THE HONISTER SLATE WORKINGS, CUMBRIA

AN ARCHAEOLOGICAL SURVEY REPORT

NMR no: NY 21 SW 7

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1. INTRODUCTION

The disused slate mines and quarries of Honister, with their associated tramways, inclined planes and massive spoil heaps, occupy the high ground to the north and west of the summit of Honister Pass and to this day dominate this remote landscape. A surfaced public road winds steeply from the village of Seatoller in Borrowdale to the east, up to the head of the pass known as Honister Hause and then descends rapidly into the valley of the Gatesgarthdale Beck to the north-west. In times past this road has been famously difficult but now it presents few problems to modern transport. At The Hause, at 1166 ft (356m OD), there is a YHA Hostel, built in 1962, and a group of twentieth-century industrial buildings which are built on the flattened summit of a large heap of slate waste. This factory complex, and the waste, are a manifestation of the final stages of the great slate industry at Honister.

This is a very mountainous and rugged area characterised by steep cliffs and rocky outcrops interspersed with rough grassland providing low quality, upland sheep pasture. Gatesgarthdale to the west of The Hause exhibits the classic effects of glaciation. It is U-shaped with the upper edges demarcated by steep, and in places, sheer cliffs and the lower slopes covered with vast amounts of scree as far down as the valley floor. The effect of the glaciation has been to expose to view three parallel slate veins on both sides of the valley; these can be seen very clearly to incline at an angle of about 30 degrees from about 1250 ft (380m) OD sloping upwards to outcrop at about 2000 ft (610m) OD. These veins have been named, in ascending order, the Quey Foot, the Honister, and the Kimberley or Yewcrag. (These names can be confusing. The term Honister is applied to the whole area where the workings occur, but it also refers specifically to the medial slate vein on both sides of Gatesgarthdale. The uppermost vein is known as the Yewcrag on the north side of the valley and the Kimberley on the opposite side. This nomenclature is is retained in this report.) It is the Yewcrag/Kimberley and the Honister veins which have been exploited to the greatest degree on both

sides of Gatesgarthdale; the Quey Foot has been worked on the Yewcrag side but only to a limited degree. It is the remains of these workings on the steep crags on either side of the Gatesgarthdale valley which are the most visually impressive elements of the slate industry, comprising quarries (open top working) and drift mines (close head), with associated transportation systems and huge waste heaps which have overwhelmed the scree in many places.

The Yewcrag workings to the north of The Hause comprise a series of mines and quarries, essentially linear in character, which can be seen to ascend the steep mountainside from south to north mainly following the line of the exposed Kimberley or Yewcrag slate vein. These workings are to be termed the **Yewcrag Series** after the prominent rocky ridge of that name just to the north-west of the workings and are described in detail in Chapter 4. On the opposite side of the valley, to the south-west facing the Yewcrag group, are the workings on the Honister and Kimberley veins. Though they are planimetrically close they occur at different levels, and for ease of understanding they have been allocated separate chapters (respectively 5 and 6).

There are further important workings on the back-slope to the south of the glaciated valley. The largest of these are **Dubs** and **Hopper Quarries** (dealt with respectively in Chapters 7 and 8). Scattered throughout the whole area of survey are numerous minor workings, examples of less successful attempts at winning the slate (see Chapter 9). From the end of the 19th century, **the Hause** was developed as a focus for the slate industry; this is described in Chapter 10. Finally there are a number of **miscellaneous features** in the landscape not associated with the slate workings which include minor prospecting for copper and iron, and some ruinous buildings, enclosures and field walls thought to be associated with sheep husbandry (see Chapter 11).

Recently, in 1996, the rights for slate removal have been acquired by a local organisation. At the time of survey, work at Honister has recommenced on a limited scale and is confined mainly to the renovation of buildings, the repair of machinery and the opening of a small display, all at The Hause, and the small-scale exploitation of the waste tips at The Hause and Hopper Quarry.

Acknowledgements

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It must be stressed that many of the surface remains, notably the Yewcrag and Honister Inclines, are in a state of collapse and potentially dangerous. Great care is needed to examine these and also some of the larger waste heaps which are far from stable. Under new management the underground workings are most definitely out of bounds and should not be entered.

2. EXPLANATION OF THE PLANS, TEXT AND SURVEY METHOD

The main thrust of the RCHME task undertaken by the Newcastle office and the Air Photo Unit (APU) at NMRC Swindon has been the production of plans, together with a descriptive text, of the surface remains of the slate workings at Honister. This was done at the request of the Lake District National Park, who required an accurate plan for management purposes specifically connected with consolidation works and interpreting the remains for the public. Many of the structures are perched precariously on ledges; some have already collapsed over the edge since their abandonment and others are in a parlous condition. It was considered important to capture the remains on plan before further damage. The project also fitted in well with a series of surveys of industrial remains in Cumbria previously undertaken by the RCHME.

In consultation with the Park Authority, it was agreed that the survey would be produced at 1:2500 scale to encompass the whole area of the workings, which measure about 2,000m east to west by a maximum of 1,200m north to south, in total approximately 100 hectares in extent. It should be stated that the largest scale of current Ordnance Survey mapping is at 1:10,000, though there are 1st edition OS maps dating from *c* 1860 at 1:2500 scale. In addition to the 1:2500 survey, 1:500 plans were to be made of specific areas, which contained the highest concentration of structures; in practice this meant the survey of the disused Honister and Yewcrag external inclined planes together with attendant structures.

For the 1:2500 overall plan, it was decided that a combination of ground and air survey methods would be employed; however, at the far west there was no suitable air photo cover available, and this was surveyed by ground methods only. The 1:500 windows were to be supplied entirely by ground survey, primarily with total-stations equipment.

The first stage in the process was a joint reconnaissance undertaken by field staff from the Newcastle Office and members of the APU from Swindon. The purpose of this was to confirm the parameters of the survey broadly defined by John Hodgson, the Park Archaeologist, though it is conceded that there may be some small scale surface workings outside the area, and also to identify a network of control points on the ground, which could be seen on the air photos to be used by the APU. The chosen points were primarily the upstanding remains of disused buildings associated with the slate workings. The next phase was the running of a traverse of 12 stations by RCHME Newcastle in order to survey accurately the selected control points. For this a Wild-Leitz TC1610 total stations theodolite was employed. The traverse was processed in the Newcastle office, and a control plot at 1:2500 on drawing film was forwarded to APU Swindon.

The rugged nature of the site rendered ground access extremely difficult in places; this problem and the fact that the remains were clearly visible and devoid of tree cover determined the suitability of air survey methods for Honister, and for this a Digicart stereo photogrammetric plotter was used. Additional data from photographs dating to the late 1940s was added using the "Aerial" rectification programme. A cover search of the area revealed that there were no oblique photographs held by RCHME or CUCAP, and the quality of the vertical cover was not very good.
Fortunately ADAS held a series of sorties flown in August 1983, and were able to provide film diapositives of these prints. Two models were set up using these to cover the main area of quarrying and associated works using the control provided by the field team. An accuracy was achieved with residuals of generally less than 1m. The RAF vertical sorties (CPE/UK/1940 and 106G/UK/1127) were examined since they showed areas of small scale working which have since been obliterated by large scale opencast quarrying, and small areas of detail on one of the inclined planes which was in deep shadow on the ADAS prints.

The photogrammetric survey completed by APU was returned to Newcastle on disc, from which a series of 1:2500 plots was made, small enough to be easily handled in the field. It was found that the vast majority of the detail, natural and man-made, was seen and plotted by the APU, and that fieldwork was confined mainly to a brief check followed by acceptance of the AP plot.

There was a limited need for some plane table survey, employing a Wild-Leitz RK1 self-reducing alidade, and also some minor graphic survey; this was due in part to minor changes to the landscape which had taken place after the APs were flown. For the far west of the area, which had no suitable AP cover, a further traverse was run and, by choosing some common points, it was possible to append this onto the main traverse.

Many of the highly complex remains of the Honister and Yewcrag Inclines, chosen for 1:500 survey, could not be seen well from the air on account of the shadows cast by the adjoining cliffs. For this reason, and for the sake of accuracy at this large scale, ground survey methods were employed. By setting up a total-station theodolite halfway up the north-east side of the valley it was possible to observe across to virtually the whole of the Honister Incline, and likewise in reverse from Honister to Yewcrag. The total-station plots were then ground checked. It was important that the details of the inclines were recorded accurately for the following reasons. Firstly, the remains, comprising adits and quarries, dressing sheds and bothies, are complicated, and can only be depicted satisfactorily at a larger scale. Secondly, these remains are very vulnerable; much of the upstanding structures have collapsed and this attrition is continuing, and it was therefore deemed necessary to survey what survives now before further damage occurred. Thirdly, access to the inclined planes, particularly the Honister example, is difficult and likely to become more so with further damage. Fourthly, the National Park Authority needs accurate plans to inform decisions about consolidation works.

Broadly OS survey conventions have been used in the compilation of the 1:2500 plan. All non-seasonal streams, cliffs and major concentrations of rock outcrop have been depicted, together with form lines at 25m intervals, to give a sense of the topography. Every modern construction has been surveyed to OS specifications; this same specification has been employed for open top slate quarries (a form of cliff symbol), and mine entrances (an oval containing a cross). An attempt has been made to differentiate between slate waste and scree by the use of different symbols (dots for waste and boulders for scree), but the shading of one into the other is not always clear. There are numerous paths and tracks crossing the area; these include modern walkers' paths, pack-horse tracks or sledways contemporary with the slate workings, and post-war lorry roads, surfaced with gravel, which were built to transport

slate. To differentiate between these, the walkers' paths are conventionalised as a single pecked line on plan, the sledways (or their courses) and the packhorse tracks are shown as a double peck irrespective of width, whereas the later lorry tracks are shown to scale and stippled to indicate a gravel surface. Upstanding structures, which include buildings and walls, are penned in red on the 1:2500 plan for clarity as opposed to black for all other detail.

Each surviving feature or group of features surveyed was allocated a letter and number code, e.g. **YEW4**, **HON12**. This code is applied to an overlay to the 1:2500 plan and also to the detailed textual description accompanying the plan. Thus plan and text are complementary, and it follows that the one has a limited use without reference to the other.

The prefix **YEW** was applied to the Yewcrag Series (Chapter 4)
HON refers to the Honister Series (Chapter 5)
KIM refers to the Kimberley Series (Chapter 6)
DUB refers to Dubs Quarry (Chapter 7)
HOP refers to Hopper Quarry (Chapter 8)
LFL refers to Low Fleetwith Quarry (Chapter 9)
LSW refers to lesser slate workings (Chapter 10)
HAU refers to the Hause Group of structures (Chapter 11)
MSC refers to various non-slate features in the landscape (Chapter 12)

It should be made clear that no attempt has been made by RCHME to examine the subterranean workings for two reasons. Firstly, since the concession to exploit the slate was reactivated in 1996, no access is permitted. Secondly work underground is highly specialised and has been well covered, notably by Tyler (1994) and Cameron (1993). The mines are unstable and unskilled exploration must not be attempted.

3. SITE HISTORY

The history of slate mining in this area of Lakeland has been documented in two recent publications (Cameron 1993; Tyler 1994). It is not proposed within this report to duplicate these works except in those specific cases where it may help to interpret what remains on the surface.

It is a matter of speculation as to when the very first quarrying took place; earliest extraction would have been by small scale picking from the very visible veins where they outcrop and presumably there was a progression at some point in time from this pre-industrial method to quarrying on a grander scale. Cameron notes (1993, 12) that the first legal document related to slate extraction dates from 1728, and was for the granting of a lease of tenancy to a John Walker to allow him to take slate from "Ewecrag and Fletwith". According to Tyler (1994, 25), the quarries of Ash Gill, Dubs and Bull Gill may well have been developed as early as the mid-18th century. When Sam Wright acquired the lease in 1833, he started to open up levels and underground quarries at Ash Gill on the Honister side, and the open-top quarries high on the Yewcrag side; Wright was to hold the lease until about 1873.

In 1879 the Buttermere Green Slate Quarry Co was formed. This organisation was responsible for the construction of three major self-activating inclines, and the further development of levels associated with the inclines. The first followed the angled natural sill at Yewcrags, which defines the outcropping Kimberley vein; the second occupies the sloping sill of the Honister vein on the Honister side, and was in three sections; the third ran from Dubs Quarry over a hog-back ridge to The Hause. Other subsidiary inclines were constructed. Until the building of these inclines, finished slates had been transported directly from the mines and quarries high on the hill, initially by pack-horse, and then latterly by a system of sled ways, two of which were routed down the scree slopes on the Yewcrag and Honister sides to the road

by specially prepared runs. From now on, the focus of the operation was to be at The Hause where by 1892 there were blacksmiths' and joiners' shops, manager's office and bothy (Tyler 1994, 52). Slates were still being finished up at or inside the mines and quarries, but these would now be transported to The Hause and stockpiled there. In 1890, a new road was made from The Hause up to Bell Crag on the Honister side, where a level, to be known as Road End, was being blasted into the exposed Kimberley vein. Exploitation of this slate vein was to be very successful, but it created a problem in that waste material from these higher workings tended to block and damage the lower part of the Honister external incline below. To combat this, the Link Level was driven in 1910 to connect Road End on the Kimberley vein to the Honister external incline (Honister vein), which effectively by-passed the threatened part of the incline, which was then abandoned.

In 1928 an aerial ropeway was erected from the vicinity of the Link Level at the external incline end to run down to The Hause, but this too was eventually abandoned in 1955, and ultimately, with the construction within the mountain of the Honister and Kimberley internal inclines in the 1930s, the large majority of slate metal won from the Kimberley and Honister veins was removed by Road End, and transported by road down to The Hause. In the 1920s it had already been decided to transfer the processing of the slate from the source down to a purpose-built factory at The Hause.

So during the documented history of the mines, there were surges of growth in 1830-40 with Sam Wright, in the late 19th century with the construction of the inclined planes and contemporary drift mines, and in the 1920s and 30s when the finishing of the slate became mechanised with the building of the cutting sheds at The Hause. The works were moribund during the two World Wars, and at other times for economic reasons.

The remote location of the workings has long created problems of transportation. In the early days, finished slates were carried directly from the mines and quarries by pack-horse, and a number of these packhorse routes have survived. As the local road system was improved, the horse and cart came into common usage, but this created the problem of getting the material from the mine or quarry high on the hill down to the roadside. Initially, the method employed was that of sledding the slates. There seem to have been

two ways of doing this. The first used the power of horses pulling the sleds on prepared tracks. The second method, confined to the steep valley slopes, utilised gravity as the principal power source; the sled laden with slates was guided by a man at the front down a run surfaced with fine slate waste from the riving and dressing processes. The period of sledding was relatively short-lived, and was superceded by the construction of the inclined planes, initially external and later within the mountain, the tramways and, briefly, an aerial ropeway. The final method of transporting slate down to The Hause from the mines and quarries on the Honister side was by lorry on purpose-built gravel roads; this method persisted until the closure of the mines in 1986.

It was customary for the slate workers to stay at Honister during the week, travelling home at the weekends; this persisted until *c* 1963. In the early days when the process of docking, riving and dressing was undertaken at the mines or quarries themselves, a number of dry-stone bothies were built high on the hill close to the workings. With the construction of the inclines in the late 19th century, and, in the 1920s and 30s, the erection of a factory at The Hause, the remote stone huts were mostly abandoned. Some of the workers stayed in barracks at The Hause, the last of which was demolished in 1963. In the 1890s, the company had built a terrace of cottages called Mountain View in Borrowdale, which are still occupied (Cameron 1993, 22), and in 1918, another terrace of six houses was erected at Seatoller (Tyler 1994, 77).

In 1986 all mining and quarrying of slate ceased. The workings were allowed to deteriorate, but the factory complex at The Hause was put on to a care and maintenance basis. Most recently, in 1996, the lease has been transferred to a local concern, who have brought the cutting machinery and the generator at The Hause into full working order, and have created a showroom and shop in the cutting shed. Some removal of slate from the extensive waste tips at The Hause and also at Hopper Quarry has taken place; at this stage it is uncertain to what extent these developments will affect the workings, if at all.

4. YEWCRAG GROUP

The various elements of the workings at Yewcrag will be identified in the text, and on the overlay to the RCHME 1:2500 plan, by the prefix **YEW**. All the areas of slate extraction here and elsewhere at Honister will be dealt with in chronological order as far as this is achievable. Tyler includes a series of plans of the workings, including Yewcrag (1994, 155), in which he names individual mines and quarries, together with start dates. This information does not in every respect match the OS maps of *c* 1860 and 1900 which show the slate workings, both operational and defunct. All three veins, the Quey Foot, Honister and Kimberley, have been exploited on the Yewcrag side though work on the former is limited.

Early Surface Workings (YEW1 on 1:2500 plan)

Here at Yewcrag and elsewhere at Honister (see HON1 and KIM1) the slate outcrops as a series of distinctive parallel bands separated by small linear depressions. Tyler (1994, 22) has identified traces of old surface workings on the Yewcrag side in the form of a small gully, which he considered to have been enlarged by quarrying; nearby he notes two small huts with low stone seats thought to be dressing sheds. The gully has been located at NY2237 1418 descending from about 520m OD parallel to the Yewcrag Incline and some 40m to the east. It contains three structures (YEW1A-C) which are from north to south:-

A: comprises a crudely built arc of large stones, not more than 0.6m high, showing no identifiable wall faces. It is no longer possible to determine whether this has been roofed.

B: *c* 2.0m to the east of A is a roughly square, dry-stone structure, now ruinous, incorporating a large boulder; it measures 1.2m square within a wall

up to 1.2m high and 0.3m thick, though this width increases to about 0.6m on one wall. There is an entrance, 0.5m wide, in the south wall. B is better built than A and was almost certainly roofed.

About 35.0m to the south is a third structure of irregular shape (YEW1C) which is very crudely built and measures internally 3.9m by 3.3m within a wall of indeterminate width measuring 0.6m high externally. This structure is built into the sides of the gully, mentioned by Tyler, so that there is no outer face on the east side; the entrance seems to have been in the south, and within it is a low shelf, probably a seat.

The depression containing these three structures (A-C) appears to be mostly natural; some surface picking has clearly taken place though there is very little loose slate from this process lying around. On balance the three structures are probably associated with the extraction and dressing of slate at an indeterminate but early date but the evidence is mainly circumstantial, based upon their proximity to a highly visible outcropping vein. Apart from the supposed seat in C, a common feature of dressing sheds, there are no diagnostic structural details to suggest a link with slate mining, and in any other area of low grade upland pasture these remains would probably be considered to be sheep shelters.

Undated Building (YEW2)

NY2237 1423. About 30.0m north of YEW1A at *c* 525m OD, immediately to the east of the adit (YEW18) is a rectangular, dry-stone building measuring 3.0m by 2.4m, externally. The wall survives to a maximum height of 1.6m and where the inner face can be seen it is 0.6m wide. However, the interior, including most of the inner wall face, is obscured by debris from the collapse of the roof. There has been an entrance, 0.5m wide and now 1.0m high in the east side. This building is quite neatly built, unlike YEW1A-C, and is almost certainly associated with the later slate workings immediately to the west though what function it served remains unclear.

Sam New Quarry (YEW3)

Centred at NY224 145. According to Tyler (1994 31, 159) Sam New Quarry was named after Sam Wright who held the lease for slate extraction from 1833 to about 1873, and was first worked, with Fisher (YEW 4), in 1839. It was reactivated in 1901 by the construction of a tunnel into a lower level. It is the highest of the quarries in the Yewcrag group at 590-620m OD and is unusual among the Yewcrag workings in that it exploits the outcropping Honister vein, as opposed to the large majority of others which enter the Kimberley vein (and to a lesser extent the Quey Foot vein). There are two main levels which are considered to correspond to the 1839 and the 1901 phases though there is some evidence for earlier quarrying at this location (see below).

The workings of the 1839 phase is largely obliterated by the incursion and collapse of the later lower level and all that remains is a sinuous passage, walled with dry-stone, up to 2.4m wide, which extends from the edge of the collapse southwards to terminate on a constricted entrance doorway. On the west side of the passage is a roughly circular cell with an intact corbelled roof of slate slabs, measuring 1.9m across internally, with a height of 0.9m to the roof. The cell, entered from the passage, is floored with flags and contains a shelf. Immediately to the south of the cell an original tramway, now removed, had led west through to a spoil heap, but this access has been blocked by a later dry-stone wall. On either side of the passage, which does not appear to have ever been roofed, there are two stone seats or recesses, one of which is set into the wall with a corbelled roof providing some measure of shelter; this suggests an open-air area for dressing. There is also a splayed window, 0.8m square, in the west side of the passage.

Associated with this early phase of the quarry are some extensive spoil heaps at three separate levels. The upper is small, probably formed by the removal of the unusable overburden; it is 2.0m higher than the slightly larger middle heap which in turn is 0.8m higher than the lowest; the latter is about 11.0m high. The heaps are composed of larger waste material, possibly directly from the mining process, and by smaller pale blue-green fragments recognisable here and in numerous other locations at Honister as waste from the dressing of the slate.

The 1901 level survives as a depression, 9.2m below the 1839 passage just described, with a back-wall 22.0m high. The south-east side is formed by a

sheer rock wall whereas the opposite side comprises mainly smaller slate debris. It appears that the south-east wall was the worked face and that waste material was piled up to the north-west, but the picture is confused by the massive amounts of slate debris in the base of the quarry, some of which may well have been mined, but some of the huge blocks are likely to be the result of subsequent frost shattering. The tunnel serving the 1901 level from the south is round-headed and rock-cut, 1.8m by 1.8m; it is still possible to gain access to the lower level by this tunnel though it is somewhat waterlogged. There are a number of round shot holes on the sides of the tunnel. From its south exit a passage curves away in a south then south-west direction with a complex of dry-stone buildings on the south side, and a single example to the north. One of the buildings to the south-east side of the passage is a dressing shed measuring 4.2m by 2.6m with a maximum height of 2.3m; the wall is 0.8m thick to the north-east and 1.3m on the opposite side. The single pitched roof of large irregular slates was formerly supported by wooden rafters, themselves reinforced by old tramway rails, but it has all collapsed inwards. In the north-east wall are two entrances, a feature common to dressing sheds at Honister. Opposing the doorways is a pile of dressing fragments neatly retained by a wall over 2.0m high. Adjoining the shed on the opposite side to the west is another building, 4.0m by 3.6m internally, with walls 1.7m maximum height and 0.9m thick; there is a large gap in the north-west side, 2.5m wide. A further building on the opposite side of the passage from the mine tunnel measures 2.3m by 1.9m within a wall 0.7m to 0.8m wide and 1.4m high; it is still partially roofed with heavy slate supported by old tram rails. It contains a shelf along the north-west wall and the entrance, 0.9m wide, is in the south-east. Associated with the 1901 level are two overlapping spoil heaps; the slightly higher one, 14.4m in height, contains large blocks of slate waste whereas the other, at a slightly lower level, comprises dressing fragments.

Interpretation of this open top quarry (and others at Honister) is difficult. In general these quarries are developed by the driving of ever deeper levels; normally this tends to bite into the earlier workings so that only the peripheral remains, e.g. the passage and spoil heaps, are left as clues to their former existence. Though Sam New comprises two major levels there is a small bank of dressing fragments, about 0.8m-1.0m high, which has been deposited on the west side of the quarry at a higher level than the presumed 1839 level.

This may indicate the existence of an upper and earlier level, or levels, than those already described but nothing can be seen of these possible workings apart from this residue. (An earlier date is postulated here as it is not customary (or common sense) to transport waste to a higher level than the source; this remains true throughout the workings.) Lower down there is a D-shaped, flat-topped spoil heap which again is at a higher level than the identifiable upper level at Sam New Quarry.

The heaps of slate waste throughout the Honister mines and quarries, including Sam New, are enormous, even taking into account their location on steep natural slopes which accentuate the height. They are composed of either large blocks, which show little evidence of having been worked, or small fragments of blue-green slate, the residue from dressing. Extending from the 1901 level is a well-engineered track which skirts the east side of the spoil heap (see YEW31 for details of track system).

Fisher Quarry (YEW4)

Centred at NY225 144. The history of Fisher Quarry at *c* 580m OD mirrors that of Sam New. It too was started in 1839 by Sam Wright to exploit the outcropping Kimberley vein (as opposed to the Honister vein) and was also re-activated in 1901. Again, the higher levels are the earliest but they have been most comprehensively obliterated by later work so that all that remains are the spoil heaps, some 3.5m to 4.0m higher than the lower 1901 level. Adjoining one of the spoil heaps, and partly engulfed by it is a dry-stone building, probably a dressing shed, comprising two walls in an L-shape, about 2.7m by 2.5m. The spoil heaps at this upper level are extensive and the passage leading to the lower levels has had to cut through them.

The east side of what is considered to be the 1901 quarry, like Sam New, comprises a jagged rock face, virtually sheer, whereas the west side comprises a sloping area of waste material much of which is retained by a series of dry-stone walls, up to 1.8m high, some having collapsed. The back wall is 16.0m high above the base of the deepest part of the quarry, which is covered by large and small lumps of slate; some of this material has probably been blasted off the east face by the miners though no shot holes can be seen, and

some of it is a result of natural fracturing. Leading from the lowest level in the quarry, through bedrock and earlier spoil, is a cut, covered in waste material, which leads out sinuously past a complex of unroofed buildings onto a spoil heap with a maximum height of 10.8m. These buildings comprise:-

1) a bothy, part of the way along the passage, of which three sides of dry-stone walling, 0.5m high, survive.

2) a cell or shelter, now unroofed but evidently corbelled. It measures 3.0m by 1.2m, with a wall up to 1.5m high, but the interior is covered with slabs, presumably from the roof.

3) a lower building of two arms forming a curious L-shape varying in width between 1.2m and 1.4m. One arm is 3.2m long, and the other is 3.3m; within it are two seats. On its east and north sides and, to some extent, the south-east side, the building is partly covered over by spoil from the heap above; on the lower south and west sides there is much dressing waste, leaving little doubt that this building was a dressing shed. The spoil heaps at Fisher are extensive though those of the upper level are perhaps bigger.

Included with Fisher Quarry (YEW4) and adjoining it to the east at a lower level is a minor open quarry, shown on plan by Tyler but not named or dated (1994, 155). The back wall of solid rock is 3.3m high and the spoil heap is 2.0m high. Adjoining the rock wall is a small dry-stone building *c* 1.0m square, possibly related to slate extraction, or perhaps a later walkers' construction.

Protruding out of the base of the lowest spoil heap of Fisher Quarry (dated to 1901) are two, possibly three, spoil heaps up to 2.0m high. It is assumed that the adit or quarry relating to these minor waste heaps is buried beneath the 1901 or later spoil, and therefore predates the waste.

Un-named Adit (YEW5)

NY2241 1445. At the base of the spoil heap of Sam New Quarry is an un-named adit, minor in comparision with Sam New and Fisher, which is shown on the OS map of 1900 with a tramway but not on the 1st edition of *c* 1860. It survives as a depression running into the hill in a northerly direction to a back wall 4.0m high. A tunnel has been exposed by the removal of some debris from the entrance. The depression opens out on to a flat-topped spoil heap upon which is a dry-stone building comprising three sides of a rectangle, measuring 4.0m by 3.4m within a wall up to 1.0m high and 0.6m thick. A small stream issues out of the adit, disappears beneath the spoil and re-appears at the base of the heap. Like Sam New this mine exploited the Honister vein, though at a lower level. From the east side of the building a track runs southwards to join a system funnelling down to the top of the incline (YEW9). Details of this track system are given below (see YEW31).

Above Incline 1 and 2 (YEW6)

Centred at NY224 143. Tyler (1994, 33-4) notes that, for a period of about twelve years after 1848 (in which year the lease was returned to Sam Wright after a period in other hands), nearly all extraction of slate was on Yew Crag side and at this time two large quarries were opened out at 1,800 ft and 1,850 ft, respectively, into the higher part of the Kimberley vein. The OS 1:2500 1st edition (*c* 1860) depicts an open top quarry and annotates it, with Fisher, as Yewcrag Quarries. Also shown and named by OS are two adjoining levels or mine entrances each accompanied by a roofed building; these were located in the vicinity of the later winding house (YEW20) and have been destroyed or buried beneath slate overburden. Subsequently this complex of quarries and mines became known respectively as Above Incline Top No 1 (the lower) and No 2 (the upper); they clearly acquired these names after the construction of the incline. The remains have coalesced to form one extensive quarry-like depression at between 540m and 575m OD containing both open top and close head workings. The picture is highly complex with a multiplicity of levels (numbered I to VI from upper to lower) but, as with Sam New and Fisher, the upper levels have been undercut by the later miners excavating through the spoil heaps to exploit the vein at progressively lower levels. Also some of the

lowest close head galleries have collapsed. What tends to survive of the first workings is peripheral, usually the residue of passages, often flanked by dry-stone buildings in varying states of decay, which lead out onto flat-topped spoil heaps cascading down the hill.

The uppermost level (I) is an open top with a back wall of solid rock, about 11.2m high. The east side, which is quite sheer, has been the working face and waste material from that process has been deposited on the west side behind a series of revetted walls, some of which have collapsed. This east rock wall has eroded quite badly, perhaps fairly recently, and the quarry floor is covered by a considerable depth of debris. A terrace, leading south-westwards out of this debris, is bounded on the west side in the main by rock and the remains of crude retaining walls, and on the east, downhill side by a wall up to 3.5m high. No buildings can be seen in association with this uppermost terrace, but there is a great deal of debris.

The next level (II), some 5.0m lower, is much easier to interpret. It comprises an open top quarry, at the north-east end of which is a round-headed and corbelled adit, 1.5m wide by 1.5m high. This is situated at the base of a dry-stone retaining wall, 5.7m high. About 5.0m inside the mine there is a blocking wall with a rectangular aperture. It appears that the miners quarried as far into the hill as was practical, and then found it more economical to tunnel thereafter. Extending from the mine entrance in a south-westerly direction is a very distinct level terrace leading past traces of a building of which two walls forming an L-shape can be seen. The level from the adit continues as a terrace retained on both sides by dry-stone walls and then becomes a distinct, sinuous passage as it approaches a group of structures. One of these is a dry-stone building which measures 8.7m by 3.7m within a wall 0.8m thick and a maximum height of 1.7m on the south-east side. There are opposing entrances in the longer north-west and the south-east sides. Adjoining the building to the north-west the passage, here defined by dry-stone walls, is 1.7m wide and 1.2m maximum height; it leads out to two finger dumps up to 6.4m high, which lie on top of a dump of rivings, itself 2.5m high.

Level III comprises another adit, 1.9m high and 1.5m wide, with a round-headed arch, situated near the end of a quarry in a similar fashion to II. A

passage leads from the adit through earlier spoil heaps but much slate waste formerly held behind crude retaining walls has collapsed on to the passage to an estimated depth of about 3.0m. The passage between dry-stone walls emerges out of the debris at the mine entrance heading in a south-westerly direction; the width varies from a minimum of 1.0m to about 2.3m. Incorporated into the east side of the passage is a dressing shed, walled on three sides with an open side adjoining the passage; it measures 3.6m by 3.3m with a single pitched roof, surviving to a maximum height of 2.1m. It was formerly roofed with large irregular slabs of slate but most of the roof has caved in. There are a couple of recesses in the interior, and some graffiti, dated 1905 and 1886. The passage continues in a south-westerly direction to further structures. One, in particular, is open-fronted with a central pillar and measures 5.4m by 2.7m; it has had a single pitched roof of slate slabs but a lot of material has fallen onto it from the spoil heap above, and the interior is obscured by debris. However, traces of stone seats, indicative of a dressing shed, can be seen.

There may have been another level (IV) but the only evidence for it are the truncated remains of two flat-topped spoil heaps between III and V; as for workings, passages or buildings there are none.

The lower workings are increasingly overwhelmed by debris from above. In level V there are traces of a passage retained by dry-stone walling, up to 1.7m high and about 1.2m wide where visible, but mostly it is clogged by waste slate. There are no buildings exposed. By superimposing the RCHME plan over the OS 1st edition (*c* 1860) it appears that this level corresponds to the upper, northerly 'level' shown by OS though the accuracy of the early map is questionable in this area.

Little has survived of the lowest level (VI), a close head some 9.0m below V. Part of the underground gallery has collapsed and is exposed to view from level V over a mass of boulder tumble. In the rock wall at the base of the tumble are many shot holes, triangular and round. It is difficult to determine with certainty where the original entrance to this gallery was but some 9.0m to the south-east of the brakeman's hut (see YEW20) are traces of a tunnel amidst masses of waste slate (see YEW 19) which may be it. This position approximates to the lower southerly 'level' shown on OS 1st edition map.

Between this putative entrance and the gallery is a vast amount of slate waste.

Ruinous Bothy (YEW7)

NY2235 1432. Tyler (1994,34) notes that a stone bothy (YEW7) was erected about 1850 as shelter for the workers at the Yewcrag Quarries. The bothy at 538m OD is now unroofed and measures 8.6m from north-west to south-east by 3.7m transversely within a wall surviving to 2.2m high at the north-west gable; this gable has been reinforced and is now 1.5m thick. The building comprises one large and one small room with a small annexe, 1.8m by 1.2m, at the south-west corner. The entrance is in the longer south-west side. There is a detached building behind the main structure, measuring 2.0m by 1.0m within walls 0.6m thick, and close to the south wall of the bothy is a refuse heap containing cinder, old pots, bottles, etc, piled up against a slate spoil heap. Presumably this is accumulated rubbish from this bothy and the one nearby (see YEW21).

Yewcrag Sledway (YEW8)

NY2232 1424-NY2218 1391. The 1:2500 1st edition OS map indicates that by 1860 slate extraction on the Yewcrag side was confined to three open top quarries as well as two close heads which were located high above The Hause at over 500m OD. These have been identified as Sam New (YEW3), Fisher (YEW4) and Above Incline 1 and 2 (YEW6). Finished slates were transported by hand-held sleds down a specially prepared sledway from the vicinity of the two close heads at about 515m OD down to the roadside at about 280m; this drop of some 235m occurred over a horizontal distance of just over 400m. This sledway is shown on the 1860 OS map but most of it has been destroyed in the construction of the inclined plane built in the 1880s along much of its course, or it has been overwhelmed by later deposits of slate waste. The only part which can be seen is at its lower end where it survives as a series of slight grooves containing small dressing fragments, the material used to surface the sledways. There is no trace of a path by which the sledmen returned to the hilltop. (The route of the sledway has been transferred from the 1st edition OS map to the RCHME overlay to

demonstrate its juxtaposition with the incline; undoubtedly the course would have altered a little through time though it is fairly constrained by the rocky terrain.)

Yewcrag Incline (YEW9)

NY2233 1425-NY2232 1395. In 1879 work commenced on the construction of a self acting incline (YEW9) to descend from a drum house (YEW20) just below the open top quarries at 523m OD southwards for a horizontal distance of 190m to 414m OD, from which point a new road (YEW10) would be constructed with a fairly gentle gradient down to The Hause at 356m OD. The incline was to follow the Kimberley vein, defined by a natural sill, formerly occupied by the line of the sledway (YEW8) which would then be rendered obsolete. A total of nine adits were to be driven with direct access for tubs on to the incline which, by 1880, was fully operational. These adits were numbered 1-9, but for the purpose of the RCHME overlay will be accorded numbers YEW11-19.

When it was decided to transfer the process of slate dressing from the mines and quarries themselves to a purpose-built factory at The Hause in the late 1920s, this meant that instead of dressed slates being transported down the hill as before, large 'clogs' now had to be moved to the factory. This involved some major alterations to the transportation system including the modification of the Yewcrag incline. It was to be foreshortened at the top and was to terminate on a shreave wheel (YEW22) in the vicinity of adit No 6 (YEW 16). The lower part was to be extended further down the hill to where an electric winding house (YEW23) was built; from this new terminus a tramway (YEW24) was constructed to run on the level to the newly built factory complex at The Hause. Three trial adits (YEW25-27) were driven a short distance into the hillslope on the east side of the incline extension.

The remains of the incline and associated adits and working platforms are highly complicated and, for this reason, RCHME Newcastle have produced a 1:500 plan extending from the 1932 winding house (YEW23) up to the 1880 drum house (YEW20). The track bed maintains a fairly regular gradient throughout its length and this has entailed the construction of both raised,

linear platforms, from 3.5m to 4.5m wide, and cuttings, about 2.5m wide, each edged with well-built dry-stone walling. From the 1932 electric winding house (YEW 23) up to adit No 2 (YEW12) the incline has been cleared of the overburden of stones as part of a continuing process of renovation which started in 1996 under the auspices of the Lake District National Park. The nature of the remains are best observed in this sector. The foundations of the track bed, where best-preserved, comprise tightly packed stone slabs set on edge, on to which the wooden sleepers are laid. The sleepers are on average 1.6m long and spaced about 0.9m apart. The rails have been removed but the parallel wires, about 0.02m thick, by which the wagons were drawn up and down the incline, are visible for the whole length from the lower winding house (YEW23) up to the shreave wheel (YEW22). Above the consolidation at adit (YEW12) the remains of the stone foundations of the incline and the sleepers are more intermittent; as the incline ascends the hill it becomes increasingly engulfed by waste slate from the workings above. Large sections have collapsed over the edge of the steep natural slope notably between adits YEW13 and YEW15, as yet untouched by the renovators, which is very vulnerable and in some places dangerous. This is particularly true of the platform at the entrance to mine no 5 (YEW15); part of the wall retaining the platform has broken away *en masse* and skewed across the path of the incline. This will certainly collapse very soon and there appears to be little that can be done to prevent this. Above adit YEW16, the remains of the incline are greatly affected by the volume of waste slate from the workings above, which have either destroyed or buried it. Only the 1880 drum house (YEW20) and part of the brakeman's hut just below it survive reasonably well. Adjoining the latter, the rails of a three-rail system survive *in situ*, protruding through the turf for a short distance.

Road from the base of the Yewcrag Incline to The Hause (YEW10)

NY2233 1406-NY2251 1357. This trackway, constructed in 1880, leads from the original base of the Yew Crags incline on a gentle well-engineered gradient down to The Hause. It remains as a disused green way cut into quite a steep hillslope, so that on its upper side it is defined by a combination of rock outcrop, which has been blasted away, and short stretches of dry-stone walling to retain the scree above, where this is needed. Nevertheless, some

material has spread onto the track. On the lower side where the natural slope is steep, it is retained for much of its length by a dry-stone wall, largely intact, which is very well built of heavy stones. The track is generally about 4.5m wide, but achieves a maximum width of 5.5m at a passing place. At the north-west end where it meets the base of the original 1880 incline, it broadens to form a platform which has been blasted out of solid rock to an average width of about 8.0m. This platform is defined on the upper side by the sheer rock, and on the other side by a retaining wall up to 4.0m high. Situated on the platform is a stone-built and mortared weigh-house measuring, externally, 3.1m by 2.2m, and surviving to a height of 1.25m. The interior is filled with debris. There has been a doorway, 0.9m wide, on the south-east side, and in the south-west are the remains of a splayed window aperture, 0.55m wide, which faces onto the metal weigh bridge. This is partially buried under turf, and all that can be seen are 2½ sides of a metal frame, indicating a width of 1.5m. Adjoining the weigh-house to the south-east is a low wall, partially buried under the turf, about 0.15m high, which extends for a further 5.4m to the south-east. Along the length of the track, part buried in the turf, are the remains of an iron pipe, about 8cm gauge, which appears to be for water.

About 150m to the south of the weigh-house, on a rocky boss beside the trackway are the remains of a building annotated 'Magazine' on the OS 2nd edition map of 1900. It measures 2.6m by 2.0m within a dry-stone wall some 0.6m thick which survives at best to a height of 0.3m though in general it is reduced to ground level. The interior and much of the area around the magazine is covered in building debris. The east side of it is about 1.0m lower than the track and is incorporated in its retaining wall; this effectively creates a blast shield.

The Adits (YEW11-19)

The upper adits are masked by stone debris, but the remainder can be seen to be similar, and form, with the incline, a cohesive unit. They are rock-cut, and each of them opens out onto a level platform adjoining the incline, so that the tubs coming out of the mine can be transferred directly to the incline. Provision was also made for tubs to pass beneath the incline to tipping points

above the steep natural slope to the west. Thus this slope is completely covered by waste slate as far down as the valley floor. There is little evidence of the rails on the surface; it is clear that they have been systematically removed.

Adit no 1 (YEW11)

NY2233 1407. This adit at 414m OD is at the same level as the weigh-house at the end of the road to The Hause (YEW10). It is rock-cut, and the roof slopes upwards to a maximum height of about 2.7m. The entrance to the tunnel is partly blocked by a dry-stone wall 1.5m high, and the floor was under about 0.3m of water at the time of survey. The rails within the mine are *in situ* as far as they can be seen. The platform outside the adit extends beneath the track of the incline to a tipping point above the natural slope, which is retained by a wall about 2.4m high. The incline must have been carried over the platform by some form of bridge but this is now collapsed; the bridge abutment on the upper side is now 2.6m high, and 0.4m high on the other side.

Adit no 2 (YEW12)

NY2233 1409. The entrance to the mine at 425m OD is rock-cut and roughly triangular, 2.0m high and 2.5m wide; it is partly blocked by a dry-stone wall, about 1.4m high. The adit opens to a level platform which is retained on its lower side by a dry-stone wall, 5.5m maximum height. In 1997 the platform was cleared of debris and partly consolidated; part of the rail system has been exposed, extending beneath the incline by a passage, approximately 1.5m wide, to a tipping point. The bridge which formerly carried the rails of the incline has collapsed.

Adit no 3 (YEW13)

NY2234 1412. Like YEW 11 and 12, this mine entrance (at 442m OD) is blasted through solid rock; it is 1.9m wide and 2.1m high, with a wall in front

of it, 1.2m high, which partly blocks access. The platform at the entrance is retained on the lower side by a wall, 5.5m high; a passage had led from the platform beneath the incline to a tipping point, where there are two rails *in situ* at 0.65m gauge with a wooden stop on the end. The incline is very badly eroded in this area, and a large part of it has fallen down the hill. Debris from it has filled the passage to the tipping point. There appears to have been another tramway leading out of the adit leading towards the incline, but all that remains of it are two wooden sleepers, about 0.6m long. On this particular platform is a concrete pad with four bolts protruding from it. It measures 2.1m by 1.6m and is only about 0.1m above surrounding ground level. This was to be the foundation of a gantry for an aerial ropeway, which was to remain uncompleted. It was proposed that the ropeway erected on the Honister side of the valley was to be dismantled (which happened) and re-erected alongside the Yewcrag Incline (which did not). Alongside the pad is another smaller example with a metal U-shape on it, 0.5m high; this is almost certainly associated. On the platform to the north of the mine entrance are considerable amounts of tumble amongst which are some parallel rails which appear at one time to have supported a roofed structure. This is now collapsed under the weight of rock from the cliff above. This was probably a bait cabin or a dressing shed.

Between the platforms of adits YEW13 and 14 a series of stone steps is exposed ascending the hill alongside the incline. Elsewhere there are slight traces of further steps, largely buried among slate waste, and it is possible that at one time there was a means of access by foot from the bottom to the top of the incline.

Adit no 4 (YEW14)

NY2233 1414. Like the rest, it is rock-cut, measuring 1.7m wide by about 1.7m high, with a dry-stone wall, 1.1m high, partly blocking the entrance. The adit, at 451m OD, opens out on to a platform containing the ruins of a dry-stone building measuring 3.8m by 2.6m with a maximum height of 1.3m. There has been a recent wooden-framed structure built within it supporting a roof of corrugated iron. There is quite a lot of cinder about this building. From the platform, retained by a wall 3.3m high, a passage, 1.8m wide, leads

beneath the incline, here defined by parallel timbers, 1.4m between centres.

Adit no 5 (YEW15)

NY2234 1416. The tunnel entrance at 464m OD measures 1.9m high and 1.8m wide, and is again blocked by a dry-stone wall. Immediately inside the tunnel there has been a massive collapse preventing access. The mine opens onto a seriously eroded platform; its retaining wall on the lower side is partly *in situ* but the south-west corner has become detached, and has slewed down the hillside onto the line of the incline, largely destroyed in this area. On the south side of the platform, by the tunnel entrance, is a concrete pad, measuring 3.4m by 1.2m, similar to that at YEW14, and doubtless for the same purpose. On the north side of the platform there is some dry-stone walling protruding out of massive amounts of tumble from above; it appears that there has probably been a building or, possibly, two buildings here but the size can no longer be ascertained. It is possible that part of the roof of slates still survives beneath the tumble, but it is not accessible.

Adit no 6 (YEW16)

NY2234 1418. Massive amounts of slate spoil and some rock from the outcrop, has tumbled down from above on to the platform of this adit and the tunnel mouth itself, though discernible, is obscured and inaccessible. The associated platform contains the only gantry of the proposed aerial ropeway to be erected. It was started *c* 1962 and never finished; this was the last work ever done on the Yewcrag side. Adjoining the concrete base is a dry-stone structure, which may have been a bait shack or a dressing shed, but it cannot be determined now. Though it achieves a maximum height of 2.4m, it is so full of rocks which have sheered off the cliff above, that it is impossible to say what size it is.

Adit no 7 (YEW17)

NY2235 1420. Huge quantities of slate waste have tumbled down on to the platform in front of this adit at 490m OD, obscuring most of whatever may have remained. All that can be seen of the mine entrance is a hole amidst the tumble leading away into the depths. The platform is fronted by a dry-stone retaining wall, 1.5m on the downhill side, and 0.8m maximum on the upside. On this same level, about 18.0m to the west, there is a second adit; this too has been overwhelmed by slate waste from above but its position is marked by some half-buried rails disappearing under the tumble at an angle. The incline at this level is within a cutting, 2.6m wide, retained on either side by dry-stone walling, up to 1.9m high.

Adit no 8 (YEW 18)

NY2237 1423. Like YEW17, this adit and its platform have been overwhelmed by masses of spoil from the slate workings above. All that can be seen of the mine entrance now is a depression at 509m OD filled with debris, driving into the hillside in a north-easterly direction towards a semi-circle of bare rock, surely the position of the buried adit. At the other extremity of the depression, a pair of rails protrude out of the tumble and head for a tipping point; the position of the rails suggest that there is at least a 2.0m depth of tumble in the adit entrance. The platform associated with this adit is almost completely overwhelmed by tumble; it appears to continue further to the west at least as far as the course of incline, and is retained by a wall, 3.3m high. The line of the incline comes up through a cut in this retaining wall. At the back of the platform is another retaining wall, now 1.9m high; as this continues to the east, it is overwhelmed by tumble, but there is a hole in this tumble reminiscent of an adit.

Adit no 9 (YEW19)

NY2233 1426. There is no trace of this adit as a tunnel amidst quantities of slate waste. Its existence is sustained primarily by a platform at about 516m OD, retained by a wall, at best 4.3m high, which extends from a tipping point

above the natural slope to the west about as far as a point some 8.0m to the north-east of a brakeman's hut (see below), where there is a depression in the spoil. This may represent the position of an adit.

The 1880 Upper Drum-house (YEW20)

NY2232 1426. This structure at 523m OD is stone-built and mortared, surviving to a height of 4.2m. The drum itself is 3.1m long and 1.3m in diameter; it is made of wooden slats, the ends being cast metal. One of the metal gantries for the proposed aerial ropeway lies close by the drum house.

Immediately below it, on the same platform as the supposed site of YEW19, is the brakeman's hut for the incline. It is built of dry-stone, with a wall, 1.7m high, and is still roofed, though this may not be original as the building seems to have served as a crude shelter more recently. Part of the braking mechanism has survived in situ, as have three rails being the start of the incline.

Ruinous Bothy, 1880 (YEW21)

NY2236 1431. This building, built *c* 1880 as sleeping accommodation for the slate workers high on the hill at 543m OD, is in fair condition though now unroofed. It is a two-roomed structure, measuring 10.3m north-south by 4.3m transversely within a wall, 0.8m thick and surviving to a height of 3.5m in the south gable. There is an annexe, 1.9m by 1.3m, attached on the north side, which contains an old bedstead, and another extension to the west. The two rooms and the north annexe have been connected by doorways, now blocked, and there has been a fireplace in the larger, south room. There are entrances into the building from the east and west and one from the north into the north annexe, and at least two windows.

From the flat summit of the spoil heap upon which the bothy stands, there is a depression leading down towards the contemporary winding house (YEW20), which becomes a cutting, 1.8m wide betweem dry-stone walls up to 2.3m high. The bottom of it is covered in slate waste. This cut was

probably a means by which slate from the upper workings, known to have been in use into the 20th century, was transported to the top of the incline. What form this transport took is unclear; this area is buried beneath huge amounts of spoil.

The 1932 Shreave Wheel (YEW22)

NY2233 1418. The shreave wheel, 1.4m in diameter, is situated at 474m OD beneath a roofed structure supported by tramway rails; it is 2.2m high and of dry-stone construction. The wheel, on the same plane as the incline, bears upon two girders affixed to the sides of the roofed shelter.

The 1932 Electric Winding House (YEW23)

NY2231 1395. This dry-stone building, with a single-pitch roof, is at the foot of the extended incline at 356m OD, and measures 6.8m by 3.4m, with an annexe to the west, 3.3m by 1.7m. The walls achieve a height of 1.5m on the west side and 2.5m at the higher east side. Until recently the roof had been in fair condition, but it has been hit by an avalanche, and much of the roof has caved in and is in a dangerous state. Before this the roof had comprised heavy timbers, with old tram rails crossing them which supported slates. Inside is a tangled mass of electrical wiring, insulators, etc.

The incline terminates at a point immediately to the east of the winding shed, where there is a gap of 2.2m to a retaining wall. The gap is largely filled with scree and rock debris, but two parallel rails of 0.65m gauge can be seen *in situ*. Extending over the gap between the building and the retaining wall is a power cable; this is visible intermittently along the trackway heading to The Hause. Immediately to the west of the building is a tipping point with a retaining wall, 0.5m high; between this point and the incline is a short length of rail, 1.2m long, which disappears beneath tumble. There is no evidence of there having been an adit associated with this tip, and it is probable that waste was brought down the incline from higher levels and dumped here.

The Tramway to The Hause dated 1932 (YEW24)

NY2231 1395-NY2242 1356. The tramway at 356m OD survives as a level terrace cut into the hill-slope, in general 3.0m to 3.5m wide, but nearer 10.0m across at its terminus by the winding shed (YEW23). Here and there the upper side is retained by a dry-stone wall. The rails have been entirely removed, and all that remains is the track bed, made up of small pieces of slate, upon which a few surviving wooden sleepers rest. Midway along it, the trackway enters a cutting into some living rock to a depth of about 1.8m; at this point it is 1.5m wide. The tramway continues southwards from the cutting as far as the public road. The tramway formerly crossed the road by a bridge, which has been removed, but the abutments survive on both sides to a maximum height of about 7.2m. Apart from its main function as transport of 'clogs' to The Hause, the tramway also served as a linear tipping zone of waste from the factory.

Post-1932 Trial adits (3) (YEW25-27)

NY2232 1400. The lowest trial at 371m OD (YEW25) is blocked. The wall is continuous alongside the track bed but this is almost certainly a result of recent consolidation work.

NY2232 1402. The next trial at 379m OD (YEW26) comprises a tunnel about 4.5m deep terminating at a rock wall. The tunnel itself is made up of dry-stone walling, 1.6m high, and the roof is supported by parallel timbers which measure 0.35m in diameter. In front of the entrance is a level platform.

NY2233 1404. The highest trial at 391m OD (YEW27) survives as a tunnel of dry-stone construction cutting into the hillside from the east side of the incline. At the entrance it is 2.0m wide and about 1.7m high to the roof supported by timbers, and appears to have been at least 5.0m in length, though the rear part is choked with scree, etc.

The Workings on the Quey Foot Vein (YEW28-30)

The only evidence for slate extraction on the Quey Foot vein in the Honister area is on the Yewcrag side, and here three distinct workings have been identified. These are, in descending order, the Quey Foot open top quarry at NY2229 1451 (YEW28), two adjoining adits at NY2228 1440 (YEW29), and an un-named adit at NY2227 1435 (YEW30).

According to Tyler (1994, 58) Quey Foot Quarry (YEW28) was opened in 1898, but apparently the slate was of poor quality only fit for building stone. A road had been built to it and a substantial bridge had to be constructed over a gully before extraction could start.

The impression is that the quarry at about 575m OD is a small-scale affair which was probably exploited for a relatively short space of time. The rock-cut back wall is 16.0m high above a single level base. There is no evidence at the quarry of dressing fragments from the manufacture of roofing slates which are so much a feature of the Honister workings, and this reinforces Tyler's statement that only building stone was produced here.

A well-engineered track leads away from this level in a south-south-easterly direction to the vicinity of the drum house at the top of the 1880 incline. Just outside the quarry the track is retained by a wall, 4.8m high, which bridges a gully; this latter has been used as a tipping point, as quantities of slate waste can be seen from the opposite side of the valley to have cascaded down the natural cleft. At the edge of the quarry, on the north-east side of the track is a small open-fronted building, probably a shelter, measuring 1.5m by 1.1m internally. It is of dry-stone construction surviving to a height of 1.2m with walls 0.5m thick. It remains partially roofed with slate.

At about 550m OD, some 180m to the south on a natural shelf beneath a low cliff to the east and the high steep crag to the west, are the remains of two adjoining drift mines (YEW29). These may be Blockley's Level depicted on a diagram by Tyler (1994, 155), and dated to 1900 (*ibid*, 159), but the position surveyed by the RCHME does not match Tyler's diagram. Both levels are heavily obscured by rock debris which has peeled off the cliff to the east, and damaged some of the structures. All that can be seen of the upper

adit is a short length of dry-stone walling, 0.9m maximum height, which disappears under tumble from the cliff. It opens out onto an eroded platform, which has been retained on the lower side by a wall, but this is mostly collapsed, and all that remains is a pillar of dry-stone walling, 4.0m high. There was a building on the platform, probably a bait cabin or dressing shed, but only the west wall, up to 1.4m high externally, and part of the north wall survives.

The other adit, some 2.0m to 2.5m lower, survives as a hole, 1.5m deep, in the considerable amounts of rock debris. About 4.0m to the south-west is a stretch of walling, possibly one side of an entrance passage, which leads in the direction of the hole. This lower working area is also deeply eroded.

The waste material from these workings has spread down a gully which runs diagonally down the steep crag. It is not easily accessible, and therefore it is difficult to assess the scale and duration of these workings. On balance, they were almost certainly in production rather than just trials as there is some minor evidence of dressed slate, but most of the tumble below the mine seems to consist mainly of displaced dry-stone walling and rock fall.

The final working on the Quey Foot vein, a drift mine (YEW30), is situated at about 525m OD on the sill at the base of a cliff, and is very difficult of access. It is rock-cut, 1.4m wide and 2.1m high at the entrance. The tunnel, with numerous shot holes visible, is driven in a north-easterly direction for about 10.0m; it then curves slightly for 2.0m before turning eastward at about 90 degrees. The adit opens out onto a flat-topped platform of spoil, 8.3m by 3.8m, where several large 'clogs' are scattered, but no shelters or buildings can be seen. Midway between this adit and the examples above (YEW29), a rough wall, 2.2m high, spans the gully. It seems to have been built to divert spoil from YEW29 away from the platform of YEW30. There is another wall, 1.0m high, below YEW30. A puzzling aspect of this mine, due to its inaccessibility, is how slates were transported from it.

Tracks from the Upper Workings (YEW31)

Centred at NY223 143. There are a number of tracks which funnel down by various routes from the upper workings to the top of the 1879 incline (YEW9) at 523m OD. These are not depicted on the OS map of *c* 1860 but appear on the 1900 edition terminating on the top of the incline, with which they are almost certainly contemporary. In general, they are poorly engineered, on average 1.5m wide, and give the impression of having been horse sledways. The exception is the track from Quey Foot Quarry (YEW28), dated to 1898, which is wider and gives the appearance more of a cart track; this may reflect the fact that building stone, not roofing slates, was being transported from Quey Foot.

5. HONISTER COMPLEX

This chapter is concerned solely with those workings and transport systems pertaining to the Honister vein on the south side of the glaciated valley, and are suffixed by **HON**. The mines and quarries exploiting the Kimberley vein above the Honister on this side of the valley have been dealt with separately in Chapter 6 suffixed **KIM**. Therefore Ash Gill Quarry, situated where the Honister vein outcrops, is described in this chapter, and Bull Gill Quarry, on the outcropping Kimberley vein is in Chapter 6. The Link Level, the only element connecting the two veins inside the mountain, will be described in this chapter. As with Yewcrag the remains will be described in chronological order as far as this is possible, for many of the features are undated; this means in practice that the higher workings exploiting the slate outcrops are described first.

Early Surface Workings (HON1 on 1:2500 overlay)

The area of surface picking of the Honister vein is marked on the overlay but not surveyed. It is by and large confined to a small area centred at NY213 140 immediately to the west of Ash Gill Quarry (HON2) at about 620m OD, where there are a series of sharp parallel ridges of outcropping slate separated by shallow gullies. There is some evidence to suggest that some slate has been prised off the outcrops, but, as with all of these early workings, there is little trace of waste material lying about. The scale of production by this method is tiny compared with what followed. The roofing slates produced in earlier times were larger, heavier and thicker than the later product, and it seems likely that the process of manufacture left a smaller percentage of waste. It should also be noted that the end product could be building stone as well as roofing slate whatever its shape or size; down in the valleys, the traditional building material for houses, barns and field walls is slate.

The outcrop adjoining the bothy in Ash Gill Quarry has been plundered recently to partly roof the bothy.

Ash Gill Quarry (HON2)

NY2133 1406. The quarry comprises several working floors (nos I to V). The top level (I) at about 610m OD is composed of dressing waste (mainly turf-covered), and is demarcated on its north-west side by an inclined worked face of slate, 6.1 maximum height. A ramp provides access to this level from the south. The dressing waste laps onto the rear of a well-built, dry-stone bothy at eaves level, which sits on its own platform (II), 1.7m below I. This is the building described by Tyler as having been built in 1818 or shortly after (1994, 29). About December 1995, it was partially re-roofed to provide a walkers' shelter. It measures 11.1m by 5.7m overall, within a wall 0.6m thick, and gives the definite impression of a dwelling, albeit temporary, with the remains of a fireplace and a small oven range incorporated. Attached to the south-east front of the building is an L-shaped porch, reduced to its footings 0.15m high. Inside the unroofed portion is a flat-topped, stone-built platform, 1.6m square, which is raised about 0.9m high above the floor. There is some plaster on and breaking from it, plus small amounts of cinder, pieces of tile and glazed pot. The purpose of this construction in what is essentially a dwelling is uncertain; it could be post-domestic, perhaps a blacksmith's hearth, although the presence of cinder is limited. In front of the building are two parallel slate slabs, 0.2m apart, measuring 0.4m high and 0.5m long. There is a half-round depression on both tops suggesting a bearing surface for a spindle. This is probably the chassis for a hand operated grinding wheel, very similar to that exposed at the Duddon Bridge blast furnace. Most of the wall retaining the platform in front of the building has collapsed over the precipice; all that remains is an L-shaped wall, about 2.3m high, with adjoining steps leading down to the next level. Here masses of dressing waste have come to rest on an eroding slope.

The next level down (III), floored with dressing waste, is some 8.4m below that just described, and runs the length of the quarry from north-east to south-west. It is about 12.5m below surrounding ground level. It contains a dressing shed, measuring internally 4.4m by 2.2m, within a dry-stone wall up

to 2.7m high. The shed has had a double entrance, typical of this form of structure, and incorporates a low stone seat on the north-west side, partly covered by slate debris from above. About 16.0m to the south-west are the remains of a further building of uncertain size, which has been mainly overwhelmed by tumble from the rock wall above. At best the dry-stone wall is 1.2m high. Dressing fragments from this level have lapped onto a level about 5.5m below (IV). Further to the south-west, this lower level is covered with tumble, perhaps partly dumped by man, but mainly natural eroded rock from the quarry wall. This has partly filled a vertical shaft, which, according to Tyler (1994, 161) was driven to Level no 10 for ventilation purposes in 1879. In the south-west corner of the quarry is a hole, 4.7m deep, which probably defines a collapsed underground chamber.

There are the remains of a dressing shed on level IV, measuring about 5.0 m by 2.5m within a dry-stone wall, up to 2.4m high and 0.8m wide. On the south-east side is a door, 1.5m wide and 1.3m high, with two small recesses inside and to the south-east of the door. The south-east wall is upstanding, but only half of the south-west can be seen and the north-east has gone completely. The building sits on a severely eroded platform, mainly of dressing waste, which is retained on its upper side, behind the shed, by a dry-stone wall, part of which is displaced down the hill. Leading from the platform, downwards towards the incline, is a flight of stone steps.

The 'bridge', noted by Tyler at the quarry, is better described as a causeway constructed of dry-stone; it is battered,1.5m wide across the top, and 3.3m wide at the bottom. It allows the transport of material directly from level III out of the quarry, and spans level IV some 4.5m below, and level V below that. There is a partly blocked arch at the base of the causeway at level IV, measuring 1.6m high and 1.8m wide, which permits access from the quarry to the south-west. It is self-evident that level IV was in existence before III (and the causeway); IV is shown on the OS 1:2500 map of *c* 1860, but the level III terrace and the causeway is not.

Stone steps, 1.2m wide maximum, lead down to level V, a platform, 2.4m below IV, and a short distance beyond. This level has been overwhelmed by rock fall, but there has been access through the base of the causeway by a partially collapsed arch, about 1.8m wide.

The OS 1:2500 1st edition map of *c* 1860 shows the workings at the upper end of the Honister vein prior to the building of the external incline. Ash Gill Quarry (HON2) is depicted (albeit slightly smaller than now and excluding level III), as is the pack-horse track (HON3) leading from it in an east-south-east direction. From examination of the map, it appears that there was probably some quarrying undertaken in the cliff face to the south of the track, but no adits or mines are marked. (The OS map is uncommonly inaccurate in this area, and it may be unwise to give it too much credence in this sector.)

Pack-horse Track from Ash Gill Quarry (HON3)

About NY2137 1403 by NY2108 1358 to NY2044 1339. This was the preferred route by which finished slates were transported from the upper workings on the Honister vein until the completion of the external incline in 1894. Due to the configuration of the ground it was possible to exit the lowest level of Ash Gill Quarry (level V) on a slightly descending line by a narrow terrace cut into the steep, descending cliff face. The part nearest the quarry is obscured by rock fall and later works associated with the incline, but where the track breaks away from the course of the incline, it can be seen at best as a well-built terrace, on average 1.6m wide, which in places is retained by dry-stone walling. There has been erosion which has narrowed the route appreciably. At the top of the cliff, on and just below the track, are two platforms, each about 6.0m wide, the one being 2.5m below the other, which are carved out of the cliff-top and retained by stone walls. Tyler (1994, 29) suggests these may have been where the dressed slates were stockpiled. From the cliff-top, the track swings sharply to the south-west, and descends gently as a well-engineered terrace or slight hollow-way, up to 2.5m wide, for about 560m, to a point where it meets a similar track (KIM3) from Bull Gill Quarry (KIM2). En route it passes by a minor propecting quarry and spoil heap (LSW5), and is crossed by a walkers' path up to Fleetwith Pike from the region of Hopper East. To the west of the crossing of the walkers' path much of the original track is overlaid with bulldozer tracks, and a large section has been destroyed when Hopper West Quarry was opened up after the Second World War. It re-emerges at the south end of the later quarry to join the track from Bull Gill 180m to the south.

From this junction the track extends westward on a gentle decline towards Warnscale Bottom. It skirts the north end of Dubs Quarry where it has been worn, here and there, to a V-shaped hollow up to 1.8m deep; it is possible that this section was deepened and converted to a drainage channel to take water away from the Dubs workings. A stream still runs along it. The track runs between the quarry and spoil heap of a minor working (LSW2) to the north-north-west of Dubs Quarry; a subsidiary track connects the main track at LSW2 to Dubs, though it is partly buried beneath a large waste heap. A further track runs from Dubs westwards to join the main route on the north side of Warnscale Beck.

As the track continues westwards a little to the east of Low Fleetwith Quarry (LFL1) it marches over some living rock. Incised into the rock are a series of three parallel grooves respectively 0.65m and 1.3m apart. The southern example is 10.2m long and fairly continuous, the medial one is poorly preserved and the northern groove is not more than about 6.0m long. These grooves were probably formed by the runners of sleds bringing slate out of the quarries. This is the only place that we have seen where these grooves do occur. This track, as it descends into Warnscale Bottom appears to have been modified in fairly recent years by the National Park to make the walking upon it easier. It continues beyond the area of survey and has not been examined.

The Honister External Incline and the Monkey Shelf

The incline is in three sections, which are, in descending order, the Ash Gill, the Nag Back and the Bull Gill; from the base of the latter the Monkey Shelf extends as a fairly level terrace to The Hause. These four elements will be described in this order, together with their associated mines, quarries, bridges etc.

The Ash Gill Incline (HON4)

NY2135 1404-NY2149 1402. This uppermost incline was the last to be

completed in 1894. It is about 146m long, and descends from the winding house (HON5) at 592m OD in a straight line, initially on an existing sill blasted out to accommodate the rails, and then through a tunnel, 69.0m long, at the lower end of which it turns to connect with the upper end of the Nag Back Incline at 532m OD. It has been engineered with great skill, and maintains a consistent gradient throughout its length, either as a cutting or as a raised platform edged with dry-stone walling, from 2.1m to 2.8m wide. Much of the track bed has collapsed over the edge of the precipice, but sufficient remains to indicate that it comprises slate slabs packed together on edge. The sleepers have not survived, and the rails have been systematically removed.

The tunnel, about 3.4m wide on average and some 3.3m in height at either end, is rock-cut, but it incorporates earlier galleries of the slate mines. Within the tunnel some 12.0m from the lower entrance is an adit (HON17). There has been some rock fall from the tunnel roof at the upper and lower entrances, and also half-way down, but generally it is quite clear of stone debris, so that the track bed of slate slabs on edge is well-preserved, as is a long series of stone steps alongside the track. The lower entrance is broad but constricted by a pack wall on the north side, up to 1.5m high. At the tunnel entrance are three sides of a dry-stone building, with an aumbry in the wall nearest the tunnel entrance, 0.35m wide by 0.3m high. The line of the inclined tramway, emerging from the lower entrance of the tunnel on a curve, extends as far as the Nag Back Incline just below the winding house as a deepening groove up to 1.1m high.

The Ash Gill Winding House (HON5)

NY2135 1404. The winding house measures 3.3m by 1.6m within a dry-stone wall, 0.9m thick. It achieves a maximum height of 3.0m on the south side and 4.0m on the north to a gabled top; the gable runs at right angles to the incline and has been roofed with slates capped with tile some of which are scattered around the winding house. Around the inside at a height of 1.4m is a scarcement capped by wooden sleeper beams to carry the bearings for the winding drum. On the north side of the winding house is a retaining wall 2.5m high.

Adit (HON6)

NY2135 1405. This drift mine is entered by an arch in the dry-stone facade, 1.4m wide and 1.7m high; the dry-stone construction continues into the mine for only 3.0m before it becomes rock-cut, and at about 5.3m it is blocked by fallen rock. The entrance leads out directly on to the gully named Ash Gill; presumably there was once a platform here but it is destroyed by erosion. (The gully Ash Gill contains much waste slate from the upper workings on the Honister vein, but, unlike Bull Gill, there are numerous outcrops along its course, and, as it survives today, it is impossible to imagine it was ever a sledway.)

Adit (HON7)

NY2125 1403. The entrance to the mine is rock-cut, 2.0m wide and 2.4m high, with a peaked roof. There are pack walls along the north and south sides of the adit, which continue into the mine. Inside is a cavern inclining upwards towards the west. This adit opens out on to a platform adjacent to the Ash Gill winder (HON5).

Adit (HON8)

NY2135 1403. The present entrance to this adit is at the base of the retaining wall by adit (HON7), and 2.8m below it. It is rock-cut, but recently it has become partially blocked by rock fall, and is particularly dangerous. Formerly the entrance to the mine had been some 13.0m to the north-east; here it is of dry-stone construction, 1.7m wide and 1.6m high. The first part of the tunnel is supported by six iron girders and thereafter by timbers, but the roof has collapsed about 7.5m from the entrance. The tunnel between the present and previous entrances had continued beneath the winding house platform, but a huge boulder has sheered off the rock face, and smashed into the tunnel; the rock fall has also displaced the west wall of a dressing shed, and this too has collapsed into the tunnel. This building is 2.0m maximum height with a wall 0.6m thick.

Probable Adit (HON9)

NY2137 1403. All that remains of the site of this adit is a slight depression in an area where a huge amount of rock has sheered off the cliff, in some cases very recently. There is no trace of a tunnel, no walling, and no platform; whatever may have been here is obscured by rock fall.

Adit (HON10)

NY2138 1404. The entrance to this mine is arched of dry-stone construction, 2.3m high and 1.7m wide. It opens out on to a severely eroded platform.

Adit (HON11)

NY2139 1403. The mine entrance of dry-stone construction measures 2.0m wide and 1.6m high; the tunnel is roofed with timbers and rapidly becomes rock-cut with dry-stone pack walls on either side. It leads out by a walled passage under the incline on to an eroded platform, retained by a wall 3.1m high. The incline was formerly bridged over the passage, but the bridge has gone leaving the abutments, 2.7m high on the west side and 1.7m to the east. On the west side of the platform is a dressing shed about 3.0m by 2.8m which has been overwhelmed by tumble. There is much dressing waste on the platform and beneath it.

Adit (HON12)

NY2141 1403. The entrance to this adit, 3.2m wide and 2.5m high, is situated at the base of a rock wall, about 8.4m high. Immediately inside the entrance the interior is cavernous with much evidence of pack walling. The workings can be seen to descend to a lower level to the east and ascend to the west. The adit leads out to a platform, composed primarily of dressing waste, which contains the reduced remains of a dry-stone dressing shed which had a single pitched roof now collapsed. The maximum wall height is 2.1m;

inside the building is a wall niche. Between this mine platform and the one above (HON11) is a flight of stone stairs sandwiched between the rock face and the retaining wall of the incline.

Adit (HON13)

NY2141 1403. The mine is entered by an arched tunnel in a dry-stone facade, measuring 1.8m wide and 1.6m high. It opens out on to the remains of a platform which is greatly eroded. Some rails protrude out of the dressing waste on the platform heading in the direction of Nag Back (HON14). There is no means of access from this adit onto the incline, and it seems clear that it is contemporary with the Nag Back Sill (HON 14) (see next para).

Nag Back Sill (HON14)

NY2142 1404-NY2150 1404. The Nag Back Sill is a natural terrace formed along the ascending line of the outcropping Honister slate vein as it curves around a protuberence in the steep valley slope. The terrace has been enhanced and widened; in parts it is retained by a dry-stone wall, much of which has disappeared over the edge. It accommodates the remains of two buildings, at least one of which is a dressing shed, and at a lower level an adit. Subsequent collapse of the retaining walls has made access very difficult; this is an extremely exposed position. The sill extends roughly from the upper west to the lower east entrances of the tunnel on the Ash Gill Incline; whereas the tunnel assumes a straight course, the sill describes an arc. As such it would have provided access from the upper workings (the Ash Gill area) to the lower slate works (later occupied by the Nag Back Incline). However when the Ash Gill Incline was built, a wall was built alongside it on its north side at the upper entrance, which effectively prevented access to the sill from this direction. Similarly, the way off the sill at its lower east end is blocked by the construction of the Nag Back Winding House (HON16). The OS 1:2500 1st edition map of *c* 1860 shows no workings on Nag Back Sill (in fact OS do not even depict the sill). If the map is accepted, it follows that slate extraction took place here after 1860, and before 1896, the date of the incline.

The single adit on Nag Back lies below the sill itself. It is stone arched, 1.7m high, and can be entered for a distance of 5.5m before a cave-in. There has been a platform at the entrance, but this is largely destroyed by severe erosion, and only slight traces of a retaining wall survive. This platform appears to lead eastwards towards the lower of two terraces, but all of this is highly speculative due to the poor quality of the remains.

Above the adit on the actual sill are the ruins of two dry-stone buildings. All that remains of the west structure is the south wall hard against the base of the cliff, 0.9m high. The east building is undoubtedly a dressing shed, surviving to about 1.9m maximum height. Three sides survive; the fourth facing north-west on to the sill has collapsed *en masse*, and the double entrance can still be seen, albeit lying flat.

The Nag Back Incline (HON15)

NY2150 1403-NY2163 1396. This is the central section in the three-part Honister External Incline, and descends from the winding house (HON16) by the lower entrance to the Ash Gill Tunnel at 532m OD down the widened and enhanced sill in a gentle curve to cross Bull Gill and connect with the lower Bull Gill Incline at the edge of the gill at 452m OD. The OS 1:2500 1st edition map of *c* 1860 shows workings here, annotated Honister Quarries, extending from the position of the winding house (HON16) to Bull Gill; a track is also depicted connecting the workings with the sledway down Bull Gill (see HON24). OS show no underground workings (but as mentioned above the OS map is plannimetrically inaccurate in this area and for this reason the depiction cannot be treated implicitly as correct).

The incline is in poor and in places dangerous condition. Many of the dry-stone walls retaining the incline on the north-east side have tumbled down the cliff taking much of the track bed with them. The problem is compounded by material lying on the incline which has eroded off the cliff and quarry face above. The damage is very pronounced in the vicinity of Bull Gill where most of the parapet which crossed the gill has disappeared due to a combination of erosion and later tipping; all that remains of the stonework is a short section of retaining wall, about 5.5m high. Nothing remains of the

bridge which replaced the parapet on a more direct line save for part of the east abutment comprising three large stones. Crossing the gill on about the same line as the bridge but at a lower level is a retaining wall (not accessible). There is now no easy access across Bull Gill from the lower to the upper incline. Here and there sections of the track bed of slate slabs on edge have survived as have lengths of tramway rail, but most of this is not *in situ*. However a short length which remains in position near the top winding house demonstrates a three-rail system.

The Nag Back Winding House (HON16)

NY2150 1403. A great deal of the top winding house by the Nag Back Tunnel has collapsed over the cliff edge; all that survives is the south wall, up to 2.8m high, part of the west back wall, and a small section of the north. Of the winding mechanism, two metal hoops of the drum, and some wire hawser remain. Some graffiti can be deciphered on the south-east corner of the winding house dated 99 (presumably 1899) and 1922. The platform upon which the drum-house stands is retained by a wall up 4.2m high. The tramway from the winding house has been destroyed by erosion for a distance of about 4m to 5m. Further down three parallel tram rails are *in situ*.

Adit (HON17)

NY2149 1402. This adit is situated within the tunnel about 11.0m from its south entrance, and on the same level as the winding house (HON16). It is square-headed, 1.6m wide by 1.5m high at the dry-stone facade, and is roofed by a combination of stone slabs and timbers. A short distance inside the mine it is blocked by a rock fall. Probably there was an adit here in some form before the tunnel which was in part incorporated in its construction entailing the re-location of its entrance; the ascending tunnel runs up alongside the adit.

Adit (HON18)

NY2142 1402. This drift mine is situated at the base of a retaining wall,

7.6m high. At the entrance it is built of dry-stone walling, 1.4m high by 1.8m wide, but it has been partially blocked by a dry-stone wall. The adit opens out on to a platform which is covered with large slabs of rock which have sheered off the face immediately to the east of the adit. On the platform there has been a cabin, possibly a dressing shed, but it has been wrecked by rock fall, and survives in a very fragile state up to 2.2m high. Some heavy baulks of timber have been wedged across the mine entrance to prevent further collapse of the cliff.

Adit (HON19)

NY2144 1401. Access to the mine is by a very wide rock-cut tunnel, up to 4.0m high. Some 16.0m into the tunnel, built against the east wall, is a dressing shed containing a stone-built seat; a pile of dressing fragments exists just to the north of it. Further into the tunnel are two pack walls, 1.7m high and 1.6m apart. Beyond this the roof has collapsed and further entry into this passage is impossible. Some graffiti dated 1899 is incised into the rock wall at the entrance. The mine opens out on to an eroded platform covered with loose boulders.

Adit (HON20)

NY2145 1400. This adit is rock-cut with a peaked roof; it measures about 1.5m high and about 2.2m wide. Some 8.0m inside the tunnel is a dry-stone blocking wall. At the entrance is a platform, which has been severely eroded and barely survives.

Adit (HON21)

NY2146 1399. The entrance to this mine is blasted out of the solid rock; it is peaked, about 2.2m high, and is fringed on the west side by a retaining dry-stone wall, 3.2m high. Immediately inside the tunnel, the mine is cavernous

with pack walling visible, primarily on the west side. Here is a dry-stone recess, probably a dressing shed. In the usual manner there is a level area at the entrance, here retained by a wall, up to 3.3m high. The platform is quite severely eroded, and appears to have consisted of slate waste.

Adit (HON22)

NY2147 1398. The mine is about 1.4m high and 2.3m wide at the rock-cut entrance. Rails of gauge 0.65m exit the mine on to a platform partially obscured by slate waste from above, which is retained by a dry-stone wall, 6.4m high. On the platform is an open-fronted rectangular building, up to 2.0m high, with its open side facing on to the platform. On the north wall there is a butt joint, 2.1m from the end, suggesting that the building has at some time been extended. Around the mine entrance there is much graffiti, the main date appearing to be 1880.

Adit (HON23)

NY2160 1397. This mine, situated alongside the incline to the south-west, is entered through a facade of dry-stone construction measuring 1.6m wide and 1.2m high. There is a relieving arch 1.4m above the entrance. As far as can be seen, the roof of the tunnel is flat, and is supported by a combination of timbers and old rails.

Most of the platform outside the mine entrance, which seemed to consist primarily of slate waste, has collapsed into Bull Gill, and further erosion appears imminent. On the platform on the opposite side of the incline are the remains of a dressing shed, of which only three sides survive in a vulnerable state to a maximum height of 1.9m.

Bull Gill Sledway (HON24)

Bull Gill is a natural cleft, as little as 3m to 4m wide, which descends steeply from the top of the cliff in the vicinity of Bull Gill Quarry at about 540m OD. The gill was utilised as a sledway for hand-held sleds, one of two proven

examples, until 1888 at which time it became unusable when the Bull Gill external incline (HON15) was built crossing the gill on a parapet (see photos in Tyler 1994, 64-6). The OS 1:2500 1st edition map of *c* 1860 appears to show that there was direct access by sledway to the gill from Bull Gill Quarry at NY2161 1387 (KIM2) and also from the sill now occupied by the Nag Back Incline; the map indicates the sledway continuing down the slope to terminate on the valley floor at NY2182 1418 where, according to Tyler (1994, 161), there was a loading dock. A photograph in Tyler (1994, 20) purports to show the Bull Gill sledway in operation. However this photo (one of a group of four, the others dated 1910) may be a later reconstruction well after 1888 judging by the dress of the figure operating the sled.

Since the sledway was abandoned the gill has been used for tipping purposes over a period of years and is now filled with slate waste which is in a highly unstable state. The former bed of the sledway comprising small fragments of slate has been enveloped by the later waste and it is only observable at the extreme lower end for a distance of 50-60m, now partly turf-covered. At NY2182 1418 are the remains of the loading dock onto which some boulders and waste slate has tumbled; it survives as a square enclosure, 3.4m across, within a dry-stone wall now not more than 0.3m high but generally flush with the surrounding ground. This construction incorporates two large boulders on its south side; there is no trace of an entrance and no evidence for a roof. Adjoining this structure is an axle with wheels of 0.65m gauge; this is severely damaged and must have come from the slate workings above.

The loading dock is at about 230m OD; therefore from Bull Gill Quarry the sledway dropped a total of 310m over a horizontal distance of 360m. Of the road leading from the loading dock to the public road by a ford across Gategarthsdale Beck little remains save a stretch of retaining wall about 7.1m long and up to 0.4m high.

Bull Gill Incline (HON25)

NY2163 1396-NY2196 1391. From the winding house at the edge of Bull Gill (HON26), at 452m OD, down as far as the Link Level (HON31) at 403m OD, Bull Gill Incline is in fairly sound condition. It can be seen to have been

a two-track system, surviving as a sloping terrace with a minimum width of 3.8m. Though almost all of the rails have been removed, many of the wooden sleepers, on average 2.7m long, have survived *in situ* on a track bed of slates packed on edge. A segmented iron pipe and some stone steps run alongside the incline; the steps are particularly well preserved just above the Link Level. More recently, after the incline went out of use, a post-and-wire fence, about 70m long, has been erected along its length.

From the Link Level down to the terminus at the Stang (342m OD), a distance of 200m, there is little to be seen of the incline due to a combination of erosion, notably in the vicinity of the Link Level, and the deposition of vast amounts of tipped slate waste from the Kimberley workings above. (It was the incursion of this waste in the early part of this century that led to the closure of the lower part of the incline and the re-routing of slate through the Link Level.) The incline is visible intermittently protruding through the waste as a terrace, 2.6m wide and retained by a wall up to 1.4m high. Nothing can be seen of its lower terminus.

Bull Gill Winding House (HON26)

NY2163 1396. The winding house on the very edge of Bull Gill is situated on an extensive platform which opens out from the adit (HON27). It measures 4.2m by 2.6m within a wall, 0.9m thick and 1.2m average height. The east side facing down the incline is open. The wall is topped by a timber sleeper beam, 0.33m by 0.2m, which originally supported the bearings for the drum itself. Nothing remains of the drum, but there are traces of the braking mechanism at the north-west corner, and piles of wire rope inside the winding house.

Adit (HON27)

NY2162 1395. The adit is at the end of a rock cutting bounded on the east side by a dry-stone wall. The height at the peaked entrance is 1.5m, and the width is 1.8m; the first 5.0m or so into the mine is rock-cut and thereafter

pack walling on the east side and collapsed timber shoring is evident. Rails of 0.65m gauge exit the mine on to a platform on which is the winding house and an unroofed bothy now comprising three rooms. The first room is open towards the incline and measures 4.8m north-south by 3.3m transversely within a wall 0.8m thick. The roof has been single-pitched rising to the open front, where the maximum wall height is 2.2m. There is a niche in the interior in the west wall. The second room, enclosed on all sides by a dry-stone wall, 1.2m high, measures 4.3m by 3.3m at its widest. This chamber was formerly a broad L-shape but it has been sub-divided to form a third room, a small annexe containing a niche. The platform is retained by a wall, 4.3m high, which is bulging ominously.

Adit (HON28)

NY2167 1395. The adit is rock-cut, 2.6m high and 2.3m wide, with rails of 0.65m gauge coming out on to a platform as far as a point immediately adjacent to the incline. The rails formerly continued to a tipping point on a large rock built into the top of the retaining wall above the cliff where there is an indentation for the rail holding. There are the remains of a cabin, probably a dressing shed, on the north side of the approach to the mine measuring 2.5m by 1.9m with a maximum height of 1.6m; the roof, now collapsed, was supported by timbers and the entrance is to the south facing the approach to the adit.

Adit (HON29)

NY2170 1395. This is rock-cut, situated below the level of the incline to the north-east; it measures 1.5m high and 1.9m wide between a rock wall on the east side and a dry-stone wall to the west. There appears to be the fragmentary remains of a dry-stone building on the platform immediately to the west of the mine entrance, but all that remains is one corner and a short length of walling, not more than about 0.3m - 0.4m high. Rails exit the mine on to the platform and terminate on the edge of it at a tipping point formed by two sleepers bolted to each other above and below the rails at right angles to make a buffer stop. Some 2.5m from the tipping point is a metal eye with

a chain attached; presumably this was attached to the wagon as a means of preventing it going over the edge. The rail system is far from complete, but it appears that another set of rails forked and headed eastwards to run through a gap, 1.3m wide, between two open-fronted buildings facing each other in the direction of the incline. The south example measures 3.1m by 1.9m internally and 1.4m maximum height, and the north about 6.3m by 2.4m and 1.5m maximum height. Within the complex a building made out of breeze blocks has been inserted positioned across the suggested course of the railway. It measures 3.4m by 2.6m within a wall now 0.8m high, but which has been at least 2.0m high; it seems to have been roofed with corrugated iron. Fairly recently, a huge rock has broken off the cliff above the complex and smashed part of the incline retaining wall above the south dry-stone building, and come to rest in the building destroying its roof of timbers and slate slabs, and also much of the breeze block insertion.

The proposed sequence of events here is as follows. When the external incline functioned, slate metal was brought out of the mine by rail and finished in the sheds facing each other; the dressed slates were then railed to the inclined tramway and away. Later, when the internal incline was constructed, superceding the external, the mine was used only as an exit for the tipping of waste material, so the railed connection to the incline was rendered obsolete. At some time after this event, and probably after the Second World War, the breeze block building, perhaps a store or bait cabin, was erected.

Adit (HON30)

NY2174 1394. This adit assumed great importance after the 1930s for it connects with the base of the Honister Internal Incline built at that time. Slate won from the close heads on the Honister vein in the form of clogs was railed out to day by this tunnel and either transported by rail through the Link Level to Road End (KIM10), or loaded on to the aerial ropeway (HON34) which terminates here.

The rock-cut entrance to the mine is 1.9m high and 2.4m wide. It remains accessible, but there has been a roof collapse at the entry very recently. A set

of rails of 0.65m gauge exits the mine on to its platform. Originally one line carried straight on to an early tipping point, now marked by two bolts set in the rock at the edge of the platform, and presumably another set forked to the east to connect with the external incline, but all of these rails have been removed. Now the rails coming out of the mine turn sharply to the east to run alongside the ropeway terminus which occupies a large proportion of the mine platform. They then branch, one set going to a later tipping point, and the other goes down via a raised metal incline supported by stone pillars to the Link Level. Wagons on this incline were controlled by a winch attached to a staunchion of the aerial ropeway terminus.

The Link Level (HON31)

NY2177 1391-NY2189 1385. This level was driven in 1911 specifically to connect the external incline on the Honister vein with Road End adit (KIM10) on the Kimberley vein thereby bypassing the lowest section of the Honister External Incline then vulnerable to rock fall from the workings above. Mostly it is a tunnel in the solid rock, but part of the centre section where it crosses a declivity has been in the form of a cutting. This area is now covered in masses of slate waste, and the cutting is roofed over with corrugated iron supported on horizontal timbers. In the side of the roofed cutting about 50m from the entrance from the incline is a metal-framed window letting light in to the tunnel; this is known as the Hole-in-the-Wall. The frame looks to be fairly modern, perhaps post-war, and not original. Very recently there has been a rock fall in Link Level blocking the way between the Hole-in-th-Wall and Road End. The entrance to the level in the west is 1.7m high and 2.3m wide, and at Road End the passage is visible just within the mine itself. Some boulder debris lies at the west entrance and this has obscured the rails coming down from HON30, though they reappear inside the mine.

Adit (HON32)

NY2177 1392. Below the Link Level is an adit situated in a dry-stone facade, about 5.0m below the incline which here has been modified to form a platform associated with the Link Level. It measures 1.4m high and 1.7m

wide with a flat roof supported by metal rails and timber. The rails coming out of the tunnel on to a platform are obscured by masses of slate waste from the tipping point directly above the adit. The tipping point dates from the ropeway phase of the adit (HON30), and it would appear that HON32 was abandoned when the ropeway started operating. The platform to HON32 contains the remains of two buildings amidst the tumble. The west building is 4.9m long (from the adit facade to the platform edge) and it survives to a maximum height of 2.0m; the east building is 3.1m by 2.9m and 2.0m high.

According to Tyler (1994, 75), with the construction of the works associated with the Link Level (HON31), the adit (HON32) which he names as Lancaster No 1 became redundant, as did Lancaster No 0, the lowest level on the incline, which had been found to be barren. The latter has not be located, and it may be buried under extensive and unstable slate waste.

The Monkey Shelf (HON33)

NY2196 1391-NY2236 1357. The Monkey Shelf was constructed in 1888 as a terrace in the hill side to take a tramway connecting The Hause, where dressed slates were then to be stockpiled, to the base of the Honister external incline at the Stang (at 342m OD), a distance of about 600m. This tramway is depicted on the OS 2nd edition map of 1900. It was rendered redundant together with the lowest part of the incline when the Link Level was driven in 1911.

All of the rails have been removed, but here and there along the terrace it is possible to see distinct traces of a raised track bed. From east to west, the terrace becomes increasingly pronounced as the hill-slope steepens; on the upper side it has been blasted into the bare rock in a number of places and on the lower side it is retained by a dry-stone wall, a fairly consistent feature along its length which achieves a maximum height of 5.0m. At its narrowest the shelf is 2.4m wide. In places there is an inner revetment to the tramway.

At the east end the terrace is overlaid to a depth of 3.5m by the spoil heap upon which the 1930s works at The Hause are located. A foundation of one

of the aerial ropeway gantries has been positioned on the Monkey Shelf close to the spoil heap (see HON34). In the course of the terrace there have been a number of well-built stone bridges crossing streams which have cut deep ravines in the rocky hillside. From east to west the first is more or less intact, but the remainder are down and only in one or two cases are the timber supports *in situ*.

At the west end of the Monkey Shelf at the Stang are the roofless remains of a building, measuring 4.5m by 2.8m overall with a wall 0.6m thick and up to 2.0m high. There is a gap in the east wall, 1.2m wide. The interior is filled with building debris, and masses of slate waste from the Kimberley workings above has come to rest against the south wall. The purpose of this building has not been determined.

The Aerial Ropeway (HON34)

NY2175 1394-NY2243 1353. This was erected in 1928 (Tyler 1994, 160-1) and ceased functioning in 1955. It extended from the upper terminus on the platform outside adit HON30 at 408m OD, via the Road End adit on the Kimberley vein (KIM10) at 403m OD to end at a point adjacent to the cutting shed at The Hause at 356m OD, a total distance of just under 800m. It was built to transport clogs from the mines down to the newly opened cutting shed at The Hause. Between the termini there were six intermediate supports, including the pick-up point at Road End; all of the superstructure was constructed of iron girders on a stone and concrete foundation, but with the exception of the upper terminus all of the metalwork has been removed. Some was sold off, but two of the gantries were moved to the Yewcrag side for re-use. The upper terminus of the defunct aerial ropeway is on the platform outside adit HON30. It is of steel girder construction, 8.3m long, 1.1m wide and 3.9m maximum height; this structure supported a horizontal shreave wheel, still in place, measuring 2.7m in diameter and 2.8m above ground level. A length of the actual wire rope is lying on the slate waste between the upper terminus and Road End.

The pick-up point at Road End (KIM10) is situated alongside the level approach to the mine; the superstructure has been removed with a cutting

torch at about 1m above ground. All of the gantries have been destroyed in the same way leaving just square foundations. One of these is situated on the Monkey Shelf, adjoining the spoil heap of the works. It is dry-stone built, measuring 5.2m square, surviving to a maximum height of 1.9m. Protruding from the pile of stones are the stumps of four metal stanchions of the gantry.

The lower terminus at The Hause has been located using the photo in Tyler (1994, 91), where it can be seen to be of the same design as the upper. All that can be seen is a small part of a concrete pad flush with the ground (here slate waste) with two bolts protruding (it is shown as a cross on the RCHME 1:2500 plan).

Hard Quarry (HON35)

NY2159 1397. Hard Quarry is situated above the adit (HON23) and immediately to the west of it. It resembles a rock shelter (of unobtainable height) blasted into a rock wall to a depth of about 7.0m. There are a large number of boulders lying on the front apron of the quarry, and these may well have sheered off the cliff since the quarry was operating. A dry-stone wall defining the south-west side of the incline isolates the quarry from the tramway suggesting that it went out of use after the construction of the incline, instigated in 1886.

Peat Cuttings (HON36)

NY2130 1398. About 50m to the south of Ash Gill Quarry (HON2) is a small area of peat cuttings (shaded on the RCHME 1:2500 overlay). This place is remote from any human settlement and the peats were probably cut by the slate workers (see also LSW14).

6. KIMBERLEY COMPLEX

The history and progression of slate exploitation on the Kimberley vein (**KIM**) replicates to a considerable degree that of the Honister (**HON**). The veins are parallel, ascending from east to west, the Kimberley being the higher. Whereas the Honister outcrops to the west of Ash Gill Quarry (HON2), the Kimberley vein reaches the surface just west of Bull Gill Quarry (KIM2) where there is an area, much more extensive than at Ash Gill, of pre-industrial surface picking (KIM1).

Bull Gill and Ash Gill Quarries are almost certainly contemporary, and probably date from the earliest industrial phase in the mid-18th century. Each was served by a pack-horse track which connect near Dubs Quarry and continue down to Warnscale Bottom. The OS 1:2500 1st edition map of *c* 1860 depicts these tracks, and also the sledway extending down the ravine of Bull Gill from the quarry at its head to a loading dock in the valley. The quarry is shown much smaller than the present remains on the 1st edition map so it was in a continuing state of development in 1860, but no other workings on the Kimberley vein are depicted. (There has to be a degree of sceptism regarding the OS portrayal in this area as the map is unusually inaccurate here.) At what period of time Bull Gill Quarry went out of use is difficult to determine. The sledway became unusable after the construction of the Honister External Incline in the 1880s, but the OS 1:10560 2nd edition map of 1900 names the quarry amongst others as 'Honister Quarries' without the suffix '(disused)' so in all probability it was still functioning then. Presumably at that time finished slates from the quarry were still being transported along the track (KIM3/HON3) to Warnscale Bottom, or at least as far as the west end of the Dubs Incline, and also eastwards to The Hause.

Development of the underground workings on the Kimberley vein came later than those on the Yewcrag and along the Honister veins. There was never an external incline connecting these mines similar to that on the Honister vein or

at Yewcrag. However an incline was built in 1905 from Upper Road End towards The Hause. Though many of the galleries inside the mountain had become connected, it was not until 1934 when the internal incline was completed that slate could be trammed out of the Kimberley workings at a single exit point, namely at Road End at the base of this incline. The latter adit was to become the main drawing level for all the mines on both the Kimberley and Honister veins as already in 1911 the Link Level had been driven on a level plane between the two veins. Production of slate continued intermittently from the Kimberley band until 1985 at about which time mining ceased.

Early Surface Workings (KIM1)

Area centred at NY215 139. These pre-industrial workings are visible as a series of angled outcrops of slate, on average 1.5m high, separated by narrow terraces, which are situated to the west of Bull Gill Quarry at about 560m OD. The area cannot be defined with precision for survey purposes, but it seems to have measured very approximately 60m north-west to south-east by 50m transversely. The evidence for slate removal, as opposed to natural fracturing, is limited. There is evidence of prising of the slate away from the outcrop using chock stones, and some relatively small quantities of heavy waste material survive on the terraces, but no dressing fragments of the type constituting the later spoil heaps is apparent. This probably reflects the coarse nature of the end product from this early method of extraction.

A caption to a photograph in Tyler (1994, 19) gives a 17th-century date for these surface workings, but there is no evidence available to indicate their age.

Bull Gill Quarry (KIM2)

NY2157 1389. The south face of the quarry is very fractured and a lot of rock has sheered off this side on to the base of the quarry, which is in the form of a platform composed largely of dressing waste. By contrast the angled north side has a less fragmented 'blue' face, about 17.0m high above the platform. The latter has been retained on the east side by a wall, most of

which has collapsed into Bull Gill. Leading from the platform in an easterly direction is an inclined way between dry-stone walls, 1.5m apart and 1.7m maximum height. This is considered to be the uppermost section of the sledway before it turned north to enter Bull Gill, but there has been massive erosion here at the head of the ravine and details are missing.

Situated on the platform in the quarry is a well-preserved but unroofed dressing shed of classic design. It measures 5.5m by 2.8m within a dry-stone wall, 2.6m maximum height and 0.8m thick; there are two arched entrances, 1.8m high, in the south front, respectively 1.7m and 1.1m wide. The single-pitched roof rose towards the front. In the interior is a stone seat comprising a single slab protruding out of the wall, 1.0m long; a niche, 0.28m long, 0.22m wide and 0.37m deep is incorporated in the wall just above the south end of the seat.

In front of the shed is a hole in the dressing waste, 1.6m deep; it is lined on the north side by dry-stone walling, 3.0m long. The reason for this is not known but it appears that there may have been an earlier level than the one upon which the dressing shed stands.

Between the quarry and the bothy (KIM4) at the eroding top of Bull Gill at NY2161 1386 is an open fronted structure facing down the gill and across the valley. It is built in to the hill-slope and measures 1.1m high and 0.9m wide at the entrance, and goes back into the hill for a distance of 2.3m. At the end of it is a narrow bench with, at floor level, a stone basin containing water. The structure is roofed with slate slabs upon which rock debris has tumbled. Tyler (1994, 36) has suggested that this a privy used by the quarrymen. Such a provision in association with slate working is unprecedented and seems unlikely. Another explanation may be that it is a spring well which has been bounded by a wall and roofed as protection from rock debris.

Packhorse Track (KIM3)

This is a well-made track, similar to the example from Ash Gill Quarry (HON3), visible mainly as a terrace, on average about 2.0m-2.5m wide, with discontinuous sections of retaining wall on the downside. It runs from the

bothy near Bull Gill Quarry at NY2163 1385 southwards then west on a level or slightly downward course until it joins the Ash Gill track at NY2108 1359. It disappears for a short distance in a bog near the modern track from Hopper Quarry, and part of the waste heap for Hopper overlies it. Where it crosses the ruinous wall (MSC1) it can be seen to be later.

From the junction of this track with that from Ash Gill Quarry, the continuation through the survey area in direction of Warnscale Bottom is described in HON3.

Bothy (KIM4)

NY2163 1385. This ruinous bothy, built into a north-east facing slope, measures 12.1m north-west to south-east by 3.7m transversely within walls, 0.8m thick; the east gable survives to a height of 2.8m. It has comprised three rooms of which the west is clearly an addition with a separate doorway in the north, 1.3m high and 0.9m wide, and an adjoining window, 0.2m wide and 0.3m high. This west extension contains the remains of a stone bench, 1.2m high, along the east wall. The main building has a single doorway, 1.4m high and 0.8m wide, into the east chamber with an interconnecting door into the larger central room which contains the remains of a fireplace and a niche next to it. Two splayed windows occur in the north side of this room. The roof, constructed of large irregular slates of an early type, has collapsed, and the interior is full of debris including a crushed iron bed frame.

Quarrying and Bothies (KIM5)

NY2165 1389. Immediately to the north-east of the bothy (KIM 4) an outcrop of slate has been fairly extensively exploited to a maximum depth of 4.0m. This seems to be an extension of Bull Gill Quarry on the opposite side of Bull Gill and is probably contemporary. Large quantities of slate waste, including dressing fragments, lie close by. At the east end of a ridge of outcropping slate is a dry-stone retaining wall, 1.5m high, incorporating a stone bench, 0.6m high, almost certainly an open-air dressing point. Within the area of waste is a building (A) with another (B) between the workings and the bothy

(KIM4).

Building A is 4.6m by 3.0m within a wall 0.7m thick. It has had a single-pitched roof rising to the south-west so that the maximum height is 2.9m to the south-west and 1.3m to the north-east. The doorway, 1.6m high by 1.0m wide, is in the north-west end; there is a plain window in the north-east, 0.6m wide and another blocked with slates, 0.9m square, in the south-east end wall. Around the north side and part of the south side of the interior is a stone bench, 0.4m wide. Traces of an oversailing cross-wall springs from the south-west wall. This is a puzzling building; it is probably a dressing shed but it may be that it has been to some extent rebuilt due to the pressure of slate spoil built up against the south-west wall.

Building B (nearest KIM 4) is outside the area of quarrying and measures 5.5m by 1.4m within a very crude wall, 0.9m wide and 1.2m high at the doorway in the west end. The latter is 0.95m high and 0.6m wide with a slate lintel. Outside the entrance is a recess, about 1.1m square, which contains riven slates as if ready for dressing; an old bed lies nearby. Part of a window, about 0.5m wide, remains at the east end. The date and purpose of this building remain unclear; the presence of unfinished slates suggests a dressing shed and the bedstead may indicate a temporary dwelling, but it differs from most other buildings which are in clear association with the slate workings in that it is very poorly constructed. It is very similar in size and construction to another some 120m to the south-east (MSC2) considered to be a sheep shelter.

Ventilation Shaft (KIM6)

NY2166 1388. A ventilation shaft from the upper terminus of the Kimberley Internal Incline was core-drilled to the surface. This has been located at the edge of an area of quarrying (KIM5) where there is a hole about 0.5m across, fringed with slate slabs.

Adit (KIM7)

NY2169 1387. This adit is almost completely blocked by fallen rock. It opens out on to a platform formerly retained by a wall which has collapsed on all but the north side where it is 3.0m high. The platform appears to be composed of small stones, including a lot of quartz, but these fragments do not resemble rivings or dressing fragments.

Adit (KIM8)

NY2174 1386. This is a rock-cut adit measuring 2.0m high and 1.7m wide at the entrance, which is approached by a passage between dry-stone walls, 2.2m wide, leading from a platform. It appears that the passage has been rammed through a spoil heap at a higher level, and this may well be associated with an adjoining open-top quarry, with a back-wall about 19.0m high. The platform is of small stones (not rivings) retained by the remains of a wall, 1.1m high. Leading from the platform eastwards is a terrace, 2.8m wide; this has been retained by walls on the upper and lower sides, surviving to about 3.6m high, but it has been largely destroyed by vast amounts of waste from Upper Road End.

Fiddler's Level (KIM9)

NY2180 1383. The adit known as Fiddler's Level is rock-cut, measuring 1.8m high and 4.3m wide. Rails of 0.65m gauge can be seen inside the mine to within about 5.0m of the entrance; formerly these rails terminated on a tipping point on the edge of a narrow platform. This platform seems to have continued further to the east where there are the remains of a retaining wall and two buildings but everything has been destroyed by erosion or has been overwhelmed by slate waste, and passage is difficult along what survives of the platform. Originally access to Fiddler's would have been from a point just to the right of Road End Adit (KIM10) where a sill of bare rock slab ascends steeply around a rocky buttress to join a mainly natural terrace which continues to connect with the aforementioned platform at the adit. To climb the sill ladders were attached to the rock slab by a series of bolts; the bolts remain but only one ladder is in place. This means of access can never have

been easy, and Tyler (1994, 76) notes that shortly after the Link Level was driven in 1910, an incline was constructed leading down from Fiddler's to the Hole-in-the-Wall midway along the Link Level. This area has been devastated by vast quantities of accumulated slate waste and nothing remains of the incline save for sections of wire hawser lying on the top of the waste. Whatever form the termini took is unknown; there is no trace at Fiddler's and the Hole-in-the-Wall is now merely a metal-framed window obviously later than the incline.

Road End (KIM10)

NY2189 1384. Road End Adit at 403m OD has a distinctive 'maple leaf' shape, and measures 6.2m high and 2.6m wide. It became the main drawing level for the mines on the Kimberley and Honister veins until their closure in about 1985. Access is barred by a metal gate at the entrance, but it is possible to see that the tunnel forks immediately inside the mine, the left hand heading for the bottom of the Kimberley Internal Incline and the right hand making for the Honister External Incline via the Link Level (HON31). Rails of 0.65m gauge exit the mine and run alongside two buildings (A and B) and the aerial ropeway pick-up point to the end of a long platform where there is a tipping point.

Building 'A' is a bait cabin of dry-stone construction measuring 4.5m by 2.4m within walls 0.6m thick. It is entered from the north and contains a fireplace, and the walls are 0.6m thick. The roof of slate slabs is of single pitch so that the wall is 2.4m high at the front and 0.7m high at the back.

Building 'B' is much later wih walls and single pitch roof of corrugated iron on a timber frame. It measures 3.5m by 2.5m and is 2.4m high at the front and 1.9m at the back.

The pick-up gantry for the aerial ropeway at the very edge of the platform at Road End has been removed by use of a cutting torch at about 1.5m from the ground level. The remaining lower part, 1.05m wide, is encased within a dry-stone wall presumably later. Rails from the Road End Adit appear to

have formerly run alongside the gantry, as evidenced by impressions in the turf, but they have been removed.

The lorry road from Road End down to The Hause contiues to be maintained to a standard suitable for a Land Rover; it is retained for much of its length by a well-built wall on its downside, up to 6.5m high.

Lower Road End (KIM11)

NY2193 1385. The Lower Road End adit at 385m OD is rock-cut, 1.8m high and about 2.0m wide. It opens on to a platform, showing traces of dressed slate, much of which has been destroyed but part of a retaining wall, up to a height of about 2.5m, still survives. There was formerly a short incline extending from Low Road End up to Road End (Tyler 1994, 135, photo) but this is either destroyed or lost beneath massive amounts of slate waste above and around the adit.

Upper Road End (KIM12)

NY2173 1383. The Upper Road End adit is rock-cut, 2.8m high and 2.7m wide; it is now partially blocked by corrugated iron. Some rails of 0.65m gauge exit the mine onto a long platform containing two buildings (A and B).

Building 'A' is a bait cabin of pebble-dashed breeze-block construction, measuring 4.3m by 3.3m. The single pitch roof of wooden planks has survived but the corrugated iron covering has been torn off by the wind. The date 1962 and the letters G M are incised upon it.

The second building (B), also of breeze-blocks, is 8.7m by 3.4m but the west part is incorporated into an earlier slate-built structure of which only part of the north and west survive up to 2.2m high. The building contains two diesel generators. It is single-pitched, 2.8m high at the front and 2.2m high at the back. Near the buildings are two boilers resting on wooden supports. No 1 is 3.18m long and 1.1m in diameter, and No 2 is 2.75m long and 1.0m in diameter.

Blocked Adit (KIM13)

NY2179 1376. A gravel road leads from the platform outside Upper Road End (KIM12) to another platform at the same level which contains the upper winding house of the Kimberley External Incline (KIM14) and an adit, formerly accessible but now totally blocked by a number of slate boulders so that nothing can be seen of it. This second platform is composed of slate spoil; a modern road descends the side of this spoil to join the main track system.

Kimberley External Incline (KIM14)

As mentioned previously, unlike the Yewcrag and Honister veins there was never an interconnecting incline between the workings on the Kimberley vein until the construction of the internal incline in 1934. However, in 1905 (Tyler 1994, 160) an incline was built from the level of Upper Road End (near adit KIM13) at NY2178 1376 towards The Hause. The lower terminus cannot be located as much of the incline is overlaid and destroyed by gravel lorry tracks; it seems unlikely due to the ground configuration that the incline extended as far as The Hause, and the probable end is where it meets the previously built track down from Road End about 300m short of the factory complex at about NY2214 1368.

The best-preserved element in the incline is the upper winding house, which is in the process of restoration by the Mines of Lakeland Exploration Society. It measures 3.65m by 3.4m overall, and conforms closely to other drum-houses at Honister being an open-fronted structure with walls 1.0m wide and up to 2.75m high. It has been gabled but only the south one survives. The wooden drum with iron bands is still *in situ*, measuring 1.5m long and 1.2m in diameter; it rests on bearings which are bolted into a wooden bearing plate. The brake handle mechanism is still in place. In front of the winding house are four stepped retaining walls; another retaining wall nearby is 2.2m high.

The incline itself is mostly destroyed by a later raised lorry track and at its upper end it is overlaid by a slate spoil heap. Only parts of the upper section between the zig-zags of the track can be seen with any clarity. From the top

the incline bed was initially in a cutting, 1.1m deep, which then becomes a ruinous causeway, 0.6m high, and finally between the lowest zig-zags it is a terrace into the hillside, 0.6m high. Some wooden sleepers, 1.7m long and about 0.7m apart, are exposed *in situ*; the disposition of nails in the sleepers suggests a three-rail system. Further down the incline are more displaced sleepers.

A secondary incline was constructed running from Upper Road End down to Road End. Only the trackbed, 2.1m wide, survives in places at the base of a slate cliff; much of it has been destroyed by later blasting and, above Road End, by erosion.

Margaret's Level (KIM15)

NY2162 1391. In 1983 a tunnel was driven from Kimberley 6 (Top Level) and broke out on the precipitous face of Bull Gill to serve as a tipping point. This was to be known as Margaret's Level (Tyler, 1994, 149-50). This is still visible but inaccessible.

Possible Magazine (KIM16)

NY2200 1380. About 110m to the south-east of Road End Adit and hidden from view is a small unroofed building, which measures 1.9m by 1.7m within a wall, 0.7m thick and 1.7m high. The doorway in the north side is 1.1m high and 0.7m wide. Within there is a small niche, 0.4m by 0.3m in the west interior, and some sort of an internal partition partly enclosing a space, 0.8m by 0.6m.

This building is situated within 2.0m of the line of the aerial ropeway; this is almost certainly coincidental as no function can be postulated in relation to the ropeway. The date and purpose of the building remains unclear; its size and relative isolation may suggest that it was a magazine (clearly not contemporary with the ropeway).

Doubtful Adits (KIM17)

There are two doubtful adits just below Fiddler's Level in a gully filled with loose and potentially dangerous slate waste. The first at NY2182 1386 is situated at the base of a rock outcrop towards the side of the gully; significantly it lies at or close to the line of the Link Level and at the same height. There appears to be no means by which slate could be transported from this location so this was probably a tipping point.

About 12m to the west-south-west of the above is a slight hollow surrounded by slate spoil which occurs just beneath a small area of rock outcrop. A little further down the hill is a fragment of a retaining wall in an L-shape which may be the residue of a mine platform. The hollow possibly marks the position of an adit buried by tumble but there is no record of a mine here and therefore the evidence is very tenuous.

"Sam Wright's Road", Trackway (KIM18)

NY2146 1396-NY2174 1378. From a point near the packhorse track (HON3) leading out of Ash Gill Quarry at NY2146 1396, to NY2174 1378 some 40m to the west-north-west of the winding house at the upper end of the Kimberley External Incline (KIM14) are the discontinuous remains of a trackway. According to Tyler (1994, 36) this was part of the return route of the sledmen after a run down Bull Gill to the road in Gatesgarthdale and was known as "Sam Wright's Road". It survives mainly as a series of four separate causeways (I to IV) constructed from large slate slabs, on average about 1.5m wide, which cross natural gullies prone to bogginess.

Causeway I, the most westerly section, is 0.2m average height and *c* 13.0m long; it cannot be seen to continue to the west or the east. Section II is identical to I. III, 52m in length, crosses a natural depression by a raised dry-stone causeway of large stones, up to 2.6m high. It is about 1.9m wide at ground level narrowing to about 1.4m to 1.6m at the top. At the lowest point of the natural depression the causeway carries over two arches, now partly blocked; they measure respectively 1.1m wide and 1.95m high and 1.5m wide and 2.2m high. To the south of the causeway is a natural spring roofed over

with a lintel; it was dry at the time of investigation surviving as a damp area between two rocks, but although it is not usable at present it may well have been a water supply for the nearby bothies (KIM4 and 5). The arches through the causeway were designed to allow the flow of water from this spring. Causeway IV is almost flush with the ground like I and II. There may have been more causeways further down the hill but this area is occupied by later spoil heaps, an incline and lorry tracks which would have destroyed any trace.

Extending from the south-east end of causeway II is a path running eastwards for about 10m to terminate on the west edge of Bull Gill Quarry; this path reappears at the south edge of the quarry and continues down the hillside in a south-south-easterly direction for a distance of 28m as a terrace, 1.0m to 1.4m wide with a line of retaining stones on the north-east side, before fading out. There is no doubt that this part of Bull Gill Quarry was developed after, but probably not long after *c* 1860 (the date of the OS 1st edition map) and is later than the path. The designation of the path as a sledmen's road attributed to Sam Wright is not therefore unreasonable, in which case it could have served both Ash Gill and Bull Gill Quarries. No other explanation for this series of features is forthcoming.

7. DUBS QUARRY

According to Tyler (1994, 25) Dubs Quarry (DUB1) was probably being developed by Charles Norman from 1750, and certainly by 1839 it was worked by Sam Wright. Extraction at Dubs seems to have been somewhat intermittent, but with the construction of the incline to The Hause in 1891 (DUB3), there was expansion, and by 1892 there were three levels (I-III). The incline terminated on level II with a spur to level III, and a short railed incline was built at 90 degrees from the vicinity of the terminus of the main incline down to I (Tyler 1994, 51).

In 1893, and again in 1901, the open top quarry collapsed, affecting the stability of the lower workings (*ibid*, 53, 59). A report of 1903 states that Dubs was difficult to work; slate extraction continued in a limited fashion until 1932 when the workings finally closed. The site office, built in the early 1860s (Tyler 1994, 36), is now known as Dubs Hut (DUB2); it has been re-roofed and serves to this day as a climbers' refuge.

Dubs Quarry (DUB1)

Centred at NY209 134. The complex at Dubs Quarry comprises three main levels (III to I in decending order). About 1884 it was decided to drive a level (to be known as Long Level) along the slate vein from the external incline on the Honister vein to Dubs III (Tyler 1994, 42-3); eventually this effort was abandoned. It follows that Dubs Quarry also exploits the Honister vein.

Dubs III

This is a huge open top, the back wall being about 26.0m high and the spoil heap is 20.0m high. The quarry is entered from the south by a walled passage, about 3.0m wide where it can be seen, for it is much obscured by

debris which has peeled off the rock face since the quarry was in use, and also by slate waste. It is clear that it has been driven through pre-existing spoil which was held back by dry-stone retaining walls, many of which have collapsed under the weight of the spoil and later intrusions. At the extreme north end of the passage, there is a distinct overhang created by the interface between the slate vein and the rock above; it is unclear whether this indicates collapsed lower workings (I or II), or whether it is a result of the quarrying of III. At its south end the passage opens out on to a broad flat area. This contains a roughly triangular ventilation shaft, 3.8m by 3.6m, filled with slate debris to within 2.4m of the top edge. Opposite this ventilation shaft has been a building which was shown on the APU plot and which therefore survived until at least the late 1940s. It is now a confused mass of tumble mixed with other slate waste and the only thing that identifies it as a former building is the presence of mortar amongst the slate. South of the ventilation shaft and the former building the platform, comprising slate waste, has been eaten into by the lower Dubs II Quarry; the latter is retained by a dry-stone wall, much of which has collapsed. This intrusion has split the platform into two parts. The west arm terminates on a spoil heap. The south arm extends past the remains of a rectangular building of which only the back wall survives, 0.8m high, plus the side walls which are now flush with the ground; it then continues in an easterly direction to connect with a spur from the main Dubs Incline (DUB3). The spur is well-engineered, raised up 1.2m and *c* 2.0m wide. Another track branches from this and goes up to Hopper Quarry.

Though Dubs III has been identified as one of three major levels there are the vestigial remains of subsidiary levels, in this case respectively 3.0m and 9.5m higher. Of the latter, presumably the very first level, all that survives is a flat area, about 32.0m by 4.0m, retained by fragments of a wall, 0.6m high. The 3.0m level, like the 9.5m level, is truncated by the later workings of III. It comprises a platform of waste, mainly dressing and riving fragments. On it is an unroofed, windowless building with a single-pitch roof, measuring 2.5m by 1.8m within a wall, 1.5m maximum height and 0.55m wide. Its entrance is in the east corner.

Dubs II

The OS 1st edition map of *c* 1860 shows a mine entrance at Dubs II as a 'level'; this is not repeated on the 1900 2nd edition map. No adit survives now; the working has the appearance of an open top, with a back wall 15.0m high, entered by a passage between the remains of retaining walls, about 1.7m high. There is a very badly mutilated dressing shed on one side of the passage, covered in slate waste from the spoil heap above; it measures 11.1m by 2.9m within walls 0.8m thick and up to 1.4m high. The passage runs through the old spoil heap of III which is retained here and there at higher levels by retaining walls. At the north end of the quarry is a retaining wall up to 4.5m high with another, 2.0m high, below it. Dubs Hut and the incline terminus are on the same level as the front apron of Dubs II; there are a few slight bumps, up to 1.0m high, on this platform. Some 8.5m above it is the residue of a further platform and a tipping level. This is cut by and is earlier than the cutting of the main incline (DUB3). From this 8.5m level, a straight track with a retaining wall, 1.9m maximum height, leads gently down to level II and Dubs Hut.

Dubs I

There has been a short incline running down from II to I occupying a cutting in the spoil heap of II up to 1.9m deep and generally about 2.5m wide. The winding house at the top of the incline had been open-fronted, 3.6m by 3.2m, but it has now collapsed and is covered with slate debris. Two large opposing iron bolts protrude from the slate waste.

Dubs I was not developed until after 1860, the date of the OS 1st edition. It is a close-head, some 15.0m below II, but the adit is blocked and buried beneath fallen material from the waste heap of II. A dry-stone passage, 1.7m maximum height, approaches the site of the adit; ranged along its east side is a long unroofed building in total 19.2m long within a wall about 0.7m thick. Nearby is a single isolated building measuring 4.3m by 3.4m within a wall 0.5m thick and up to 1.2m high; the entrance is to the south. Some of these buildings are undoubtedly dressing sheds judging from the amount of dressing fragments which lie around. The maximum height of the spoil heap to I is 14.0m.

Dubs Hut (DUB2)

NY2092 1344. Dubs Hut, now re-roofed and in use as a climbing hut, faces on to a courtyard, bounded to the south by a wall up to 0.7m high, to the north by the base of a spoil heap which has lapped into the yard, and in the east by a building which survives to gable height on its south side but which is largely robbed to ground level, or close, elsewhere. Only the south half of Dubs Hut is renovated; the remainder is unroofed but survives up to gable or window height. In this section are two splayed window apertures to the back and two to the front, with the remains of another porch. The small extension to the north, entered from the east, also has a small window. This courtyard complex is well-built and cohesive; it may have been the focus of operations not only for Dubs Quarry but also for Ash Gill and Bull Gill Quarries before the construction of the inclines and the transfer of functions to The Hause.

The Dubs Incline (DUB3)

NY2094 1341-NY2231 1354. The Dubs Incline, built in 1891, extends in more or less a straight line from level II at Dubs to The Hause, with spurs off to levels I and III. It is in constant use as a walkers' path and the old track bed is now bare ground devoid of turf. At the quarry all that remains of the terminus are some set stones, flush with the ground, at right angles to the incline; no shape or size of this structure is ascertainable. From here the incline rises gently, and enters a cutting through earlier spoil, 1.6m deep and about 2.2m wide (though it has been deformed by the pressure of waste on the north side, so here it has reduced to about 1.4m in width). It continues on a fairly gentle gradient, in places raised, in others in a cutting, up to 1.0m deep as far as the engine house situated on the highest point of its course. On either side of the engine house the incline is raised up to 2.7m above surrounding ground level, and is retained by a buttressed retaining wall surviving in fair condition. From here the incline descends quite steeply to The Hause. At its steepest, about 200m from its terminus, it is severely eroded; this section has been fenced off to keep walkers out. The precise end of the incline at The Hause can no longer be identified.

8. HOPPER QUARRY

Tyler states (1994, 34) that by the early 1860s Hopper quarry was opened firstly as an open top, then a tunnel was driven beneath it. The quarry is depicted on the OS map of *c* 1860 and annotated 'Hopper Level' indicating a close-head. It seems to have been developed little until 1967 when a concerted effort was made to quarry slate here when a new road was constructed to Hopper Level from The Hause. The main emphasis was on opencast and eventually all trace of underground workings was obliterated; work ceased in 1985 when the 'quartz line' (marking the ascending lower plane of the slate vein) could be seen to be converging on the ground surface (Cameron 1993, 32-3).

Hopper comprises two distinct and separate quarries, the east (HOP1) and the west (HOP2) both of which are disused. From their relationship to Ash Gill and Dubs Quarries, both on the Honister vein, it appears that Both Hopper Quarries are also on this vein. Hopper West has expanded since 1983, the date of the last air photographs used in the transcription (ADAS 159, 030-2, 11/8/83), and much of the debris from it has gone largely to back-fill the east quarry. During 1997 some clogs have been removed from the waste heaps at Hopper East by the new company and transported down to The Hause.

Hopper East (HOP1)

Centred at NY213 137. Part of the 19th-century quarry has survived as a deep cut into the natural rock, 5.0m deep, which is entered from the south-east. It has been larger, as seen on the air photographs of 1983 (ADAS 159, 030-2), but the vast amount of slate dumped here from the west quarry has partly obliterated it. No adit can be seen. On the west side of it is a flat area, at the back of which are piled some dressing fragments. As all slate dressing took place at The Hause after the 1930s, and as there was little or no

development of Hopper from the mid 19th century until 1967, these fragments may be assumed to date from the earliest Hopper Level, shown on the OS 25" map of *c* 1860.

The back face of the post-war quarry is up to 8.0m high; it can be seen that the bedding plane below the slate vein is exposed and rising towards the ground surface here and it is evident that this quarry was on the point of being worked out. Waste from it has been dumped in large heaps to the south, up to 16.0m high; this spoil is all of unworked slate with no evidence of dressings. Subsequently, spoil from the developing west quarry (HOP2) has been dumped on the top of these waste heaps (post-1983 AP). The only building is a quarryman's hut of corrugated iron, 4.3m by 2.8m and still roofed, which contains the remains of an old pot-bellied stove.

Hopper West (HOP2)

Centred at NY211 138. The west quarry comprises a lower level entered from the south-west, which is about a maximum of 20.0m deep at the back wall, with two sideways extensions in the form of benches on either side at a slightly higher level, some 11.0m below ground level. It may be significant that the quality of the slate is much superior on the west side of the quarry; here the rock wall is relatively smooth whereas the east side is very fractured.

To the north-east of the main depression at a higher level is a further quarry with a back wall up to 12.0m high. This top quarry looks fairly fresh with much slate debris lying in it. This could be frost shattering or alternatively it could be material blasted from the rock wall and left here when the quarry was abandoned.

Track System at Hopper (HOP3)

NY2113 1376-NY2240 1353. The OS 6" map of 1900 shows a track which branches from The Hause to Road End road and ascends the hill by a series of traverses to join the pack-horse track from Bull Gill Quarry just to the east

of what is now Hopper East. This route was utilised when Hopper was developed in the post-war period; the new road, suitable for lorries, was to be in the main a raised causeway with a gravel surface and a drain to the side. It ran to Hopper East then through it to Hopper West. This road is still maintained to a reasonable standard and is passable by Land Rover. There are other tracks of poor quality, probably for tracked vehicles, around the Hopper workings and also from Hopper East to Dubs Quarry.

9. LOW FLEETWITH QUARRY

NY2055 1348. Low Fleetwith Quarry **(LFL1)** is situated to the north of Warnscale Beck some 400m to the west of Dubs Quarry. According to Tyler (1994, 26, 31) it may have been exploited by Charles Norman from about 1753 onwards; certainly by 1839 Low Fleetwith was being worked by Sam Wright. Both 1st and 2nd editions of the OS map of *c* 1860 and 1900 annotate it 'Old Quarry' indicating disuse at that time.

The quarry has been driven into the hill-slope and is entered from the south. At the back there is a rock wall, about 11.0m high, down which a sizable stream cascades which then disappears beneath the spoil. Approaching the rock wall from the south is a dry-stone passage, where visible between 2.0m and 3.0m wide, which retains slate spoil on the west side and naturally fragmenting rock to the east. This passage is mainly buried, particularly where it approaches the back wall, and in consequence it cannot be stated unequivocally that there was never a tunnel at the base of this rock wall. There appear to have been two working floors on the front apron to the quarry. The upper level is simply a flat, about 5.0m above the next level, with no trace of any structures. The main floor is in effect a flat-topped spoil heap, 17.0m high on the south side; it comprises some large pieces of waste slate and a high percentage of dressing fragments. There is another smaller spoil tip, 2.5m high, on this working floor; it contains waste slate and a smaller proportion of dressings.

There are three trackways extending from the main working floor. The first extends eastwards rising at a slight incline towards the main packhorse track (HON3); The second track runs south, down towards the burn and the main track running alongside of it, and is retained on its west side by a dry-stone wall, 1.1m high. A further packhorse track extends from the quarry floor downwards quite steeply towards Warnscale Bottom to the west. It has been largely washed out and was probably not more than about 1.5m wide. There

is evidence of some engineering, i.e. denuded retaining walls on the downside.

Immediately to the west of the main quarry is a large quantity of slate waste situated at a much higher level than the quarry bottom. This is probably the residue from earlier slate extraction but there is no evidence of any workings in this area.

10. LESSER SLATE WORKINGS

The major complexes of slate mining and quarrying have been described in Chapters 4 to 9. Scattered throughout the whole area are a number of relatively minor workings, almost exclusively quarrying as opposed to mining. Some of these are the remains of small-scale production whereas others are prospecting levels.

Slate Quarry (LSW1)

NY2078 1323. On the south side of Warnscale Beck is an open top working, entirely turf- and heather-covered. It comprises a trench, with no trace of revetting walls, which is dug slightly upwards into the hillside. The back wall is 5.0m high and the spoil heap is 6.0m high, its size commensurate with the trench. Running in direction of this same back wall at an angle from the north side is a blocked passage, 1.1m wide, between a rock and a dry-stone wall, 1.0m high. It opens out on to a spoil heap about 2.5m high. A number of finished slates are piled against a rock nearby indicating some production from this quarry.

Slate Workings (LSW2)

NY2089 1354. This is a small-scale opencast working comprising a trench into a south-facing slope with a craggy back scarp, 8.0m high, and to the south a platform of spoil, 5.0m high. A passage running from the platform into the workings from the south-west is retained for short distance on the east side by dry-stone walling. Adjoining the main passage at a slightly higher level is a smaller version of the above with a surface exploration into a slate outcrop to a depth of *c* 2.5m, with two small spoil heaps, the highest being 4.0m.

The pack-horse track leading from the quarries of Ash Gill and Bull Gill down to Warnscale Bottom cuts between the quarry and the spoil heap. A further track, retained on the downside by a discontinuous wall, 0.6m maximum height, extends from the main pack-horse track just east of LSW2 towards Dubs Hut but it disappears beneath the base of the spoil heap of Dubs III.

Slate Mine (LSW3)

NY2097 1363. This working is adjudged to be a close-head, based upon the large amount of spoil in relation to the fairly small size of the visible excavation into the hill. The back wall is an estimated 6.5m high and the spoil, in effect two diverging finger dumps, is a maximum of 9.0m high. The passage is completely obliterated under quantities of stone, and may have been deliberately back-filled. There is no walling and no dressing shed or sheds despite quantities of dressing fragments.

Surface Quarrying (LSW4)

NY2106 1352. This linear area of surface quarrying is L-shaped, starting and finishing on the upper edge of Dubs III quarry. It extends from a distinct surface quarry, 2.4m deep and about 7.0m wide, at the edge of Dubs, in a north-easterly direction along what appears to be a slate bedding plain for about 50m; here are a series of fissures up to 4.0m deep and from 0.1m to 2.0m wide. The quarrying then turns 90 degrees to the north-west to return to the edge of Dubs as discontinuous excavations up to 3.5m deep. Quantities of slate fragments (which are larger than the normal dressing fragments) lie about.

This relatively minor quarrying, though apparently earlier than Dubs, resembles prospecting rather than the remains of pre-industrial surface picking (see HON1, KIM1 and YEW1). Well engineered tracks, *c* 2.0m wide and retained on the downside by lines of stones up to 0.4m high, run from the angle of the quarry to the north-east and south-east, to connect with the main track system. It seems that the surface quarrying is later than these tracks.

Prospecting Quarry (LSW5)

NY2136 1392. This is a small prospecting trench cut into solid rock to a depth of 2.0m; the adjoining spoil heap, 5.0m high, is composed of large lumps of slate with no dressing fragments. On the west side of the quarry is a supplementary or, possibly, earlier surface digging. Here the rock is exposed to a height of about 2.0m with an associated small spoil heap, 4.0m high, all of which is largely turf- and heather-covered. Between the quarry and the spoil heap is the pack horse track (HON3) which runs from Ash Gill Quarry to Warnscale Bottom.

Prospecting Slate Quarries (LSW6)

NY2113 1350. Ranged down the east side of a stream are three turf-covered prospecting trenches. The northerly example is 0.6m deep, with no structures visible; it gently enters the slate vein. There is a turf-covered spoil heap downslope, 1.5m high. To the south and parallel to the burn is a second linear cut, up to 1.0m deep, and with no spoil heap apparent. On balance this is most likely to be a minor prospecting trench but the absence of spoil is puzzling and conceivably it may be natural, perhaps a stranded water-course. The most southerly workings are visible as two trenches excavated in to the hillside which are respectively 16.0m long with a back scarp, 2.0m high, and 10.0m long and 1.5m maximum height. They extend from the edge of the Dubs incline but this may be coincidental.

Prospecting Trench (LSW7)

NY2155 1374. This trial, *c* 150m E of Hopper, survives as a cut into a slate vein in a south-facing slope, about 2.0m wide and 3.0m maximum depth. It contains much stone debris. The spoil heap, 1.0m high, is of a size commensurate with the quarrying; it consists of large and small pieces of slate but no rivings or dressings.

Possible Slate Quarry (LSW8)

NY2109 1370. All that can be seen of this possible quarry is a depression open at both ends which extends down a south-facing hillside and cuts through an exposure of slate. It measures on average 3.0m wide and up to 2.5m deep. Some slate lies at the base of the cut but this could be a result of natural fracturing; otherwise there are no spoil heaps and no evidence of working. This feature may be entirely natural or it may have been a natural gully enhanced by slate prospecting.

Open-top Quarry (LSW9)

NY2045 1336. This quarry, hacked out of the side of a sheer ravine in which Warnscale Beck flows, is noted by Tyler (1994, 37) as being worked in the 1860-70s by Sam Wright, who also opened the quarry higher up the hill (see LSW10) and built an associated bothy (see LSW11). Most of the quarry cannot be entered with safety and this section of the report is compiled from observations from the other side of the ravine, here about 10m deep. The quarry has been driven into the rock and has then curved around in a semi-circle to exit the rock wall, thereby isolating a pillar of rock and creating two entrances. Some waste slate has spilled out on the lower, west entrance, but the majority of the spoil, much of which appears to be dressing fragments, has come from the upper east cut. There is a corner of a dry-stone wall of unknown purpose visible from across the ravine; it seems to be about 1.7m high. It is unclear how finished slates were transported out of this quarry.

Quarries (LSW10)

NY2052 1324. High on the hill opposite Low Fleetwith Quarry are two minor quarries adjacent to each other on the same slate vein angling upwards to the west. These are dated to the 1860-70s (see LSW9). The west example is rock-cut with a back wall of a maximum height of 6.0m. The floor is now covered with debris which has shattered off the rock face. On the north-west side of the quarry entrance is a dry-stone structure, possibly the remains of a dressing shed, but only a part of the north-east wall survives, about 5.0m long

and about 1.0m high. Below the remains of this building is a waste heap which contains a considerable amount of dressing fragments. Access from this particular level would appear to be towards the east by a sloping sill down to the east quarry.

The east quarry curves around to form two entrances, that to the east being lower than that to the west. The back wall is about 8.0m high but much debris has fallen into the quarry so that the original floor level is masked by rock fall. On the west side of the upper entry, about 1.8m wide, is a dry-stone building set against the natural rock face. It measures overall about 5.5m by about 2.5m and survives to a maximum height of 2.0m. There appears to have been a single-pitched roof sloping down to the front, but this has disappeared. The structure seems to comprise one rectangular chamber containing possibly a fire-place and what looks like a seat. The other chamber is roughly triangular but open-fronted; it too contains a seat. The area here is very constricted and possibly this is a dressing shed which has assumed this curious shape due to a lack of space. The lower east entrance is about 2.0m wide. At the outer end of the passage is a dry-stone building which measures 2.7m by 1.8m and 1.8m high. There is a square window which measures 0.5m wide and 0.5m high which looks out over the valley towards Buttermere. Extending from the north-west corner of this building is a retaining wall which is about 1.6m high; it slopes downwards towards the roofed climbing hut below (see LSW11). There is no route visible by which dressed slate could be transported from these quarries down the hill. No packhorse tracks can be seen and the only method that presents itself of getting the material away is by a sledway down the quarry spoil heap which has come to rest on the hillside almost as far as the climbing hut. No sledway as such survives but there are quantities of dressing fragments, suitable for a sledway surface, among the slate waste.

Bothy (LSW11)

NY2047 1329. This building, situated on a shelf below the waste heaps associated with the open-topped quarries above it, was built as a bothy for quarrymen in the 1860-70s (see LSW9) but it now serves as a climbing hut. It measures 11.4m by 4.4m externally; only the west half has been re-roofed

while the east part survives almost to gable height.

Minor Quarrying (LSW12)

NY2066 1337. On the south side of Warnscale Beck is a trial trench which has been driven into the ravine; the back wall thus formed is between 3.0m to 4.0m high. There is very little evidence of spoil; whatever there may have been it would probably have been tipped into the river and have washed away.

Slate Quarry (LSW13)

NY2061 1359. This quarry survives as a rock-cut trench, 8.0m long and 1.5m wide driven into the hill-slope from the south creating a back cliff, 4.0m high. The trench opens out into a level area at the end of which is a crescentic spoil heap, which appears to contain some dressing fragments. Built against the base of the rock wall adjoining the quarry is a crude building, roughly D-shaped, measuring about 1.8m by 1.8m within a wall 0.8m wide and about 0.8m high. The roof, apparently of large slate slabs, has collapsed. This structure is more roughly built than those commonly associated with the slate industry and it may simply be a sheep shelter built from waste material from the quarry. No dressing shed can be identified but some minor production probably took place here.

Slate Workings in Borrowdale Parish (LSW14)

NY2258 1448. At about 600m OD, to the east of the boundary fence between the parishes of Borrowdale and Buttermere, is an un-named slate working of uncertain date. It is visible as a depression, about 4.5m wide, which cuts into the hill-slope in a north-north-west direction to a depth of 3.8m. At its south end is a flat-topped spoil heap, 2.4m high, containing some large un-worked waste and also some small blue-green dressing fragments. The spoil heap has lapped on to a small dry-stone building which measures 3.0m by 1.8m within a wall 1.6m maximum height and 0.6m thick. The south-east doorway is

partly blocked by a wall erected when the building was later converted to a crude shelter. Immediately to the east of the depression is a small quarry dug into the hill-slope to a depth of 1.3m, with a very small amount of spoil to the south.

It can be seen that these minor workings intersect outcropping slate and this vein is visible on the surface extending to the north-east as a series of parallel slate exposures and gullies. Some 100m in this direction (out of the area of survey) slight depressions and adjoining concentrations of slate lying loose on the surface suggest early, pre-industrial surface workings or minor propecting. The best of the depressions is 0.5m deep and measures about 5.0m by 3.0m with some waste slate lying in and below it. The slate vein continues eastwards down the hill until it gets lost in boggy, peaty ground.

Immediately to the east-south-east of the quarry (LSW14) is an area of old defunct peat cuttings with further evidence at a slightly lower level (not surveyed). This area is very remote and seems an unlikely place for peat extraction unless it was by the slate workers. Similar peat banks occur near Ash Gill Quarry on the Honister side of the valley (see HON36).

Trench (LSW15)

NY2249 1365. Some 100m to the north of the factory at The Hause there is a trench, now bracken-covered, extending into the hill-slope to a maximum depth of about 2.5m. The date and purpose of this feature is not know but there are several alternatives. It could be natural or it could be an early quarry, not necessarily for slate.

Prospecting Trench (LSW16)

NY2148 1397. About 120m to the east-north-east of the prospecting trench (LSW5) is another similar example driven into the north side of a shallow gully. The cut into the solid slate is 1.8m wide and deep and the back wall is 1.8m high. The spoil heap, 0.5m high, contains no dressing fragments. Further west towards the cliff the gully contains masses of slate for a distance

of 28m or so. It seems that this gully is mostly natural but it has been enlarged by surface quarrying. Part of the way along this area of loose slate is a wall, 1.0m high and 1.8m long, with an upright slab, 1.0m long and 0.35m high coming off at right angles to the north then turning west as a dry-stone face, 0.15m high and 0.6m long.

11. THE HAUSE

The Hause is the name given to the head of Honister Pass at 360m OD. It had little significance in relation to the slate mines and quarries until the 1880s when a series of inclined planes were constructed from the workings in the hills to the north and west leading down to and focussing on The Hause. Slates were to be stockpiled here and a blacksmith's and joiner's shop, a manager's office and a bothy were erected. The major changes occurred in the late 1920s and early 1930s when all slate finishing was transferred to a purpose-built factory complex at The Hause from the mines and quarries in the hills. It is this group of 1920s buildings which characterise the area to this day. They comprise a cutting shed (HAU1), a generator house (HAU2), both of which are fully operational, and a partly de-roofed building dating from before the 1920s (HAU3). About 80m to the south-west are the remains of a concrete dam (HAU4), which formerly impounded the water supply for the factory, and about 130m to the south-south-east is a demolished building, possibly a magazine (HAU5). Recently part of the rail system together with a weighbridge has been exposed (HAU6). On mine closure in 1986 the buildings and machinery within were left on a care-and-maintenance basis. In 1997, when a new local organisation took over, the buildings were repaired and re-painted and all machinery has been brought up to full working order; part of the cutting shed has been allocated for a showroom.

Cutting Shed (HAU1)

NY2246 1354. This is by far the largest building at The Hause; it is steel framed with an exterior of stuccoed breeze blocks and a corrugated iron roof. This year (1997) it has been brought to full working order.

Generating House (HAU2)

NY2249 1352. This is of mortared slate build with a slate roof; it is still in use.

Building (HAU3)

NY2240 1352. This building measuring 7.2m by 6.1m is of mortared slate with a slate roof much of which has been removed. There is a doorway and a window in the north wall and further windows in the east and west gables. The structure features on a ground photo in Tyler (1994, 68) dated by him to *c* 1900.

Reservoir (HAU4)

NY2239 1346. The reservoir built in 1926 (Tyler 1994, 160) to supply water to The Hause factory complex is now empty. The concrete dam is breached on the east and west sides; it is 2.4m maximum height. The present-day water supply bypasses the dam and utilises the old iron mine (see MSC6) as a reservoir.

Building Remains, possibly a Magazine (HAU5)

NY2254 1339. On the hillside above the generator house there has been a building of rendered and mortared slate blocks which appears to have been demolished. All that remains is a mound of building debris, 0.7m high on the upper side, which has collapsed down the hillslope. Protruding from the mound are slight traces of a foundation, mostly buried but exposed for some 0.5m at one corner; it is very approximately 3m square. Within the tumble a displaced wooden floor can be seen. Extending from this building diagonally down the hillside towards the factory is a terraced path.

The purpose of this structure has not been discovered; from the materials in its construction it would seem to be quite recent and almost certainly

associated with the slate industry. Judging by its isolation it may have been a magazine.

Rail system, weigh-house and weigh-bridge (HAU6)

NY2250 1353. Part of the rail system of 0.65m gauge at The Hause exiting the cutting shed has been exposed during recent renovation work; associated are the remains of a weighbridge with, alongside it, the foundations of a weighhouse surviving as an area of floor boarding about 6.0m by 2.8m. It is shown in good order on a photograph of 1930 in Tyler (1994, 97).

At the west end of the main shed at The Hause are the concrete foundations of the lower terminus of the aerial ropeway, most of which is buried beneath slate waste. The shape cannot be seen very well because of the debris on top of it, but there appears to be a concrete base with a series of three bolts protruding (see HON34).

The factory buildings sit upon a fairly flat-topped area made exclusively of slate waste. On the fringes of the spoil heap various tipping levels can be observed. The accumulation of waste from the factory has produced huge impressive banks of slate; they achieve a maximum height of about 18m though this is accentuated by the sloping nature of the land. From the factory the original track into Borrowdale angles down through the waste heaps between retaining walls up to 1.8m high. En route, this track passes by another weighbridge at NY2261 1353 (HAU7) constructed of metal set in an area of concrete.

12. MISCELLANEOUS FEATURES

This chapter is devoted to those features occuring in the area of survey which are considered to be unassociated with the slate workings. They include the remains of mines other than slate, and some structures deemed to be agricultural.

Boundary Wall (MSC1)

NY2161 1383-NY2125 1355. A ruinous wall extends from the region of Bull Gill and winds across the hill in the direction of Dubs Quarry before fading. It is discontinuous, largely turf-covered and incorporates several sections of rock outcrop along its course. Part of it is buried beneath the heaps of waste slate from Hopper East. The packhorse track from Bull Gill (KIM3), certainly 19th and probably 18th century, slices through the wall and is very clearly later.

The purpose of this wall is unknown; it may simply define an early property boundary.

Possible Shepherd's Shelter (MSC2)

NY2172 1376. Built into the hillside is a ruined dry-stone building measuring 2.85m by 1.65m within a wall 0.6m thick and surviving to a maximum height of 1.8m. The roof, formerly single-pitched, has collapsed. The doorway in the west is 1.5m high and 0.7m wide. This building has no clear association with any of the slate workings; the nearest exposed veins are 40-50m to the south, and there is no slate waste in the vicinity. There is some slate in the fabric but by and large the building is crudely built of stones (unknown but not slate) which have probably been gathered from an adjoining boulder-

strewn area.

This is one of two buildings mentioned by Tyler (1994, 22) which he describes as small stone huts made out of cobbles, not quarried slate. He suggests that they may be the dwellings of the first quarrymen dating from the late 17th century. This is certainly a possibility, but this building (MSC2) has been erected some distance away from any workings, and it is untypical of buildings known to be contemporary with the slate industry, being somewhat crudely constructed. (Where slate, a high quality building material, is available it tends to be used.) On balance this is more likely to be a shepherd's shelter.

Boundary Wall (MSC3)

NY2039 1325-NY2043 1335. At the extreme west edge of the survey area is a ruinous wall which crosses a natural shelf from the upper edge of a ravine to the base of a steepening slope where rock outcrop commences. It is crudely built of boulders; where wall faces are discernible it is about 0.9m wide and it achieves a maximum height of 0.7m. It is most likely to have been a property wall or to have served some agricultural purpose, and probably no connection with the nearby slate workings.

Sheepfold (MSC4)

NY2258 1388. On the east side of the boundary fence in Borrowdale Parish, is a ruinous sheepfold, crudely built up against a rocky slope on the north side. It measures 9.0m north-south by 7.2m transversely within a dry-stone wall, up to 1.4m high and 0.8m thick.

Fox Fold (MSC5)

NY2250 1388. Fox Fold is an ancient sheep fold built up against a rock outcrop. It is dry-stone built, measuring 7.5m east-west by 4.0m transversely. The wall, very crudely built, is 2.2m maximum height externally on the south

side and 1.8m internally, but on the north-west side it has collapsed almost to ground level. The rock outcrop is on the north-east side.

Iron Mine (MSC6)

NY2236 1345. Tyler notes that *c* 1860 a company was given a lease to work a vein of iron just south of The Hause (1994, 35); they drove a tunnel westwards for about 100 yards and built a house, subsequently called the Smiddy Hut, to accommodate the workers. Another trial was cut near the waterfall to the south (see MSC7). The venture was unsuccessful and it was closed down after 18 months (1994, 35). In the 1960s the mine was deepened and extended to provide the catchment for the Company's water supply (Tyler 1994, 128).

The mine adit is rock-cut, 1.8m wide. A low wall has been built across the mine entrance in order to impound water, and this serves as a reservoir for the present operation at The Hause. Immediately to the north of the adit is a flat-topped mound of ferrous spoil, 2.5m high.

The associated house has been reduced to a height of 0.5m; it measures 8.0m by 4.0m within a stone wall, 0.75m thick. It comprises two rooms, both filled with building debris, and is entered by a doorway in the north side into the smaller east chamber. An interconnecting door allows access into the larger west room which contains the remains of a fireplace. The house is built on a platform cut into the hill-slope on the east bank of a stream.

Trial Iron Mine (MSC7)

NY2233·1336. This was driven *c* 1860 into a rockwall in a quartz vein beside a waterfall (Tyler 1994, 35); neither this mine nor MSC6 were commercially viable. The adit is roughly triangular, 1.5m high and 1.4m wide and has been driven for a distance of 4.7m into solid rock. Some small pieces of ferrous spoil have spewed down the hillside towards the stream.

Trial Quarry (MSC8)

NY2232 1340. A depression has been excavated out of the side of a steep stream valley; the adjoining waste heap, *c* 3.0m high, appears to have a ferrous content. This work was probably an element in the abortive iron mining venture of about 1860.

Trial Copper Mine (MSC9)

Tyler notes that there was an unsuccessful trial on a copper stringer beneath Stang How at about the same period as the iron mining venture above The Hause (see MSC6-8) and probably by the same company (1994, 35). This mine has been located to NY2229 1376 alongside the stream and just below the public road. The rock-cut adit is 1.6m wide and approximately 1.2m high; above both the left and the right side of the entrance are two near-vertical veins which contained the copper ore. The tunnel is filled with water and at present is inaccessible; some attempt has been made quite recently to drain the mine by digging a trench at the adit and inserting a plastic pipe. No spoil is apparent.

Enclosure; Probable Sheepfold (MSC10)

NY2222 1386. Beside the public road as it ascends to the summit of Honister Pass is a rectangular dry-stone structure measuring 3.4m by 3.1m within a crude wall about 0.7m thick and up to 0.7m high. Some tumble from the slate workings above and some scree lies within the interior and against the east wall. There is no trace of an entrance and no evidence that there was ever a roof. This was probably a sheepfold.

Sheepfold (MSC11)

At NY2210 1389 a sheepfold has been constructed by building a dry-stone wall, now up to 1.4m high, connecting a vertical outcropping face on the south-west side with a huge detached boulder to enclose an area about 7.0m

by 5.5m. There is an entrance gap in the north-west between the outcrop and the wall.

13. LIST OF RCHME GROUND PHOTOGRAPHS

AA97/4728	TIPPING POINT AT BULL GILL ADIT LOOKING DOWN TO VALLEY FLOOR. (HON27)
AA97/4729	TIPPING POINT AT BULL GILL ADIT SHOWING START AT BULL GILL INCLINE.YEWCRAG INCLINE IN THE BACKGROUND. (HON27)
AA97/4730	REMAINS OF BRAKING MECHANISM ON BULL GILL WINDING HOUSE. (HON26)
AA97/4731	BULL GILL WINDING HOUSE FROM THE EAST.(HON26)
AA97/4733	BULL GILL WINDING HOUSE IN LEFT FOREGROUND;HARD QUARRY IN MIDDLE DISTANCE CENTRE;NAG BACK INCLINE CENTRE RIGHT.
AA97/4734	BULL GILL WINDING HOUSE (FOREGROUND) WITH HARD QUARRY AND NAG BACK INCLINE IN THE BACKGROUND.LOOKING WEST.(HON15,26,35)
AA97/4736	YEWCRAG INCLINE FROM THE HONISTER INCLINE.VIEW FROM EAST.(YEW9)
AA97/4737	VIEW EAST FROM THE BULL GILL WINDING HOUSE LOOKING DOWN THE BULL GILL INCLINE.(NOTE BULGE IN RETAINING WALL RIGHT OF INCLINE)
AA97/4738	INSIDE FIDDLER'S LEVEL AT THE KIMBERLEY INTERNAL INCLINE LOOKING DOWN.
AA97/4739	INSIDE FIDDLER'S LEVEL AT THE KIMBERLEY INTERNAL INCLINE LOOKING UP.
AA97/4740	KIMBERLEY INTERNAL INCLINE AT THE INTERSECTION WITH FIDDLER'S LEVEL.
AA97/4741	WITHIN FIDDLER'S LEVEL LOOKING TOWARDS THE ENTRANCE.
AA97/4742	GRAFFITI ON HONISTER INCLINE AT HON 29 ADIT.
AA97/4743	NAG BACK INCLINE LOOKING WEST FROM BULL GILL INCLINE.(HON15)
AA97/4744	GRAFFITI ON BUILDING AT SAME LEVEL AS THE LOWER ENTRANCE TO INCLINE TUNNEL.(HON4)
AA97/4745	ADIT (YEW30) ON QUEY FOOT VEIN DIPPING AT 30 DEGREES TO THE RIGHT.

AA97/4746	BULL GILL RAVINE (HON24) FROM BULL GILL ADIT (HON27) LOOKING DOWN TO THE NORTH.
AA97/4747	THE VALLEY OF GATESGARTHDALE BECK LOOKING NW FROM ROAD END EDIT.CENTRE LEFT IS UPPER TERMINUS OF AERIAL ROPEWAY (HON34)
AA97/4748	ROCK CUT ADIT BY UPPER TERMINUS OF AERIAL ROPEWAY. (HON30)
AA97/4749	TIPPING POINT AT ADIT. (HON29)
AA97/4750	TIPPING POINT AT HON29 LOOKING NE TOWARDS YEWCRAG INCLINE. DRESSING SHED & LATER CONCRETE BUILDING REMAINS TO THE RIGHT.
AA97/4751	DRY-STONE DRESSING SHED CONTAINING POST-WAR CONCRETE BLOCK BUILDING ALL SMASHED BY BOULDER (VISIBLE TO THE RIGHT). (HON29)
AA97/4752	UPPER TERMINUS TO AERIAL ROPEWAY LOOKING SE TO THE HAUSE. (HON34)
AA97/4753	RAILS FROM ADIT (HON30) LEADING BY RAISED INCLINE TO THE LINK LEVEL (HON31) VIEW FROM TOP OF AERIAL ROPEWAY TERMINUS.
AA97/4754	UPPER TERMINUS OF AERIAL ROPEWAY.
AA97/4755	WINCH ATTACHED TO TERMINUS TO CONTROL WAGGONS TO AND FROM THE LINK LEVEL. (HON31)
AA97/4756	YEWCRAG INCLINE FROM THE WEST.
AA97/4757	CONCRETE FOUNDATION OF AERIAL ROPEWAY GANTRY (NOW REMOVED). (HON34)
AA97/4758	VIEW N. SHOWING DRYSTONE BUILDING,CONCRETE DAM TO HAUSE CUTTING SHEDS AND ROCK WALL(WITH WATERFALL).
AA97/4759	VIEW TO THE WEST TO SHOW MONKEY SHELF (HON33) AT THE LOWEST LEVEL.LORRY TRACK UP TO HOPPER AND DUDS QUARRIES.
AA97/4760	THE HAUSE CUTTING SHEDS.
AA97/4761	GENERATOR HOUSE,THE HAUSE.
AA97/4762	ROAD END ADIT;ROUTE TO FIDDLER'S LEVEL TO THE RIGHT DEFINED BY BOLTS IN ROCK OUTCROP (FORMERLY FOR FIXING LADDERS)
AA97/4763	FIXINGS FOR LADDERS EN ROUTE TO FIDDLER'S LEVEL BY ROAD END ADIT.
AA97/4764	BUILDINGS AT ROAD END ADIT.
AA97/4765	REMAINS OF AERIAL ROPEWAY PICK-UP POINT AT ROAD END (ADIT TO LEFT).UPPER ROPEWAY TERMINUS AND BULL GILL INCLINE VISIBLE.
AA97/4766	REMAINS OF AERIAL ROPEWAY PICK-UP POINT AT ROAD END.ALSO SHOWS UPPER TERMINUS AND BULL GILL

	INCLINE.
AA97/4767	LORRY ROAD FROM ROAD END TO THE HAUSE.
AA97/4768	ROPEWAY PICK-UP POINT AT ROAD END.
AA97/4769	START OF NAG BACK SILL (HON14) WITH NAG BACK WINDING HOUSE (HON16) IN LEFT FOREGROUND.
AA97/4770	YEWCRAG INCLINE (YEW9) FROM HONISTER INCLINE LOOKING EAST.
AA97/4771	ADIT (HON18) OFF NAG BACK INCLINE.ROCK WALL SUPPORTED BY TIMBERS.COLLAPSE IMMINENT.
AA97/4772	ADIT (HON19) NB. INTERNAL PACK WALLS.
AA97/4773	LOOKING EAST ONTO NAG BACK SILL (HON14) RIGHT LOWER,THE HAUSE CUTTING SHEDS.YEWCRAG INCLINE (CENTRE AND LEFT BACKGROUND)
AA97/4774	AS AA97/4773
AA97/4775	AS AA97/4773
AA97/4776	TIPPING LEVEL (KIM5) OVERLOOKING BULL GILL.
AA97/4777	ADIT (HON22)
AA97/4778	LOOKING DOWN NAG BACK INCLINE (HON15) TO BULL GILL. N.B BULGING RETAINING WALL (CENTRE)
AA97/4779	GRAFFITI ON RUINED BUILDING OUTSIDE ADIT (HON22)
AA97/4780	LOOKING UP BULL GILL FROM HONISTER INCLINE.
AA97/4781	LOOKING WEST FROM LOWEST LEVEL AT DUDS DOWN THE VALLEY OF WARNSCALE BECK, THE ROUTE OF EARLY PONY TRACK.
AA97/4782	LOWEST LEVEL AT DUBS QUARRY SHOWING PARTIALLY BLOCKED PASSAGE TO ADIT TO RIGHT & COURSE OF INCLINE TO END OF DUBS INCLINE.
AA97/4783	HOPPER EAST QUARRY (POST WAR) SHOWING BASE OF VEIN PINCHING OUT.
AA97/4784	CAUSEWAY (OF UNKNOWN PURPOSE) APPROXIMATELY 100M SE OF BULL GILL QUARRY.
AA97/4785	LOOKING INTO BULL GILL QUARRY FROM THE EAST WITH RUINOUS BOTHY IN LEFT FOREGROUND.
AA97/4786	DRESSING SHED IN BULL GILL QUARRY (KIM2).
AA97/4787	RUINOUS BOTHY 30M SE OF BULL GILL QUARRY (KIM2).(QUARRY IN THE RIGHT BACKGROUND)
AA97/4788	RUINOUS BOTHY OR DRESSING SHED 15M ENE OF BULL GILL BOTHY (SEE NEG.NO AA97/4787. NOTE LARGE THICK UNDRESSED SLATES NEARBY.
AA97/4789	INSIDE OF DRESSING SHED IN BULL GILL QUARRY (KIM2).
AA97/4790	SUPPOSED STONE-BUILT TOILET AT HEAD OF BULL GILL;MORE LIKELY A SPRING WELL.
AA97/4791	BULL GILL QUARRY IN BACKGROUND,BULL GILL IN

	FOREGROUND, SUPPOSED SPRING WELL TO LEFT.
AA97/4792	OUTCROPPING SLATE (KIM1) ABOVE BULL GILL QUARRY WITH CHOCK STONE BEHIND.
AA97/4793	WINDING HOUSE AT UPPER ROAD END IN PROGRESS OF RENOVATION.
AA97/4794	WINDING HOUSE AT UPPER ROAD END IN PROGRESS OF RENOVATION. VIEW FROM NORTH.
AA97/4795	ADIT (HON23). PLATFORM ALMOST COMPLETLEY GONE.
AA97/4796	LOOKING WEST FROM THE OLD PACK-HORSE TRACK (HON3) INTO ASH GILL QUARRY (HON2) WITH THE ASH GILL INCLINE BELOW.
AA97/4797	LOOKING SE TO THE HAUSE (RIGHT BACKGROUND) YEWCRAG INCLINE (LEFT BACKGROUND) STONE-BUILT CAUSEWAY OVER GULLY (FOREGROUND)
AA97/4798	MINOR PROSPECTING QUARRY (LSW5) ALONGSIDE THE PACK-HORSE TRACK (HON3) 120M SOUTH OF ASH GILL QUARRY.
AA97/4799	HOPPER WEST QUARRY FROM THE SOUTH WEST.
AA97/4800	DUBS HUT (CENTRE) WITH SPOIL HEAPS FROM QUARRY TO LEFT & RIGHT
AA97/4801	LOOKING DOWN THE LINE OF SUBSIDIARY INCLINE FROM DUDS MEDIAL LEVEL TO LOWER LEVEL SHOWING DRESSING SHEDS.
AA97/4802	GRAFFITTI AT HONISTER.
AA97/4803	LOOKING OUT FROM THE MINE. (HON22)
AA97/4804	ON NAG BACK SILL LOOKING WEST TO ASH GILL QUARRY (RIGHT BACKGROUND) & AND ASH GILL INCLINE (CENTRE).
AA97/4805	WELL PRESERVED STEPS SANDWICHED BETWEEN ROCK WALL & RETAINING WALL OF ASH GILL INCLINE.VIEW FROM PLATFORM OF ADIT (HON12)
AA97/4806	COLLAPSING REMAINS OF ASH GILL INCLINE AS IT APPROACHES ITS TUNNEL MOUTH (CENTRE).NAG BACK SILL TO THE LEFT.
AA97/4807	ADIT (HON13)
AA97/4808	ASH GILL INCLINE LOOKING UP TO WINDING HOUSE SHOWING TRACK BED OF SLATES SET ON EDGE.
AA97/4809	ADIT (HON8)
AA97/4810	VIEW FROM ASH GILL INCLINE SHOWING INCLINE TUNNEL (RIGHT CENTRE).NAG BACK SILL (CENTRE) & YEWCRAG INCLINE (BACKGROUND)
AA97/4811	ASH GILL WINDING HOUSE (HON 5);ASH GILL QUARRY IN BACKGROUND
AA97/4812	STEPS DOWN FROM ASH GILL QUARRY (HON2) TOWARDS ASH

	GILL WINDING HOUSE.(HON5)
AA97/4813	ASH GILL INCLINE (& TUNNEL) FROM ASH GILL QUARRY.VIEW ACROSS TO YEWCRAG INCLINE & DOWN TO PUBLIC ROAD.
AA97/4814	STEPS FROM ASH GILL QUARRY (HON2) TO WINDING HOUSE (HON5)
AA97/4815	RUINOUS DRESSING SHED IN ASH GILL QUARRY (HON2) LOOKING EAST.
AA97/4817	PART-RENOVATED BOTHY IN ASH GILL QUARRY (HON2)LOOKING EAST.
AA97/4818	LOOKING DOWN ASH GILL INCLINE FROM THE BOTHY IN ASH GILL QUARRY SHOWING CAUSEWAY TO RIGHT & INCLINE TUNNEL IN CENTRE.
AA97/4819	STONE-BUILT CAUSEWAY LEADING OUT OF ASH GILL QUARRY. (HON2)
AA97/4820	QUEY FOOT QUARRY (YEW28) FROM THE SOUTH SHOWING TRACK.
AA97/4821	PASSAGE FROM 1839 LEVEL AT SAM NEW QUARRY.VIEW FROM NORTH. (YEW3)
AA97/4822	CELL AT 1839 PASSAGE IN SAM NEW QUARRY.(YEW3)
AA97/4823	LOOKING ALONG 1839 PASSAGE INTO SAM NEW QUARRY (YEW3) SHOWING STONE SEATS FOR DRESSING SLATES.NB.PILE OF "RIVINGS" CENTRE.
AA97/4824	LOOKING WEST TO WINDING HOUSE (YEW20) & HONISTER INCLINE IN BACKGROUND.
AA97/4825	DETAIL OF BRAKE MECHANISM ON WINDING DRUM.(YEW20)
AA97/4826	YEWCRAG WINDING HOUSE.(YEW20)
AA97/4827	YEWCRAG WINDING HOUSE (YEW20) EX-HONISTER AERIAL ROPEWAY GANTRY TO LEFT.
AA97/4828	BRAKEMAN'S HANDLE AT THE TOP OF YEWCRAG INCLINE.(YEW20)
AA97/4829	BRAKEMAN'S HUT (YEW20) & THREE-RAIL SYSTEM REMAINS ON YEWCRAG INCLINE (YEW9)
AA97/4830	REMAINS OF SUPPOSED EARLY DRESSING SHED (YEW1C)
AA97/4831	VIEW FROM YEWCRAG DOWN GATESGARTHDALE TO BUTTERTMERE.
AA97/4832	VIEW FROM DRESSING SHED (YEW1C) DOWN GULLY TO THE HAUSE.
AA97/4833	DETAIL SHOWING MANNER OF TYPICAL SLATE OUTCROP ON YEWCRAG SIDE
AA97/4834	VIEW FROM SAM NEW QUARRY (YEW3) DOWN TO BOTHY (YEW21) WITH DUBS INCLINE & MODERN LORRY TRACKS IN THE BACKGROUND.

AA97/4835	FISHER QUARRY SPOIL HEAP (YEW4) FROM SAM NEW QUARRY.(YEW3)
AA97/4836	DRESSING SHED AT SAM NEW QUARRY (1901 LEVEL).(YEW3)
AA97/4837	LOOKING NORTH.EAST INTO UPPER LEVELS OF ABOVE INCLINE QUARRY. (YEW6)
AA97/4838	ADIT AND PACK WALL ABOVE (PARTLY COLLAPSED).(YEW6)
AA97/4839	BOTHY 1880 (YEW21) FROM WEST.
AA97/4840	BOTHY CIRCA 1850 FROM SOUTH.(YEW7)
AA97/4841	VIEW FROM TOP OF YEWCRAG INCLINE ACROSS VALLEY TO THE HAUSE (LEFT),DUBS INCLINE (CENTRE) WITH LORRY TRACKS BELOW.
AA97/4842	CRUDE BOTHY (DRESSING SHED?)(YEW1B) FROM SOUTH WITH WINDING HOUSE (YEW20) IN BACKGROUND.
AA97/4843	RE.POSITIONED GANTRY FROM HONISTER AERIAL ROPEWAY AT ADIT (YEW16) PLATFORM
AA97/4844	KIMBERLEY AND HONISTER COMPLEXES FROM YEWCRAG INCLINE.
AA97/4845	1932 SHREAVE WHEEL AT TOP OF LATER YEWCRAG INCLINE.(YEW22)
AA97/4846	LOOKING UP YEWCRAG INCLINE (YEW9) FROM PLATFORM AT ADIT (YEW.14).SHOWING SERIOUSLY DISPLACED BLOCK OF RETAINING WALL.
AA97/4847	DISPLACED RETAINING WALL (TO LEFT) AT ADIT (YEW15) PLATFORM.
AA97/4848	RECENTLY CLEARED PASSAGE BENEATH YEWCRAG INCLINE AT ADIT (YEW12) LEADING TO TIPPING POINT.
AA97/4849	WEIGH-HOUSE AND WEIGH-BRIDGE AT NORTH END OF TRACK.(YEW10)
AA97/4850	RENOVATED INCLINE BETWEEN ADITS (YEW11) AND (YEW12)
AA97/4851	GENERAL VIEW FROM YEWCRAG INCLINE DOWN GATESGARTHDALE TO BUTTERMERE.HONISTER WORKINGS TO LEFT.
AA97/4852	BLOCKED ADIT ALONGSIDE YEWCRAG INCLINE.(YEW9)
AA97/4853	GENERAL VIEW WEST TO BUTTERMERE.
AA97/4854	TRIAL ADIT.(YEW26)
AA97/4855	LOOKING UP YEWCRAG INCLINE (YEW9) FROM CLOSE TO THE BOTTOM.
AA97/4856	1932 ELECTRIC WINDING HOUSE (YEW23);INCLINE BEHIND.
AA97/4857	LOOKING WEST ALONG THE MONKEY SHELF TO STANG END.(HON33)
AA97/4858	THE MONKEY SHELF (HON33) (LEFT CENTRE) & HONISTER WORKINGS FROM YEWCRAG TRAMWAY. (YEW24)

14. BIBLIOGRAPHY

Cameron, AD 1993 Slate from Honister: an historical and field guide
(Cumbria Amenity Trust Mining History Society)

Tyler, I 1994 Honister Slate: the history of a Lakeland slate mine
(Blue Rock Publications, Caldbeck)