On scawtite pseudomorphs after spurrite at Scawt Hill, Co. Antrim.

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Scawtite was first described at Scawt Hill as a secondary mineral occurring in vesicles and venules in melilite of a melilite-rich hybrid of the endogenous contact-zone.[1] Since then scawtite has been identified in a gehlenite-vesuvianite-calcite-rock from the contact-zone of a gabbro in the Little Belt Mountains, Montana.[2] The present note records a further occurrence of scawtite at Scawt Hill in a different paragenesis, viz. in association with and replacing spurrite of the exogenous contact-zone.

In discussing the paragenesis of larnite and spurrite at Scawt Hill,[3] reference was made to the instability of larnite in the presence of calcite, the reaction leading to the formation of larnite proceeding in the presence of excess calcite to the development of spurrite

$$\underset{\text{(larnite)}}{2Ca_2SiO_4} + CaCO_3 \rightarrow \underset{\text{(spurrite)}}{2Ca_2SiO_4.CaCO_3}.$$

Spurrite is thus a constituent not only of the silicated zone of the contact but also occurs isolated in calcite in the marbles derived from the chalk. Spurrite is usually found quite fresh and unaltered in these associations, but in a study specially devoted to the secondary minerals of the Scawt Hill locality, a number of examples of spurrite-rocks which have suffered secondary alteration under the influence of late solutions has been encountered. In these, in hand-specimens, the development of scawtite is associated with the appearance of white turbid zones in the clear glassy spurrite associated with calcite.

Under the microscope, the best examples of this pseudomorphous replacement is seen in the spurrite-marbles, where the spurrite occurs

[1] C. E. Tilley, Min. Mag., 1930, vol. 22, p. 222.

[2] J. H. Taylor, Amer. Min., 1935, vol. 20, p. 126. [M.A. 6–125.]

[3] C. E. Tilley and H. F. Harwood, Min. Mag., 1931, vol. 22, p. 445.

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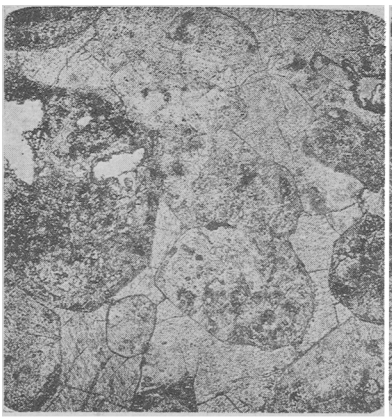
FIG. 1. Melilite-rock, Scawt Hill. Showing melilite with alteration zones and a vein rich in scawite (lath-shaped crystals). × 26 diams.

FIG. 2. The same section between crossed nicols. A subsidiary vein containing scawtite is well seen in this photograph (right-hand side).



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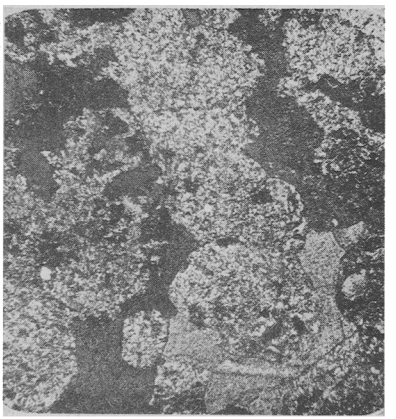

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FIG. 3. Spurrite-marble, Scawt Hill. Idioblastic crystals of spurrite completely replaced by scawtite, set in a ground of calcite. × 30 diams.

FIG. 4. The same section between crossed nicols, showing the aggregate polarization of the scawtite pseudomorphs after spurrite.

as well-shaped idioblasts. All stages from partial to complete replacement can be traced.

The scawtite occurs as fibrous aggregates of radiating, overlapping flakes 0·03 to 0·05 mm. in length, completely replacing spurrite or sometimes with a little interstitial calcite. Larger flakes isolated from the sections show that the mineral is optically positive, 2V high about 75°, α 1·597, β 1·606, γ 1·619, and with a maximum extinction γ to length of fibres 30°. In these properties the mineral agrees with scawtite already described. Additional confirmation is given by micro-chemical tests for carbon dioxide. Inspection of a series of altered spurrite-rocks shows that this scawtite development is the commonest change which spurrite undergoes.

The metasomatic changes involved in the conversion of spurrite to scawtite can be estimated from the known specific gravities of the two minerals. Assuming a replacement without alteration of volume as the pseudomorphs indicate, the chemical changes involve loss of lime and the incoming of silica and carbon dioxide. These changes doubtless operated during the hydrothermal stages in the cooling of the contact-zone. It seems not unlikely that examination of other spurrite occurrences may reveal a similar development of scawtite now discussed.