NOTES AND NEWS

GENTHELVITE CRYSTAL FROM EL PASO COUNTY, COLORADO

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The St. Peters Dome—Stove Mountain area near Colorado Springs, El Paso County, Colo., has been the source of many unusual minerals found in pegmatites in the Pikes Peak granite. One of the rarer minerals of these pegmatites is genthelvite, the zinc member of the helvite group. Until recently this species was represented only by a single small specimen discovered in the 1890's and now in the Genth Collection at Pennsylvania State College, State College, Pa.

In March 1949 J. W. Adams, accompanied by Edwin Over of Colorado Springs, made a brief visit to the area, and in excavating a small miarolitic pegmatite he discovered a large crystal of genthelvite, apparently the largest known crystal of any member of the helvite group. This crystal is 5.5 cm long, 4 cm thick, and weighs 72 grams. It is a somewhat distorted combination of the positive and negative tetrahedrons with narrow rounded faces of the rhombic dodecahedron. Because the combined positive and negative tetrahedrons form a geometrical octahedron, this crystal simulates a distorted octahedron. The tetrahedral faces of this crystal are etched; those of one tetrahedron are more etched than those of the other.

The genthelvite-bearing pegmatite is on a ridge west of the Gold Camp Road (Corley Mountain Highway) in the NW$\frac{1}{4}$ sec. 4, T. 15 S., R. 67 W., El Paso County, Colo. The pegmatite, except for the presence of genthelvite, is similar to many other pegmatites in the area. Although not completely exposed, it appears to have been originally a small cavernous body about 6 feet long and probably not more than 1 foot in diameter. The bulk of the pegmatite material forms a shell about 2 inches thick on the walls that enclose a central miarolitic cavity. This shell consists of a graphic intergrowth of microcline-perthite and quartz, and the cavity walls are lined with projecting crystals of pale buff microcline-perthite and smoky quartz. A few crystals of brown zircon are embedded in the perthite. The cavity is partly collapsed and filled with soil, limonitic mud, and smoky quartz crystals that have become detached from the walls. The genthelvite crystal was found loose in this debris. It is shown in Fig. 1.

Genthelvite is the zinc-rich member of the helvite group, which con-

FIG. 1. Photograph of genthelvite crystal from El Paso County, Colo., looking down on a binary axis of symmetry. (Approximately natural size.)

sists of three isomorphous species whose chemical composition is expressed by the general formula $R_4Be_3Si_3O_{12}S$, in which R represents Mn in helvite, Fe in danalite, and Zn in genthelvite.

Frederick A. Genth[1] analyzed and described this zinc-rich member of the helvite group, and called it "a variety of danalite." Although the helvite group has been recognized as a three-component system, later writers overlooked Genth's analysis (published in 1892) of this "danalite" with 46% ZnO. It was not until 1944,[2] when a detailed study of the helvite group was made, including a re-examination of the original material from the Genth Collection, that the zinc end-member of the helvite group was established and given the name genthelvite.

The crystal is dark reddish brown but thin fragments in transmitted light are pale pink to nearly colorless. Cleavage traces are parallel to the tetrahedron. Fracture uneven. Brittle. Hardness greater than 6. Luster vitreous on fresh surfaces. Sp. gr. = 3.59.[3]

The mineral is isotropic. Transparent. The index of refraction $n = 1.744$.

Chemical tests showed that the mineral is decomposed by hydrochloric acid, giving off hydrogen sulfide and yielding gelatinous silica. Confirmatory tests for zinc and beryllium were obtained in the U. S. Geological Survey laboratories. Fragments from this crystal assumed a brilliant canary-yellow color due to the arsenic sulfide formed when tested

[1] Genth, F. A., Contributions to mineralogy, No. **54,** with crystallographic notes by S. L. Penfield: (6) Danalite: *Am. Jour. Sci.*, **44,** 385 (1892).

[2] Glass, J. J., Jahns, R. H., and Stevens, R. E., Helvite and danalite from New Mexico, and the helvite group: *Am. Mineral.*, **29,** 163–191 (1944).

[3] Specific gravity was determined on the Berman microbalance by Theodore Woodward of the U. S. Geological Survey. Nine determinations were made on six chips and the average computed.

by the Gruner[4] staining method, a simple test for the identification of any mineral of the helvite group.

X-ray examination by F. A. Hildebrand of the U. S. Geological Survey of genthelvite from El Paso County, Colo., confirms the identity of genthelvite.

This crystal is deposited in the U. S. National Museum.

A XONOTLITE OCCURRENCE IN PUERTO RICO[1]

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Xonotlite, a relatively rare hydrous calcium silicate, $Ca_3Si_3O_8(OH)_2$ (Berman, 1937, p. 391), has been found in Puerto Rico in an unusual contact association with serpentine and a metavolcanic rock. The mineral was recognized by Robert Berman and Evelyn Cisney, U. S. Geological Survey, using optical and *x*-ray methods, respectively, from samples collected by the writer.

The xonotlite was discovered in the walls of a tunnel connecting the Rio Yauco and the Rio Loco, not far from the town of Yauco, Puerto Rico. This tunnel is part of the Southwestern Puerto Rico Project of the Puerto Rico Water Resources Authority. The xonotlite occurs approximately 2,000 feet from the outlet portal of the tunnel on the Rio Loco, at the contact of a large serpentine massif and a metavolcanic rock. The mineral was also identified at the surface outcrop of the contact about 150 feet above the tunnel.

The serpentine massif crops out over an area of about 35 square miles and is the largest serpentine body in Puerto Rico. The serpentine exposed in the tunnel is intensely sheared throughout. Its contact with the metavolcanic rock is sharp but uneven in the tunnel; and from its expression on the surface, the contact is seen to be essentially vertical.

The metavolcanic rock has been altered beyond precise recognition at the contact, but it possibly is related to a trachyte that occurs in a relatively fresh state several hundred yards away from the contact. The metavolcanic rock is finely porphyritic with an aphanitic groundmass. At the contact the phenocrysts are augite and feldspar, the latter mineral being completely altered to a variety of chlorite. The matrix, which in hand specimens is white, is seen under the microscope to be a very fine-grained aggregate of slightly brownish material of very low birefringence. It is probably a clay. Farther away from the contact the clayey ground-

[4] Gruner, John W., Simple test for the detection of the beryllium mineral helvite: *Econ. Geol.*, **39**, 444–447 (1944).

[1] Publication authorized by Director, U. S. Geological Survey.

[2] Geologist, U. S. Geological Survey, Spokane, Washington.