Note on some Inclusions in Quartz.

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In a quartz crystal, slightly over $2\frac{3}{4}$ inches in length, which has been in my possession for many years, and was stated to come from Derbyshire (possibly Castleton), there is a curious white cirrous inclusion which describes a graceful feather-like curve, and consists of a series of nearly parallel lines of colourless and transparent to opaque snow-white grains, which, under the microscope, are seen to be at times well defined rhombohedra; but for the most part they present the appearance of rhombohedra which have been more or less eroded, and they are so ranged in lines that one rhombohedron lies with one pair of faces slightly above or below the corresponding pair of faces of the succeeding rhombohedron, thus giving the line a distinctly serrated edge.

The rhombohedra, or at times mere grains of irregular form, range from $\frac{1}{\bar{1}10}$ to about $\frac{1}{\bar{1}000}$ inch in diameter, and occasionally larger opaque white patches of quite irregular form, measuring nearly $\frac{1}{40}$ inch across, are present.

That these rhombohedra and irregular grains represent a carbonate, such as calcite or dolomite, there seems no reasonable ground for doubting. The quartz crystal in which they occur is so large that we may safely assume that it was formed in a cavity or fissure, and, if it came from the locality indicated, that cavity or fissure was in carboniferous limestone or in one of the beds of dolomite so common in the carboniferous limestone series of Derbyshire.

Taking this into consideration, as well as the ragged and partially eroded appearance of the little rhombohedra, we are, I think, justified in assuming that the latter were derived from limestone which was undergoing disintegration, and that some of the *débris* was taken up by the quartz crystal during its formation. The linear arrangement of the rhombohedra and grains is, however, less easy to account for. The quartz crystal itself is evidently composite in structure. Whether the curved surface upon which the particles of the rhombohedral carbonate are

ranged represents a conchoidal fracture upon which a subsequent growth of quartz took place I am not prepared to say, but such a hypothesis does not seem improbable.

The other quartz crystal to be described is of much smaller dimensions, being only about $\frac{3}{4}$-inch in length, and consists of two individuals in parallel grouping. In this there are numerous colourless transparent rhombohedra irregularly distributed through the crystal. They are sharply developed, and show the usual strong light-absorption of calcite. Their dimensions vary from $\frac{1}{50}$ to $\frac{1}{250}$ inch. In one or two instances their stepped character proves them to be cleavage fragments. This, however, is not always the case, since in one instance the crystal is a combination of the basal planes with the rhombohedron. Evidence of erosion is not common in these small crystals, but in one case a rhombohedron has been very greatly eroded, and appears to have been enveloped in the silica while breaking up into a number of much smaller rhombohedra.

In addition to calcite, this quartz crystal contains beautiful examples of vermicular aggregates of chlorite (helminthe), and is traversed in all directions by delicate hair-like fibres, apparently of asbestos.