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PECTOLITE PSEUDOMORPHOUS AFTER QUARTZ FROM WEST PATERSON, N. J.

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Most collections of minerals from the trap-rock quarries in the vicinity of Paterson include specimens labeled "quartz pseudomorphous after pectolite" altho in the last few years considerable doubt has been cast upon the correctness of this labeling, anhydrite and glauberite rather than pectolite being now regarded as the original mineral in most cases. In the present note an instance of the opposite replacement, namely, pectolite pseudomorphous after quartz, is described. It is hoped that the interpretation of the material in this case will be more permanent. Similar specimens may have been found in the Paterson region before. Thus, in the F. A. Canfield collection there is, as noted by Mr. A. C. Bates,¹ "a fine specimen of well-formed quartz crystals turned into pectolite." Dr. Fenner, in his paper on the Watchung basalt and the paragenesis of its zeolites² mentions on page 135 and again on page 157 partial replacement of quartz by pectolite, but this occurred presumably only on a microscopic scale. None of the other books or articles available to the writer refers to such an occurrence, and it has therefore seemed worth while to bring it to the attention of mineralogists.

While collecting at McKiernan and Bergin's quarry in the summer of 1915 the writer found a mass of typical pectolite, imbedded in which there was visible what seemed to be the tip of a small quartz crystal coated with pectolite. On breaking up the

¹ *Mineral Collector*, **15**, 162, 1909. Mr. Canfield writes that the specimen referred to, and several others, were collected in 1907.

² *Ann. N. Y. Acad. Sci.* **20** (2), pt. II, 93-187, 1910.

specimen some months later a group of these crystals measuring 2 x 2 inches was detached; the separate crystals are about $\frac{3}{8}$ inch in diameter. This is illustrated in Figure 1. Where the crystals were broken across they proved to consist, not of quartz coated with some other mineral, but of a compact-fibrous material entirely occupying the apparent crystals of quartz. One proved to be hollow, the fibrous mineral forming a mere shell.

That the external form of these crystals is that of quartz was proved by measurement of the angles with a contact goniometer:

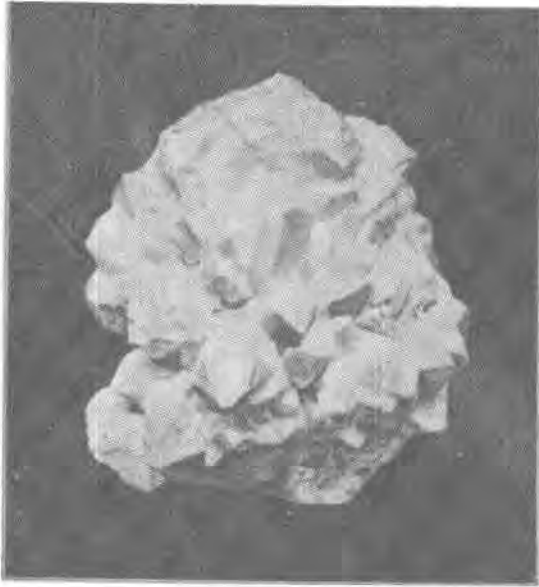


Photo. by S. G. Gordon.

FIGURE 1.—PECTOLITE PSEUDO. QUARTZ, WEST PATERSON, N. J.

the angle between the rhombohedron and prism of the same order is 38° and between two faces of the former 46° , which correspond within half a degree to the equivalent angles of quartz. The two rhombohedrons are about equally developed, and the crystals are short prismatic in habit as is frequent in the quartz of the Paterson region.

With the idea that optical study might indicate the nature of the mineral replacing the quartz, a sample was submitted to Dr. Wherry of the National Museum, and he reported as follows:

“The mineral is compact-fibrous and essentially homogeneous;

its indices of refraction are $\alpha=1.59-1.60$ and $\gamma=1.62-1.63$, the double refraction being around 0.03, and the extinction is straight with the direction of elongation optically + ; it therefore agrees optically with pectolite, except that the indices are rather low." The low indices are due to the high water content.

The inference that the material represents a pseudomorph of pectolite after quartz seemed worth establishing still further, so a chemical investigation of it was undertaken. It proved to give the usual reactions of pectolite, fusing quietly at 3 with a yellow flame and dissolving in HCl with imperfect gelatinization. Quantitative analysis yielded the results presented in the first column of Table 1 below.

TABLE 1.

	1	2	3
H ₂ O	3.77	4.09	2.70
Na ₂ O	7.45	8.57	9.31
CaO	32.63	32.21	33.68
MgO	2.35	1.43
Al ₂ O ₃ +Fe ₂ O ₃	0.52	0.58
SiO ₂	53.42	53.94	54.31
	100.14	100.82	100.00

1. Analysis of pectolite pseudomorphous after quartz from West Paterson, N. J., by the writer.

2. Analysis of massive pectolite from Point Barrow, Alaska¹, introduced for comparison; these two specimens are certainly very similar in composition.

3. Theoretical composition of pectolite, HNaCa₂ (SiO₃)².

These results show that pectolite is indeed represented.

DURDENITE FROM CALIFORNIA²

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THE rare hydrous ferric tellurite, durdenite, has been described only from the original locality, Honduras. However, in examining specimens of tellurium ores in the collections of the University of California for tellurite, the author found a specimen,

¹ F. W. Clarke, *Am. J. Sci.* [3], **28**, 20, 1884.

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