

## RADIATED CHRYSOTILE FROM FRANKLIN FURNACE, NEW JERSEY<sup>1</sup>

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During a recent trip to Franklin Furnace a number of specimens were noted in the collections that were generally called "wavellite" because of their characteristic radiated structure. One of these (U. S. N. M. 95208) was obtained and found on examination to be serpentine, variety chrysotile.

The chrysotile forms radiated groups made up of silky fibers. The individual fibers are as much as 3/4 centimeters long, and are easily separable into silky threads. The color is light hair brown, the luster silky. These radiated groups are embedded in a white to pink and brown calcite. Associated with them is a massive brown serpentine and a few small grains of franklinite.

The optical properties of the radiated mineral are as follows: Biaxial, negative.  $2V$  is medium small.

$$\alpha = 1.546, \quad \beta = 1.550, \quad \gamma = 1.557, \quad \text{all } \pm .003.$$

The plane of the optic axes is parallel to the fibers,  $Z$  = length of fibers. Elongation (+). Parallel extinction. These data are near those given in Larsen's Tables for chrysotile but are slightly higher. There seems to be a tendency for the grains to lie parallel to the plane of the optic axes, suggesting that the cleavage in this direction is somewhat better than the other cleavages.

Material for analysis was obtained by selecting apparently clean, radiating fibers. Microscopic examination, however, showed that the fibers included some calcite grains. A large part of the calcite was eliminated by screening and the remaining small percentage dissolved out with citric acid. The sample thus prepared was washed and air dried and found to be essentially free from extraneous materials. The following composition was determined on this sample by standard chemical methods:

H <sub>2</sub> O—	2.31
H <sub>2</sub> O+	14.51
SiO <sub>2</sub>	41.47
Al <sub>2</sub> O <sub>3</sub>	0.10
FeO	0.90
CaO	0.83
MgO	38.40
MnO	0.71
Alkalies	0.42
	99.65

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This analysis shows the mineral to be normal chrysotile. The somewhat high water content is probably due to adsorption through washing.

There has been much discussion regarding the origin of chrysotile and two general hypotheses have been proposed not only to account for the formation of the mineral but of its characteristic fibrous structure as well. The first hypothesis is that the chrysotile grew by pushing apart the inclosing walls and that the fibrous nature is due to the introduction of the chrysotile bearing solutions through numerous closely spaced pores. The second theory is that the chrysotile is a result of the replacement of the wall rock. Without entering into a discussion of the relative merits of these two ideas it may be pointed out that the Franklin Furnace mineral, because of its radiated structure, can most reasonably be considered as a replacement of the inclosing calcite; and that the fibrous structure is not due to any vagaries of deposition from solution, but is a property inherent in the mineral itself. The *normal* cleavage habit of chrysotile is fibrous.

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## PROCEEDINGS OF SOCIETIES

### NEW YORK MINERALOGICAL CLUB

*Regular Monthly Meeting of May 13, 1925*

At a regular monthly meeting of the New York Mineralogical Club held in the Morgan Memorial Hall of the American Museum of Natural History, on the evening of May 13, the Gratacap Memorial Tablet was formally presented to the Museum by the Club and unveiled.

Dr. George F. Kunz, President of the Club, made the presentation address. President Henry Fairfield Osborn accepted the tablet on behalf of the Trustees of the Museum. The Rev. Henry Mottet, a classmate of Doctor Gratacap, spoke eloquently of his personality and magnetism. Mr. Lewis Sayre Burchard, praised his gifts as a writer and a public speaker. Mr. George C. Lay, outlined the Gratacap ancestry and told of his theological studies. Mr. Joseph L. Buttenwieser, President of the Alumni Association of the City College, spoke of his interest in his Alma Mater and her graduates.

Mr. Gilman S. Stanton, speaking in behalf of the Mineralogical Club, related instances of his interest in and inspiration extended to boy students and collectors. Mr. Herbert P. Whitlock, who succeeded him as Curator of Mineralogy in the American Museum, spoke with great appreciation of the work of Louis Pope Gratacap as a curator.

The members of the Club present and the friends and former associates of Dr. Gratacap then viewed the memorial tablet which has been placed upon the north wall of the Morgan Memorial Hall, and is carved in light buff marble, harmonizing with the general color of the Hall. It bears a portrait of Dr. Gratacap, by Albert T. Stewart over the following inscription: