to the writer that a separation might be effected by the prolonged application of the etching methods previously outlined.

The behaviour of a mineral with acids when intimately associated with another mineral is sometimes not the same as when it alone is treated under similar conditions with the same acids. An instance of this is recorded by V. Goldschmidt and A. L. Parsons as follows:

> By treatment with dilute hydrochloric acid the calcite can be dissolved out without the goethite being in the least attacked, so long as the least trace of the calcite is present.[16]

This fact was also noticed by the writer in the case of the association of minerals under discussion. It was found, for example, that aqua regia rapidly dissolves breithauptite and niccolite, leaving the cobaltite apparently quite unattacked so long as breithauptite or niccolite is present, but as soon as the two former minerals have disappeared, the cobaltite is at once vigorously attacked and quickly dissolved. Thus the cobaltite can be completely separated from the breithauptite and niccolite.

Fig. 16. White native silver filling cleavage cracks in dark calcite. This structure terminates an irregular, much thicker vein, the end of which is seen at the lower right-hand corner.

Similarly, though both niccolite and breithauptite alone are violently attacked by concentrated nitric acid, yet when the two minerals together are acted on by this acid the niccolite is relatively little attacked so long as a clean surface of breithauptite is present. Under the conditions described under etching methods, this process thus affords a means of freeing niccolite of breithauptite inclusions but not of cobaltite, which resists nitric acid so long as breithauptite or niccolite is present. Cobaltite, when alone, however, is readily attacked and quickly dissolved by nitric acid.

Finally, hot dilute nitric acid (1-4) dissolves away the niccolite leaving breithauptite practically unaltered, so that in this way we can free the breithauptite from niccolite inclusions. Here, again, when the niccolite has almost or quite disappeared, the solubility of the breithauptite in the dilute nitric acid is apparently much increased.

The details of the application of these methods are described below.

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[16] Über Goethit von V. Goldschmidt und A. L. Parsons—Zeitschrift für Krystallographie usw. XLVII. Band, 3 Heft.