

A Mineral named after a Continent

Antarcticite is the only mineral named after a continent. Fittingly, it is a truly bizarre mineral. It is known to be found only in two places in the world- Antarctica and ---California!

Antarcticite is a colorless glassy mineral that may occur as brittle acicular crystals up to 15 centimeters long. It has a formula of $\text{CaCl}_2 \cdot 6\text{H}_2\text{O}$ and crystallizes in the trigonal system. It has a very low density of 1.7 grams per cubic centimeter (quartz's density is 2.65 g/cc.). Antarcticite also has a perfect basal pinacoid cleavage and a hardness of 2-3 on the Mohs Scale. When put in a humid atmosphere it sucks up H_2O readily and falls to pieces.

The mineral was first described by two Japanese geologists, Tetsuya Torii of the Chiba Institute of Technology and Joyo Oosaka of the Tokyo Institute of Technology on Dec. 30, 1963. They found the mineral has "muddy clusters" of crystals with individuals up to 10 cm. long growing in Don Juan Pond in Wright Valley in Antarctica. Wright Valley is one of the "dry valleys" not occupied by glacial ice. The conditions found in these dry valleys are among the harshest on the planet with the combination of extreme cold, wind and aridity. Don Juan Pond is a very salty lake 300 meters (about 900 feet) long, 100 meters (about 30 feet) wide and only 10 cm (about 4 inches) deep. The salinity is so high that it doesn't freeze over. The salts in the water include not only sodium, potassium and chlorine, but also high amounts of calcium. Evaporation encourages the growth of antarcticite along with halite and other minerals. X-ray and chemical analysis verified that this was a previously undescribed mineral. When Tetsuya and Oosaka published their paper in 1965, they wrote that the mineral must form due to the unique extreme conditions of cold and high salinity.

It turns out that extreme cold isn't necessary to form antarcticite. In 1969 C.F. Dunning and J.F. Cooper described antarcticite as occurring in the Bristol Salt Lake in San Bernadino County, California. Bristol Dry Lake is a playa lake in a basin down-dropped by faulting. The basin is partly filled with alluvium and lake sediments interlayered with recent lava flows from nearby Amboy Crater. The salty brines of the lake have been mined since 1910. Trenches and pits are dug. Brine seeps into these excavations. The water evaporates, forming crusts which can be converted to calcium chloride, then sold. In these crusts, antarcticite was found in 1961 and 1962 as "divergent groups of colorless prismatic crystals and compact aggregates". Associated minerals were halite, gypsum (both as massive material and clear "selenite" crystals), anhydrite, calcite, chlorocalcite (KCaCl_3) and large concretions of celestite.

Notice that the antarcticite from Bristol Dry Lake was collected several years before it was found in Antarctica. However Torii and Oosaka were the first to describe the mineral in print, hence got the right to name it. Only after their article was published was the true identity of the California specimens recognized. This is a common happening in mineralogy, and is invariably frustrating to those who noticed the mineral first but missed a chance to describe and name it.

Antarcticite is thus the only mineral named for a continent. I know of no mineral named for an ocean or planet, although a variety of a common mineral is

named for our moon. That material is, of course, selenite, the clear crystallized variety of gypsum. The name refers to the milky, moonlight-like character of light seen through slabs of selenite when it was once used instead of glass in windows. But that's another story...

-Dr. Bill Cordua, University of Wisconsin-River Falls

References:

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