

THE HUSHING LEATS AT CWMYSTWYTH

Stephen Hughes

Abstract: The hushing channels at the eastern end of the mid-Wales Cwmystwyth leadmine, on Copa Hill, are already fairly well known. Less appreciated is the existence of several other large hushing systems, with associated ponds, on the plateau above the central and western portions of the mine. That above the great opencast at Graig fawr is especially complex with evidence of repeated dammings and diversions.

The disused copper/lead/zinc mine at Cwmystwyth, in mid-Wales, is of very large size with over a hundred known mining tunnels. The most visually striking remains until recently were the turn-of-the-century Concentrating Mill and the multi-storeyed workers' accommodation at New Place. With the demolition of both these the mining landscape of a mine apparently operational from the Bronze Age through to medieval times becomes more apparent.

The Royal Commission on the Ancient and Historical Monuments of Wales has undertaken some revealing aerial reconnaissance of the Cwmystwyth Mine (Figs. 1 and 6). This has accompanied RCAHMW funding a survey of Ceredigion Metals Mines undertaken by Robert Protheroe Jones

during 1993 for the Dyfed Archaeological Trust, as part of the Uplands Survey programme. Similar aerial programmes by RCAHMW have accompanied the 1993 surveys of Clwyd and Powys Metals Mines undertaken by the Clwyd-Powys Archaeological Trust.

From the air the deep hushing channels on Copa Hill at the east end of the mine are readily apparent (Fig. 2). A leat leads off the Nant yr Onnen to the deepest gash towards the south end of Copa Hill, at the head of which is the Bronze Age Opencast currently being excavated by the Early Mines Research Group. Along its course the leat is interrupted by an embanked water storage pond from which radiates a series of presumably more recent and shallower hushing leats, suggestive of

the complex chronology which applies to the whole Cwmystwyth Mine.

What may not be appreciated is that a much more extensive system of hushing leats extends from the west side of the Nant yr Onnen valley for the whole of the scarp bordering the north side of the main Ystwyth Valley. Aerial reconnaissance has similarly illustrated the extent of hushing systems at the nearby Esgair Mwyn Mine and the Dylife and Craig y Mwyn Mines in Montgomeryshire. The latter with rectangular 'hushing-ponds' or 'holding-tanks' of a type only previously known from the Dolau-Cothi Gold Mines.

During 1993 a joint team from the Department of Archaeology of St David's College, Lampeter and the Industrial Archaeology Branch of the Royal Commission on the Ancient and Historical Monuments of Wales have used large staff/student teams to carry out two weeks of survey. The first to survey the remains of standing buildings on the lower mine site and the second to record part of the hushing system on the western part of the mine.

Hushing systems known on Welsh non-ferrous mine sites are associated with large opencast excavations at Esgair Mwyn, Craig y Mwyn, Dolau-Cothi and Cwmystwyth. The largest opencast at Cwmystwyth is the 'Graig Fawr' (the 'Great Rock') and above this is a particularly complex pattern of leats (Figs. 4-6). Immediately above a waterfall on the Nant y graig just to the north of the great opencast there is the site of a sluice leading to a diversionary channel on its eastern bank. This channel

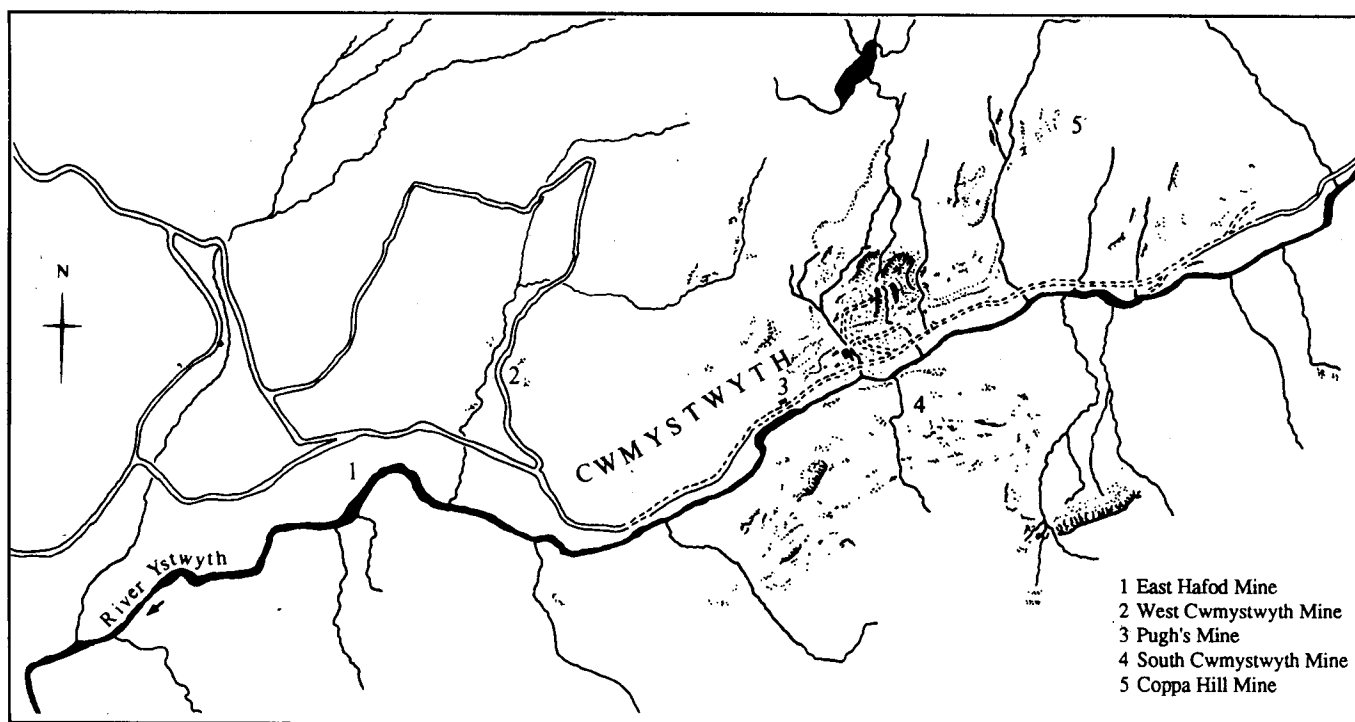




Fig. 2. Hushing channels on Copa Hill, the deepest (with the Bronze Age opencast at top) are on the centre-right. To the left of these deep gashes are a shallower series radiating from a supply pond to the top-left which itself cuts an earlier leat leading to the head of the deep channels near the early opencast. (Crown copyright, Royal Commission on the Ancient and Historical Monuments in Wales).

develops into a deep gash as it drops southwards onto the small plateau situated above the cliff of the Graig Fawr opencast. An earlier leat at a higher level leaves the eastern side of the deeper gash and once fed extra water that scoured out the deep gully of the Nant Watkin on the east side of the large opencast. Earlier hushes at the south end of the deeply scoured channel above the Graig Fawr opencast were successively sealed off by roughly built blocking dams of shale rubble. These allow a chronology of the site to be projected. In addition two of the leats, a fragment labelled 'GF7' on the plan (Fig. 5) and 'GF4' are much shallower than adjoining leats and are therefore almost certainly the first 'release-channels' used by the deeper 'supply-leats' alongside.

It seems likely that the deep gash of the main supply-leat from the waterfall originally supplied the deep channel leading steeply downwards to the release channels of 'GF1' and 'GF2' (Figs.4-5). These have subsequently been blocked by rubble dams to divert water round to release channel 'GF3'. Channels 'GF1' and 'GF2' lead into the deeply cut ravine of the Nant y Graig and it seems likely that the deepening of the Nant Watcyn and Nant y graig ravines were the first scouring activity undertaken at Graig Fawr, possibly

followed by the driving of the small irregular mining tunnels still visible in the sides of the streams.

On the 12 March 1788, the engineer Francis Thompson visited the Cwmystwyth Mine during the tenure of Thomas Bonsall, originally from Bakewell in Derbyshire (Hughes 1981 p16). He described what seems to be a description of hushing in use on and around Graig Fawr:

Commustwith is a mine running along the side of a steep hill and some part of it under the rock (i.e. below Graig Fawr) where the water comes from the tops of the hills (Nant y graig and Nant Watcyn) and is geathered [sic] together for the use of hushing (Nant y gwaith and Graig Fawr hushing systems) as the mine was first found by that means.

So in this instance the process of hushing is mentioned as a prospecting process. The majority of the 'release-channels' (5-12) from the Nant y Gwaith (a name translated literally as 'Works' or 'Mine' stream) were prospecting hushes on the section of Cwmystwyth known as the 'Kingside Mine' and may well have discovered the line of the lead veins there.

Raw's Adit of 1874, driven on Pugh's

Mine (the western end of Cwmystwyth) re-used an 'old' mining tunnel located at the bottom of release-channel '17' to the west of Nant Trefach. The location of that mining tunnel must have related to the strata revealed by the hushing operations and the development of Pugh's Mine may well have been determined by the initial hushing activity.

Francis Thompson also made a longer reference to hushing at Cwmystwyth in which he also referred to the use of hushing as a means of production (Hughes 1981):

Where they have plenty of water the mine is on the side of steep hill and some part of it under the rock; their is a large stream of water which comes from the top of the hill and crosses the vean but is carried over where the vean is cut, but they dig water courses at other places where the vean is uncut and lets the water wash open the top of the vean and some times brings down large quantities of ore; and this they call Hushing; from the hills all these mines bears up to the grass so that they are found be eather hushing or by trenching.

On the western part of the mine there appear to be four areas where hushing was used to remove substantial areas of

Fig. 3. Sketch Survey of the western hushings at Cwmystwyth.

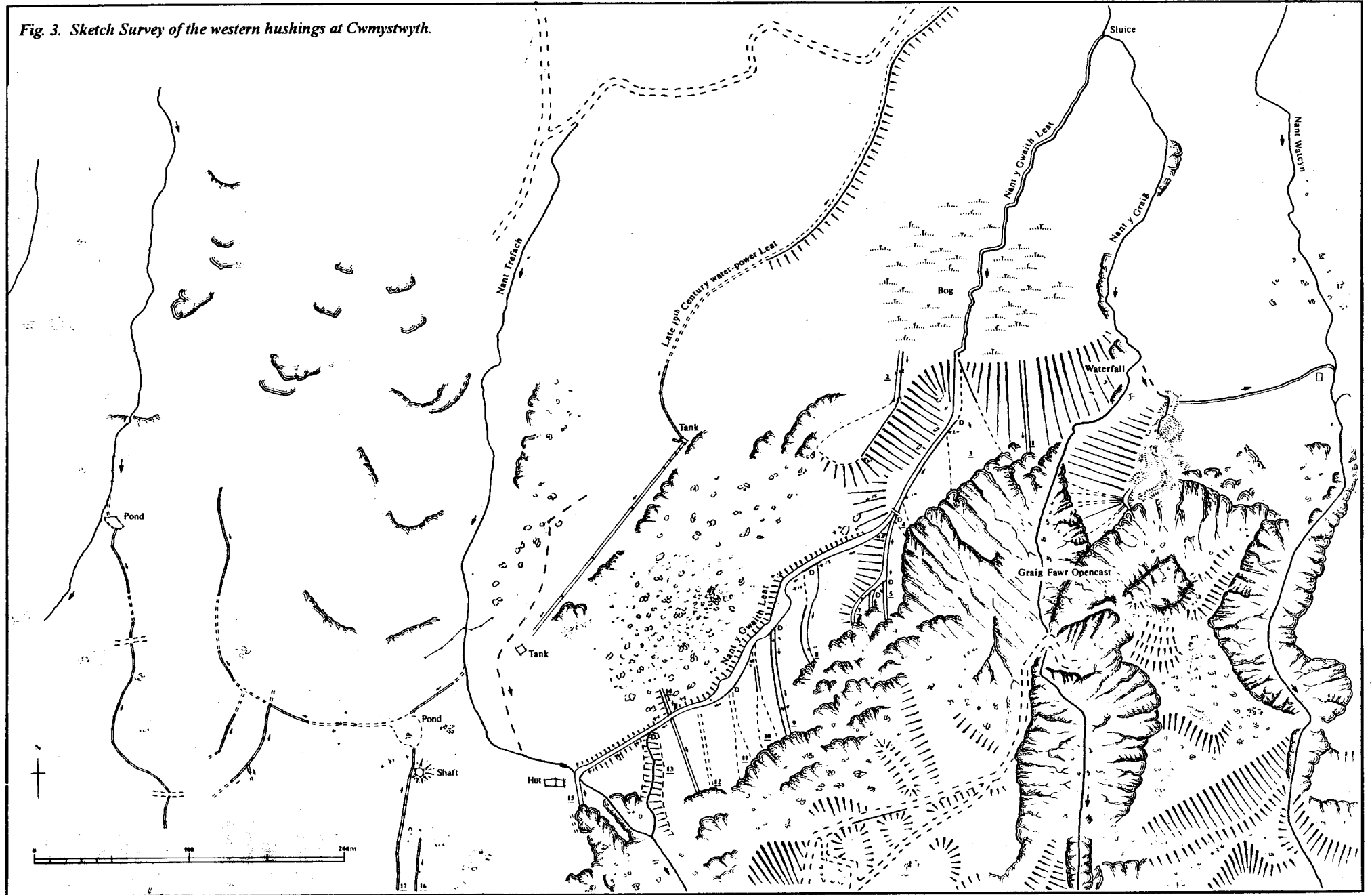


Fig.4. Graig Fawr Hushings, general survey.

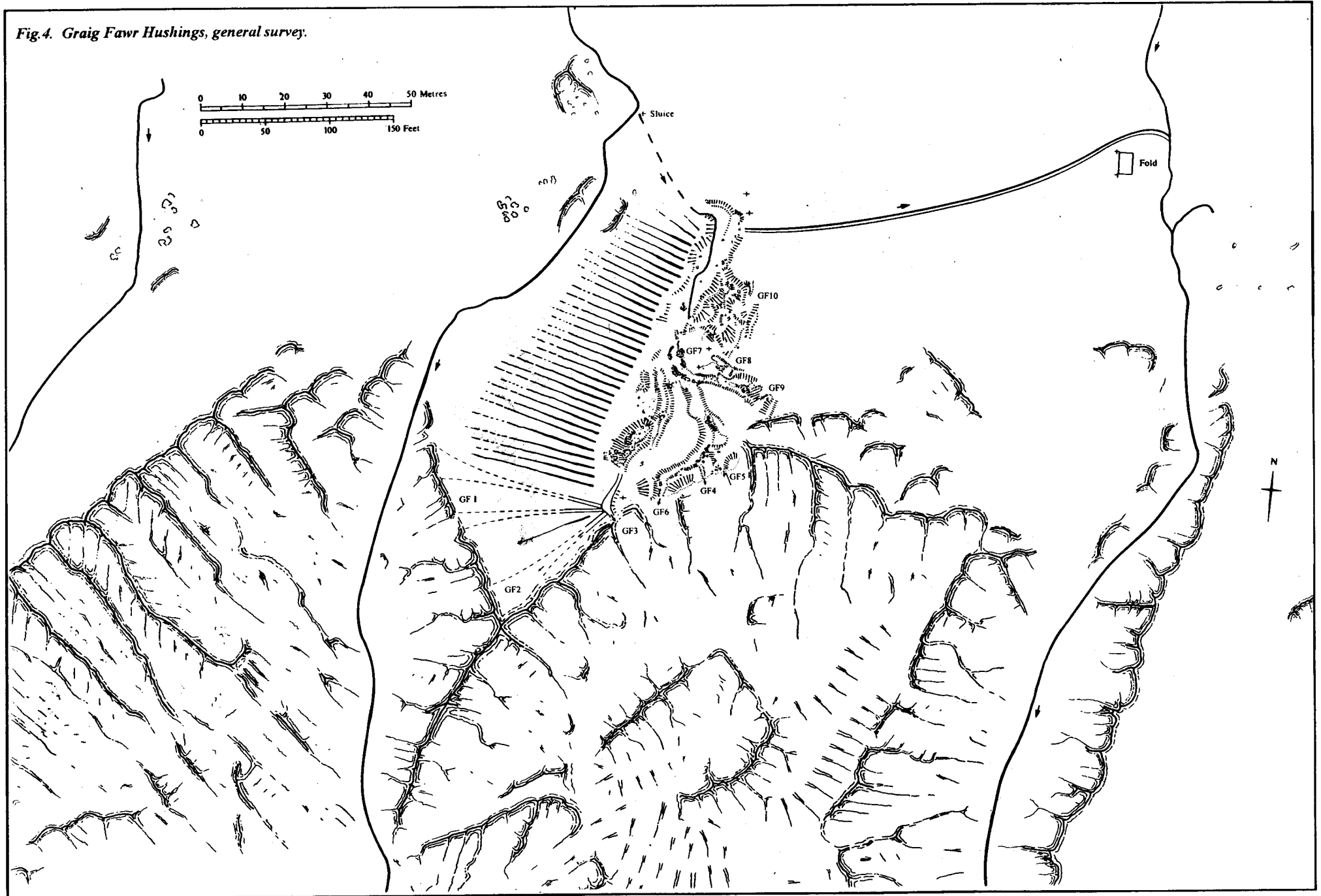


Fig. 5. Graig Fawr Hushings, detailed plan.

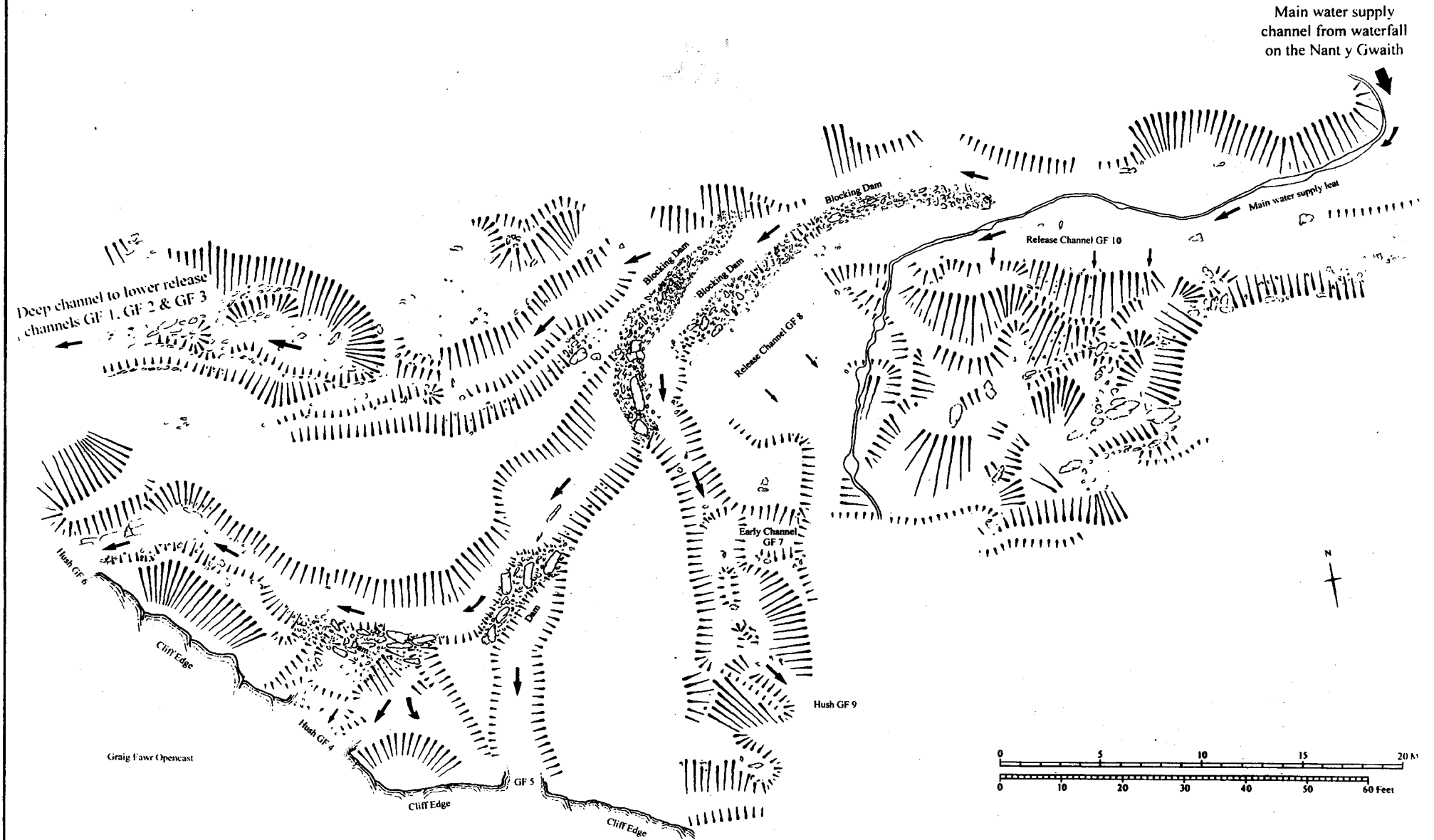




Fig. 6. Aerial view of the western part of the Cwmystwyth Mine. Prospecting Hushes are clearly visible descending the hillside to the top left and on every other piece of upland green pasture above the mine. The great opencasts on the Graig Fawr can be seen towards the top right with the dense complex of hushing channels descending from the waterfall above. (Crown copyright, Royal Commission on the Ancient and Historical Monuments of Wales).

rock and ore, rather than merely being a means of prospecting. The most westerly is an opencast scoured by release-channel '15' (see fig. 3) leading a probable combined flow from Nant Trefach and the Nant y Gwaith supply leat.

The great crag or 'Graig Fawr' was effectively surrounded by three very large opencast workings. The gorge of the Nant Watcyn to the east, and had effectively been deepened by diversionary leats from the Nant y Graig. The southward face workings of the Graig, between the gorge of the Nant Watcyn and the even deeper gorge of the Nant y Gwaith, were so large that they were eventually deepened into the Comet Lode stopes. The Graig Fawr release-channels 3-10 (Figs. 4-5) fed water down onto this face. Release-channels 1-2 from Graig Fawr and the early Nant y Gwaith channels 3-4 released large quantities of water into the head of the deep gorge of the Nant y Graig to the west.

The dating of the hushes around the Graig Fawr is problematical. From 1583 Charles Evans was manager at Cwmystwyth and engaged forty local miners. He also engaged two miners from the Harz mining region of Germany: Mathias Ryley and Mathias

Shillymstener, who were described as "conninge workmane" (Hughes 1981 pp.7-8). An inquisition on the validity of the lease in 1592 mentions lead mines at Craig y Mwyn (translated literally as 'the Ore Rock') "between great rocks of stone" and this almost certainly refers to mining in the Nant y Graig gorge near Graig Fawr. Hushing may have been introduced by the German miners but it is impossible to say. In 1664, Cornelius le Brun of Cologne, was one of the two partners at the Cwmystwyth Mine, referred to significantly as the 'Cragge Mine' (Hughes 1981 p.9)

Graig Fawr continued to be a centre of mining operations in the eighteenth century, almost certainly now on the cliff face to the south of the rock, as the following quotation of 1749 makes clear:

I saw a stupendous rock at Cwm Ystwyth in Cardiganshire, where so much lead was found blended in the rocks, as to be worth working and seperating [sic] from the rock. This rock at Cwm Ystwyth is of great higt, and I saw miners there suspended in ropes, blasting down the rocks with gunpowder . . . (Hughes 1981 p.17).

By c.1780 however, it was clear that

the area being mined on Graig Fawr suffered from poor drainage and that the deep haulage and drainage way of the Level Fawr needed to be constructed. This suggests that the complex of hushing leats on the summit of Graig Fawr may have pre-dated the deep mining of the lode at the foot of the cliff and that this part of the system was out of use by the middle of the eighteenth century, if not many years before.

A full survey of all the Cwmystwyth Mine hushing leats will be undertaken over the next few years but the absolute, rather than the comparative, chronology of the system is likely to be extremely difficult to establish.

REFERENCES.

Hughes S.J. 1981 *The Cwmystwyth Mines*, British Mining No. 17. (Reprinted 1993).

Stephen Hughes.