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MINERALOGY.—*Beidellite, a new mineral name.* ESPER S. LARSEN, Harvard University, and EDGAR T. WHERRY, Bureau of Chemistry.

Several years ago we described[1] a peculiar aluminum silicate mineral, occurring as a gouge-clay adjoining metalliferous veins, as leverrierite. Subsequent studies of the relationships among the minerals of this subclass have suggested that it may be better to restrict leverrierite as a species name to vermicular material with the alumina-silica ratio near 1:2. As no mineralogical name appears to have been assigned to a compact crystalline compound with the 1:3 ratio represented in the Colorado mineral, we now propose to rename it. Our thanks are herewith extended to Messrs. Clarence S. Ross and Earl V. Shannon for valuable suggestions in connection with the preparation of this note; their work on the composition and properties of the mineral from other localities is recorded in the following article. The properties and distinctive features of the mineral may be summarized as follows:

CLASS: SILICATES; SUBCLASS: HYDROUS METASILICATES; DIVISION: $R:Si:H_2O = 2:3:X$.

Beidellite

Name.—From the locality of the first occurrence described in detail, Beidell, Colorado. This is accented on the final syllable, so the mineral name should be pronounced *bei-dell'-ite*. Originally not separated from leverrierite. Termed "clay-gouge" in a recent tabulation.[2]

Chemical properties.—Formula $Al_2O_3 \cdot 3SiO_2 : XH_2O$, with some Al replaced by Fe‴, and often containing minor amounts of other oxides

[1] Larsen, E. S., and Wherry, E. T., *Leverrierite from Colorado.* This JOURNAL, **7**: 208. 1917.

[2] Am. Min. **10**: 141. 1925.

presumably replacing H_2O. Theory for $X = 4$, a frequent value: SiO_2 51.0 per cent; Al_2O_3 28.7 per cent; H_2O 20.3 per cent; sum 100.0 per cent.

Crystallographic properties.—Known only in plates, with indistinct crystal boundaries, and often of only microscopic size. Probably orthorhombic.

Physical properties.—Luster vitreous to waxy. Color, white, reddish or brownish-gray. Form, micaceous plates, often very minute, so that the mass is cryptocrystalline. Hardness less than 2. On wetting, may become plastic, owing to the entrance of water in innumerable thin films between the plates.

Optical properties.—Refractive indices of original beidellite are variable with conditions and method of measurement, and increase on standing in the immersion liquids to $\alpha = 1.494$, β and $\gamma = 1.536$[2] which may be taken as standard for the species. The figures given in the former paper for material saturated with oil are $\alpha = 1.558$ and β and $\gamma = 1.602$, but these observations were made on a specimen unusually rich in iron oxide. Biaxial, with a small axial angle, 2 E usually = 16° to 24°, 2V = 9° to 16°, though approximately uniaxial in some specimens.

Relationships.—Beidellite may be defined as the compact-crystalline representative of the alumina-silica ratio 1:3, with about 4 molecules of water to the one alumina. It belongs in a mineral group lying, with respect to alumina-silica ratio, between the kaolinite and the pyrophyllite groups; the colloidal member of this group is apparently steargillite (grouped by Dana under montmorillonite) and the crystallized member anauxite, although both of these need further study.

Occurrences.—Found as a gouge-clay by the writers (*loc. cit*) and by Shannon;[4] as a gangue mineral by Ferguson;[5] as the result of alteration of zeolites by Shannon;[6] as a derivative from volcanic glass by Miser and Ross,[7] and as a schist-forming mineral by Corbett.[8] The X-ray pattern given by the last author as typical of leverrierite represents beidellite, as here defined.

[3] Determined by Clarence S. Ross, personal communication.
[4] Shannon, Earl V., Proc. U. S. Nat. Mus. **62**: art. 15. 1922.
[5] Ferguson, H. G., Econ. Geol. **16**: 1. 1921.
[6] Shannon, Earl V., Am. Min. **10**: 159. 1925.
[7] Miser, H. D., and Ross, Clarence S., Am. Journ. Sci. **9**: 119. 1925.
[8] Corbett, C. S., Am. Journ. Sci. **10**: 247. 1925.