

## Ingleborough Archaeology Group

### A survey of the north-west flanks of Ingleborough 2007-2011

#### Mineral working

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##### **Map evidence**

The 1:63,360 map showing the solid geology of the wider Ingleborough area marks known mineral veins, of lead and copper ores, by means of brown lines (BGS 1971). Five such veins are marked on the north-western flanks of the mountain. However, it must be borne in mind that the map currently available is based on field surveying undertaken in 1889, even though it was re-published in 1971 so it is probable – inevitable even – that fieldwork undertaken now would locate other as yet unknown veins. The official monograph on geology and mineralisation in the North Pennines has no relevant references to Ingleborough (Dunham and Wilson 1985).

Four of the veins depicted on the map are very short – less than 300m in length – and of these three are located between Lead Mine Moss and Tatham Wife Moss, the fourth being north of the fell boundary wall west of Meregill Hole. One vein stands out: it originates at the northern end of Lead Mine Moss (at SD732 747) and runs in a straight line for over 2km to terminate at the top of Twistleton Scars (at SD724 767).

##### **Ground evidence**

There are four discrete sites where mineral working can be discerned on the ground but the largest is located just outside the survey area on Lead Mine Moss (at SD7284 7442) so will not be discussed here, other than to report that its two large opencast workings and associated spoil heaps have traces of Barytes (heavy spar, barium sulphate,  $\text{BaSO}_4$ ) and Galena (lead sulphide,  $\text{PbS}$ ). It was undoubtedly a trial working.

Just to the north of Lead Mine Moss (at SD7303 7461), on Green Edge, is a small mineral working (ING 182) consisting of two very small spoil heaps associated with an equally small working, which was probably a shallow shaft (Fig.1). Adjacent to the workings is a small stone structure (ING 183) which resembles structures known from other mining grounds



*Fig.1 Green Edge trial mine ING 182*



*Fig.2 Coe at Green Edge mine ING 183*

where the term coe is applied to them (Fig.2). They are known from Derbyshire as well as more locally on the Clowders in Littondale and at Dewbottoms Mine between Malham Tarn and Arncliffe (pers. comm. Yvonne Luke). Coes are generally associated with lead mining after the introduction of gunpowder in the late 17<sup>th</sup> century, and they served the dual purpose of safe and dry storage for gunpowder and overnight store for tools and materials. This site, too, was a trial working.



*Fig.3 Mine trial spoilheap ING 105*

The Green Edge trial (ING 182) was sunk at the south-eastern end of one of the short veins marked on the published geology map; at the opposite end of the same vein, and on a lower terrace, is a second trial working (ING 105). This is very different in nature from ING 182 in that it was cut as a horizontal adit (a tunnel) into the natural slope rather than as a shaft. ING 105 survives as a 6m-long backfilled cutting that gave access to the adit entrance, with a 4m-high spoilheap at the outer end of the cutting (Fig.3). Specimens of Barytes and quartz can be seen among the waste limestone.

On the northernmost vein is a further small trial working (ING 012), this one consisting of a shallow shaft adjacent to an elongated open trench (Fig.4). There is a small spoilheap next to the workings with samples of barytes and a mineral with a greenish hue that is predominantly copper carbonate (Malachite  $\text{CuCO}_3 \cdot \text{Cu(OH)}_2$ ) with crystals of copper pyrites (Chalcopyrite  $\text{Cu}_2\text{S} \cdot \text{Fe}_2\text{S}_3$ ) (pers. comm. Alison Armstrong).



*Fig.4 Mine trial ING 012*



*Fig.5 Adit at Ten Pound Gill mine ING 129*

The fourth mine working was driven into the hillside by an adit, the remains of which can still be clearly seen (ING 129) (Fig.5). This was Ten Pound Gill and, unusually, it does not lie on any of the veins plotted on the published geology map.

## Documentary evidence

None of these workings amounted to anything in commercial terms as the quality and quantity of ore was insufficient to warrant large-scale exploitation. The fact that all the remains are so small, and that there is no ground evidence of ancillary structures (other than the single coe), is convincing in itself, but there is also sufficient documentary evidence to prove it.

Henry Bouch (sometimes spelled Bouche) was lord of the manor of Ingleton from 1673 to 1714, living at Ingleton Hall (NYCRO ZXF 2/1). He was a wealthy and well-connected man who married into the Fleming family of Rydal Hall in Cumbria, and had coal mining interests around Ingleton as well as extensive properties in the Settle area (CRO [K] WDRY/1/1/2/16, Box 52/9). He was clearly intent on developing his estates to maximise his income.

On 21 September 1703 Bouch entered into a binding 21-year agreement with John Blackburn of Friar Head at Winterburn in Malhamdale (Craven Museum, Box 13). Blackburn was granted the right to 'digg, delve, trench, sink shafts, drive levels or opencasts, grave turfes for seaking and getting lead ore' on a tract of land that extended from 'Scaleber Yeat in the west to little Ingleborrow in the east' as well as Easegill and 'Ingleton Pasture'. The demised land included Lead Mine Moss. Blackburn was also given leave to build a smelt mill and any other structures as he saw fit.

In return, Bouch was to be paid a royalty of a 'tenth dish' or share of all Blue Ore (Galena) and a fourteenth dish of all White Ore (Tyson 1986) which latter was a better quality lead ore. In addition, should the venture prove profitable, he would become a partner. On 4 October of the same year Blackburn purchased a further fourth share, this time from the Wilkinson family based in Halifax who had, in turn, purchased that same share the very same day from Peter Alcock of Burnsall in Wharfedale. Alcock sold it to the Wilkinsons for £5; they sold it on to Blackburn for exactly double that amount! This purchase gave Blackburn tighter control over the mining operation on Lead Mine Moss, for fifteen years, and he would not have agreed to this unless he was convinced it would prove profitable for him.

He brought in two miners to seek for lead and then to open up the vein(s), to dress the ore on site and to send it by packhorse to the smelter at Marrick, in Swaledale, in which Blackburn also had business interests. It cost him £3. 16s. to recover and dress sufficient ore and a further 16s. in transport costs. At current values that is equivalent to a total of £336, no mean sum. The purpose of sending it to Marrick was to have it assayed and this cost him a further £1. 16s. If the assay were to prove positive, he would go ahead with commercial production; if not he would have wasted his money.

Sadly for Blackburn, 'it proved good for nothing'. That was the end of mining on Ingleborough ... at least for a while.

On 13 May 1835 the joint lords of the manor of Newby, James William and Oliver Farrer of Clapham, signed a binding 21-year agreement with Joseph Thompson of Kendal to 'try for mines of ore' in the High Division of the manor, that is on the mountain (WYAS[W]WYL 524). No records have survived to confirm whether this was any more successful than Blackburn's attempts, nor precisely where he sunk his trial workings.

## References

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WYAS (W), West Yorkshire Archive Service (Wakefield), WYL 524, Agreement, 13 May