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outline and show the emergence of the positive acute bisectrix. They may easily be taken for uniaxial crystals, as the axial angle is small but variable. $2E$ is usually about 32° . Basal sections of some of the crystals are divided into six radial segments and the plane of the optic axis in each segment is normal to the pseudo-hexagonal prism edge.

The following analysis was made on fresh, light gray crystals of *hinsdalite*. They were examined microscopically and found to be very pure but showed a slight zonal growth.

Analysis of hinsdalite

W. T. Schaller, analyst

PbO.....	31.75 }	1.93 or 2
SrO.....	3.11 }	
Al ₂ O ₃	26.47	2.92 or 3
SO ₃	14.13	1.99 or 2
P ₂ O ₅	14.50	1.14 or 1
H ₂ O.....	10.25	6.40 or 6

CaO, MgO, Na₂O, K₂O traces. Density = 3.64.

Formula 2 (Pb, Sr) 0.3Al₂O₃.P₂O₅.2SO₃.6H₂O.

Hinsdalite is infusible but whitens on heating. It reacts for aluminum when heated with cobalt nitrate, and readily yields a button of metallic lead. The water is driven off only at a temperature of from about 400° to 600° C. It is insoluble in acids. From its chemical composition and crystallographical form it is seen to be closely related to *svanbergite* and forms an additional member of the *alunite-beudantite* group.

MINERALOGY.—*Beaverite*, a new mineral. B. S. BUTLER and W. T. SCHALLER. Geological Survey. To appear in the *American Journal of Science*.

The new mineral *beaverite*, a hydrous sulphate of copper, lead, and ferric iron, was found (by B. S. B.) in the Horn Silver mine near Frisco, Beaver County, Utah. The mineralization occurs along a fault that has thrown Tertiary lavas down against Cambro-Ordovician limestone. The ore is mainly a replacement of the volcanic rocks.

The principal primary minerals of the deposit are galena,

sphalerite, wurtzite, pyrite, chalcopyrite, jamesonite (?), pyrargyrite, argentite, quartz, barite, sericite, and small amounts of other minerals.

To a depth of about 600 feet the primary minerals have been almost entirely altered by descending solutions and this alteration has taken place to a lesser extent to a much greater depth. The characteristic alteration is to sulphates with some secondary carbonates, chlorides, and sulphides.

The following secondary minerals have been recognized: Anglesite, cerusite plumbojarosite, jarosite, *beaverite*, linarite, bindheimite (?), smithsonite, calamine, goslarite, covellite, chalcocite, brochantite, malachite, azurite, chrysocolla, chalcantite, cerargyrite, sulphur, chalcedony, kaolinite, gypsum, hydrous oxide of iron and manganese, and alunite (?).

Beaverite commonly occurs mixed with other secondary minerals but occasionally is found pure in small, friable masses. It is canary yellow in color and crystallizes in six-sided plates too small for measurement of the angle or determination of the optical character. Minute inclusions, whose character has not been determined, are present in nearly every crystal.

The mineral is soluble in boiling hydrochloric acid leaving an insoluble silicious residue. The analysis and ratios are as follows:

Analysis of beaverite
W. T. Schaller, analyst

Insoluble	10.05		
CuO.....	9.70	0.121	.92 or 1
PbO.....	29.44	0.132	1.00 or 1
Fe ₂ O ₃	17.28	0.108	} .144 1.07 or 1
Al ₂ O ₃	3.64	0.036	
SO ₃	21.32	0.266	2.01 or 2
H ₂ O.....	9.02	0.501	3.80 or 4
	100.45		

The ratios agree well with the formula $CuO.PbO.Fe_2O_3.2SO_3.4H_2O$. The water is all constitutional as none was driven off below 250°. There is no known mineral to which beaverite is related so that at present it stands as an isolated member of the sulphate group.