectances are given of 2 samples from Tuka, the first containing vesuvianite, the second small amounts of gehlenite, vesuvianite, and hydrosorellous. The X-ray powder data are given for Tuka and Carneal material. The strongest lines (16 given) are, respectively,

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<th>211</th>
<th>310</th>
<th>222</th>
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<tr>
<td>Tuka</td>
<td>3.60</td>
<td>90</td>
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<tr>
<td>Carneal</td>
<td>3.60</td>
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The a edge equals 8.829 (Tuka), 8.82 (Carneal), 8.837 (synthetic “gehlenite hydrate”, Ca,Al,SiOz,H,O); Carlson (1964), who first synthesized it, gave a 8.83 A.

Hydrothermal experiments showed the gehlenite-bicchulte boundary to be at 635 ± 5°C, 1 kbar and at 595 ± 5°C, 3000 bars. The mineral from Carneal is colorless, isotropic, n 1.625 (n of synthetic = 1.628, Carlson, 1964). Sp. gr. synthetic = 2.75 meas, 2.813 calc from unit cell data.

The name is for Bicchu, the type locality in Japan. Type material is at Okayama University, Okayama, Japan, and at the Institute of Geological Sciences, London.

Isomertieite*
Palladium arsenide—antimonides from Itabira, Minas Gerais, Brazil. Mineral. Mag. 39, 528–543.

Electron microprobe analyses of 4 grains gave (range and av.): Pd 71.96-72.90, 72.4; Cu 0.93-1.13, 1.1; As 10.74-10.99, 10.9; Sb 15.41-15.74, 15.6, sum (of av.) 100.0 percent, corresponding to (Pds,Cus,1, IGe,et,a, As,an,SB,an) or (Pds,Cut, As,an) the same formula as mertieite (Am. Mineral 58, 1–10, 1973).

X-ray study shows the mineral to be cubic, space group Fd 3m, a 12.283 A, Z = 16, G calc 10.33, not measured. The strongest lines (49 given) are 2.356 (vs) 333,511, 2.167 (vs) 440, 1.533 (ms) 800, 1.253 (ms) 844, 0.860 (s) 10.10.2, 14.2.2, 0.821 (s) 12.8.4, 0.800 (s) 10.10.6, 14.6.2, 0.788 (s) 999, 11.11.1, and others, 0.780 (s) 12.10.2, 14.6.4.

Reflectances are given in air and oil; mean for Rr and Rz in air: 470 nm, 45.23, 45.66; 546 nm, 52.67, 52.88; 589 nm, 55.82, 55.93; 650 nm, 58.80, 58.82 percent. Vickers hardness, 587-597, av. 591 (100 g. load), 585-598, av. 591 (50 g. load).

The mineral occurs as grains 0.4 to 0.8 mm in size in concentrates from gold washings at Itabira, Brazil.

In one grain it was intergrown with arsenopalladinite.

* Minerals marked with an asterisk after the name were approved before publication by the Commission on New Minerals and Mineral Names of the International Mineralogical Association.
which was free of hematite inclusions present in the iso-

closed tube.

The name is in allusion to the relation of the composition
to that of mertieite. Type material is at the British Museum.

Killalaite*
R. Nawaz (1974) Killalaite, a new mineral from Co. Sligo,

Electron microprobe analysis, using synthetic augite as
standard, gave CaO 57.0 ± 1, SiO2 39.8 ± 1, H2O (by
difference 3.2 percent, corresponding to Ca5Si4O12·1/2 H2O
(theory CaO 56.6, SiO2 40.4, H2O 3.0 percent). MgO, Fe2O3,
and Al2O3 were <0.1 and microchemical tests for CO2
and F were negative: The mineral gives H2O when heated in
a closed tube.

The mineral occurs as crystals up to 2 mm long, cleavages
{100} perfect, also {010} and {001} good. Monoclinic.

Complex penetrative twinning with composition plane in-
dimensions were calculated to be a 9.3, b 9.9, c 7.7 Å (all
±0.1 Å).

The occurrence of hematite inclusions present in the iso-
closed tube.

The name is for the locality. Type material is at the Ulster
Museum, Belfast, and the British Museum of Natural His-
tory, London.

Paolovite*
A. D. Genkin, T. L. Evstigneeva, L. N. Vyalkov, I. P.
Laputina, and N. V. Groneva (1974) Paolovite, Pd2Sn,
a new mineral from copper-nickel sulfide ores. Geol.

Analyses by electron microprobe, using as standards Pd,
Pt, Bi, and Pb metals, and galena, gave Pd 60.6, 64.8, 59.7;
Pt 2.9, 2.5, 2.6; Sn 34.0, 35.5, 34.6; Pb 0.6, 0.3, 0.6; Bi
—, 0.2, —; sum 97.5, 103.3; 95.5 percent, corresponding
to (Pd0.91Pb0.09)Sn, (Pd0.85Pb0.15)Sn, and (Pd0.80Pb0.20)Sn,
respectively. Small amounts of Sb were found qualitatively.
The compound was synthesized by heating the metals in a sealed
silica ampule at 1300°C, holding at 800°C for 6 hours, cooling
to 300°C and quenching. The X-ray pattern was identical with
that of the mineral.

X-ray study showed the mineral to be orthorhombic,
space group Pbmn, a 8.11 ± 0.01, b 5.662 ± 0.006, c 4.324
± 0.002 A. Schubert et al. (Z. Metallkunde, 50, 1959) gave
a 8.11, b 5.65, c 4.32 A for synthetic Pd2Sn. Z and calcd.
G are not given. The strongest X-ray lines (24 given) arc 2.36
4 021, 2.28 10 121,301, 2.16 7 002, 1.955 5 112,320, 1.397
4 132, 1.315 4 610,731, 1.120 612,441,150,701, 1.078 5
503,004,532.

In section the mineral is illac-rose with noticeable bire
fectance and change of color from dark illac-rose to pale
rose. Optically biaxial; the sign changes at 638 nm in sample
1, 712 nm sample 2, 596 nm sample 3. Microhardness
360-400, av. 380 kg/sq mm with 50g load. Reflectances were
measured for 3 samples at 15 wave lengths (440-740 nm),
including the following for R'p and R'g: 460 nm; no. 1,
41.8, 42.8; no. 2, 49.0, 51.2; no. 3, 45.0, 46.5 percent,
540 nm, n. 1, 54.5, 48.6; no. 2, 53.8, 56.6; no. 3, 50.6,
52.2 percent; 660 nm, no. 1; 56.0, 55.0; no. 2, 57.9, 59.2;
no. 3, 61.8, 58.9 percent.

The mineral occurs in copper-nickel sulfide ores of the
Oktayr deposit, Talnakore ore field, in cubanite-chalcopyrite,
cubanite-talnakhite, and cubanite-mooihoekite ores. It oc-
curs as polysynthetically twinned grains, commonly inter-
grown with sperrylite, native Ag, Pd, Bi, and (Pt,Pd)Sn.

The name is for the composition, Palladium + Olovo
(=Tin). Type material is preserved at the Fersman Min-
eralogical Museum, and the Institute of Geology, Moscow.

Stibarsen

The IMA Commission on New Minerals and Mineral
Names has accepted by a vote of 11-1 the name stibarsen
for the single-phase hexagonal As-Sb mineral whose com-
position is essentially AsSb (M. Fleischer, written com-
munication to B. F. Leonard, May 14, 1974). The Com-
mission recognizes allemontite as an intergrowth of stibarsen
with either arsenic or antimony and rejects the name
allemonite as a synonym for stibarsen.

Tantal-aeschynite* [*Tantal-aeschynite-(Y)]
Tantal-aeschynite, a new mineral of the aschynite group
from the Borborema region, north-eastern Brazil. Mineral.
Mag. 39, 571-576.

Analysis by electron microprobe by C.K. gave Ta2O5
39.3, Nb2O5 18.7, TiO2 11.7, Fe2O3 0.9, CaO 6.2, La2O3 1.3,
Ce2O3 3.7, Pr2O3 0.6, Nd2O3 1.9, Sm2O3 0.6, Gd2O3 0.6,
Dy2O3 0.4, Er2O3 0.4, Yb2O3 0.7, Y2O3 4.6, ThO2 6.5, UO2
0.4, sum 98.5, corresponding to the formula (Ca0.96(Y, Ce0.04
Th, U)0.01) (Ta2nTi2mNb2nFe2mO2n-1)O6. The DTA curve shows
a sharp exothermic peak at 740°C.

The mineral was amorphous to X-rays. Material heated
in air or nitrogen at 700°C, 1000°C, or 1300°C gave the same
X-ray pattern, similar to that of aeschynite. Material heated
in air at 1300°C gave strongest lines (30 given) 3.00 10 130,
2.91 10 112, 2.65 5 200, 1.70 5 242, 1.581 7 312, 134. This
corresponds to a cell with a 5.34, b 10.97, c 7.38 Å.

Crystals show the forms (010), (001), (110), and (130). Color
brownish-black to black, luster resinous, streak light
yellowish-brown. H. 5 1/2-6, fracture conchoidal. G. of
material containing veinlets of unidentified impurity was
5.75-6.13, G. calc 6.39. In thin section, isotropic, color
yellow-orange. In polished section dark gray in oil immer-
sion with abundant internal reflections, white to dark red.
Reflectance 470 nm, 14.5; 546 nm, 14.2; 589 and 650 nm,
14.0. Microhardness 657-673 kg/sq mm (100g load).

The mineral occurs in the Raposa pegmatite, N.E. Brazil,
associated with quartz, red microcline, biotite, columbite,
and beryl.
Discussion

The name tantal-aeschynite had previously been used by Kornetova et al., Trudy Mineral. Muzeya Akad. Nauk. SSSR, 14, 108–121 (1963), but their mineral has Ti: Ta: Nb = 0.89: 0.565: 0.525 and was therefore a tantalian aescynite. The mineral here described should be named Tantal-aeschynite-(Y) by the Levinson system, since Y > Ce.

Vincentite*


Electron microprobe analyses of 2 grains gave Pd 61.3, 59.6; Pt 14.4, 17.6; As 7.3, 7.2; Sb 6.3, 9.3; Te 8.9, 6.3; sum 98.2, 100.0 percent, corresponding to (Pd0.6Pto.4) (As0.4Sb0.6Te0.0) and (Pd0.7Pto.3) (As0.6Sb0.4Te0.0). The name applies to (Pd,Pt)As (Sb,Te), with Pd > Pt and As: (Sb + Te) ≈ 1:1.

X-ray powder data gave lines (after deducting those of Pt and Os) at 4.180, 3.952, 3.240, 2.750, 1.997, 1.749, and 0.944 Å (intensities not given). These have not been indexed; they cannot be matched by the patterns of arsenopaladinlite, stibiopalladinlite, mertieite, isomertieite, atheneite, or synthetic PdAs.

The mineral occurs in grains of average size 7–10 microns, rarely up to 40 microns, in iron-bearing platinum from concentrates from the Riam Kanen River, S.E. Borneo. In reflected light, color light brownish-gray, weakly anisotropic in some sections. Reflectances were measured on 2 grains: 470 nm, 463–475; 546 nm, 492–528; 589 nm, 51.7–53.9; 650 nm, 54.9–56.0 percent. Microhardness 494, 15 g load.

The name is for Professor E. A. Vincent of Oxford University.

Discussion

Needs further study, especially single crystal work and synthesis.

Arsenopalladinlite


Type arsenopalladinlite, described in 1956 as hexagonal PdAs, was reexamined and found to be a mixture of three minerals, two of which are new (atheneite, isomertieite). Electron microprobe analyses of 13 grains gave (range and average): Pd 76.86–79.24, 78.1; Cu 0.02–0.12, 0.06; As 17.48–18.83, 18.2; Sb 5.01–6.10, 5.4, sum (av.) 101.8 percent, corresponding to (Pd0.6Cu0.4) (As0.6Sb0.4) or PdAs (As,Sb)2.

X-ray study showed that the mineral gave a weakened diffuse powder pattern (not given), stated to differ from that of synthetic PdAs (As,Sb)2. The mineral is reported (data of R. J. Davis) to be triclinic, a 7.399, b 14.063, c 7.352 Å, α 92° 03', β 118° 57', γ 95° 54', Z = 6, G. calc 10.46, determined 10.4. The previously reported hexagonal cell was actually measured on atheneite.

The mineral occurs in grains 0.3 to 1.8 mm in size in concentrates from gold washing at Itabira, Brazil. Color in reflected light white with a yellowish creamy hue. Bireflectance weakly perceptible. Strongly anisotropic with colors from red and golden brown to blue-gray in air, khaki-brown to blue-gray and bright steel-gray in oil. Complex polysynthetic twinning; the mineral does not extinguish in any position. Reflectances are given in air and oil; mean values (8 grains): 470 nm, 47.08, 48.48; 546 nm, 51.24, 52.35; 589 nm, 53.61, 54.39; 650 nm, 55.92, 56.65 percent. Vickers hardness (10 grains) 379–449, av. 407 (100 g load). Malleable.

A coating on the mineral contains approximately PdO 90, HgO 10 percent; it may be a mercurian variety of the hitherto doubtful species palladinlite (Dana's System, 7th ed., v. 1, p. 515).