

O, Cl, etc.), of which 4 are sodium or calcium, and the others are the nearly equivalent Al and Si atoms.

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## QUARTZ IN METEORIC STONES

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Nearly every detailed analysis of meteoric irons shows traces of silica, which, if reliance can be placed on the examination of the insoluble residues, occurs in the form of minute quartz granules and sometimes distinct crystals. The manner in which these residues have been obtained, it must be confessed, throws a doubt on some of the determinations but the occurrence noted below in the St. Mark's, South African stone, at least insures their possible correctness.

Silica in the form of tridymite (asmanite) it will be remembered constitutes 8.527% of the pallasite of Steinbach, and Berwerth of Vienna has described both quartz and tridymite in the stones of Juvinas, Stannern, Jonzac and Peramho, which he believed to be secondary and due to the breaking down of the pyroxenic

constituent, through the heating incidental to the passage of the stone through our atmosphere.

In his description of the St. Mark's, South African stone, Klein gives the mineral composition as enstatite, olivine, nickel-iron, troilite and "*vielleicht noch Quarz in geringer Menge.*" In examining a thin section cut from a fragment of this stone in the Museum collection I was pleased to more than verify this determination—to be able to write *gewiss* instead of *vielleicht*. Fig. 1, from a photomicrograph of the section shows an aggregate of quartz granules, one (about 0.3 mm in diameter), a crystal cut at right angles to the vertical axis and with good hexagonal outlines. The mineral it will be observed is imbedded in the metal and not in the

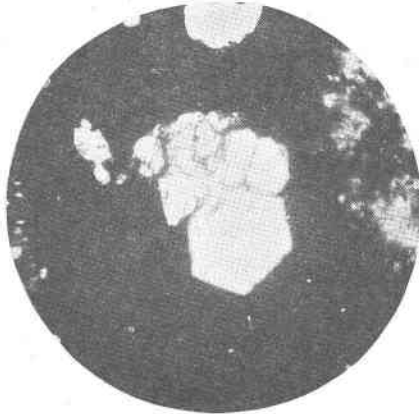


Fig. 1. Quartz crystals in St. Mark's meteorite.

silicate portion. I can see no reason for not supposing it to be original rather than secondary, but it should be remarked that the stone is what is known as a black chondrite and presumably owes its color to secondary heating. Whether this heating was due to its passage through our atmosphere or to earlier conditions remains to be shown.

#### TITANIUM BEARING JEFFERISITE FROM WEST-CLIFFE, CUSTER COUNTY, COLORADO

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Several specimens of jefferisite, and jefferisite bearing rock, recently sent to the Colorado School of Mines for examination and