NEW MINERAL NAMES

Bowleyite

H. P. Rowledge and J. D. Hayton. Two new beryllium minerals from Londonderry: *J. Royal Soc. Western Australia*, **33**, 45–52 (1946–47) (Published 1948).

Chemical Properties: Two analyses were made, the first on material containing quartz, the second on a purified sample. These gave:

	1	2	3
SiO_2	32.22	33.37	31.95
Al_2O_3	35.58	36.24	41.75
BeO	8.05	7.30	2.27
FeO	none	0.17	—
MnO	none	trace	—
MgO	none	0.04	0.13
CaO	15.35	14.42	14.30
Na_2O	0.55	0.29	0.40
K_2O	0.09	0.04	0.16
Li_2O	2.61	2.39	2.73
Ignition loss	5.80	5.72	6.50
	100.25	99.98	100.19

P_2O_5, Cl, F, CO_2, and TiO_2 were tested for and found to be absent. Analysis 1 gives values calculated after deduction of 34.27% quartz, 0.13% cassiterite, and 0.20% moisture. The quartz was determined by decomposing the mineral with fuming sulfuric acid and treating the residue with warm Lunge's solution to remove the separated silica. Analysis 2 is on the moisture-free mineral.

The formula of the mineral is calculated to be $3(Be,Ca)O.2Al_2O_3 \cdot 3SiO_2 \cdot 2H_2O + n(Li,Na)_2O$.

The mineral, when finely ground, is decomposed by fuming sulfuric acid with the separation of gelatinous silica. The mineral is infusible in the Bunsen flame.

Physical and Optical Properties: Colorless to brownish-white, in flat compact waxy looking layers and in wedge-shaped micaceous aggregates. Biaxial, negative, with 2E small. The micaceous plates are normal to Bx_a or nearly so. "The maximum and minimum refractive indices of the plates on the flat lie between 1.65 and 1.66 with very weak birefringence. On edge the maximum refractive index was greater than, but near to 1.66, the birefringence being about that of quartz." Sp. gr. 3.02, 3.03.

Occurrence: Found in the Londonderry feldspar quarry, 13 miles from Coolgardie, Western Australia, in a columbite-cassiterite band of mineralization. It was closely associated with cassiterite, also at the contact of milky beryl and quartz, in fractures in the beryl, and associated with albite and duplexite (see below). Petalite and microcline also occur in the quarry.

Name: For H. Bowley, Director of Chemical Laboratories and Government Mineralogist of Western Australia.

Discussion: Further study of bowleyite in several laboratories has shown that it is identical with bityite. Analysis 3 above is that of bityite from Madagascar by Pisani (*Bull. soc. franc. mineral.*, **31**, 241 (1908). Spectrographic analysis by K. J. Murata, U. S. Geol. Survey, has shown that Pisani's BeO determination was erroneous and much too low. Details, including *x*-ray determinations by George Switzer, U. S. National Museum, and by K. Norrish, Waite Institute, South Australia, will be published elsewhere.

Duplexite

H. P. Rowledge and J. D. Hayton., *loc. cit.*

Chemical Properties: Two analyses by J. D. Hayton are given.

	1	2
SiO_2	58.92	59.13
Al_2O_3	6.88	7.00
Fe_2O_3	0.07	none
BeO	7.72	7.14
CaO	23.26	23.90
MnO	0.01	0.01
MgO	0.13	0.05
Na_2O	0.44	0.10
K_2O	0.04	none
Li_2O	trace	none
H_2O^+	2.41	2.46[a]
H_2O^-	0.06	0.06
	99.94	100.01[b]

(a) Ignition loss minus 0.11 C, 0.02 Cl, 0.03 CO_2, and 0.06% H_2O.

(b) Also contains Cl 0.02, CO_2 0.03, C 0.11%.

These analyses lead to the formula $Al_2O_3 \cdot 4BeO \cdot 6CaO \cdot 14SiO_2 \cdot 2H_2O$. The mineral is readily fusible in the bunsen flame. The powder is insoluble in strong HCl or fuming H_2SO_4.

Physical and Optical Properties: "Duplexite occurs as fan shaped crystalline aggregates up to ½ inch in radius, sometimes forming almost complete rosettes. It is pearly white and lustrous, extremely brittle, with pronounced cleavage in two directions. When crushed, it breaks into long and short rectangular fragments. Some of these fragments show very weak birefringence, sometimes appearing isotropic, while the majority show moderate to weak birefringence and have a small extinction angle (2–5°)." Optically biaxial, positive, *ns* (Na) alpha = 1.582, beta = 1.584, gamma = 1.593, 2V approx. 22°, elongation negative. Sp. gr. = 2.71.

Occurrence: With bowleyite and associated with quartz, albite, and beryl. Cassiterite, altered milky beryl, and pucherite are present on some specimens. "The manner of occurrence suggests that the mineral was one of the last to crystallize from the mineralizing solution penetrating the pegmatite and that it has crystallized at the same time as or later than the idiomorphic quartz crystals, but before bowleyite.

Name: For Mr. S. Duplex, manager of the quarry, who first drew attention to this mineral.

Discussion: Rowledge and Hayton point out the near identity in optical characteristics with bavenite, whose composition is similar, but which contains less than 3% BeO (usually). *X*-ray study shows that duplexite and bavenite give nearly identical powder patterns (George Switzer, personal communication; report of K. Norrish sent by H. P. Rowledge, February 10, 1950.)

Further discussion will be published elsewhere.

Michael Fleischer

Lomonosovite

V. I. Gerasimovsky. Lomonosovite, a new mineral: *Doklady Akad. Nauk S.S.S.R.*, **70,** 83–86 (1950).

CHEMICAL PROPERTIES: A sodium titanium silicate-phosphate $Na_2Ti_2Si_2O_9 \cdot Na_3PO_4$, which form a complete series of solid solutions with murmanite, $Na_2Ti_2Si_2O_9 \cdot H_2O$. (Note—The three available analyses of murmanite show wide variations.) The following analyses are given:

	1	*2*	*3*	*4*	*5*	*6*	*7*
P_2O_5	12.84	11.95	8.20	5.94	4.36	0.60	—
Cb_2O_5	3.00	1.72	5.66	6.82	3.96	5.74	7.71
Ta_2O_5							0.50
TiO_2	24.43	25.53	26.79	25.32	29.77	29.44	29.51
SiO_2	24.07	24.20	26.17	30.85	29.88	32.11	30.93
ZrO_2	2.10	2.50	0.91	1.31	1.98	2.31	1.40
Al_2O_3	—	0.38	—	—	—	0.10	—
Fe_2O_3	2.39	2.40	2.27	2.78	2.88	2.85	3.34
Mn_2O_3	—	—	0.31	0.35	—	0.91	—
MnO	3.17	3.80	1.20	1.00	1.70	1.45	2.42
MgO	0.58	0.65	0.60	0.60	0.60	0.35	0.27
CaO	0.80	1.08	1.60	1.94	1.69	2.80	2.74
K_2O	—	—	—	tr.	tr.	0.83	0.56
Na_2O	26.09	23.78	20.31	15.72	15.25	10.28	7.44
H_2O^-	0.26	—	2.24	2.52	2.53	4.17	6.46
H_2O^+	—	2.20	3.96	5.28	5.68	6.03	6.06
F	—	—	—	—	—	—	0.19
Cl	tr.	0.10	—	—	—	—	—
S	—	0.16	—	—	—	—	—
Sum	99.73	100.45	100.22	100.43	100.28	"99.96"	"99.53"
Sp. gr.	3.13	—	2.957	2.946	2.906	2.883	2.766

1. Cinnamon-colored lomonosovite, T. A. Burova, analyst. 2–6. Intermediate compounds. 2. brown, N. E. Kazakova, analyst. 3–4. rose-violet. 5. light yellow. 3–6. I. D. Borneman-Starynkevich, analyst. 7. Murmanite, rose-violet, T. A. Burova, analyst.

Leaching lomonosovite with hot or cold water dissolves Na_3PO_4 from it. Thermal analysis shows a sharp endothermic break at 900° C.

PHYSICAL AND OPTICAL PROPERTIES: Lomonosovite occurs in laminated tabular crystals up to 7×5×0.6 cm. The color varies from dark cinnamon-brown to black, also rose-violet. Streak light rose-cinnamon. Luster on cleavage vitreous to adamantine, on fracture vitreous to greasy. Perfect cleavage in one direction, fracture uneven. The mineral is brittle, hardness 3–4.

Optically negative with alpha = 1.670, beta = 1.750, gamma = 1.778, 2 V 56°. Extinction oblique to cleavage. Universal stage determinations show variable extinction angles of optical directions to cleavage: X $\wedge$ cleavage 61–66°, Y to cleavage 59–65°, Z to cleavage 37–41°. Pleochroism light cinnamon with rose tinge to cinnamon yellow. Fine polysynthetic twinning was observed. The mineral is monoclinic or triclinic.

OCCURRENCE: Not stated. Presumably from Kola Peninsula, U.S.S.R. Lomonosovite occurs in pegmatites in syenite, and is associated with hackmanite, ussingite, lamprophyllite, eudialyte, arfvedsonite, microcline, ramsayite, and aegirite; sometimes chinglusuite, nordite, neptunite, sphalerite, molybdenite, and others.

NAME: For M. V. Lomonosov, 1711–1765, Russian naturalist.

EARL INGERSON