REPORT ON THE FIFTH SEASON OF THE TRE'R CEIRI CONSERVATION PROJECT APRIL TO SEPTEMBER 1993

PART 1: TEXT

Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

REPORT ON THE FIFTH SEASON OF THE TRE'R CEIRI CONSERVATION PROJECT APRIL TO SEPTEMBER 1993

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Gwynedd Archaeological Report No. 98

CONTENTS

PART 1

LIST OF FIGURES

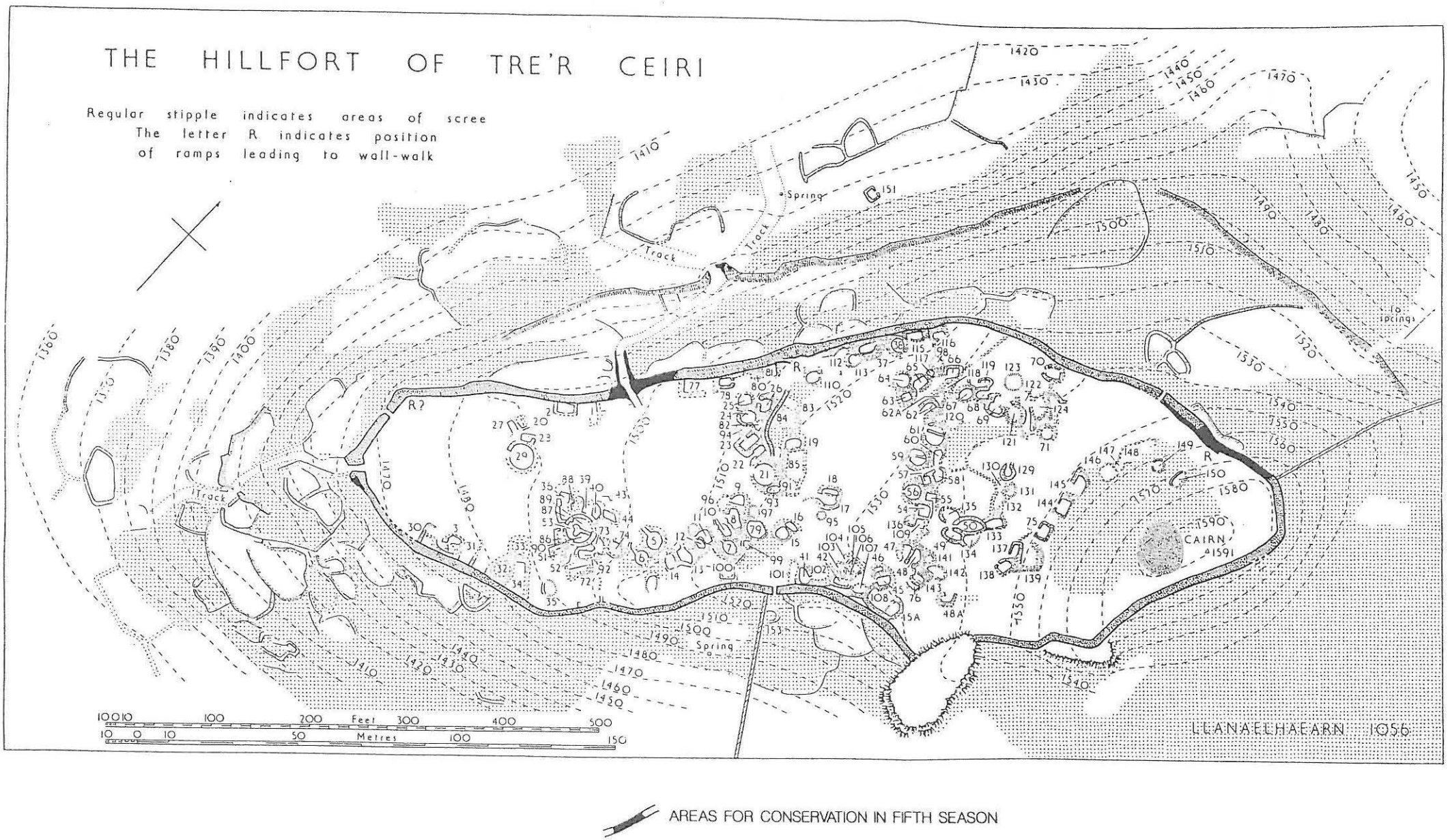


Fig. 1 General Plan (after R.C.A.H.M.W. 1960), showing areas for conservation in the fifth season.

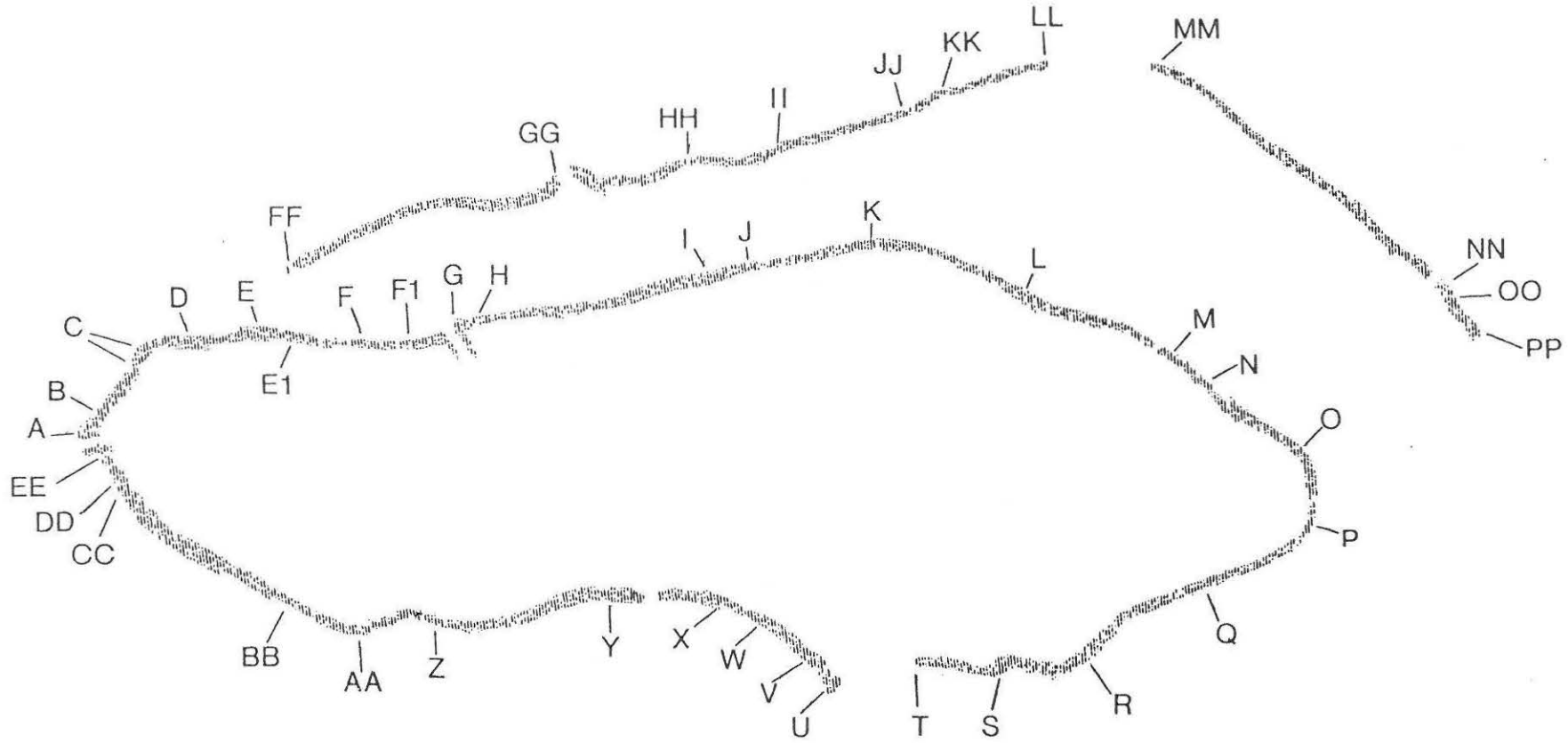


Fig. 2 The Ramparts: points of collapse (after Dallimore 1978).

INTRODUCTION

Tre'r Ceiri has often been described as one of the best preserved hillforts in the British Isles. It stands at a height of 485m O.D. on the easternmost of the three peaks of Yr Eifl, on the Llŷn Peninsula. The 2.0 hectare fort is bounded by a massive dry-stone wall, which, due to the inaccessibility of the site and the abundance of stone on the peak, has survived close to its original height of 3.5m in places. A further outer defensive wall stands to the north-west of the fort. The best preserved parts of the rampart retain a dry-stone parapet.

The interior of the fort contains the remains of about 150 dry-stone huts exhibiting a great variation in size and shape, ranging from simple round huts to irregular, rectangular structures. There are two main entrances through the inner rampart, at the south-west and north-west of the fort with additional simple gaps in the rampart at the north, west and south.

This spectacular site has been attracting large numbers of visitors for at least 100 years (Cambrian Archaeological Association, 1895) and has consequently suffered from severe erosion. Increasing concern about the deterioration of the remains prompted Cyngor Dosbarth Dwyfor, in conjunction with Cadw: Welsh Historic Monuments and Gwynedd County Council, to embark in 1989 on a conservation project to consolidate the site. The project was to run for an initial five years. Gwynedd Archaeological Trust was commissioned to provide archaeological supervision and to record all works as they progressed.

The fifth and final season of the original project began in April 1993, continuing until September 1993.

STAFF AND SUPERVISION

Works were conducted by W. H. Evans, D. Ll. Jones and I ap Llyfnwy of T.I.R. stonemasons, Penrhyndeudraeth, under the supervision of the writer. Clearance of the north-west entrance was carried out by the writer and an assistant from Gwynedd Archaeological Trust. Monthly site meetings were again held in order to monitor the progress of the project and to arrange the work programmes and were attended by the above stonemasons, the writer, Mr A. Davies of Cyngor Dosbarth Dwyfor, Dr M. Yates of Cadw, Mr J. St.Paul of Gwynedd County Council and Mr D. Longley of G.A.T.

PROGRESS IN THE FIFTH SEASON

During the fifth season work was concentrated on the north-west entrance and its immediate surroundings. The complexity and sensitivity of this area resulted in much of the time available being spent on its conservation.

In addition to this, consolidation works were carried out on the gateway through the outer defensive wall and the lower banquette east of the north postern. Thirty metres of wall were conserved between collapse N and the modern field wall, at the north of the site. At the end of the season two collapses in the south-east bastion of the south-west entrance were consolidated.

As this was the last year of the project it was felt that a management plan for the site was needed. This was produced during the fifth season by the writer, for Cyngor Dosbarth Dwyfor, and comprised a survey of all unconserved areas in the fort, recommendations for a further, concluding, five years' work and a long-term management strategy.

RECORDING METHODS

Before conservation, relevant areas were surveyed with a total station. All standing walls were photographed in 2m segments, using a 28mm shift lens to correct the verticals, from a standard distance of 4m, thus using the most accurate 40% of the negative. In this way an overlapping pre-conservation sequence of all consolidated areas has been produced.

A detailed written and photographic record was kept of the works as they progressed, supplemented with measured drawings where photographs could not show enough detail or demonstrate relationships between features clearly.

All photographic records were taken on black and white and colour prints, supplemented with colour transparencies for lecture purposes. At the end of the season the negatives were catalogued and stored in standard archive conditions.

DETAILS OF WORKS COMPLETED

Details follow of all conservation works completed during the fifth season. Works were conducted on the main rampart wall and the outer defensive wall and can be located by reference to the numbering scheme produced by K. Dallimore in 1978 (Fig. 2) and detailed location plans, Figs 3, 8, 15 and 17. As the works were predominantly recorded photographically, it is recommended that the relevant Plates in Part 2 be consulted alongside the text.

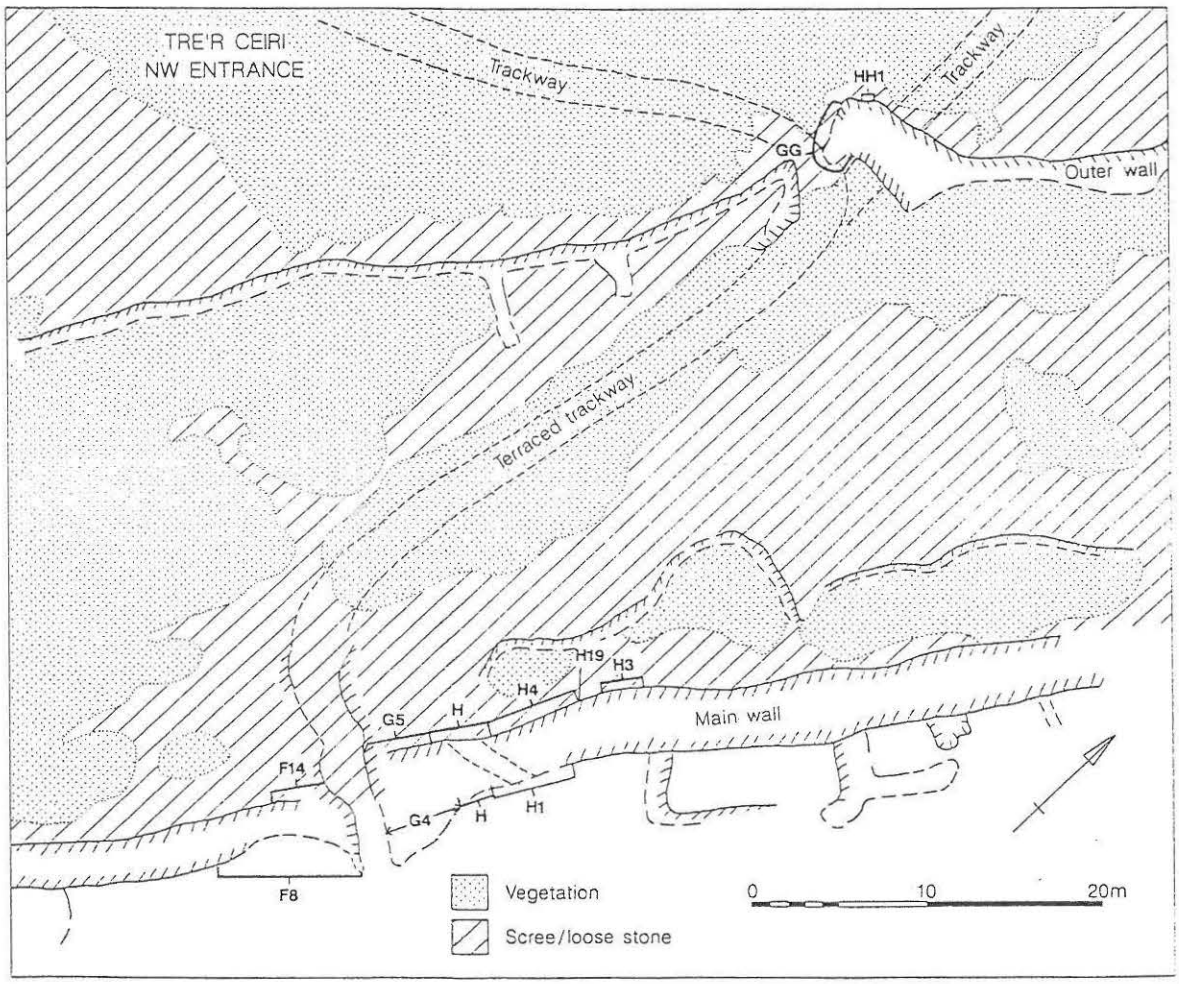


Fig. 3. The north-west entrance and environs before conservation, showing collapses for conservation in the fifth season (for collapses within the north-west entrance see Fig. 4).

Collapse F8 (Fig. 3)

An 8.0m length of inner face to the south-west of the north-west entrance was in a state of collapse, falling from 1.25m at the south-west to ground level 5.0m from the entrance (Plates 1 and 2). Loose core had spilled forwards and was standing 0.4m above the standing face. The 5.0m of lost facing (Plates 3 and 4) corresponded to a rise in ground level as the entrance was approached. No facing could be traced for any of this area, the wall line being indicated by a very loose rubble slope. The rubble was standing to a height of 1.0m at the south-west, gradually falling to the same level as the interior of the fort and the top of the north-west passage walls at the north-east of the collapse.

The loose core was cleared from the top of the standing facing. The facing was sound except for a small void which was packed with a stone (Stone A, Plate 5). No *in situ* facing was disturbed and a maximum of 0.3m of masonry was added in order to retain the core. Care was taken to emulate the very irregular facing at this point, and the edge of the wall was stabilised with large slabs (Plate 5).

A small amount of rubble was cleared from the presumed wall line running from the end of the surviving face to the edge of the passage, but no basal courses were revealed. This area was causing no threat to surviving masonry so the rubble was replaced. Care was taken to produce a graded slope at the south-west to support the core and semi-collapsed facing at this point (Plates 6, 7 and 8).

Collapses F13 & F14 (Figs. 3 and 15)

The outer face to the south-west of the north-west entrance was generally well preserved, standing to a height of 2.0m. It became more ruinous as it approached the north-west entrance passage, falling from a height of 1.4m, 3.5m away from the passage, to the level of the scree at a distance of 2.5m (F14) (Plate 9). A minimal amount of clearance was undertaken along the line of the wall to ascertain the depth of masonry before stabilisation. A face (F13) was revealed abutting the outer face of the rampart at 90°(Plate 10). This could be traced for 1.5m, turning towards the passage before becoming too ruinous to follow. Both the outer face and F13 could be seen to run down into the scree for at least 1.0m, suggesting a different style of building from the outer face of the rampart on the north-east side of the passage, where the wall was sitting directly on the scree.

The rubble was replaced in front of F13 to protect it and the end of F14 was graded down more gently by the addition of up to 0.3m of facing (Plate 11). No original masonry was disturbed.

Wall H - I Inner Face (Fig. 3)

The face rises from ground level at the south-west end of Hut 77 to a height of 0.75m, 4.0m south-west of the hut. This facing is constructed from large slabs and is stable.

Collapse H1 (Fig. 3)

A large slab had fallen from the wall at the south-west of the stable facing to the south-west of hut 77 (Stone A on Plate 12). Beyond this the face became very ragged with displaced stones obscuring the line of the face for 4.9m (Plates 12, 13 and 14).

The displaced masonry was stripped from the collapse. The basal courses survived for 1m beyond stone A, but beyond this only an occasional header could be seen, the face petering out over the next 2m (Plate 15). It was felt that the core needed stabilising and, as the line of the face could be traced with some certainty, a low face was built. This face was constructed to a

maximum height of 0.4m, grading down to a more ambiguous slope at the south-west end of the collapse where the face could not be traced with any certainty (Plates 16 and 17).

Collapse H inner face (Fig. 3)

A 2m length of possible facing was standing directly to the south-west of collapse H1 (Plate 18). This 'facing' consisted of small stones and was semi-collapsed, the stones being more characteristic of wall core. The masonry was not very stable but there seemed to be little virtue in attempting to rebuild such a debatable length of facing. A compromise was achieved by using a few stones to pin the base of the wall in an attempt to support the weakest parts of the face (Plate 19).

Collapse G4 (Fig. 3)

The area between collapse H and the north-west entrance consisted of undifferentiated rubble lying between a natural rise in the ground and the remains of the outer face of the rampart (G5) (Plate 20). At the south-west end of the collapse, the rubble formed a steep slope down to the north-west entrance passage and collapse G1. There was no trace of any facing but the area was very eroded due to the use of collapse H as an entrance to the fort. The maximum distance between the outer face and the bedrock delineating the area of rubble was about 5m. There was an unusually high proportion of large stones within this very extensive area of rubble, suggesting either that the face may have continued along a line within this area and suffered a catastrophic failure or that some other major structure was present. As this was likely to be relevant to the conservation of collapse G1 in the entrance passage, a limited investigation of this area was carried out, consisting of no more than lifting and carefully replacing some of the larger stones in order to look for buried facing. It was clear that there was a considerable depth of rubble but no structural remains were visible. Further investigation was beyond the brief of this project. If any structure remains in this area it is well protected by the overlying stones. No further works were conducted on G4 but the conservation of Collapses G5 and G1 impinged somewhat on this area. Plate 21 shows this area after conservation.

Wall H-I Outer Face (Fig. 3)

The wall is generally well preserved for much of this area with only one major failure in the wall face: Collapse H.

Collapse H3 (Fig. 3)

H3 was a 2.4m long dip in the outer face corresponding to the low part of the inner face to the south-west of Hut 77. The face fell from a height of 2.4m at the north-east to 1.6m at the centre of the collapse, rising again to 2.0m at the south-west (Plate 22). The masonry at the sides of the dip was showing signs of instability and recent erosion.

No *in situ* masonry was disturbed and the dip was filled with stones taken from the scree at the base of the wall (Plate 23).

Collapse H19 (Fig. 3)

There were several voids approximately half way up the wall to the south-west of H3. The voids can be seen just to the left of the right-hand ranging rod on Plate 24. They were caused by the presence of a large curved slab, typical of the more bizarrely shaped stones found on Tre'r Ceiri, in the wall face. This gave the wall an unstable appearance. Several attempts

were made at packing these voids but the shape of the slab did not allow stones to be wedged into the face. In the final event only three stones, A, B and C on Plate 25, were added. The length of the headers in this part of the wall imparts a high degree of stability so no further action was taken.

A few stones were added to the edge of the wall between collapses H3 and H4 as part of general stabilisation of the wall top. These can be seen on Plate 25.

Collapse H4 (Fig. 3)

A 5.5m length of upper courses of the outer face had been lost. The remains of the inner face and the wall core were standing in excess of 1.0m above the remaining facing in places (Plates 26, 27 and 28). The wall turns to a more southerly direction in the course of the north-easternmost 2m of the collapse. The upper courses of the wall had slipped forward at this point, causing a pronounced bulge in the wall and a slight overhang. The headers in this area are long and heavy and the facing has reached a point of stability. At the south-east end of the collapse the face fell from 1.5m to 0.8m. The standing facing was stable apart from a few smaller stones at the top. Several courses of masonry were added to the wall for the whole length of the collapse, thus stabilising the top of the original masonry and retaining the core behind it. The wall now stands to a height of 1.8 to 2.0m at the north-east of the collapse, falling to 1.0m at the south-west (Plates 29, 30 and 31).

It is interesting to note that the scree is roughly revetted at this point, forming a narrow upper terrace and a wider lower terrace, thus stabilising the naturally steep slope.

Collapse H outer face (Fig. 3)

The face fell sharply at the end of H4, reaching ground level within 0.2m. The core was still standing up to 1.0m high for a further 1.0m, the wall was then visible as a rubble slope for 1.8m (Plates 32 and 33). This area was eroding fast due to visitors using this collapse as a means of access to the fort.

The tumbled masonry was cleared from the collapse (Plates 34 and 35). Only one basal header on the north-east end of the collapse and two on the south-west had survived. The rest of the face was completely lost. The north-east end of the collapse was bounded by a straight joint. Another straight joint was visible 0.4m to the north-east of this (Plate 36). There was a suggestion of another joint at the south-west end, but the face was too disturbed to be certain. These features suggested the presence of an earlier blocked entrance. Rather more core than usual was cleared from behind the collapse, but no facing could be seen within the wall and no facing survived on the inner face at this point. The straight joints may have no great significance but they would have contributed to the weakness of the wall face at this point, as the now collapsed masonry was not well tied in to the rest of the wall. The lack of basal courses suggests that the cause of the wall failure was a movement in the scree slope, which is very steep at this point.

The masons rebuilt the collapse using the stones in the rubble slope which were presumably from the collapsed wall face. As the consolidation work progressed it became obvious that the stones in the rubble were smaller than is usual for a collapsed wall face. The rebuilt face (Plates 37 and 38) is out of character with the wall to the north-east. The wall at the south-west however contained a high proportion of small stones. In view of the possible multi-phase build and the fact that the stones used in the consolidation were from the collapsed masonry, it was decided to retain the out-of-character facing and not to rebuild it. Another factor in this decision was the very fragile traces of terracing in the scree in this area. Importing large stones from the surrounding slopes would further disturb these rather insubstantial features.

Collapse G5 (Fig. 3)

The outer face to the south-west of Collapse H was standing to a height of 1.1m, falling gradually over the next 4.3m to the level of the scree at 0.5m away from the entrance passage (Plates 39 and 40). The wall appears to be built on the scree as the facing cannot be seen running below the present scree level.

Much of the facing in G5 was only marginally stable; the core and wall behind it (Collapse G4) was lost, thus drastically weakening the surviving masonry. The upper courses were tipped backwards and the base of the wall was tending to be pushed forwards, making it very difficult to trace the original wall line. There were two rows of headers, one in front of the other, at the south-west end of G5 (Plate 41). This could have been caused by the facing at the front slipping off the original basal course or by two phases of building. Clearly interpretation could not extend beyond the realms of guesswork, so it was decided to disturb this length of wall as little as possible.

The face was considerably strengthened by the placement of a number of large stones behind the unsupported facing (Plate 21). The conservation of collapse G1 also stabilised this area. Supporting stones were placed behind the collapse and several stones were added to the most unstable areas of the upper facing, thus helping to lock the upper courses together (Plates 42 and 43). The above measures, along with the conservation of G1 and H, have considerably strengthened this length of wall, which was in danger of being lost altogether.

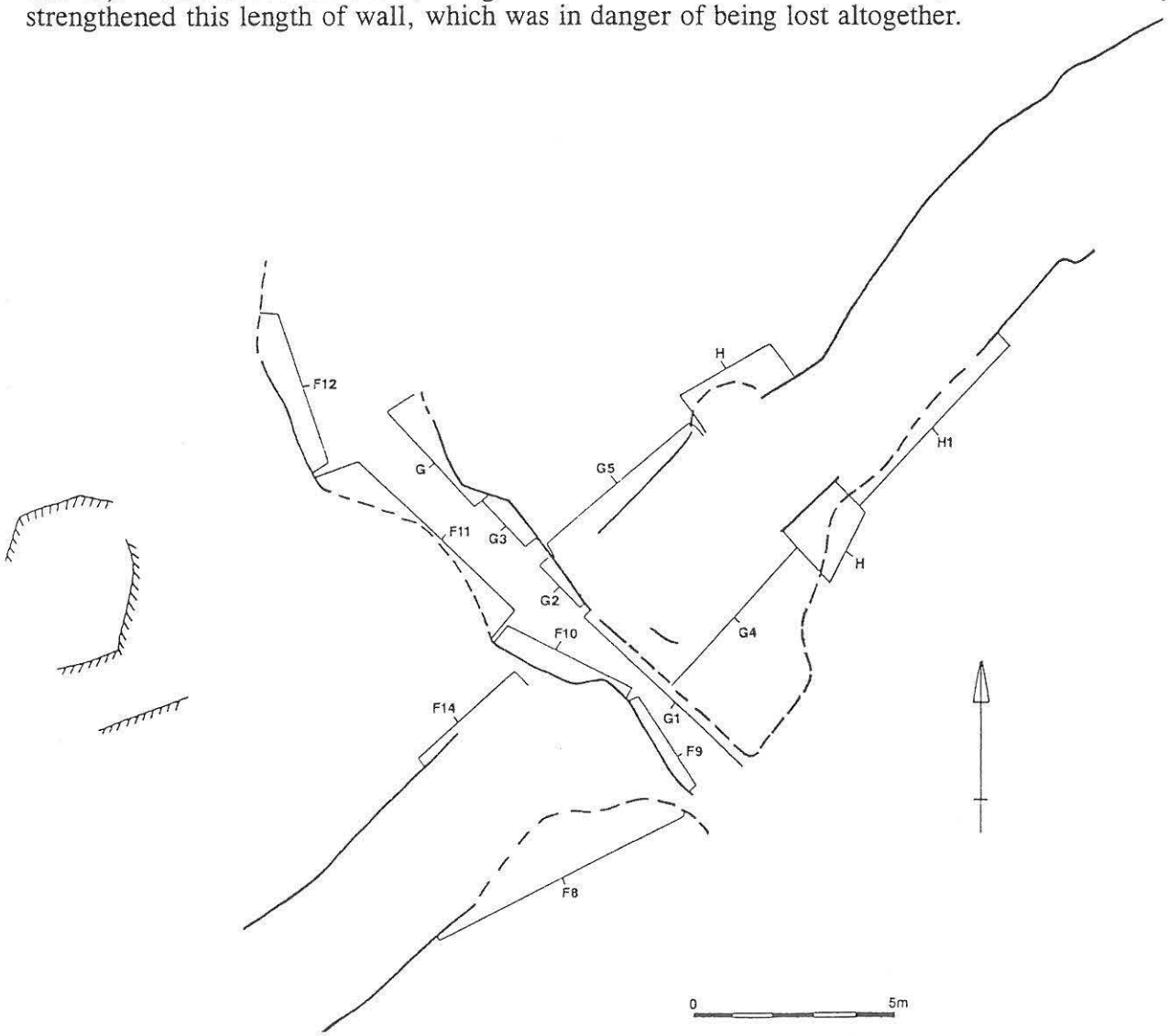


Fig. 4. The north-west entrance before conservation, showing collapses for conservation in the fifth season.

The North-West Entrance (Figs 3 and 4)

Introduction

The north-west entrance is approached by a terraced trackway leading from the gateway in the outer rampart. The entrance passage is 15m long in total, including outer flanking walls extending beyond the rampart for 8m. The passage floor, near it's inner end, runs about 1.5m below the natural scree level. When the site was visited by Pennant in 1781 he described is as 'The Grand Entrance'. In recent years the south-west entrance has been used as the main access to the fort. At the beginning of the 1993 season the outer end of the north-west passage was barely discernible, being choked with rubble from a major collapse in the south-western flanking wall (Plates 44 and 45). The line of the inside of the passage on the north-eastern side was also lost, a major collapse having deposited yet more rubble in the passage (Plate 46). Much of the standing masonry was unstable and the collapse in the outer passage was being severely eroded by a footpath that was becoming established over the rubble, thus threatening masonry to either side. In view of the above and the desirability of having an accessible entrance on the north-west side of the fort to discourage climbing over the ramparts, a proposal for the consolidation of this area was submitted at the end of the 1992 season.

It was agreed that the collapsed rubble should be cleared from the entrance and the collapses be conserved in the usual fashion.

The north-west passageway before conservation (Fig. 4)

The north-west entrance was described and planned by Hughes in 1906 (Figs 5 and 6).

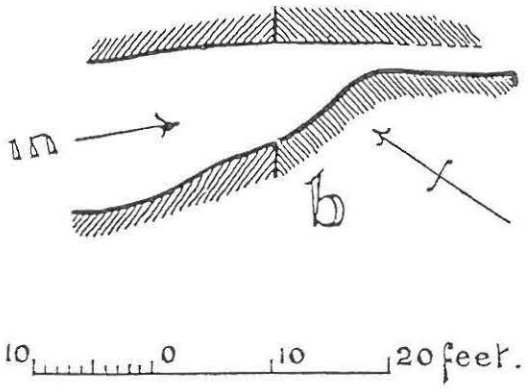


Fig. 5. The north-west entrance (Hughes 1907).

'The passage through the north-western entrance, in the inner encompassing wall, has been lengthened by extending the masonry inwards for about 20 ft. beyond the inner face of the rampart wall. On the plan [Fig. 5], the entrance through the inner wall is shown with reversed hatching to that through the extended walling. The north-western, or left-hand, wall is slightly concave. The south-eastern wall slopes in sharply towards the north-western; it is irregularly concave, and has a slight bulge in the middle; the gateway narrows from a width of 12 ft. at the entrance to 2 ft. at the inner end. The outline of a short length of the face of the inner portion of the left-hand wall could not be traced, owing to the dilapidated state of the masonry. This small section is shown by means of a broken line on the plan; the pathway rises rapidly through the thickness of the wall.'

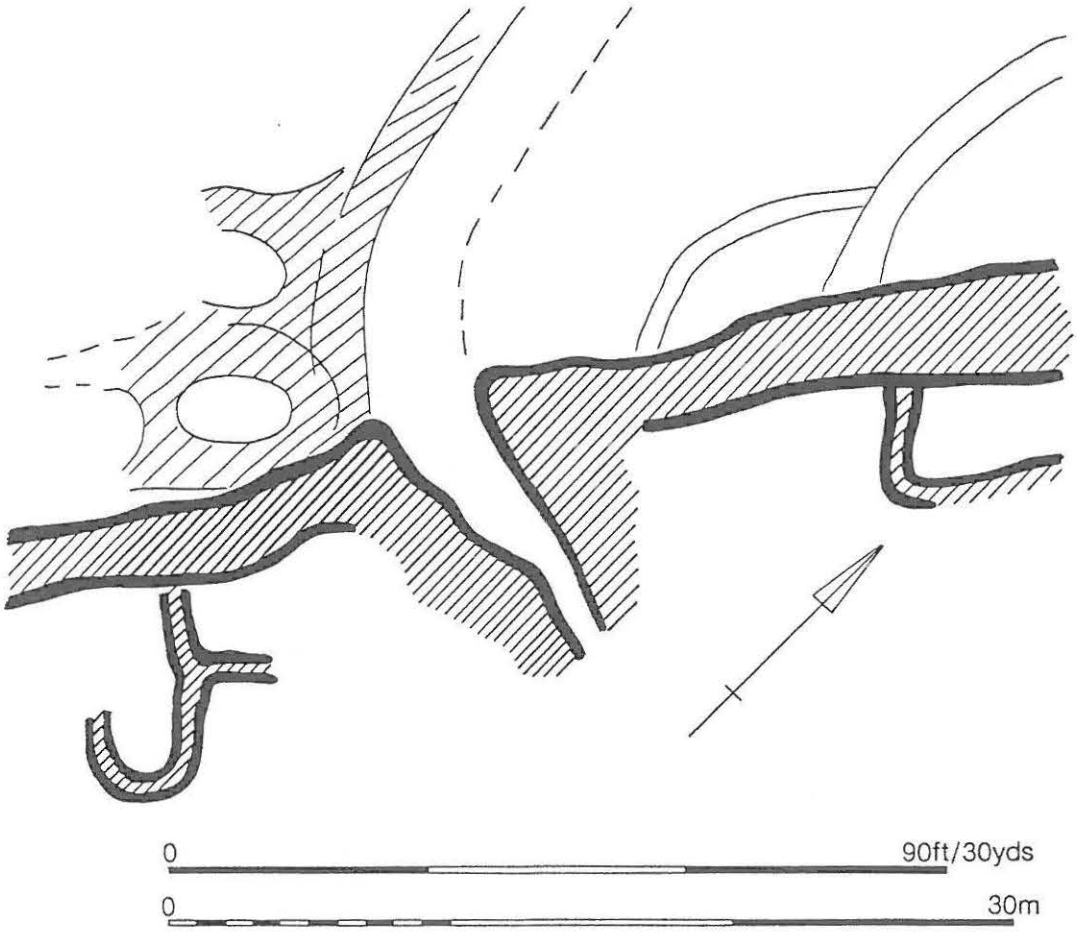


Fig. 6. The north-west entrance (Hughes 1906).

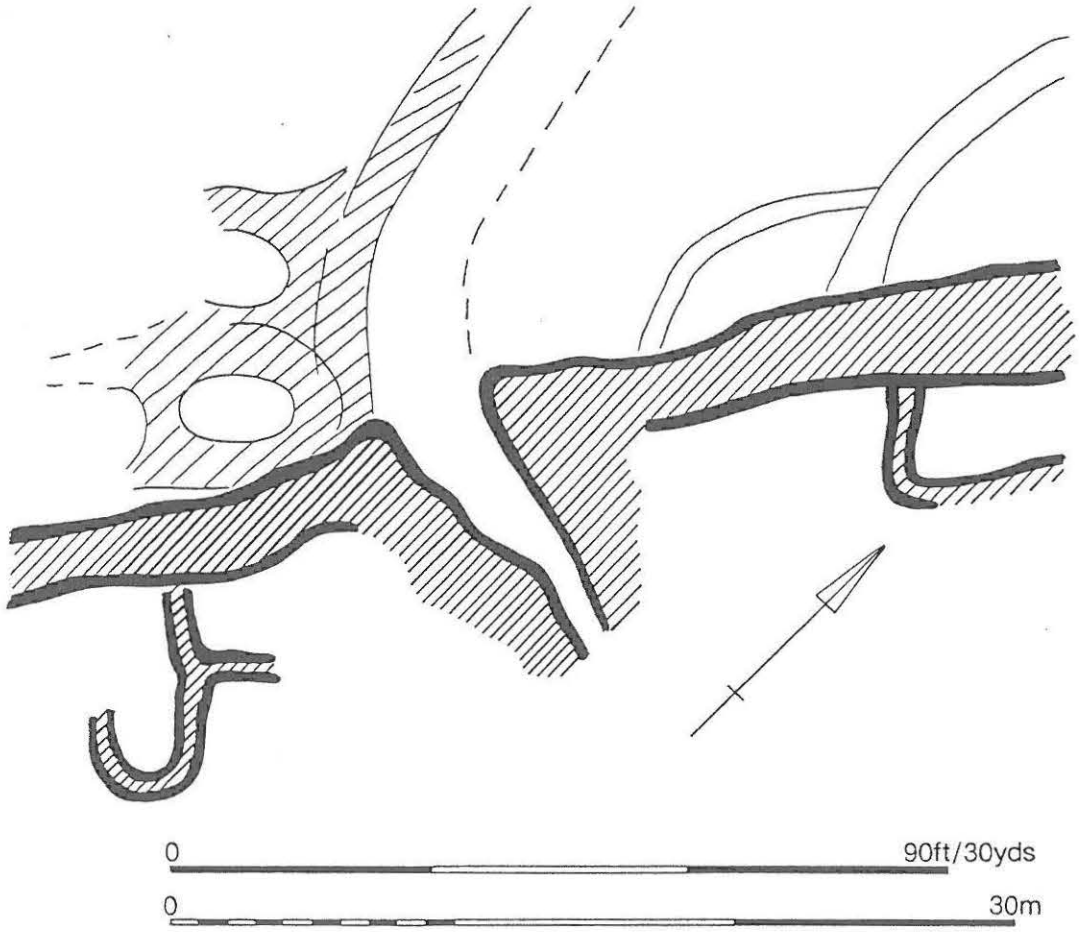
His unpublished draft plan of Tre'r Ceiri (Fig. 6) shows the extended flanking walls on the **inside** of the ramparts. The shape of the passage however is comparable to the total station plan produced at the beginning of the 1993 season if the line of the passage is projected behind collapse F11 (Fig. 4). The line of the inner face of the ramparts shown on Hughes' plan is the same as the line of the outer face on the 1993 plan, suggesting a transcription error between Hughes' site records and his final report. If this is assumed, his description makes good sense and is very valuable, as the major collapse in the outer end of the passage was obviously not as severe in 1906, still allowing the line of the face to be recorded.

Griffiths recorded the entrance in 1946 stating that :

> 'The entrance passage has a total length of 34 ft, including the passage through the flanking walls outside the gate, and varies in width from 3 ft. to 7 ft. 6 ins. The N. wall is practically straight, but the S. wall has a concave recess in its middle section and a straight stop on the inside.'

Hogg described the entrance in 1956 (see also Plate 47):

> 'The W. gateway is now much ruined, but appears to be a simple gap with the rampart slightly thickened. The floor of the gateway is below the interior of the fort, and the track ascends between rough revetment walls about 20 ft. long, not bonded into the rampart.
>
> 'According to Harold Hughes, the passage through the rampart was about 15ft. long and 12ft. wide externally narrowing to 9 ft. The passage between the revetment walls, however, narrowed rapidly from 9ft. at the back of the rampart to about 2 ft. at its inner end.'



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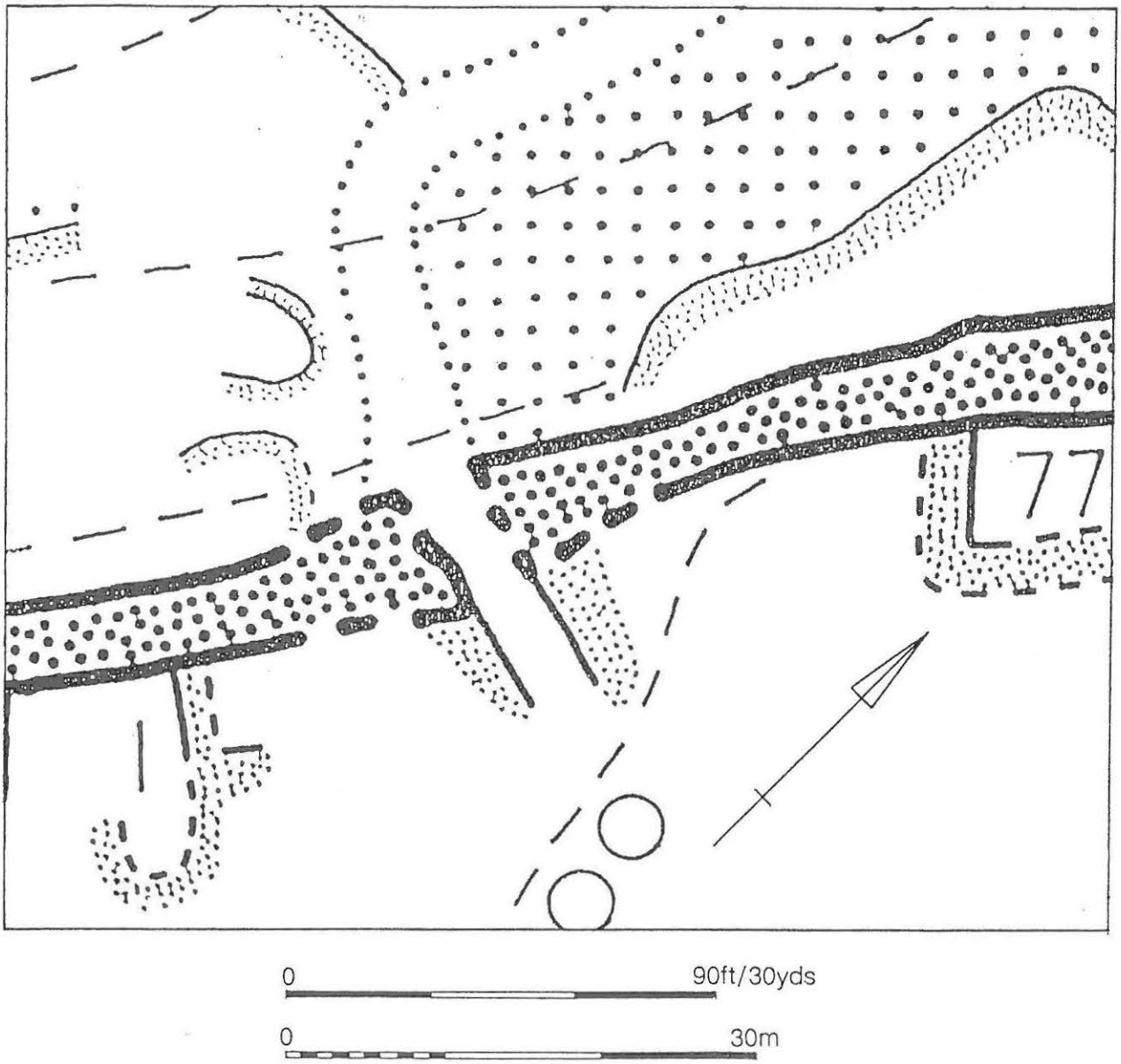

Fig. 7. The north-west entrance (R.C.A.H.M.W. 1960).

The error in Hughes' report was hinted at here but not analysed. The discrepancy between the measurements of the maximum width of the passage may be explained by the fact that the line of the outer face of the rampart is different on the north-east and south-west sides, so measurements may have been taken at different places, but Griffiths does seem to be suggesting that the maximum width of the entire passage was 7ft 6ins. If so, this measurement is difficult to interpret. Neither the R.C.A.H.M.W. (Fig. 7) or Plowman Craven (Fig. 8) plans show the outer flanking walls.

The passage was planned at the beginning of the 1993 season, using a total station, and the collapses described and coded (Fig. 4). The floor of the passage was choked with fallen stone and stood 1.6m below the level of the scree at the outside of the passage through the ramparts. No evidence of the relationship between the outer walls and the inner passage was visible, suggesting that some erosion had taken place since Hogg's description in 1956, although only slight differences are evident between the 1956 and 1993 photographs (Plates 46 and 47). The following collapses were identified:

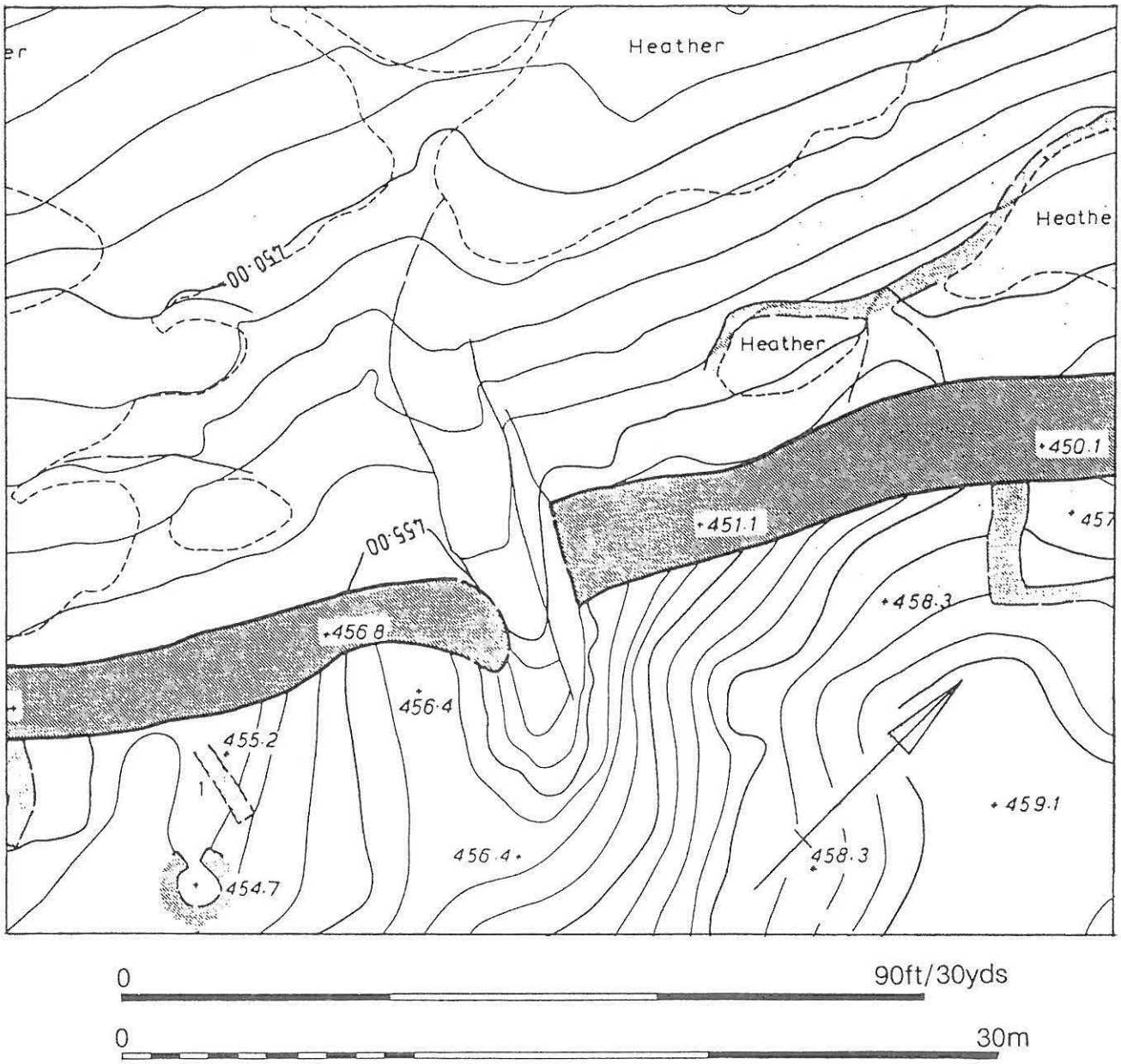

Fig. 8. The north-west entrance (Plowman Craven and Associates 1980).

Collapse F9 (Fig. 4)

The innermost 0.4m of facing on the south-west side of the passage was standing 0.75m above the rubble. There was a 0.4m x 0.4m void in the wall at this point and the facing was untidy and disturbed (Plate 48).

A possible straight joint was observed bounding the north-west end of the void. At this point the face became more regular with a 2.1m length of facing standing to a height of 1.1m at the south-east, rising to 1.7m at the north-west as the passage became steeper (Plate 49). The facing in this area was generally stable with a pronounced batter of about 15°. The wall top was somewhat loose.

Collapse F10 (Fig. 4)

The face turned in an east - west direction just to the north-west of F9 and was standing to a maximum height of 1.85m (Plates 50 and 51). The upper 1m of the wall was semi-collapsed and unstable. This area of facing consisted of small, short stones more consistent with wall core. The lower half of the wall exhibited a pronounced overhang. The collapse was 3.3m long.

Collapse F11 (Fig. 4)

The facing at the west of F10 was standing to a height of 0.8m; the upper courses were loose and disturbed but the rest of the masonry was stable. This facing deteriorated rapidly over the next 1.45m into a 3.95m long steep rubble slope (Plate 52). There were traces of possible facing in the east end of the rubble, creating a substantial bulge in the passage wall (Plates 53 and 54). The rest of the slope was severely eroded by the path running around the outside of the rampart.

Collapse F12 (Fig. 4)

4.0m of rough facing, with a maximum height of 0.75m, could be traced running from the end of collapse F10. A further 2.0m length of rubble walling marked the end of the outer flanking wall (Plates 55 and 56).

Collapse G1 (Fig. 4)

The innermost 5.3m of facing on the north-east side of the passage could not be traced. This area consisted of a steep rubble slope falling to a 1.0m wide footpath at the foot of collapse F9 (Plates 57, 58 and 59). The high percentage of unweathered stone in this area indicated that the slope was eroding very quickly. The width of the collapse, however, appeared to have increased only slightly since Hughes' 1906 plan.

A 1.0m length of rather dubious and unstable facing was standing 1.0m north-east of the path (Fig. 6 and lettered stones on Plate 58). This appeared to be standing on the scree slope. A short length of 0.3m high facing was visible at the north-west of the collapse (Plate 59).

Collapse G2 (Fig. 4)

The face to the north-west of G1 was well defined, standing to a height of 0.45m and rising raggedly over the next 1.4m to a height of 1.1m (Plate 60). The upper courses were loose.

A 0.6m length of stable facing 1.15m in height stood between collapses G2 and G3. The upper courses were protected by 0.4m of stable backward-sloping slabs (Plate 61).

Collapse G3 (Fig. 4)

This collapse was a 1.40m length of very irregular facing with a maximum height of 1.0m (Plate 61). The facing appeared to have partially collapsed in antiquity; the lower 0.7m of wall was, however, stable despite the presence of number of voids in the masonry. The face above this consisted of loosely-packed small stones. After rising briefly to 1.1m at the north-west of the collapse, the face fell away suddenly to collapse G.

Collapse G (Fig. 4)

Collapse G marks the end of the north-eastern outer flanking wall. The facing could be traced for 1.9m before becoming lost in the rubble at the side of the path (Plate 62). The masonry stood to a maximum height of 0.7m in the centre of the collapse and was unstable. At the south-west end of the collapse, the lower courses formed a pronounced bulge in the passage wall.

Clearance of the passage

The clearance of the tumbled stone from the passage commenced in the second week of May. The work was carried out by the writer and an assistant from Gwynedd Archaeological Trust as the area was very archaeologically sensitive.

The passage was choked with varying depths of rubble; an initial assessment suggested a depth of at least 0.5m in places. Recently disturbed stone was removed first, then clearance continued at the inner end of the passage. A careful watch was kept at all times for any buried structures etc. within the collapse.

A length of facing was revealed at the inner end of collapse G1 (see below), running to the outcrop to the north-east of the entrance.

A possible step was uncovered at the inner end of the passage: a stone was neatly wedged by a large protruding facing stone at the level of the base of the wall (Stone A, Fig. 11 and Plate 63). This stone 'step' appeared to have been broken in antiquity, with only the south-western half remaining; care was taken not to disturb it and no clearance was undertaken below this level.

The collapse in the narrowest part of the passage was characterised by a number of slabs standing on edge at the sides of the passage. Some were obviously a result of falling into a confined space and not being able to settle to a horizontal position (Plate 64); others, stones M, N and perhaps P on Plate 65, were apparently deliberately set. Stone P was partially supporting a collapse in the lower wall.

The upper levels (0.2 to 0.4m) of the rubble contained partially degraded heather, small stones, an animal bone, plastic wrappers mostly dating from the early 1970s and numerous fragments of a Whitbread beer bottle, often found in positions suggesting that the rubble had been disturbed as opposed to material having fallen between the stones. The shallow rubble at the inner end was overlying loose stones at a level with the 'step'. At the base of G2 a layer of small stones overlying black sticky peat with protuberances of bedrock was uncovered. This was protected with stone slabs while the rest of the passage was cleared.

The collapse in the outer half of the passage was deeper than in the inner and complicated by the severe collapse at F11. The more obvious tumble was removed, revealing a 2.5m length of facing, running from the passage wall at the east of F11 and apparently revetting the collapsed masonry (Plates 44 and 45). This was roughly parallel with, but in front of, the dubious facing already recorded in the area of F11. The stones were all laid as stretchers and appeared to be standing on tumbled masonry. It seemed inconceivable that a face thus constructed could stand to any great height. Clearance in front of this facing revealed a few flat horizontal slabs and more modern finds, the larger part of a china cup apparently broken *in situ* being the most notable.

Hughes recorded the outer end of the passage as being 12 feet wide. This must cast further doubts on the antiquity of this stonework, as a face on this line would make the passage less than six feet wide. The masonry was also uncharacteristic, no headers being used even though the stones were suitable. The above observations suggest that these features were a result of relatively recent (since 1906) clearance of the passage.

This area was planned (Fig. 10), photographed (Plates 66 and 67) and the masonry was removed, thus allowing clearance of the passage to continue.

As interpretation of the tumble was proving to be very difficult it was decided to clear a rough section through the outer end of the passage, level with collapse G (Plate 68). This revealed that the collapses had tended to fall like a pack of cards and had come to rest with the ends of the headers resting on the surface in front of the collapse. Plate 68 illustrates this phenomenon: the stones in front of the wall line are sloping towards the centre of the passage. Using the level at which the fallen headers had come to rest in the passage as a guide, 0.4 to 0.5m of rubble was removed from the passage. At this level the character of the stones changed from being jumbled and irregular to horizontal slabs interspersed with small stones suggesting a roughly paved way (Plate 69). Clearance to this level enabled works to be carried out on the individual collapses. The passage floor was planned at this point (Fig. 11).

Conservation of the collapses in the north-west entrance

Collapses F10 and F11 were very unstable, causing a possible safety hazard, and were thus conserved first.

Collapse F11 (Fig. 4)

A straight joint was revealed in the facing at the south-east end of F11 during clearance of the passage. The face at the south-east could be seen to turn to the west, with the outer wall abutting this, creating a straight joint and a slight in-turning in the facing (Plate 70). The facing was very unstable beyond the point of abuttal, but could be traced for a further 1.4m, standing to a maximum height of 1.7m. Two massive, 0.7m wide, stones marked the basal course. These were very irregular and uncharacteristic of the face above them (Plates 70, 71 and 72). Another similar stone was sitting on the wall line at this level. If the whole of the basal course had been constructed from this type of stone it would go some way to explaining the collapse as it would not have formed a stable base for the wall. There was another slight in-turn in the facing at the south-west of the collapse (just to the left of the right-hand ranging rod on Plate 72), but the masonry was too disturbed to reveal any further detail.

The steep area of collapse in the centre was cleared by the masons but no convincing basal course was identified, suggesting the initial failure was at the base of the wall (Plate 73). Another face was identified, standing 1m behind the line of the passage wall (Plate 74). This face was neatly constructed, standing to a height of 1.0m above the level of clearance, a total of about 1.4m above the passage floor. It was continuous with the in-turned face at the south-east of the collapse, continuing parallel with the line of the passage for 2.0m before turning to the west where it was lost in the scree.

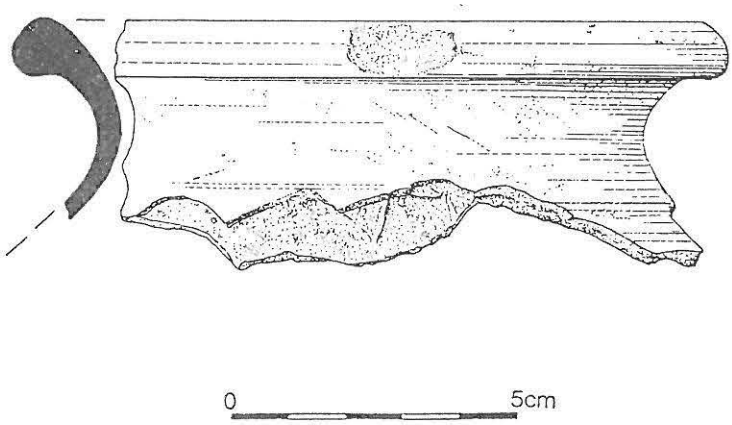

Fig. 12 The largest sherd of Severn Valley ware recovered from F11.

Part of a mid 2nd- to 3rd-century Severn Valley ware jar was recovered from the core as the masons were making space for the new basal course. This consisted of a large rim sherd (Fig. 12) and 24 smaller fragments, representing c.70% of the vessel rim altogether, all found within a scatter of about 0.25m diameter (Plate 75). The findspot was midway between the hidden face and the line of the passage facing, and about 0.2m above the level of the passage floor. The core at this point appeared to be relatively undisturbed and was certainly less jumbled and loose than that cleared from above it. It is probable, considering the small extent of the scatter, that the recovered portion of the vessel was broken *in situ*. The original piece of the jar, which would have been about 0.12m in diameter, could not have fallen through the standing masonry as it was too large to have passed through the voids in the wall, suggesting that it was deposited during the construction of the inner facing. The area has been very disturbed, however, so some caution must be exercised in the interpretation of this evidence, but it does strongly suggest that the final phase of the entrance was constructed after the mid 2nd century.

No further disturbance of the core was possible without endangering the surrounding masonry, so the face was rebuilt on a line extrapolated from the surviving facing to either side. The face was built to a height of 2.0m in order to support the scree and the unstable facing to either side (Plates 76 and 77). The previously hidden face was reburied, the core being replaced to a height of c. 0.20m above the top of it. A line of stones was placed in the wall top in order to allow the facing to be added to the total station plan at a later date. The unstable upper courses to the south-east of the straight joint were reset and stabilised with large slabs during the conservation of F10.

Collapse F10 (Fig. 4)

The extent of the overhang was revealed as the passage was cleared in front of F10. It was noticed that some stones in the lower third of the wall had slipped forwards bringing the wall above with them (Plate 78). The rubble in the passage was not deep (c. 0.3m) and was loosely packed. Stone 7 on Plates 49 and 78 was wedged in the overhang, apparently holding up the face. Concern was expressed during the site meeting as to whether the removal of the rubble in the passage had further weakened the face. It was felt that this may have contributed slightly but that the rubble was not packed tightly enough to provide much support. Several strategies were discussed for the stabilisation of this face. Dr Yates was concerned that the dismantling of a standing wall would exceed the conservation brief. J. St.Paul was consulted, and expressed the opinion that the face was unsafe, with too much weight sitting over the front of the wall, as the upper 0.5m was little more than a heap of loose core and therefore the weight of the stones was not spread into the wall. If the face was to fall in an uncontrolled manner it would bring down the facing at the inner end of the passage and no stone by stone reconstruction would be possible. This was borne out when the masons examined the wall for loose stones and the whole face slid forwards slightly. This was obviously a safety hazard so the area was cordoned off (Plate 79). It was decided to dismantle and rebuild the overhanging length of facing. Stones in this and the surrounding masonry were marked (Plates 49 and 50 show the marked stones on the pre-conservation photographs). The obviously collapsed area in the upper central area and right-hand side of the collapse was not marked but the semi-collapsed slabs above 11, 12 and 13 were marked for retention in order to keep this area in character.

The face was dismantled and stones C, 27, 26, F, I, H, J, Q, R, S, T, Y, 12, 16, 19, 20, 18, 11, 17, X and W were removed, revealing large stones Z and 5 which were tipped forwards at an angle of c. 40° (Plate 80). These in turn were removed, revealing stone 3 (below 5 on Plate 80), tipped forwards at a similar angle. A constant problem at this point was falls of loose core from behind the collapse. The core was pinned as it was revealed but it was necessary to maintain a steep rubble slope as further core removal would have threatened the main rampart and collapse F13 to the west. Stone 3 was removed, revealing a further four flat stones tipped forward at 45° (Plate 81). These too were removed, exposing a large slab sitting on loose scree which appeared to have settled, causing the stone to tilt (Plate 82). The

stone to the left of this was also tilted but could not be moved as it was holding up the face to the left of the collapse. Another slab was revealed running into the wall behind stone 22 (Plate 83). This was on line with the outer rampart face which could be seen to survive within the wall at this point, albeit in a semi-collapsed state. The newly revealed basal course was planned (Fig. 13). Owing to the very unstable core the relationship with the rampart could not be further investigated without endangering the surrounding masonry but it seems very likely that there was a continuous face at this point and that the wall to the north-west was added at a later date.

Stones 1 and 2 slipped out of position as the large slab was levered and reset, causing stone W to move slightly and the retained face above this to settle slightly. Plate 84 shows the base of F10 after the removal of stones 1 and 2. Stone W was a long header and was supporting the face above it. A stone previously placed beneath stone M as a precautionary measure now bears the weight of this (Plate 85). The base of the wall was rebuilt, stones 1 and 2 and the four slabs at the base of the wall were discarded and replaced in an attempt to provide a secure footing for the wall and to underpin stone W.

Stones 25 and 6 were replaced in the same configuration as before dismantling but with stone 6 rotated slightly to produce a more stable bed for building on. As the overhang had been corrected the wall face was now in a slightly different position and it was therefore necessary to replace stones Z and 5 0.02m closer together.

As it appears that the facing at the north-west of the collapse (stone 22 and above) abutted F10, a straight joint was built in the wall. Stones 17, 18, 11 and 12 were replaced very close to their original positions. Stone 16 was a small packing stone which could no longer be secured and was replaced.

Stones H, J, S, R, Q, Y, T and J were replaced within a few centimetres of their original positions but as the wall was standing back from its previous line several extra stones were added, particularly to the right of stone 5. It was possible to bond the left of the collapse into the retained face without serious adjustments. It was not possible to replace stone F as accurately as the rest. Stones I and O could not be replaced in their original positions as they were too small to bear any weight. Stone C was replaced above E and small packing stones 26 and 27 were discarded. The face was rebuilt to its pre-conservation height and the wall top secured with heavy slabs. The core was packed very securely at all times during the rebuilding work and was marked with bunting and polypropylene cord at several levels. The rebuilt face is shown on Plates 86 and 87.

Some large slabs were placed at the base of the collapse to secure the scree on which the wall was built.

Collapse F9 (Fig. 4)

The two loose stones at the south-east end of the void at the inner end of the passage were removed and the void was packed with four stones (Plate 88). The upper wall was stable and required no stabilisation apart from at the north-west end where several slabs were added in order to stabilise the wall top (Plate 89). It must be noted that the north-west end of this area was disturbed by the work on collapse F10 and was observed to settle slightly. It appears that the face may have slipped forwards in antiquity in its entirety at the point where it changes direction between F9 and F10. The addition of further stones at the base of the wall at this point may be necessary.

Collapse F12 (Fig. 4)

After clearance of the passage, the end of the flanking wall was revealed to have survived up to a height of 1.0m for much of its length. There was one major area of collapse in this

length of wall. A length of facing had collapsed and was clearly visible within the rubble in the passage. The surrounding stone was removed and the fallen face was photographed (Plate 90). The *in situ* headers to either side of the collapsed facing were marked (Plates 55 and 56) and the fallen masonry was cleared (Plate 91). It was noticed that the stones behind the collapsed facing were large and apparently well laid. This may be a result of the outer flanking wall being very narrow at this point and being constructed from facing on both sides with very little core in between. The base of the wall at the left of the collapse was not supporting stone O, so the stone was underpinned during consolidation work. The facing to the right of the collapse was very unstable, so the marked facing was dismantled in order to allow the base of the wall to be rebuilt. Stones S, T, R, and P were replaced close to their original positions.

The centre of the collapse was rebuilt to the height of the surrounding masonry (Plate 92), thus stabilising the pinned masonry to the left of the collapse. No marked stones were disturbed on this side of the collapse (Stones A to O).

Only minimal clearance was undertaken at the outer 1.5m of the flanking wall, as it was low and tumbled and not under threat (Plate 93).

Collapse G1 (Fig. 4)

Three stones were left on edge at the base of the wall after the passage was cleared. Two stones, M and N, were left in position (Plate 94), with stones placed in front of them in order to support them during conservation work. The face behind these stones had slipped forwards but had settled in a stable position. The function of the edge-set stones is unclear as they are small and could not support any weight of masonry.

The third edge-set stone (stone P, Plate 94) was 0.5m in front of the wall line, again with a collapse behind it. In this instance however the collapse was not stable (Plate 95), the stones behind P were loose and not suitable for supporting a face. There was some doubt as to whether this stone was deliberately placed as a support for the collapse, as it seemed to be impossible that the face could have continued above the displaced masonry. In view of the above doubts and the fact that consolidation of G1 would have to be abandoned at this point if the collapse was left *in situ*, the stone was planned, photographed and removed and the collapsed masonry cleared (Plate 96). Fig. 14 shows this area after clearance. Some standing masonry was clearly under threat, so the stones were marked A to P (see Plate 94). Stone E is not visible on the Plate and is located beneath stone D.

Stones A and C were unstable as stone B was tipped forwards. They were removed and stone B was reset to form a stable base for building. The basal course was clearly visible running behind stones M and N and their associated collapses. Stones O and L were seated on loose core and were obviously part of the collapse that had fallen from above. They could not be stabilised and were re-used in different positions. Stones A and C were replaced close to their original positions and the face rebuilt, after conservation of the rest of the collapse, to a height of 2m in order to stabilise the core behind it and to provide support for the outer face of the rampart at G5 (Plate 97).

The facing at the south-east of the collapse was largely collapsed, although one large stone (Q), to the right of stone N, remained in the basal course. The length of debatable facing set back behind the wall line (see G1, pre-conservation, Plate 58) was marked and examined. The stones were short and loose and sitting on obviously collapsed core and rubble. The 'face' could never have been stable in this form and was probably a chance occurrence or a result of clearance from the footpath. It was decided to leave it for as long as possible during the clearance of G1 in case any further evidence emerged.

The tumbled stone was cleared from south-east G1 and the above 'facing' inevitably collapsed. No further evidence emerged and the stones were re-used elsewhere. One more basal stone

(R) was uncovered, to the right of stone Q. This was lying at an angle, suggesting a possible turn to the west in the wall line (Plate 98). Further clearance down to bedrock revealed no surviving facing between this stone and the facing at the far north-east of the collapse, where the wall abuts the bedrock (Plate 99).

Four stones shown on Plate 98 along the line of the ranging rod suggested the presence of an earlier phase of building, perhaps running to another rocky outcrop that could be seen beneath the rubble about 0.6m back from the facing at the north-east of the collapse. In areas of severe collapse such as G1 there is always a danger of 'selective clearance' creating faces such as this, but the fact that most of the stones run into the wall face as headers gives this length of facing a degree of validity.

The 1.4m of lost facing was rebuilt to a height of 1.6m between the definite facing to either side (Plate 100). The *in situ* masonry at the far north-east of the collapse was not disturbed but some slabs were placed along the top of the wall in order to stabilise it.

Collapse G2 (Fig. 4)

Several stones were displaced and in danger of falling from the wall top. These were reset and 0.6m of masonry added in order to tie the face into the rebuilt G1 (Plate 101).

Collapse G3 (Fig. 4)

The irregular upper facing in this area had a pronounced batter and was stable, therefore no further action was taken. A possible straight joint was noticed in the facing, about half way along the collapse (Behind the left-hand scale on plate 101).

Collapse G (Fig. 4)

The upper face at this point was largely collapsed and consisted of scree fallen from the slope above. The south-east end of the collapse contained much recent damage. Stones A, B, C and D on Plates 62 and 102 represent the edge of the stable masonry. Stone A was slightly reset; the others were not disturbed and were protected by the addition of three or four courses of masonry (Plate 102). Several stones were revealed after clearance of the rubble from the passage, wedged at about 30° beneath the lower courses of the wall (Plate 103). Their function is not clear but they may be collapsed headers wedged by facing displaced from above, or perhaps buttressing, supporting unstable masonry. Much of the rubble forming the north-west end of the flanking wall was left undisturbed with only minor resetting and pinning of loose masonry (Plate 104). Stone was added to the scree slope beyond the end of wall to buttress both the scree slope and the now collapsed end of the outer flanking wall. Several voids were visible at the base of the surviving face in collapse G. These were packed and buttressed. The packing stones are marked with crosses on Plates 102 and 104.

Consolidation of the passage floor

After the passage floor was planned and photographed, the protecting rubble and small stones overlying the peat on the passage floor in the vicinity of F10 were removed. It was felt that the peat layer was endangered by the clearance of the passage due to the change in drainage and erosion patterns. As important dating evidence may have been contained therein the peat layer was excavated. The peat was however only on average 0.02m deep and continuous with the deposits between the stones to either side, and was found to contain sherds of Whitbread beer bottle so was presumably recently redeposited. Beneath this there was a hard-packed stony layer with occasional protrusions of bedrock (Plate 105). The stony layer was comprised of a very dark reddish-brown humic silt with a variable percentage of clay, containing 70% subangular stones with a size range of 0.04 to 0.2m. The layer was hard and

well compacted, suggesting that it formed the passage floor at this point. The presence of bedrock close to the floor level and the associated poor drainage explains the presence of peat in this part of the passage.

This surface was durable and partially protected by the bedrock, so it was recorded and reburied.

There was in the region of $39m^3$ of stone left from the clearance of the passage after conservation of the passage walls. It was decided in view of the fragility of both the original passage floor and some areas of the wall bases to put a layer of large stones in the passage (Plate 106). This formed a rough but stable surface. The voids between the stones were filled where possible with the small stones, peat and organic matter previously cleared from the passage.

The steep rise at the inner end of collapse G1 was buttressed with a number of large stones (Plate 100). A few stones were left over and these were sensitively spread on the scree, weathered side uppermost. The level of the original passage floor was marked with plastic tape and polypropylene cord.

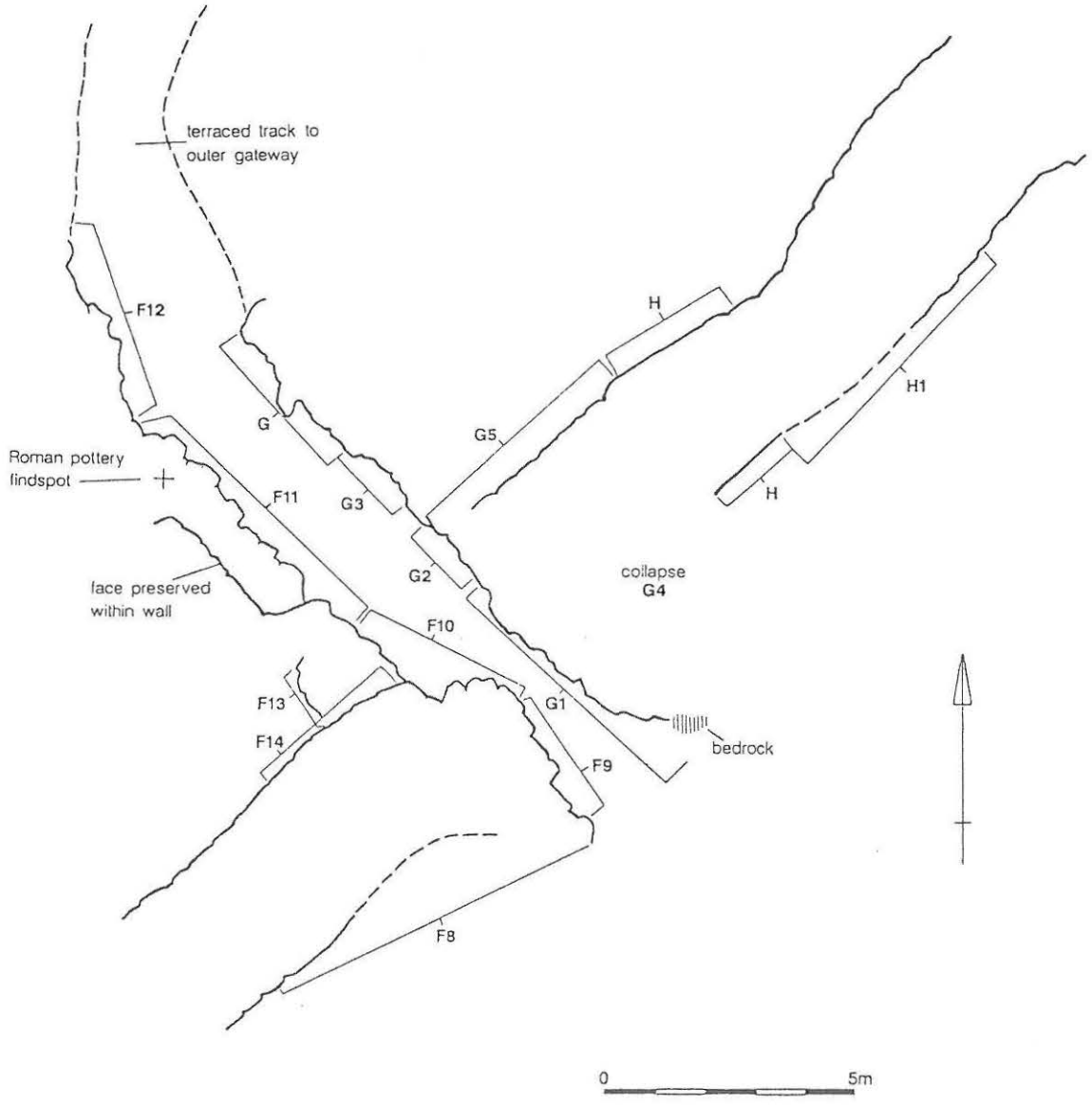

Fig. 15. The north-west entrance after conservation.

Conclusions

Fig. 15 shows the north-west entrance after conservation. It now gives the impression of being the 'main' entrance to the fort (Plate 107). The entrance is now clearly visible and easily passable and should encourage visitors to enter the fort at this point and not to attempt to scale the ramparts.

The Outer Gateway

Collapse GG (Fig. 3)

There is a gateway in the outer defensive wall at the bottom of the trackway leading from the north-west entrance. Dallimore recorded a collapse along with a daub of pink paint at this point. The paint is still visible and the north-east side of the gateway was partially collapsed.

The wall on this side deviates from its north-east - south-west line to a more westerly direction, forming an out-turned entrance. The north-western corner of this out-turn had collapsed down to a height of 0.5m (Plate 108); only the lowest three courses of masonry could be traced in places. The face rose steadily in the passage through the walls to a height of 1.6m (Plate 109) before it abutted the rise in the ground.

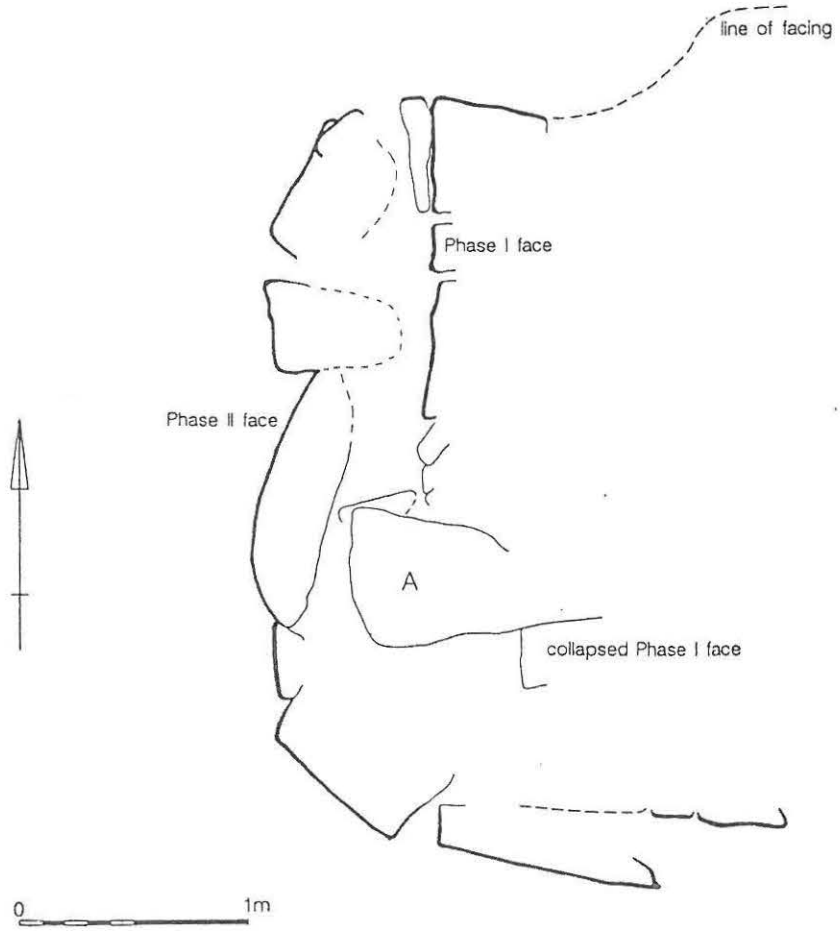

Fig. 16. Collapse GG after clearance.

The loose stone was cleared from the collapse, revealing a partially collapsed face with the lower courses of another, later, face standing 0.5m in front of it (Fig. 16 and Plates 110 and 111), forming a rounded end to the passage wall.

The earlier face had collapsed at its south-eastern corner. This may have been caused by a movement in the lower courses. Stone A on Plate 112 and Fig. 16 had obviously slipped out of the wall, causing the face above to collapse. The large basal stone beneath this had, unusually, been laid as a stretcher, presumably to accommodate the already collapsed facing, suggesting that the later face had been built as a buttress after the earlier face had failed. The western corner of the earlier facing was standing to a height of 2.5m and was stable, but the buttress was completely lost in front of this. The buttressing could not have been bound into the earlier facing at this point and would have been only one stone deep and would thus have been inherently unstable.

It was decided to build the face to a sufficient height to stabilise the north-western corner. As there was only a 0.5 to 0.7m gap between the two phases of building, the size of stones that could be used in the new face was severely limited. This created a face which was out of character with the massive surrounding masonry. The face was built to a height of 1.1m at the north-western corner (Plate 113), grading down to ground level at the south-eastern corner where the line of the buttressing face could not be traced (Plate 114).

Collapse HH1 (Fig. 3)

There was a 0.6 x 0.6m void in the north face of the out-turn at the north-west side of the outer gateway (Plate 115). The masonry above the void was poorly supported. The void was packed with 11 stones, great care being taken to avoid disturbance of the surrounding masonry (Plate 116).

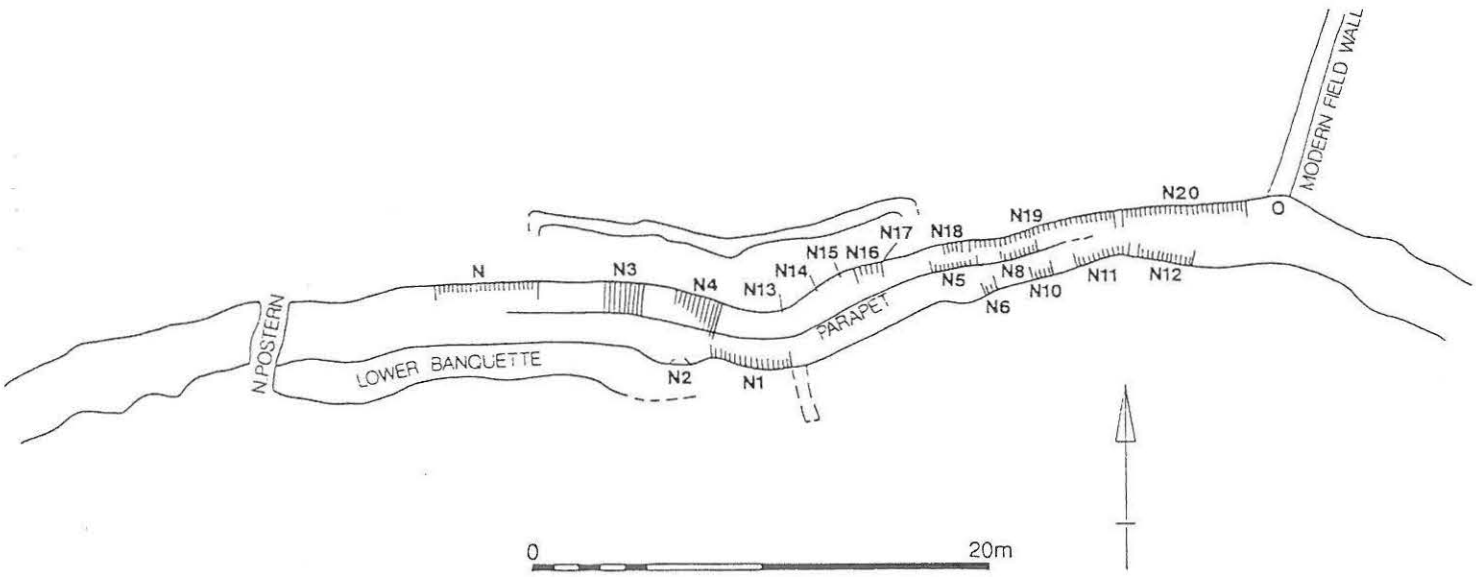

Fig. 17. Wall N - O, showing areas for conservation in the fifth season.

The Lower Banquette (Collapse N) (Fig. 17)

The 'lower banquette', a low (0.6m high) step against the inner face at collapse N, was generally stable. A number of large stones lying at the foot of the wall (Plate 117) had obviously been displaced from the top of the banquette, thus threatening the stability of the structure. It was not necessary to disturb the banquette, the fallen stones simply being placed in the dips in the facing. These stones are marked with crosses on the post-conservation Plates 118 and 119.

Wall N - O (Fig. 17)

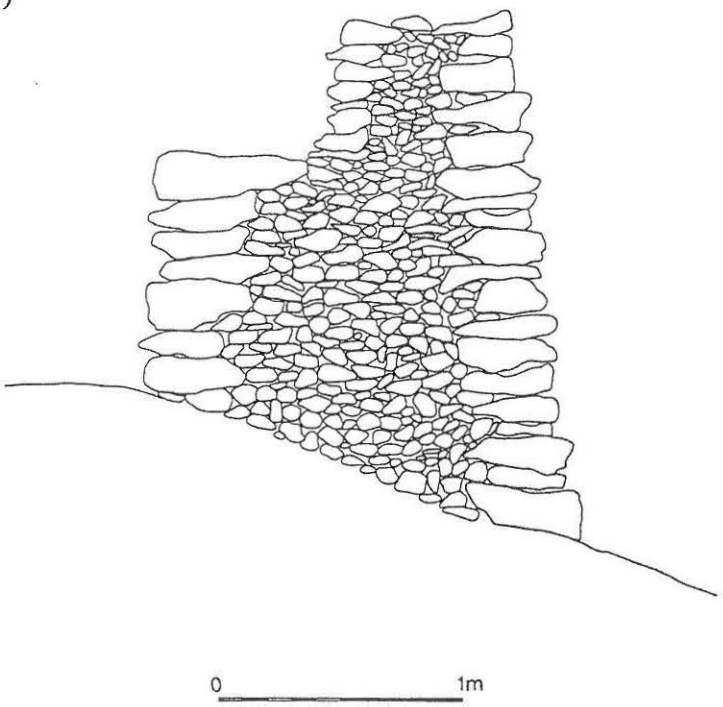

Fig. 18. Sketch section through the ramparts at the north of Tre'r Ceiri.

This 32m length of wall was well preserved, with the parapet surviving for much of its length. The walkway associated with the parapet is constructed from large slabs which stabilise the top of the wall (Fig. 18). The major cause of collapse in this area is the displacement of the slabs from the walkway, allowing the core to be eroded and thus undermining the parapet. The stabilisation of the walkway was thus seen to be a priority.

Collapse N2 (Fig. 17)

There was a large void in the base of the inner face at the end of the lower banquette (marked with a cross on Plate 120), giving dubious support to the wall above. The void was packed with seven stones (Plate 121). The large protruding stone moved slightly during this procedure.

Collapse N3 (Fig. 17)

This collapse was a 2m wide dip in the outer face 2.3m east of collapse N (Plate 122). The dip was filled with a maximum of 0.5m of masonry without disturbing the *in situ* facing, providing additional support for the unstable parapet at this point (Plate 123). The inner face of the parapet was still somewhat loose but no improvement could be achieved without total reconstruction and no further action was taken.

Collapse N4 (Fig. 17)

A 2.2m long dip in the outer face (Plate 124) corresponding to an unstable length of parapet above N1 was filled (Plate 125). Again, no *in situ* stone was disturbed. This action produced a gentler gradient at the end of the parapet, thus adding greatly to its stability. The outer face was still unsupported and the steeply-sloping wall top was loose. The area was buttressed with a number of large stones taken from the scree (Plate 126).

Collapse N5 (Fig. 17)

This collapse was a 1.6m long failure in the inner facing of the parapet caused by the loss of a number of stones from the wall top. The stones were marked prior to conservation (Plate 127). Stones K, M, N, O, and P had slipped forward, causing the masonry above to become very unstable. There was no way of pinning the facing so the loose masonry was dismantled. Stones S and T were left *in situ*, stone J was pushed back in line with the rest of the face and stone R was rotated to form a stable base. Stone G was the main source of instability as it was wedge-shaped and sloping forwards at 45°. This was replaced upside down. Stones K and M were discarded, being short packing stones, and one extra stone was added next to stone D. All other stones were replaced close to their original configuration, but set a few centimetres back to bring them back in line with the rest of the face (Plate 128). The dip at the right of the numbered stones was filled and the top of the parapet secured with five heavy slabs (Plate 128).

Collapse N6 (Fig. 17)

A large slab (stone W) had fallen from the edge of the walkway, contributing to the instability in collapse N5 (Plate 127). This was replaced and the core and stones behind it were reset and stabilised (Plate 128).

Collapse N8 (Fig. 17)

A 1.8m length of ragged parapet (Plate 129) was stabilised by the addition of large stones to the top of it. Stone A was pushed back a few centimetres and stone B was reset by rotating it slightly (Plate 130). Further consolidation to the top of the parapet was carried out during the stabilisation of N19.

Collapse N10 (Fig. 17)

A small dip in the inner face of the rampart (Plate 129) was filled with one large stone, and the walkway stabilised behind it (Plate 130).

Collapse N11 (Fig. 17)

At this point the parapet becomes ragged and peters out (Plate 131). A 2.2m length of wall top was stabilised and two large stones were added to the top of the inner face during the conservation of N19 in the outer face (Plate 132).

Collapse N12 (Fig. 17)

The inner face stands to a height of 1.0m at the west of the collapse, becoming progressively more ragged over the next 2.4m (Plate 133). The dip in the centre of the collapse was caused by a stone slipping out about half way down the face. The dip was filled with 12 stones and the wall top was stabilised during the conservation of collapse N20 (Plate 134).

Collapses N13, N14 and N15 (Fig. 17)

The base of the wall appeared to have been somewhat undermined at this point, forming three large voids (Plate 135). As the outer face stands to a height of 2.6m here, any movement in the wall could be potentially serious. The voids were packed and buttressed with large stones lying at the base of the wall, preventing any further erosion at this point (Plates 136 and 137).

Collapse N16 (Fig. 17)

This was a 1.6m wide dip in the outer face (Plate 138). The surrounding stonework was stable and the dip was filled with a maximum of 0.4m of masonry (Plate 139).

Collapse N17 (Fig. 17)

A void at the base of the wall below N6 (Plate 138) was packed as the curved stone above the void did not seem to be well supported (Plate 139).

Collapse N18 (Fig. 17)

A small, 0.4m wide, dip in the outer face was threatening the already unstable parapet at N5 (Plate 140). The dip was filled with four stones and the parapet top stabilised (Plate 141).

Collapse N19 (Fig. 17)

This collapse was 6.8m long and the upper courses had been lost, giving a very ragged appearance to the wall top (Plates 142, 143 and 144). The *in situ* facing was stable, so the displaced stone was cleared and between 0.2 and 0.5m of masonry was added to the top of the face, raising it to the height of the wall top and retained core. The wall top was stabilised (Plates 145, 146 and 147) (see also collapses N8 and N11 in the inner face).

Collapse N20 (Fig. 17)

The damage at this point on the rampart appeared to be deliberate. Many partially weathered stones were lying at the base of the outer face, there was no obvious instability in the surviving facing and it was difficult to envisage any natural process that could have caused the stone to be displaced (Plates 148 and 149). Further investigation of the area revealed similar damage to the outer face beyond the modern field wall. The corresponding length of inner face (N12) and wall top was very ragged for the whole of N20, so one or two courses of stone were added to the face to raise it to the height of the core behind it (Plates 150 and 151). The collapse was 4.7m long.

Wall DD-EE (Fig. 19)

The buttress at the south-east side of the south-west entrance was smaller than its north-western counterpart and had suffered less damage. Minor stabilisation works had been carried out at the outer corner of the entrance passage in 1992. A 4.2m length of facing had slipped forward and collapsed at the outer south-eastern end of the buttress (Plates 152, 153 and 154). This was subdivided into two collapses, EE apparently following the line of the buttress, and DD1 being part of the main rampart.

Collapse EE (Fig. 19)

After clearance of the loose rubble it became clear that the upper courses of the wall had slipped off the still intact basal course, thus causing the collapse (Plates 152 and 153). The basal course continued to within 0.6m of the edge of DD1 on a line 0.4m to the south. If this line was projected an point of abbutal would be formed about 0.4m from the west end of DD1. In contrast with the north-west side of the entrance, the rampart face could not be traced behind the curve of the bastion. Plate 155 illustrates the relationship between the two faces. The facing has been highlighted on the photograph to clarify the line of the

masonry. A 0.8m high face was built along this line abutting the west end of collapse DD1 (Plates 156 and 157).

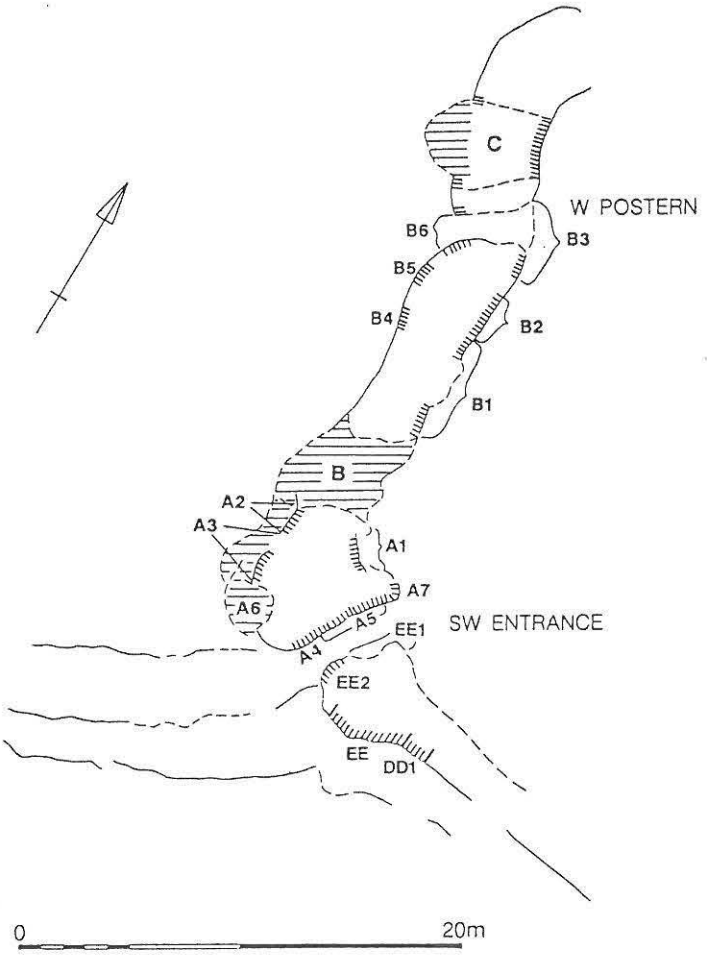

Fig. 19 Wall DD - EE, including areas for conservation in the fifth season.

Collapse DD1 (Fig. 19)

This collapse was 2.2m wide; the upper courses had slipped forward, forming an overhang (Plate 158). The collapsed masonry was cleared and the face raised to a height of 0.5m (Plate 157). No *in situ* masonry was disturbed. It was interesting to note that the face could be seen to continue down into scree for 0.5m in the centre of the collapse.

PROGRESS IN THE INITIAL FIVE-YEAR PROJECT

The 1993 season marked the end of the initial five-year project. Fig. 20 shows the areas conserved so far.

Half (330m of the 660m) of the inner rampart has been conserved on the north-west side of Tre'r Ceiri, encompassing the south-west, west, north-west and north entrances. A total of 145 collapses have been stabilised, representing close to 50% of the conserved wall length. Many of the collapses amounted to little more than small dips in the facing but there were a number of serious collapses necessitating rebuilding from ground level. The clearance and conservation of the north-west, south-west and north entrances have provided easy access to the fort which, when combined with the rebuilding of the major collapses in the rampart, has provided an incentive for visitors to use the entrances instead of climbing over the ramparts.

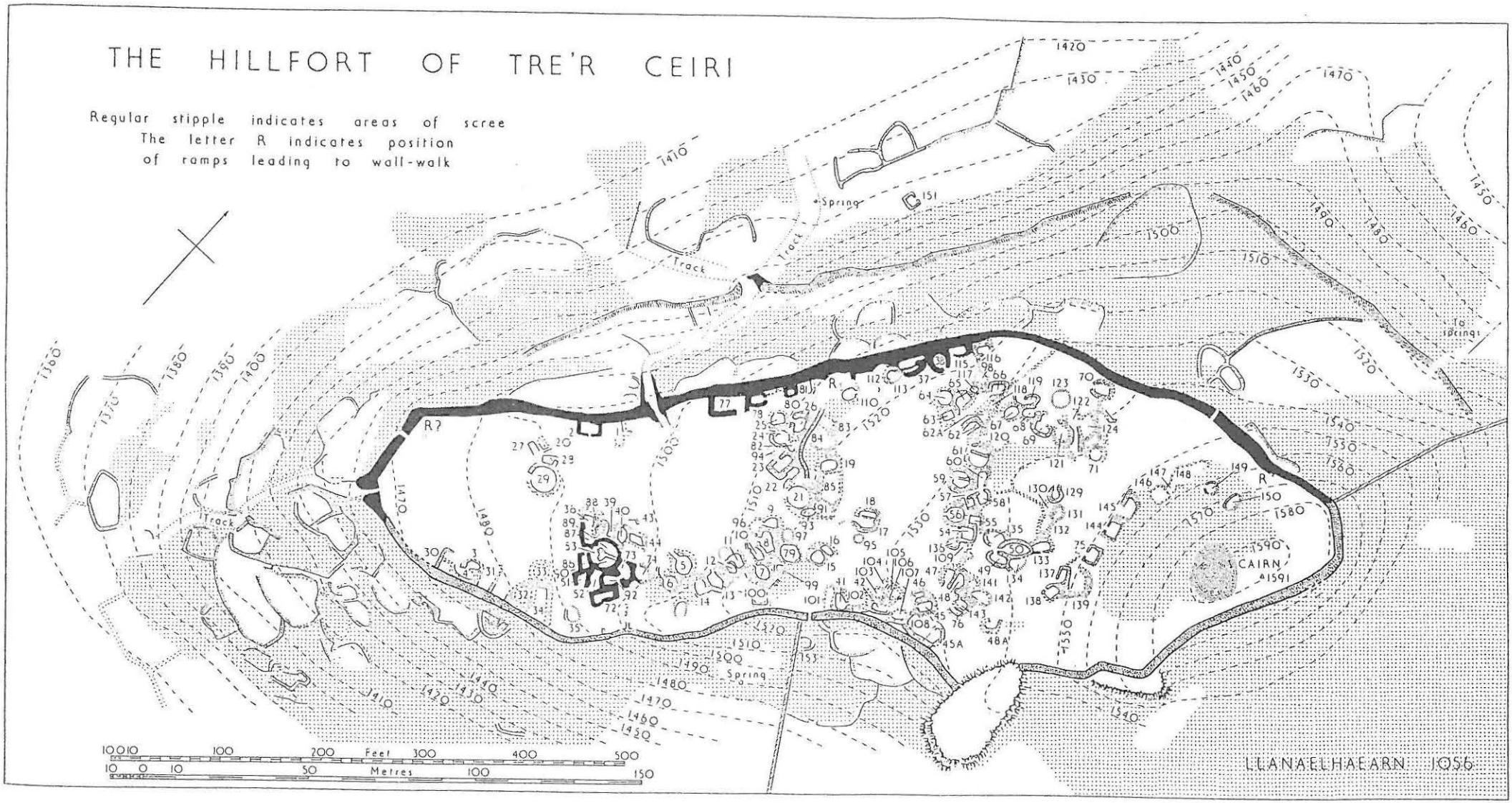

Fig. 20 General Plan, showing areas conserved in the first five seasons.

The defined entrances give a better impression of the scale and importance of the site (Plate 159). This will hopefully encourage visitors to respect Tre'r Ceiri as a well-preserved monument and therefore lessen the incidence of thoughtless damage to the walls.

The clearance of the entrances has revealed much new information concerning their structure and phasing, and yielded valuable evidence, suggesting additional phases of construction, later in the fort's occupation.

Twenty-one huts have been consolidated, allowing conservation techniques to be refined. The hut walls are, due to their smaller size, much more fragile than the ramparts and are consequently more difficult to secure.

CONCLUSIONS

The conserved lengths of rampart have survived very well, erosion being limited to the displacement of occasional small stones from the wall tops. The huts have exhibited a little more erosion but this has been limited to points where paths cross the walls. The effectiveness of the project can be demonstrated by comparison of the above rates of erosion with some unconserved areas where masonry and hence archaeological information is being lost at an alarming rate. The survey and management plan carried out at the end of the fifth season of the project estimates that the remaining areas of the fort can be conserved if the project is continued for a further five years. This would leave Tre'r Ceiri as a stable monument requiring minimal management and thus as a valuable cultural and educational resource to be enjoyed for years to come.

ACKNOWLEDGEMENTS

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APPENDIX

The Roman Pottery from Tre'r Ceiri

Jeremy Evans

Twenty-four sherds from a single constricted-necked jar in hard, well-fired Severn Valley ware with common moderate sand temper c0.3mm and occasional brown ironstone inclusions c0.3mm. (Fig. 12) The jar has a slightly undercut rim, cf. Webster (1976) no 3, for which a mid 1st-3rd century date range is suggested. The rim and shoulder is burnished and there is a slight cordon on the shoulder. About 70% of the circumference survives. The date of the piece may be clarified a little by the evidence from Segontium (Webster 1993), where Severn Valley ware does not appear before the mid 2nd century. Since the source of material at Tre'r Ceiri is likely to have been through the Segontium vicus it seems unlikely this piece arrived here before that date. Weight 125g.

BIBLIOGRAPHY

Boyle, S. D., 1990. *Report on the first season of the Tre'r Ceiri Conservation Project.*
Boyle, S. D., 1991. *Report on the second season of the Tre'r Ceiri Conservation Project.*
Boyle, S. D., 1992. *Report on the third season of the Tre'r Ceiri Conservation Project.*
Cambrian Archaeological Association, 1895. 'Report of Carnarvon Meeting, July 1894.'*Archaelogia Cambrensis* 5th series XII, 146-148.
Hogg, A. H. A., 1960. 'Garn Boduan and Tre'r Ceiri, Excavations at two CaernarvonshireHill-forts', *Archaeological Journal* 117, 1-39.
Hopewell, D., 1994. *Tre'r Ceiri Iron Age Hillfort Management Plan.*
Hopewell, D., 1993. *Report on the fourth season of the Tre'r Ceiri Conservation Project.*
Dallimore, K., 1978. *Tre'r Ceiri* (unpublished typescript).
Hughes, H., *ca.*1906. Plan of Tre'r Ceiri (unpublished manuscript).
Hughes, H., 1907. 'Report on the Excavations Carried out at Tre'r Ceiri in 1906',*Archaeologia Cambrensis* 6th series VII, 38-62.
Plowman Craven & Associates, 1980. *Plan of Tre'r Ceiri.*
R.C.A.H.M.W., 1960. *Caernarvonshire Inventory. Volume II: Central.*
Webster, P. V., 1976. 'Severn Valley ware: a preliminary study', *Trans of the Bristol and Gloucestershire Archaeological Society* 94, 18-46.
Webster, P. V., 1993. 'Coarse pottery in Casey, P. J., Davies J. L. and Evans, J., *Excavations at Segontium (Caernarfon) Roman fort 1975-1979,* CBA Res Rept 90, 250-308, London.