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# Nab Gill Mine, Cumbria

[NY 173 014]

## Introduction

Nab Gill Mine, near the village of Boot in Eskdale, provides the finest exposures of hematite veins within the Lower Palaeozoic rocks of the Lake District. The veins at Nab Gill lie within the Eskdale Granite.

Nab Gill Mine is the largest of a number of mines which worked hematite from vein deposits within the Eskdale Granite. Whereas small-scale workings for hematite from these deposits probably took place several centuries ago, the first known workings at Nab Gill were those made in the early 19th century. Although early trials were unsuccessful and were soon abandoned, the increasing demand for domestic supplies of iron ore brought about by the Franco–Prussian war renewed commercial interest in the mines in 1871. Over the next few years substantial quantities of ore were extracted, although mining came to an end in 1882. Although some attempts were subsequently made to resume production, none was successful and all mining and exploration finally ended at Nab Gill in 1917. The hematite deposits of Nab Gill Mine, and the prospects of further deposits in the Boot area, led to the construction of the original Ravenglass and Eskdale Railway, to carry ore from the mines to the main railway at Ravenglass. The history of mining at Nab Gill has been outlined by Davies (1968), and Young (1984).

## Description

The main Nab Gill Vein occupies a NNW–SSE-trending fault which cuts and displaces outcrops of granite and microgranite on the steep hillside north of Boot village (Figure 2.23). The fault downthrows to the east and hades in this direction at up to 25°. The stream known as 'Nab Gill' has been eroded along the course of the vein, but this is now largely obscured by subsequent mining activities. Near the hill-top several branches diverge from the main vein which continues to the NNW across White Moss towards Mitredale.

At Nab Gill Mine the vein filling consists of brecciated granite wall-rock and hematite. Payable ore appears to have been concentrated in two orebodies separated by an interval of barren ground (Hibbert *et al.*, 1940). Brecciated and hematite-stained granite, presumably representing this barren section of the vein, can be seen in the old opencut above the entrance to the No. 1 Level at [NY 1731 0142]. Contemporary reports suggest that the vein attained its maximum width near the hill-top where it was up to 6.1 m wide, although this included up to 3.4 m of granite wall-rock, referred to by the miners as 'horse' or 'rider'. According to Smith (1924) the average width was between 0.76 m and 1.06 m. This is understood to have thinned to as little as 0.15 m in the deepest levels cut immediately prior to the mine's final closure.

Much of the hematite within the vein consisted of 'kidney ore'. A characteristic feature of the Nab Gill ore is its brecciated texture. The most intensely brecciated ore consists of disorientated fragments of 'kidney ore' or 'pencil ore' in a matrix of crushed, rather earthy hematite. Inclusions of unaltered granite are common. Good examples of this type of ore are common on the dumps, especially those from the lowest levels of the mine near the derelict Boot Station. Similar ore may be seen *in situ* locally. 'Kidney ore', forming bands parallel to the vein walls, with the mammillated surfaces facing the centre of the vein, may be seen in the old open stopes near the hill-top.

Massive hematite occurs in small amounts, and Smith (1924) has noted the presence of the uncommon stalactitic variety of hematite known as 'ring ore'.

Other minerals present in minor amounts are quartz, which occurs both massive and as vuggy crystallized masses with turbid white pyramidal crystals up to 5 mm long, and dolomite, present as pale-yellowish coarsely crystalline masses. A little romanèchite occurs locally. Smith (1924) suggested that hematite locally replaces granite, although Young (1985b) found no evidence to support this. Indeed the granite wall-rocks throughout the accessible parts of the workings show little obvious alteration other than some shattering and hematite staining.

## **Interpretation**

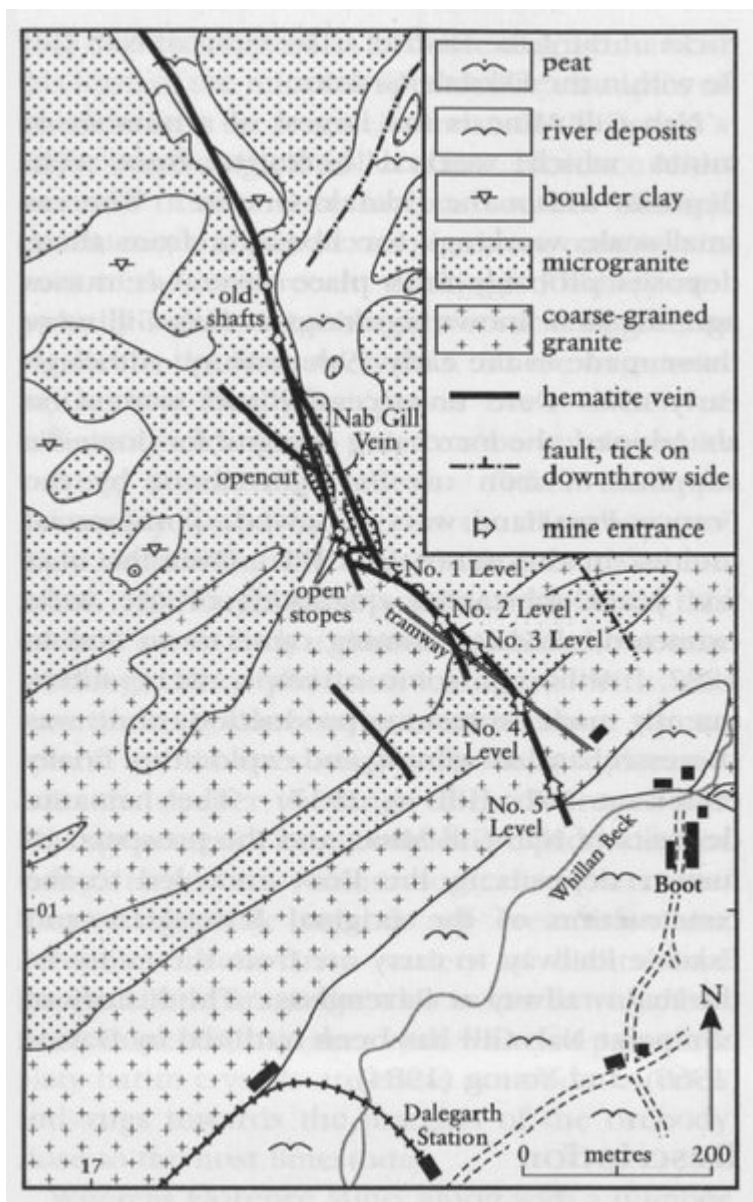
The hematite veins found within the Lower Palaeozoic rocks of the Lake District are regarded as part of the much larger province of hematite mineralization emplaced within the Carboniferous rocks of the adjoining areas of west and south Cumbria, of which the Florence Mine GCR site, near Egremont, is a fine example (see GCR site report, this chapter). These formerly important iron ore deposits have long been the subject of research. References to this large literature will be found in Smith (1924), Shepherd (1973), Rose and Dunham (1977), Dunham (1984), Young (1985b), and Shepherd and Goldring (1993).

The hematite veins at Nab Gill Mine, like those elsewhere in the Lower Palaeozoic rocks of the Lake District, are distinguished by their almost monomineralic composition. Gangue minerals, including quartz, dolomite and calcite, are typically present in only very minor amounts. The hematite is usually the mammillated fibrous crystalline variety known as 'kidney ore'. The characteristic form of the hematite and the almost monomineralic nature of the veins serves to link them genetically with the very large replacement bodies of hematite in the Dinantian limestones of west and south Cumbria. The origin of these and the related deposits, of which the Nab Gill Vein is an example, are described in the Florence Mine GCR site report (this chapter).

## **Conclusions**

The hematite veins at Nab Gill Mine form part of the suite of deposits which include the huge replacement orebodies within the Carboniferous limestones of south and west Cumbria. Nab Gill Mine offers the best exposures of such vein deposits in the area today. The site has very considerable educational and research value.

## **[References](#)**



(Figure 2.23) Geological sketch map of Nab Gill Mine. After Young (1985b).