

NOTES AND NEWS

SOME LITTLE-KNOWN MINERALS OF THE BEAR MOUNTAIN SECTION OF THE HUDSON HIGHLANDS, NEW YORK

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INTRODUCTION

Field work was carried on for two summer seasons by the junior author as Geologist of Trailside Museums, Bear Mountain, N. Y. This locality is in the Palisades Interstate Park, 50 miles north of New York City, on the Hudson River. Petrographic studies were made by the writers at the Geological Laboratory, University of Virginia. The purpose of this paper is to place on record several little-known minerals found in the area.

Bear Mountain is part of the relatively rugged upland known as the Highlands of the Hudson. The rocks of the region are ancient pre-Cambrian crystallines, which appear to be closely related to those of the Adirondack Mountains.

The oldest rocks are schists, gneisses, and marbles which are said by Berkey and Rice¹ to be of Grenville age. These highly metamorphosed sediments were intruded and replaced by a number of igneous rocks. From oldest to youngest, these include Pochuk diorite, Canada Hill granite, Storm King granite, and a swarm of basaltic and diabasic dikes.

MINERAL LOCALITY CONSIDERED

The location where the minerals to be discussed were found is in the valley of the mountain stream which connects Upper and Lower Twin Lakes. It is about five miles west of Bear Mountain, just off of Highway No. 6.

This locality was brought to the attention of the junior author when girls of a nearby camp brought for identification a number of shiny black octahedral crystals of pleonaste, collected from the river sand. Some of the crystals measured half an inch on an edge.

The source of this spinel placer was later found to be a low ledge of contact metamorphosed Grenville marble which had been cut by the stream. The marble at this locality consists chiefly of pink and white calcite, greenish-black pleonaste, and yellow chondrodite. A pyroxene (probably diopside), magnetite, and chlorite were shown by the microscope to be the accompanying minerals.

Pleonaste in thin section appears as a gray-green mineral with rounded outline, high relief, and an index of approximately 1.77. Imperfect octa-

¹ Berkey, Charles P., and Rice, Marion, *Geology of the West Point Quadrangle, N. Y.:* *New York State Museum, Bull.* 225-226, 49 (1921).

hedral cleavage can be seen in both the hand specimen and in thin section.

The presence of chondrodite was suggested by Mr. D. J. Cederstrom, of the United States Geological Survey, and its identification was checked by the senior author. In thin section in ordinary light, it appears as a colorless mineral with irregular form and a quadratic fracture. The lowest index is approximately 1.60. The double refraction is approximately 0.035, and the extinction angle measured on the cleavage is 31° . The data, together with the large optic axial angle, check rather closely with the determination made by Eskola.²

Across the stream from the outcrop of marble was found a ridge of dark-gray hornblende and pyroxene gneiss. The rock is of interest because it contains scapolite (mizzonite). The mineral occurs only in small amounts, and is best shown in thin section. In one instance it is associated with hornblende and pyrite, and in another it fills the spaces between augite crystals.

Optical investigation of the mineral in thin section yields the following information: under ordinary light it appears colorless, with irregular form, slight "twinkling," low relief, and the following indices of refraction: $\omega = 1.575$, and $\epsilon = 1.55$. Two cleavages can be seen and the angle between them is 90° . Under crossed nicols, the interference colors are second order blue, yellow, and green, with a double refraction of approximately 0.029. The extinction is parallel, and the mineral is uniaxial, optically negative. These observations check closely with scapolite of the composition of mizzonite.

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² Eskola, Pentti, On contact between gneiss and limestone in western Massachusetts: *Jour. Geology*, 30, 270 (1922).