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Iron Age Promontory Fort to Medieval Castle ? Excavations at Great Castle Head, Dale, Pembrokeshire 1999

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***Summary.** Great Castle Head Iron Age promontory fort has some of the most massive defences of all the coastal forts of Pembrokeshire. However, due to coastal erosion, it has one of the smallest surviving internal areas and the remains are bisected by a former landslip. The threat posed by continuing erosion prompted a survey and rescue excavation in the summer of 1999. The site is characterised by two lines of defences each consisting of a bank, a ditch and a counterscarp bank. It is suggested that the original entrance was adjacent to the cliff edge to the north of the surviving defences and that the present entrance through the outer defences probably dates to the earlier twentieth century.*

The results of the excavation indicated that the inner bank had at least three phases of construction, with the earliest phase possibly dating to the Early or Middle Iron Age. It seems probable that the more massive, second phase of the defences dates to the later Iron Age although a later date cannot be ruled out. Evidence from the interior of the fort indicated intensive occupation during the later prehistoric period. However, no clear structures could be identified due to the fragmentary nature of the results from the small area that was excavated. The third phase of inner bank construction suggests that the site was re-fortified during the late twelfth and thirteenth centuries AD. Further evidence for medieval activity is provided by a spread of pottery within the interior of the fort. It is argued that there is a strong case to suggest that, during this period, Great Castle Head became the site of a small medieval castle.

Introduction

The excavations at Great Castle Head followed an assessment of all the coastal promontory forts of Pembrokeshire (Fig. 1). This assessment was undertaken in 1993–94 by Cambria Archaeology (Dyfed Archaeological Trust) on behalf of Cadw: Welsh Historic Monuments. One of the objectives of the assessment was to highlight those sites under severe threat from coastal erosion. Two of the sites singled out for particular concern were Great Castle Head (Fig. 1, No. 34) near Dale and Porth y Rhaw on the northern side of St Bride's Bay (Fig. 1, No. 19).

Evaluation and limited excavation was undertaken by Cambria Archaeology at Porth y Rhaw between 1995 and 1998 (Crane, forthcoming), when parts of the defences and the interior were examined. The results indicated that the multiple defences were started in at least the Early to Middle Iron Age, with occupation continuing into the fourth century AD. The partial remains of at least eight roundhouses were identified, suggesting that, at times, the site must have been intensively occupied. The investigation of the most threatened parts of the promontory fort at

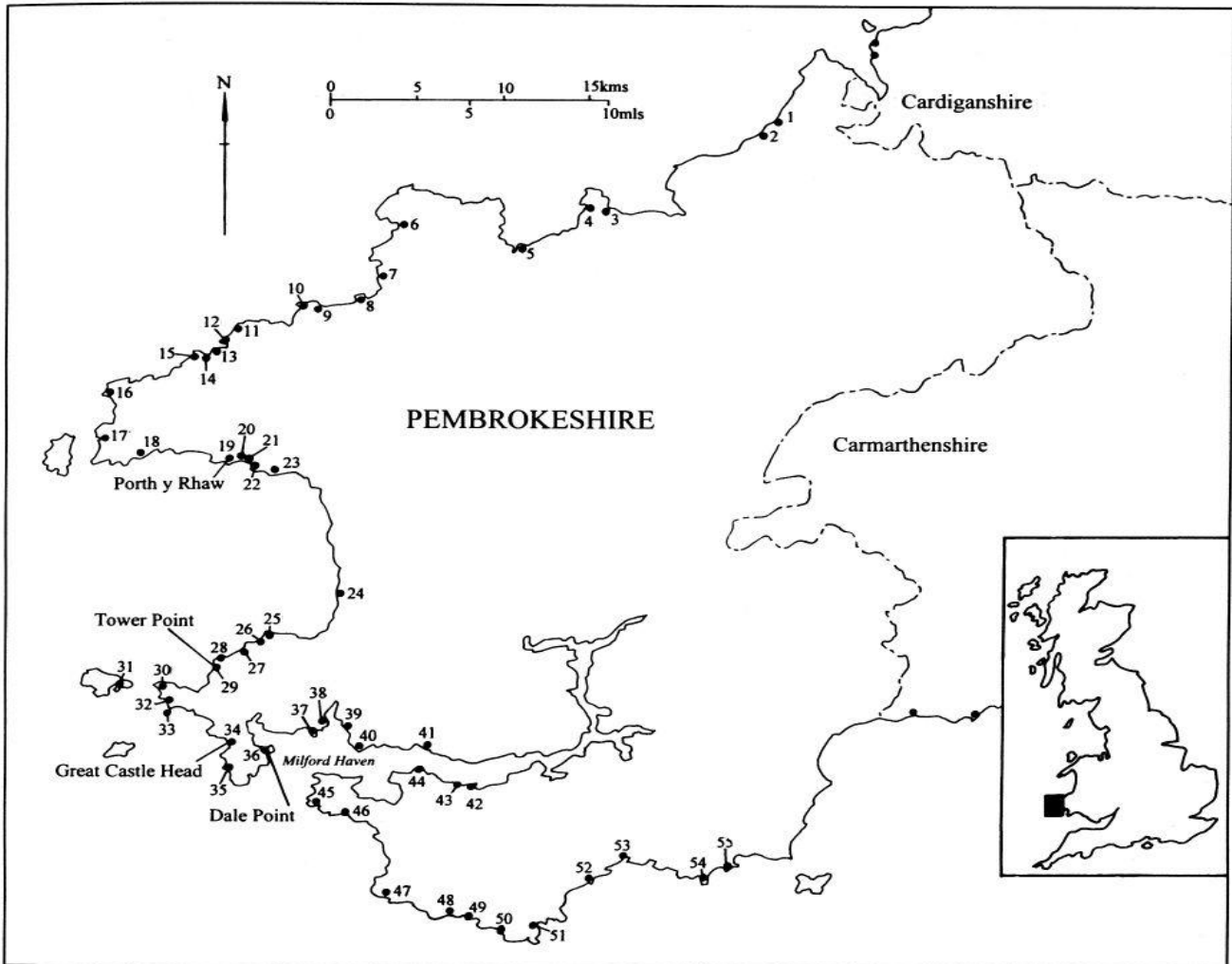


Fig. 1. Pembrokeshire Coastal Promontory Forts, numbered 1–55.

- | | | |
|----------------------------------------|-----------------------------------|---------------------------------|
| 1 Castell: Pen Castell | 20 Gribin | 39 South Hook Camp |
| 2 Castell Tre Ruffydd | 21 Porth y Bwch (Natural) | 40 Cliff Castle (Destroyed?) |
| 3 Dinas Island Castell East | 22 Dinas Fawr (Natural?) | 41 Old Castle (Destroyed) |
| 4 Dinas Island Castell West (Natural?) | 23 Dinas Fach | 42 West Pennar Rath |
| 5 Castle Point | 24 Black Point Rath | 43 Martin's Haven |
| 6 Dinas Mawr | 25 Howney Stone Rath | 44 West Popton Camp |
| 7 Carreg Golchfa | 26 Broadmoor Rath | 45 Castles Bay |
| 8 Castell Coch | 27 Halfway Rock (Natural) | 46 West Pickard Camp |
| 9 Ynys y Castell (Natural) | 28 Old Castle Head | 47 Linney Head |
| 10 Castell Coch | 29 Tower Point Rath | 48 Flimston Bay Hillfort |
| 11 Porth Egr | 30 Wooltack Point | 49 Crocksydarn Hillfort |
| 12 Trwyn y Castell | 31 South Castle Neck Camp | 50 Buckspool Camp |
| 13 Little Aber Pwll | 32 Watery Bay Rath | 51 Fishponds Camp |
| 14 Caer Aber Pwll | 33 Gateholm Island | 52 Greenala Point |
| 15 Castell Coch | 34 Great Castle Head, Dale | 53 Freshwater East (Built over) |
| 16 St David's Head | 35 Little Castle Point | 54 Castle Head |
| 17 Castell Heinif | 36 Dale Point | 55 Skomer Camp |
| 18 Penpleidiau Camp | 37 Great Castle Head, St Ishmaels | |
| 19 Porth y Rhaw | 38 Little Castle Head | |

Great Castle Head was undertaken by Cambria Archaeology between May and August 1999. Both projects were grant-aided by Cadw: Welsh Historic Monuments.

Prior to this programme of work, little investigation had taken place on the coastal forts of Pembrokeshire. The most extensive work had been undertaken at Dale Point Fort (Fig. 1, No. 36), 2km to the east of Great Castle Head, by Professor W.F. Grimes between 1966 and 1983. However, other than the first interim report (Grimes, 1966), this work has not been published. The finds from Dale Point Fort indicated Romano-British activity. However, subsequent work in the 1980s (Benson and Williams, 1987; Ramsey and Williams, 1992) suggested that the defences were begun in the late Bronze Age and were re-modelled in the Iron Age. Limited area excavation has also taken place at Tower Point (Fig. 1, No. 29) in 1970 (Wainwright, 1971). This identified the site of one roundhouse and also included a section through the inner defence. The stone foundations for roundhouses have been identified at St David's Head (Baring Gould, 1898).

Site location and topography

Great Castle Head (SM 79929565) (Fig. 1, No. 34) is a promontory rising 50m above the sea at the south-west corner of the Dale valley and projecting westward into the Irish Sea (Fig. 2). To the south is the Dale peninsula; a broad tongue of land extending southward across the western, seaward end of the Milford Haven waterway. The Dale valley defines the northern limit of the peninsula from the Irish Sea in the west to the Haven in the east. The valley lies on the line of the Ritec Fault which runs the length of the Haven, along the Ritec valley to Tenby in south Pembrokeshire and beyond to Swansea, 90km to the east. During the pre-glacial period, the sea flowed through the valley leaving the Dale peninsula as an island. The fault line along this strait was further cut during the Ice Age before the eastern end was blocked by deposits from glacial meltwater (Wright, 1986, 205). Westdale Bay lies at the west end of the valley, with Dale Castle and the parish church halfway along the valley bottom. The village of Dale occupies the east end of the valley facing Milford Haven.

The underlying geology of Great Castle Head is Lower Old Red Sandstone, with superficial deposits of glacial and fluvio-glacial clays and sands. There are a number of large fissures and landslips both in the area of the fort and in the adjacent cliffs. The fort holds a commanding position over Westdale Bay to the north, along the valley to the south and the Milford Haven waterway to the east. The land immediately to the east and south-east of the fort is relatively flat for 250m before dropping into a north-south gully where springs run north into Dale valley. The Dale peninsula to the south forms a small plateau roughly on a level with the fort, rising to a high point of 71m towards St Ann's Head at its southern tip some 1.5km away. The nearest water source for the fort was probably that at Hayguard Hay Farm, 400m to the south-east, although there could have been a closer supply, in a hollow some 200m south-east of the defences. There are suggestions of cropmarked features, approximately parallel with the defences, running across the level ground outside the fort. These are visible on a 1983 vertical aerial photograph (Geonex, 50 83 103) and appeared to be the same as those observed briefly during the course of the excavation. However, as the aerial photographs were taken at high altitude, the cropmarks are not clearly defined and could relate to geological features or later trackways.

Immediately to the east of the fort's defences is a 25m wide strip of rough grazing, bounded on the east by the remains of the stone enclosure wall of the Dale Castle estate. This wall was

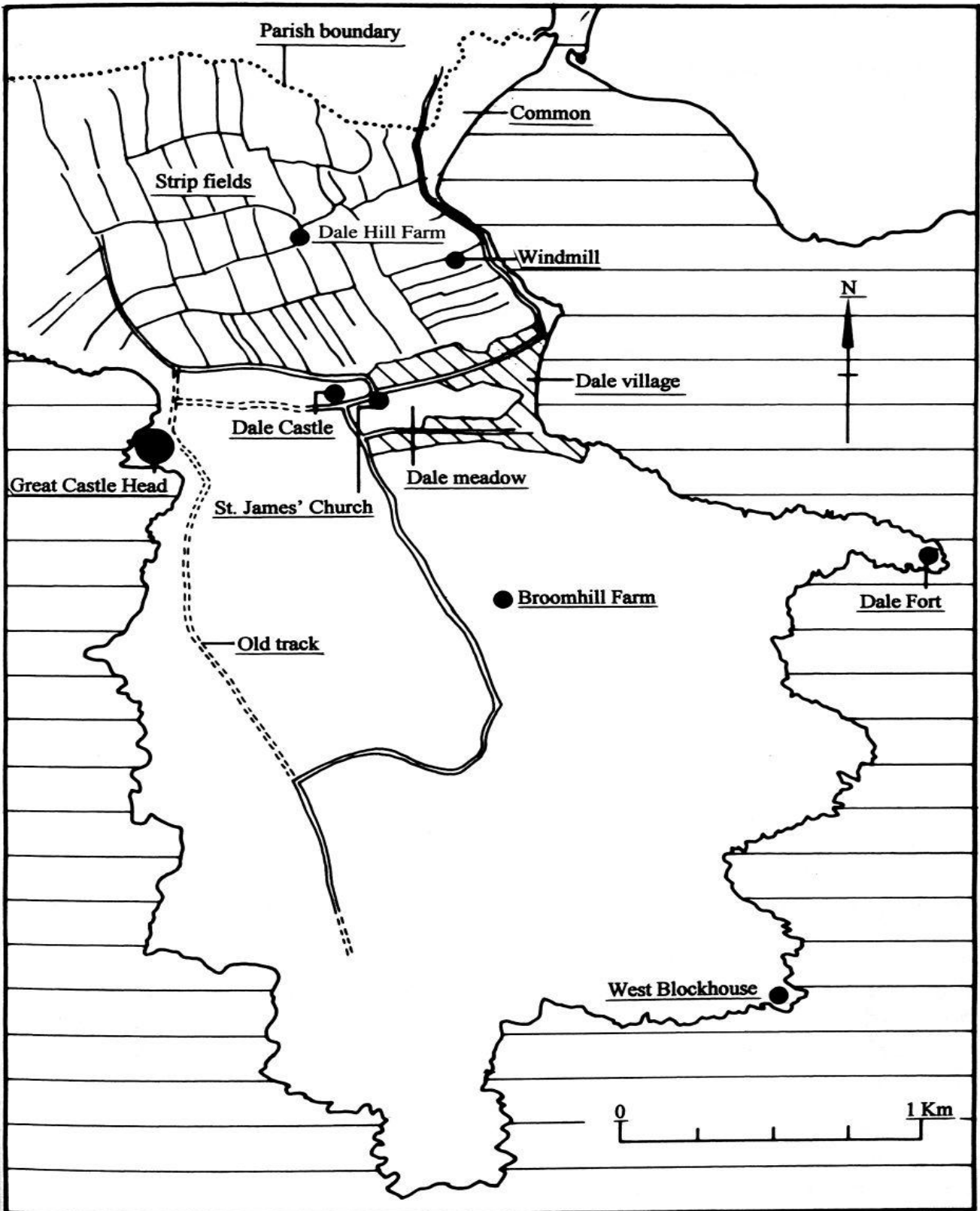


Fig. 2. Dale parish. Sites mentioned in text.

probably constructed in the early nineteenth century and appears to have had a gateway leading towards the southern part of the fort. Parts of the wall are now very reduced. The Pembrokeshire Coast Path runs beside this enclosure wall. Whilst the site was fairly accessible up to a very few years ago, the outer approaches have become increasingly overgrown. The remains of the fort are currently in the private ownership of the Dale Castle estate.

Site description

The surviving remains of the fort are very impressive (Figs 3 and 4). These include two lines of defences each consisting of a massive bank, ditch and counterscarp bank. These inner and outer defences are separated by a berm varying from between 5m and 20m wide. There is a simple causeway entrance located near the middle of the outer defence. A landslip running from west to east has sliced across the ramparts and caused the southern half of the fort to slump down by 3–4m at the western end. This increases to just over 7m in the area of the outer defences. The landslip effectively divides the remains of the fort into two parts. The upper part includes a surviving interior area of approximately 200 square metres, whilst the sunken section includes an additional interior area of 160 square metres. The defences of the fort cover a total area of 3,740 square metres. The slope of the fault-line face between the two areas covers approximately 900 square metres.



Fig. 3. Great Castle Head, Dale, view east 1988.

The inner bank does not extend quite as far as the north cliff edge. Instead there is a flat area, 2m wide and level with the interior, between the apparent end of the bank and the cliff (Fig. 5, profile 2). From this northern end, the ridge of the bank runs south, rising to a height of 3.5m above the interior, immediately before the landslip. The southern part of the inner bank does not quite reach the base of the landslip, creating a gap in the defences. This southern part of the

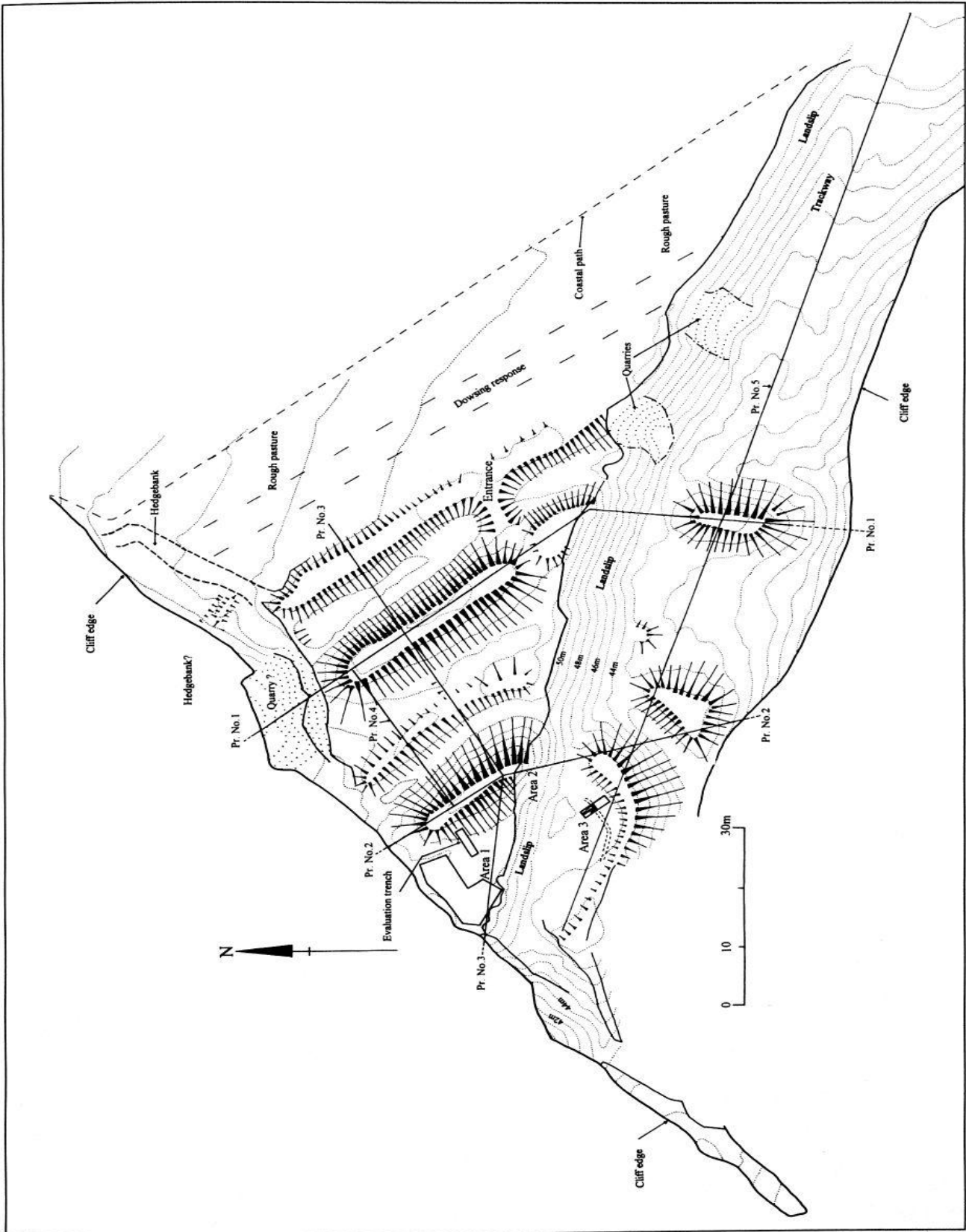


Fig. 4. Great Castle Head. Overall plan with location of areas and profiles.

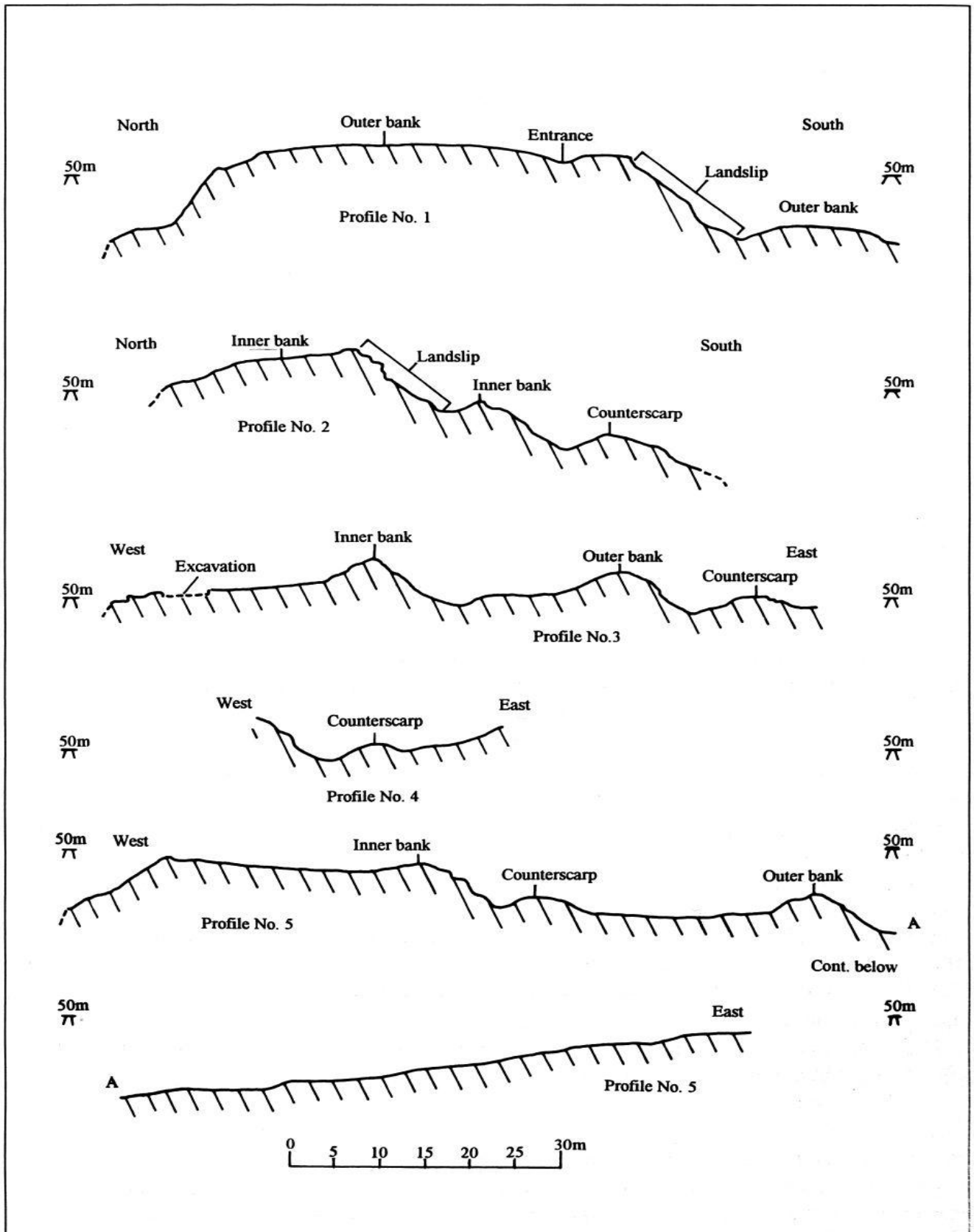


Fig. 5. Profiles (locations on Fig. 4).

inner bank, in the landslip area, curves round to the west. In this area the crest of the bank is lower in relationship to the adjacent area of the interior than the crest of the bank in the northern area. However, the difference in height between the crest of the inner bank and the base of the inner ditch is comparable in both the southern area of the inner defences (Fig. 5, profile 5) and the northern area on the inner defences (Fig. 5, profile 3). Both the northern and landslip sections of this bank have a gradual slope on the interior side and a very steep outer face.

The present-day bottom of the inner ditch appears to be quite level; generally about 1.5m below the interior and berm levels. This comparative depth is maintained in both the northern and landslip areas of the site. As with the inner bank, the inner ditch appears to terminate before the northern cliff edge is reached. The southern, landslip, part of the ditch curves round to the west. The counterscarp to the inner bank stands no more than 1m high above the berm at the northernmost end of the site. Just to the south of this there appears to be a slight gap and the counterscarp then continues at a much reduced height to the edge of the landslip. In the landslip part of the site the counterscarp bank is much larger with a flat triangular area on top, and stands 2m above the adjacent berm (Fig. 5, profile 5).

The outer bank is 1m lower than the inner bank and its inner face is less steep (Fig. 5, profile 3). The northern end of the outer bank terminates at the edge of a natural slump or quarry edge, in which there is no indication of any bank material. The height of the outer bank is relatively uniform along its length (Fig. 5, profile 1). There is an entrance through the bank just to the north of the landslip. The bottom of this entrance is above the level of the berm between the defences and considerably above the level of the causeway across the outer ditch. The southern part of the bank, in the landslip area, appears to be angled or curved toward the west, even allowing for some twisting when the landslip occurred.

The outer ditch is about twice the width of the inner ditch. South of the causeway entrance, the bottom of the ditch appears to be turning to the south before it reaches the landslip fault. The outer counterscarp bank is more substantial than the inner counterscarp, although it is less pronounced south of the entrance. There are still traces of a slight bank where the entrance crosses the line of the counterscarp. The northern end of this bank terminates at a possible hedge bank which runs across the end of the outer ditch. Immediately to the north-east there is a hedge bank along the edge of the rough pasture field. On the north side of this there is another short length of narrow bank and ditch.

In the landslip area the outer ditch is partly obscured and there is no obvious counterscarp bank. This is probably due to the dumping of tailings from a quarry cut into the face of the landslip slope. There is a further small quarry 10m further to the east. There appear to be traces of a cart track (Fig. 4), leading eastwards from the base of the landslip towards a gateway in the Dale Castle estate wall. On the south side of this cart track there is a bank, possibly built out of further quarry tailings.

The most obvious current erosion is on the north side of the western end of the interior where there is a slight overhang above the cliffs. There is also exposed subsoil along the top edge of the landslip and across the lower deposits of the inner bank, where gradual erosion is occurring. There is active slumping on the outer faces of both banks. The far western end of the promontory is cut by a fissure, although any archaeology in this area would appear to have been lost due to erosion. There is substantial evidence of fox and rabbit holes in all areas of the site, particularly in the banks. However, most appear to be no longer in use. All of the site, except the western end of the interior, is overgrown with bracken, some bramble and grass, the vegetation reaching over 1.8m high in places.

Historical Background

Other Prehistoric and Roman sites

A number of Mesolithic or Neolithic flint finds have been recorded on, or near, the Dale peninsula although no settlement activity has been identified. There was a stone circle of Neolithic or Bronze Age date near the centre of the peninsula and there is a possible round barrow 1.5km north-east of Great Castle Head. The only Iron Age or Roman finds, other than those found at Dale Point Fort, are two spindle whorls, one recovered 2km to the south, and the other 1.4km to the north-east (Sites and Monuments Record).

Several other promontory forts are within view from Great Castle Head including, to the north, South Castle Neck Camp on Skomer Island (Fig. 1, No. 31) and Gateholm Island (No. 33) which was probably a promontory fort in the Iron Age. To the east, Great Castle Head at St Ishmaels (No. 37) and Cliff Castle (No. 40) are both visible. Martin's Haven (No. 43) and South Hook Camp (No. 39), both on the shores of the Haven, may also have been in sight. It is uncertain whether Dale Point Fort (No. 36) projecting into the Haven at the east end of the Dale valley, was directly in view, as there is a rise of ground between the two forts. However, any associated structures would probably have been visible. Little Castle Point (No. 35), 1.8km to the south, is also obscured by a rise in the ground and even the tops of structures would probably not have been in sight. There is also a possible hill-fort/defended enclosure at West Blockhouse Point on the south-eastern part of the Dale peninsula, 2.25km from Great Castle Head and 300m inland from the coast. However, this would not have been visible from Great Castle Head.

Medieval and later history

Prior to the Anglo-Norman period Dale would have been located within Cantref Rhos, one of the administrative divisions of the kingdom of Dyfed. Each *cantref* was made up of a number of smaller *cymydau* (Richards, 1969, 307) each of which, by the eleventh century, would normally have featured an administrative centre (or *llys*) and a commercial centre (or *maerdref*). Few have been identified, although proposed *llys* sites have included the later castles at Pembroke (Ludlow, 1991, 25–6), Carew (Austin, 1992, 5–6; Gerrard, 1990, 45) and Tenby (for example Walker, 1978, 290–9)—all of which may have origins as Iron Age promontory forts.

The history of Dale and the surrounding region after the Anglo-Norman invasion is dominated by the establishment of the marcher lordships of Pembroke and Walwyn's Castle. The manor (and parish) of Dale formed a subordinate, *mesne* lordship of the barony of Walwyn's Castle. The manor had, by the thirteenth century at least, been acquired by the de Vale (or Valle) dynasty. The family appears to have been named after the location of its manor, rather than vice versa, and it is possible that the place-name had become fixed by the early twelfth century. In 1293 Robert de Vale was granted the right to hold a weekly market at Dale.

Dale parish church (St James) had been established by 1291 and, along with the present Dale Castle (see below, Discussion), it forms an apparent settlement nucleus at the west end of the present village and valley. There is little further topographical evidence for the medieval settlement, and the windmill immediately north of the present village is post-medieval (Nash, 1986, 45).

Dale did not become a successful port or market and, apart from quarrying, and possibly some excavation for copper ore (Lewis, 1833), the economy was overwhelmingly agricultural until the leisure boom of the later twentieth century. However, one of a pair of blockhouses

guarding Milford Haven was constructed at the tip of the Dale peninsula under the coastal defence initiative of Henry VIII, and increased naval traffic led to the construction, in the mid 1800s, of Dale Point Fort on the peninsula to the east of Dale village.

Twentieth-Century activity

During the First World War there was a manned defence system on this part of the coast. A trench on the north side of the Dale valley cut off any potential landing on the peninsula, but no records of activity on Great Castle Head itself have been traced. During the Second World War a large airfield was constructed to the north of Dale and a very large prisoner of war camp was built on the peninsula. Westdale Bay immediately to the north of the fort was a 'denied' (barricaded) beach and it is likely that there was some form of defensive position on either side, probably including the site of the fort. There was a coast watch scheme under the coastguard for which the promontory would have provided a suitable lookout point. A searchlight position with a hint of a trench to the north-west of Hayguard Hay Farm and some signs of disturbance to the site appear on aerial photographs taken in 1946. These suggest possible weapon pits on both the upper and slipped parts of the inner bank and in two locations by the entrance on the outer bank (pers. comm. Roger Thomas, English Heritage). The site was designated a Scheduled Ancient Monument in 1950 (SAM PEMB 197).

Recent history

There has been comparatively little antiquarian interest in the promontory fort. The earliest reference was in 1880 (Laws, 244) when it was included in a list of forts, together with a note that flint chips and a bronze ring had been found. Later the Pembrokeshire Archaeological Survey (Laws and Owen, 1908) recorded that 'about a peck of un-worked flints were found here in one nest'. Other objects have subsequently been recorded as probably coming from this site: a hemispherical piece of pumice 38mm in diameter, a pounder stone, a blunt core, a granite flake and some small flint flakes.

A relatively large-scale plan and measured profile was made in 1912 by Downman (1910–1913), together with some notes recording that 'there seems to have been no regularly formed entrance'. The present entrance through the outer defence was not marked, confirming the accuracy of the 1:2500 first edition Ordnance Survey map (1909). Consequently, this entrance is likely to have been a recent creation. It has indistinct edges, is higher than the berm and considerably higher than the causeway across the outer ditch. Furthermore, where the entrance crosses the inner counterscarp a faint trace of the bank can still be seen. However, the landslip had occurred by this period, as it was noted by both Downman and the OS 1909 survey.

The original entrance may well have been at the present northernmost edge of the defences and is possibly represented by the 2m level gap at the apparent northern terminal of the inner bank and the inner ditch. Also suggestive of an entrance at this point were a few stones located just to the east of the inner counterscarp bank and seen in slump edges. Any further evidence for an entrance to the east would have been lost in the possible quarry cut or cliff slide (Fig. 4).

The Excavation

Objectives

The excavation was essentially a rescue exercise, designed to salvage archaeological information from the areas of the fort most immediately threatened by further erosion. However, several research objectives could also be identified.

Chronology – the excavation allowed an opportunity to obtain evidence for the establishment of the fort and the duration of its occupation. Evidence from other promontory forts, including Porth y Rhaw and Dale Point Fort, has suggested a long sequence of activity beginning in the later Bronze Age and extending into the Romano-British period.

The defences – the landslip and subsequent erosion had exposed a section across the inner bank of the fort allowing an opportunity to examine in detail the character and chronological phasing of this structure.

Settlement organisation and economy – the excavation of an area of the interior allowed the opportunity to obtain evidence for the internal arrangement of the site and the character of the occupation. This could be compared with the recent work at Porth y Rhaw which had indicated intensive occupation with numerous, closely-spaced roundhouses.

Method

The work was undertaken in two stages: a survey and evaluation trench in the spring, and the recording of two sections and a small area excavation in the summer. Geophysical survey was not undertaken due to the varied geology, steep earthworks, fissuring, vegetation and the proximity of a wire fence on the east side of the outer counterscarp bank. Dowsing using twin rods was attempted and some responses were detected which corresponded with features such as the ditch and gullies.

In May 1999, the site was re-surveyed and a single evaluation trench was excavated immediately behind the inner bank (Fig. 4, Area 1). The evaluation demonstrated that there was a far greater depth of deposits than anticipated (600mm or more) and that the area excavation would have therefore to be more modest than originally planned. The excavation took place over six weeks during July and August, with an average team size of thirteen. The ground conditions were far from ideal, particularly at the start of the summer, which was very dry. The whole of the site had to be hand excavated, partly because of the complex stratigraphy, but mainly because of the almost impossible access. A large proportion of soils from the features were coarsely sieved for artefacts and bulk samples were taken for wet sieving later. Excavation areas and the spoil tips were screened with a high-quality metal detector.

The Defences

Two areas of the inner bank were investigated (Fig. 4, Areas 2 and 3).

Area 2 (Figs 6 and 7)

The landslip movement had exposed a slightly oblique section across the upper area of the inner bank. Some of this section, towards the bottom and front, of the bank was bare soil and obviously slowly eroding. Therefore, it was decided to cut back the exposed section, with minimum disturbance, to create a number of stepped sections (Fig. 6). The individual sections were recorded and then combined as one drawing (Fig. 7), although there were a few anomalies caused by the oblique section cuts and the dipping of the bank layers towards the south.

The upper glacial deposits (226) comprised a yellowish brown, slightly clay silt loam with sparse, small-medium stones and occasional, large, round stones. Above this, towards the front (east) of the bank, was a buried soil (225) 50–80mm thick, of purplish brown silt loam, which contained a lens of iron panning (276). Two samples (837 and 838) for palaeoenvironmental analyses were taken from this buried soil, and results suggested an open landscape possibly used as pastoral grassland, perhaps with some arable activity in the area (see environmental report below).

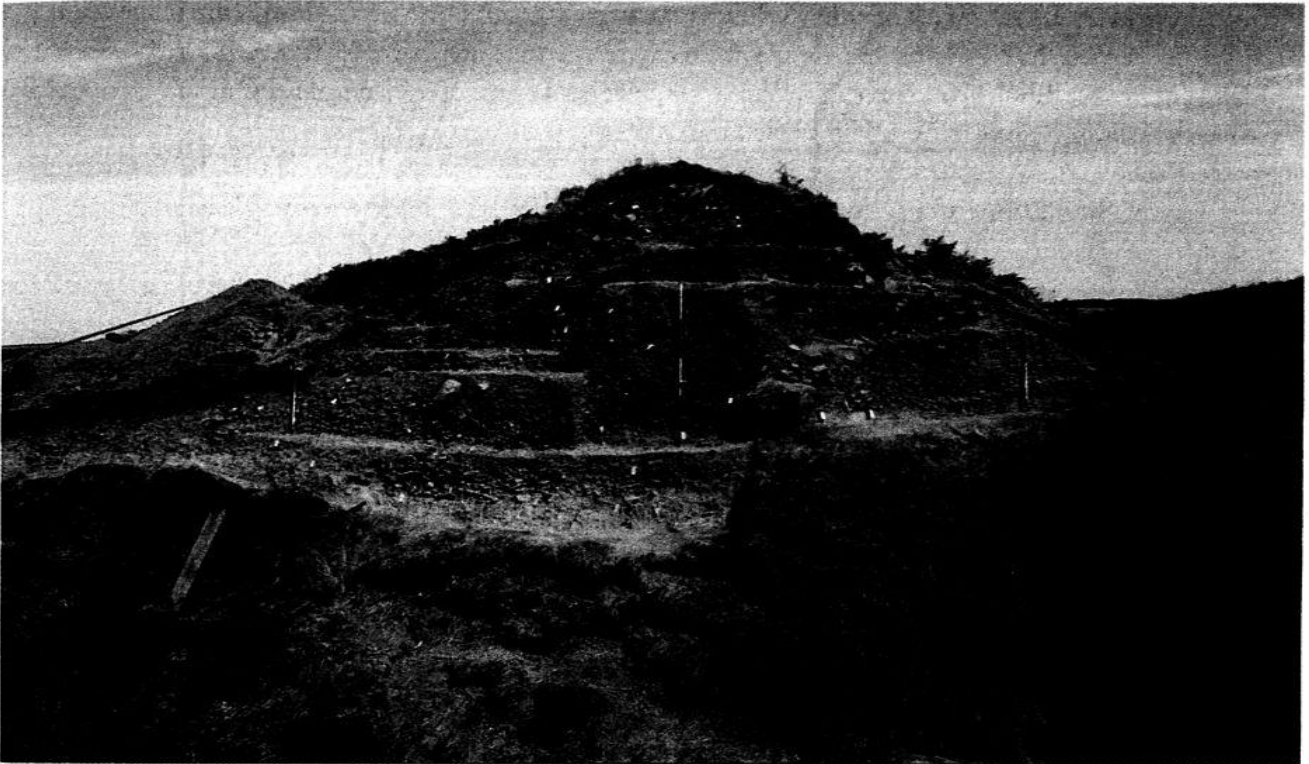


Fig. 6. Area 2, section, view north-north-east, scales 2 x 1m and 2m.

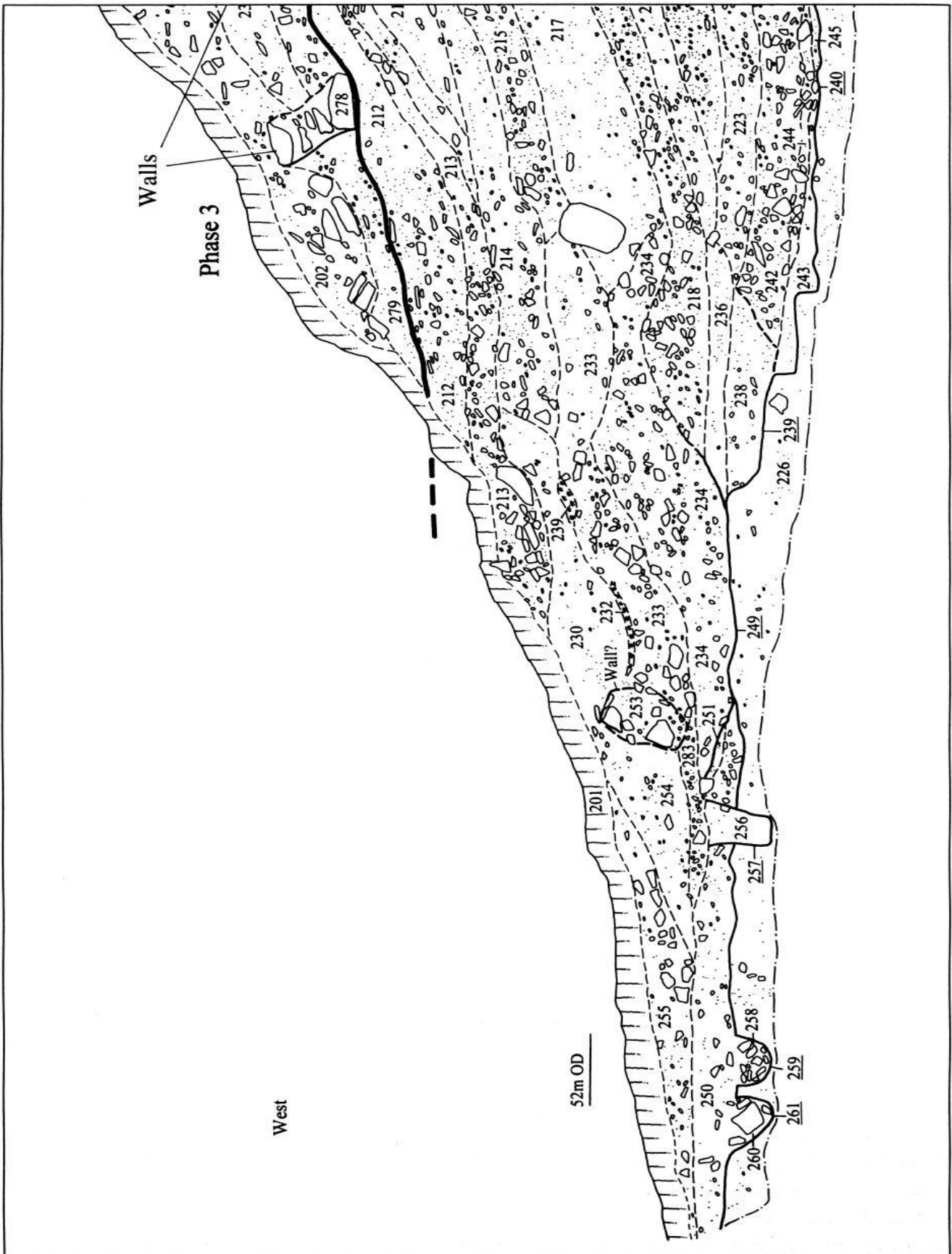
Above the buried soil were a number of distinctive compact deposits (280; 275; 274; 273; 272 and 271) forming a primary bank. In the back edge of this primary bank was a very large stone (285) the rear face of which appeared to be on the line of the bank. Above this large stone was a very stony layer (266) which did not extend beyond the western half of the large stone.

Immediately to the rear of this large stone (285) was a deep vertical cut (240) into the upper glacial deposits (226), in line with the back edge of the stone. Further west was a second, shallower cut (239). Following partial excavation, both of these cuts proved to extend less than 600mm north into the section. A charcoal sample (853) was taken from the lower layer (209), in the deep cut. A radiocarbon date of 770–410 cal. BC at 95% probability (Beta-135351, see Table 3) was obtained from this charcoal.

The primary bank was cut by a substantial feature (270), of which only the lower and most of the eastern edges were clearly defined. The lower fills of this feature (267; 269; 268 and 262) were overlain by stone packing, possibly the remnants of a wall (263).

The western edge of this cut (270) and the primary bank was overlain by a number of substantial, inclined deposits (222; 221; 220; 219; 218; 217 and probably 262), tipping from east to west. Overlying the western edge of these layers was a deposit (234) filling a possible hollow or shallow cut (249). This was in turn overlain by a layer (283) which appeared to be associated with a possible retaining wall (253). Overlying the layers retained by this possible wall (253) were further inclined layers (215; 216; 224; 231; 214; 211; 208; 207; 213 and 212) similar to those below. There was no indication of any turf line between any of these deposits.

The remains of a retaining wall (278), with a well-defined western face (Fig. 8), were set onto the uppermost of these layers (212). To the rear of the lower part of this wall was an inclined



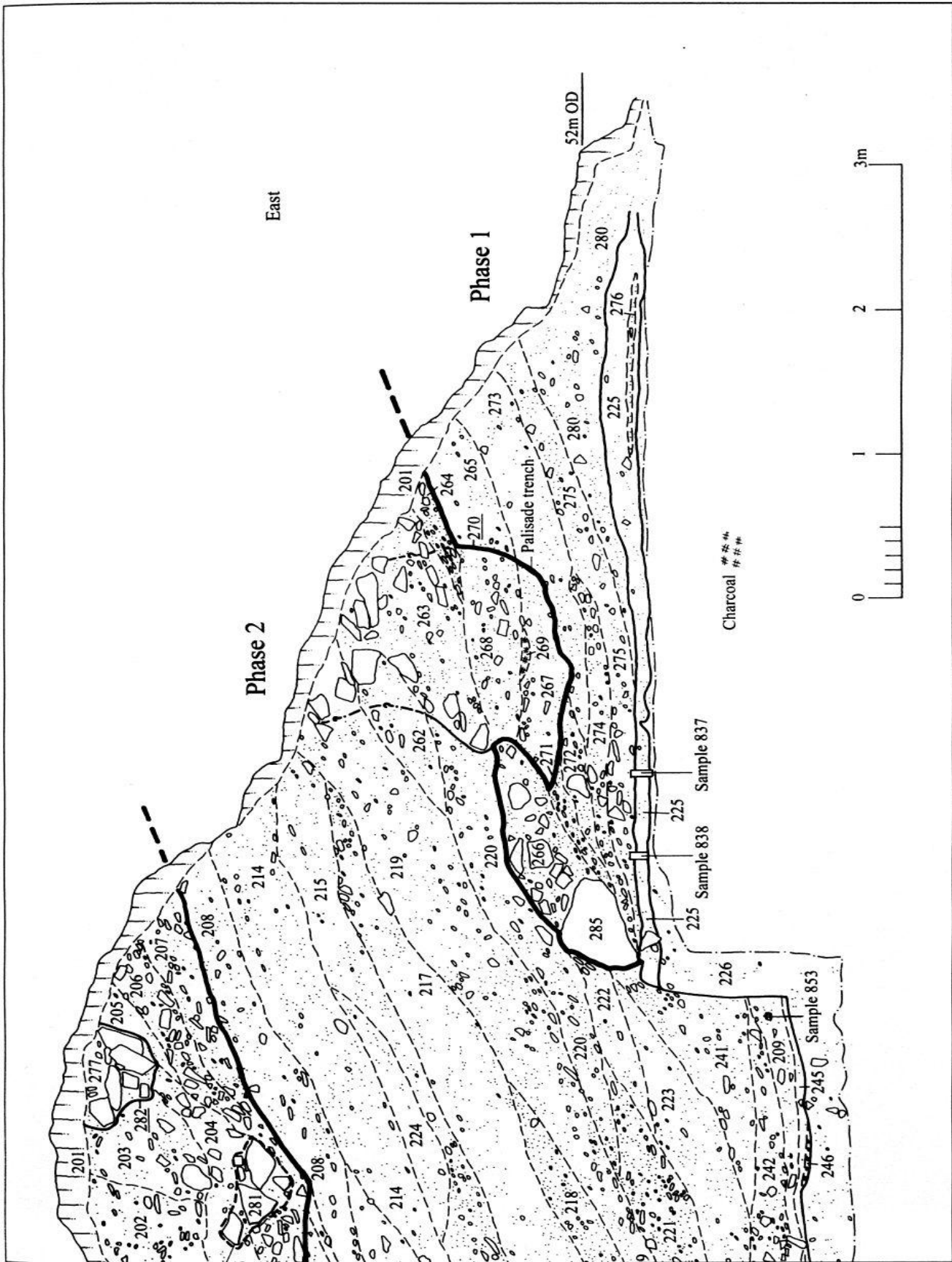


Fig. 7. Composite section (Area 2).

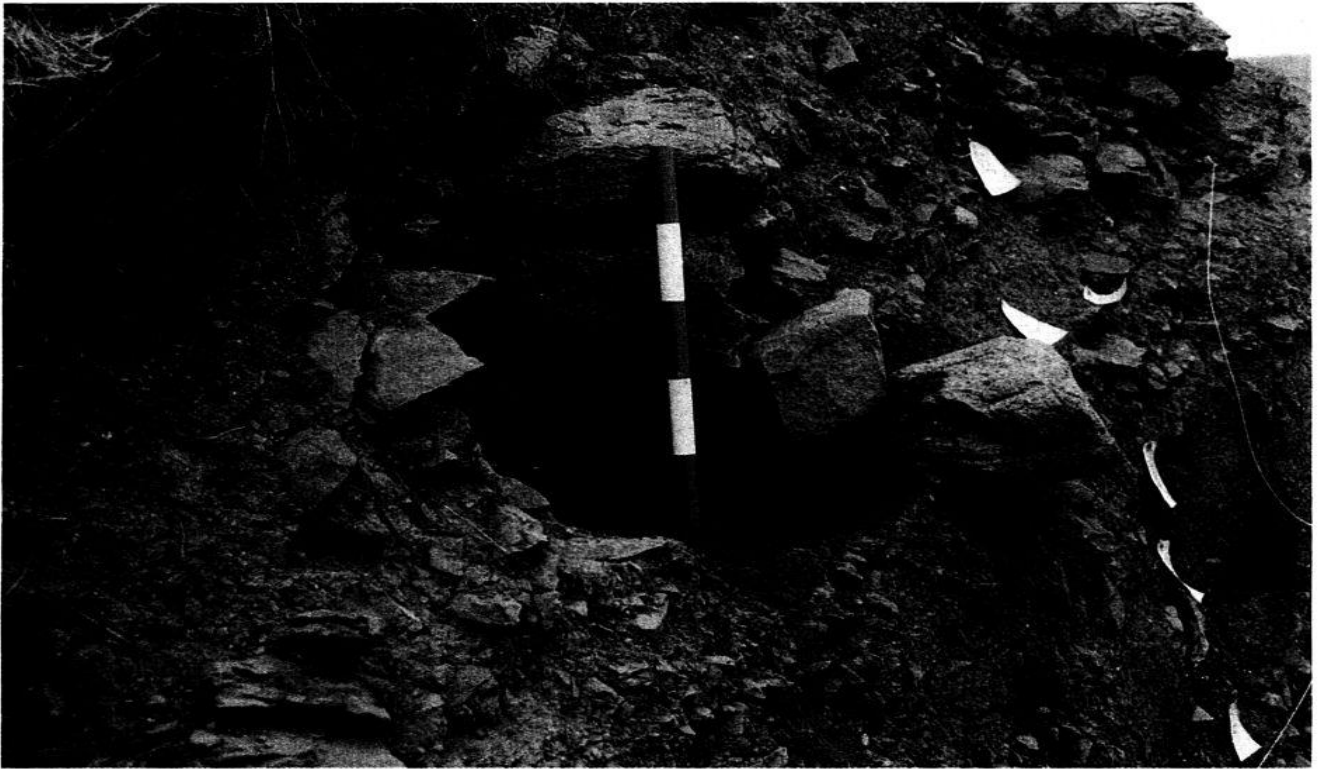


Fig. 8. Area 2, retaining wall (278), view north-east, scale 0.5m.



Fig. 9. Area 2, retaining wall (281), view north-east, scale 0.5m.

layer (206) on or within which were the partly collapsed remains of another retaining wall (281) (Fig. 9), again with a western face. A fragment of orpiment, used as a pigment in the production of medieval manuscripts, was recovered from immediately below the stone wall (see below).

A possible former turf line (205) was located near to the top of the bank. This was overlain by a deposit (204), possibly within a cut, which contained a large body sherd of unglazed, medieval Ham Green ware. This lay directly over the collapsed retaining wall (281). The top of the bank was cut by a feature (282) containing a fill (277) with packed stones. This was partly excavated back into the top of the bank and appeared to be the remains of a posthole rather than a wall or wall footings. The bank was sealed by an uneven topsoil (201), disturbed by some very large tussocks, ant heaps and cut by a number of large animal burrows.

Area 3

Area 3, which measured 5m by 1.4m, was located to the rear of the inner bank within the landslip area. The objective of this trench was to determine the character and survival of both the remains of the bank and the deposits sealed below the spread from it. In the central area of the trench, a natural outcrop of Old Red Sandstone was encountered at a relatively shallow depth of 0.8m (Fig. 10). At the north-western end of the trench the upper geological deposit consisted of boulder clay. No buried soil was identified below the bank material in the south-eastern end of the trench. However, the bank material was only partially excavated.

The boulder clay was cut by three gullies. These were approximately on the same north-west-south-east alignment as the trench and extended beyond its north-western end. The northernmost of these gullies (917) and its fill (916) were also seen in the main section of the trench. These gullies were possibly associated with two stake holes and a possible posthole. In the central area of the trench was a retaining wall (903) (Fig. 11) which appeared to overlay the gullies. However, it was not possible to demonstrate conclusively this relationship without demolishing the retaining wall.

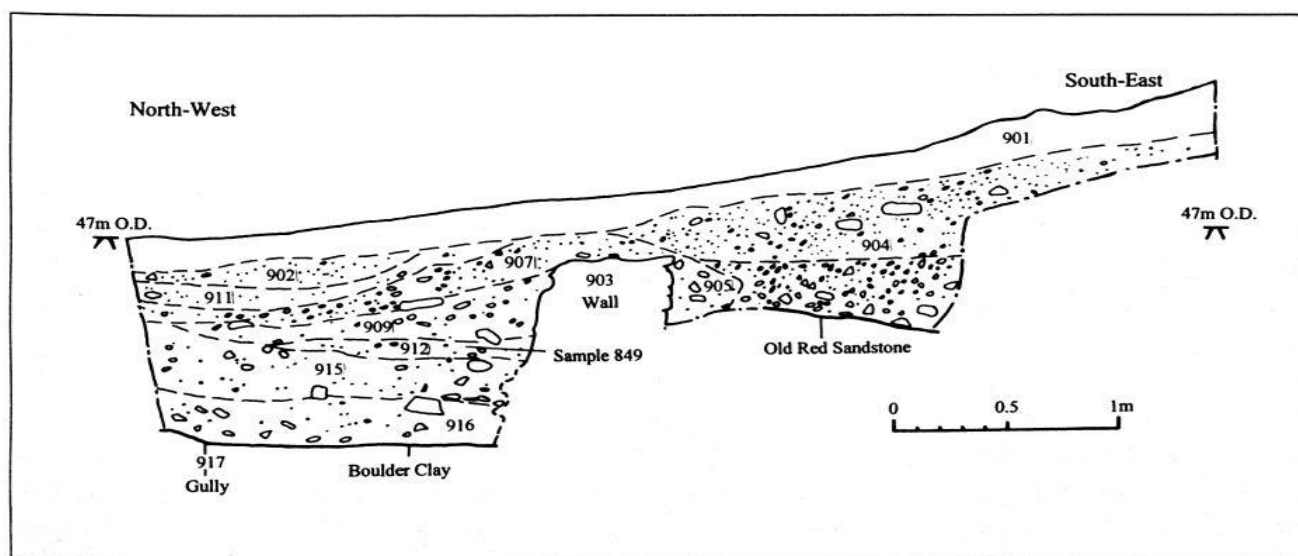


Fig. 10. Area 3, section.



Fig. 11. Area 3, retaining wall (903), view south-west, scale 1m.

On the interior side of the retaining wall (903), and built up against it, a thick deposit (915) overlay the fills of the gullies and stake holes. Above this were two layers (912 and 909) butting against the wall. The lowermost of these deposits (912) contained nail heads and charcoal. A radiocarbon date of 990–1255 cal. AD at 95% probability (Beta-135350, see Table 3) was obtained from this charcoal (Sample 849). The uppermost of these layers (909) and the wall were sealed by a layer (907) which contained an iron object with a looped head, possibly coated with a tin alloy. A First World War cap badge (414) and a metal object, again possibly coated with a tin alloy, were recovered from the fill (911) of a possible cut or hollow at the north-west end of the trench.

Interpretation

Phase 1, Primary bank – The deposits at the eastern side of the inner bank section in Area 2 appeared to form a primary phase of bank construction, the material apparently derived from the immediately underlying upper glacial deposits. This primary bank was 6m wide and at least 1.4m high. Two features (240) and (239) immediately to the rear of this part of the bank could have been hut scoops although they are more likely quarry pits for the primary bank. A large stone (285) at the back of these primary bank deposits appeared to have functioned as part of a rear retaining wall. There was no surviving evidence for either the top surface or front face of the bank. In the pits or scoops there appeared to be primary (or near primary) fills (243 and 245) which were probably re-deposited old ground surface, similar to the buried soil below the front of the bank. There was no direct dating evidence associated with this phase of activity. However, charcoal from the fill of the associated quarry pit to the rear of the bank produced an

Early to Middle Iron Age date (770–410 cal. BC; Beta-135351). This date would not be inconsistent with the form and character of the bank itself.

Phase 2 – The primary bank appears to have been engulfed by a much larger structure 13.4m wide and at least 4.2m high formed by substantial dumps of material, with tip lines dipping from east to west. The upper fills in the possible Phase 1 pits/scoops to the rear of the primary bank may well have been deposited as part of this second phase of bank construction. No evidence was identified for a hiatus between the deposition of these fills and the secondary bank deposits above. The feature towards the rear of the Phase 2 bank, consisting of a block of stones (253), was possibly a retaining wall. However, it could equally be a build-up of larger stone rolling to the back of the bank during construction. The nearby posthole (257) could be related to this possible wall. Alternatively this feature, along with two other postholes (259 and 261) could be part of a structure or building to the rear of the bank.

The large feature at the front of the bank (270), and cutting into the earlier Phase 1 structure, was almost certainly the foundation trench for a front palisade or retaining wall. The principal fill of large stones (263) may have been post-packing for vertical timbers or the foundation for a retaining wall. However, there was a substantial amount of animal disturbance in this area. The make-up layers of the bank appeared to be piled-up against the rear of this structure.

Again there was no direct dating evidence for this phase of construction although a later Iron Age date for the construction of the Phase 2 bank seems likely.

Phase 3 – The final phase of bank construction appeared to be represented by the addition of two retaining walls (278) and (281) to the rear of the top of the Phase 2 structure. These may have formed a stepped rear to the top of the bank. These structures cut a into a possible turf line (204) and (205). The development of this possible turf line suggests that Phases 2 and 3 were separated by a significant amount of time. In fact, the recovery of medieval pottery from this turf line and from the deposits overlying the two revetment walls, strongly suggests that this phase of activity relates to a medieval re-use of the site possibly during the late twelfth and thirteenth centuries. This is supported by the recovery of the fragment of orpiment from under the revetment wall (278) and the pottery from the interior of the promontory fort (see below).

The inner bank in Area 3 – It is difficult to determine which of the three phases of construction of the inner bank is represented by the revetment wall and bank deposits recorded in Area 3. The dimensions suggest that these features are comparable with the primary bank in Area 2. However, the apparent levels may not be representative. The difference in height between the crest of the bank and the bottom of the ditch is similar in both the intact and landslip parts of the site. It is also possible that the landslip area could, originally, have been higher than the intact area. There was no buried soil beneath the bank in Area 3. Instead the bank overlay fragments of shattered Old Red Sandstone, possibly derived from the underlying bedrock identified in the south-eastern part of the trench. There was no direct dating evidence for the gullies and stake holes to the rear of the bank and it was not possible to determine whether or not these related to structures. However, the radiocarbon date from one of the deposits overlying these features (990–1255 cal. AD, Beta-135350) provided further support for a medieval re-use of the site.

The finding of the cap badge and the tinned, iron fragments indicate at least some disturbance in Area 3. The cap badge, apparently broken immediately before its loss, cannot date before 1909. The most likely time for the loss of this badge is between 28 September and 19 October 1914 when the Brecknockshire Battalion was based at Dale (based on information kindly



Fig. 12. Excavation of Area 1, view north-west.

provided by Major Martin Everett, The South Wales Borderers and Monmouthshire Regimental Museum, Brecon, Powys).

The Interior

Description

Due to practical limitations, the area of excavation within the interior of the fort was restricted to an area forming a broad 'L' shape. This covered the areas considered to be most at risk and leaving just sufficient room for the spoil tip (Fig. 12). The underlying geology was similar to that encountered under the main bank (Area 2), although here there were a number of fissures, as well as some root and animal disturbance. One voided fissure was found near the north-western corner of the site, along with probable old bird burrows. Because the subsoil between this fissure and the cliff edge appeared to be insecure (there is a slight overhang near this area), this small sector of the site was abandoned. The central and eastern areas of the site were fully excavated.

Few features cut each other and, other than two possible layers of metalling at the eastern end of the site, they could not be separated into phases. The site is described from south-west to north-east. Not all features are referred to in the text, although they are shown on the main plan (Fig. 13).

Cut features to the west of a large ditch (164) were probably all minor postholes with no stone packing. The ditch itself was cut up to 0.9m deep into the subsoil. It appeared to have been a drainage ditch flowing from south-east to north-west. The fills of this ditch suggested

that most of the material may have been derived from above its western side. The upper fill of the ditch produced a fragment of a bronze mount (404), probably medieval in date (see page 113 below). No features were seen cutting the fills of the ditch.

To the east of the ditch and towards the south there was a cluster of three postholes with vertical stone packing (150;181 and 196) and two or three stake holes (179;187 and 512). An irregular gully (134), to the north of this group of features, was aligned west–east, and was up to 250mm deep. A spindle whorl (405) was recovered from the stony fill which may have been disturbed post-packing. This gully was aligned at right angles to a similar feature (159) which may have extended across to the northern edge of the site, but appeared to have been truncated by later activity. Immediately to the east, and running into the south section, was a short length of parallel gully (154), possibly with a posthole at its northern end.

A few heat-affected features were located near to the north section. The most significant of these was a possible hearth (528) and area of flat stones (511). To the east of these were four postholes (186, 566, 550 and 569) that were similar in size and shape. A charcoal sample (860) from the fill of one of these postholes (550) provided a radiocarbon date of 845–760 cal. BC and 635 to 560 cal. BC at 95% probability (Beta-135352, see Table 3). A possible prehistoric pottery sherd was recovered from another small posthole (1106) adjacent to the northern section.

A posthole (589), further to the east, contained a post setting angled to the north-west. To the north was a gully (584) and an associated posthole (1114). The gully contained a considerable amount of stone-packing with at least three stake holes on the western side (Fig. 14). Towards the south-eastern side of this feature, was a short length of gully (586), which just cut the upper fill of posthole (1114).

A stone surface or metalling (571) was located in the eastern area of the excavation (Fig. 15). This metalling contained two rubbing stones (417 and 418). The metalling was cut by several



Fig. 14. Area 1, gully (584), view west, scale 0.5m.



Fig. 15. Area 1, metalling (572) below 2m ranging rods, view north.

features including two shallow postholes (1101 and 1115), a shallow scoop (1116) and a shallow gully or possible worn hollow (1103). The fill of this shallow feature was cut by another gully (1109) which probably extended to the east but was cut by a substantial posthole (592). Another probable posthole (590) was located immediately to the south.

All of the features in the eastern area of the excavation, including the two gullies (584 and 586) and the metalling (571), were overlain by another stone spread (531, not indicated on the plan). This may have formed an upper metalling or surface which may have been contemporary with a posthole (576) and a feature which appeared to be comprised of three possible post settings (578, 580 and 587). The stone packing for all of these postholes was approximately level with the stone spread.

The following overlying deposits are illustrated only in the section (Fig. 16). The stone spread (571) was overlain by a layer of silt loam (570) which covered the eastern half of the excavated area. A single unglazed sherd of medieval pottery was recovered from this layer. Overlying this silt loam was the stony layer (531), limited to an area adjacent to the bank. Above this was a layer or stony spread (520) confined to the eastern 3m of the site. A silt loam layer (146) lay above this, resulting in a surface of indeterminate nature and which appeared to be spreading from the inner bank. Above was another stony spread layer (141), containing a sherd of Severn Valley ware dating to probably the first or second century AD. This was overlain by a silty layer (138/132), which probably extended over the whole site and which contained 28 medieval pottery sherds. Above this was a stony deposit (130/131) and a layer with fewer stones (124) but disturbed by a large number of bracken roots. Both of these deposits also contained medieval pottery sherds. The overlying topsoil (102) was covered with coarse turf and bracken.

Two, shallow stake holes (120 and 123) and two (or possibly three), shallow postholes (119, 125 and 127) were recorded in the bottom of the spring evaluation trench (Fig. 13 and Fig. 17). In the eastern end of the trench, two layers, immediately above the subsoil, contained a large amount of heat-affected material and charcoal (Fig. 17, 116 and 117). A charcoal sample (865) from these deposits provided a radiocarbon date of 365 cal. BC–55 cal. AD at 95% probability (Beta-135353, see Table 3). The burnt material was overlain by a stony layer (114) extending from the bank. At the western end of the trench, above a thin layer of silt (111), was a possible pebble surface (110). The thin silt could be the same as that overlying the burnt deposits and stony layer to the east. Above these were a number of layers (104–109 and 112) which appeared to derive from the back of the inner bank. Some of these upper layers contained sherds of medieval pottery and some iron fragments including a possible arrowhead.

Interpretation

The two gullies in the western part of the site (134 and 159) appeared to be structural and it seems likely that they represent the eastern and southern sides of a rectangular building. The only dating evidence was the spindle whorl, thought to be Iron Age in date (see below page 111), from the southern gully, although this item could be residual. The arc of postholes to the north (186; 550; 566 and 569) may form part of another, possibly circular, structure with a hearth (528) and the flat stones (511) near to its centre. Presumably these two possible buildings belong to different phases of activity. The radiocarbon date from one of the postholes (Beta-135352, see Table 3), suggests an Early to Middle Iron Age for the possible circular structure.

The full extent of the metalling (571) to the east could not be established. The southern edge appeared to fade out and the western edge may respect the adjacent north–south gully (584). However, the excavation in this area was incomplete. The northern edge appeared to be worn away or cut by a shallow feature (1103) and it was suspected that the eastern edge continued outside the excavation area towards the bank. It is possible that this metalling lies just within the original inner entrance to the fort. The shallow cut or feature (1103) on the northern edge of the metalling could be the result of traffic passing through this possible entrance.

The straight section of gully (584) to the west of the metalling also appeared to be an early feature and the associated stake holes suggested that it held a wattle structure. The evidence for the uprights in the gully suggested that they were 80–100mm wide and possibly square or square pointed and set approximately 300mm apart. The larger posthole (1114) may have been included for extra strength. The well-defined southern end of this gully suggested one side of an entrance. It is possible that the postholes to the south (589 and 594) also formed part of this entrance. The much shallower gully immediately on the eastern side could be the results of the frequent dragging of a wattle hurdle on the ground to close this entrance. Various other postholes within the area excavated appeared to form possible alignments. However, no other potential structures could be defined.

The radiocarbon date from the burnt material in the evaluation trench (Beta-135353, see Table 3) suggests a Late Iron Age date for this activity. This date also provides a *terminus post quem* for the later metalling (110) suggesting that this possible surface is Romano-British or later in date.

The south-western area of the excavated area appeared to have suffered more truncation from erosion. Consequently, the original width of the large drainage ditch (164) was probably more

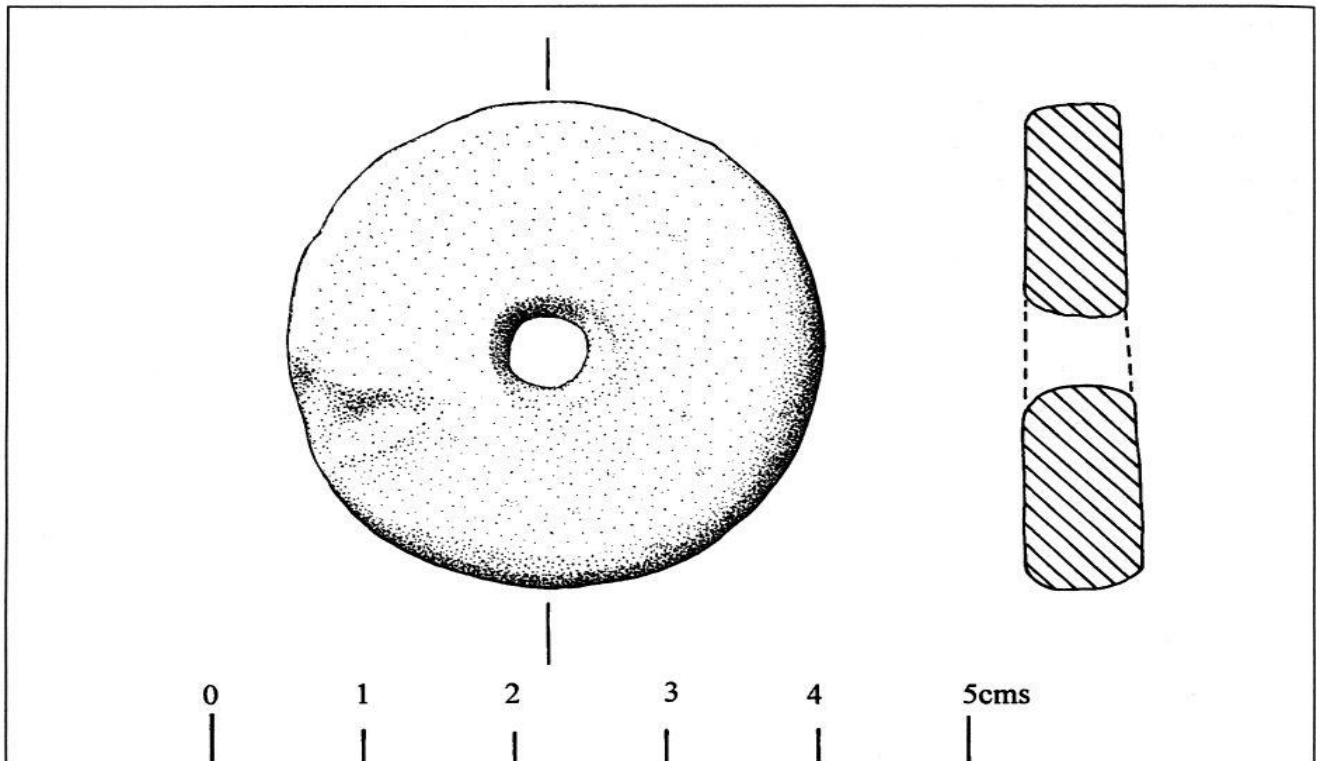


Fig. 18. Spindle whorl (405).

uniform. Similarly, the cuts for postholes in this area were smaller and exceptionally shallow. The lower fills of the ditch were possibly deliberately back-filled with bank material, itself possibly derived from the original ditch excavation. There was no evidence for the accumulation of differing silts, suggesting that the ditch had not been open for long. It is possible that this drainage ditch had an associated bank on the western side; the fills in the ditch suggested that they had spread in from that direction. The upper fill of this ditch was very silty and similar to the deposits above. The gilt bronze object of probable medieval date suggests that the ditch itself might be medieval.

The layers of build-up over the excavation presumably derived from the top and rear of the inner bank. The presence of medieval pottery in these deposits strongly suggests a late twelfth-century or thirteenth-century date for at least the later phase of bank construction (see also above) and possibly also for the later phase of occupation within the interior of the fort.

Finds

Flint and stone tools *by Andrew David*

A total of 47 flints were recovered during the course of the excavation, only one of which (415) is certainly an artefact. It is a large tertiary flake of good quality unpatinated dark grey flint. Although unretouched, its edges show clear evidence of utilisation, both polish and microchipping. The flake is thin and curved in profile, reminiscent of an axe-thinning flake perhaps detached with a soft hammer. However, it is not otherwise diagnostic and is an isolated find having nothing in common with the other flints recovered. The good quality material is unlikely to be local in origin and is suggestive of a post-Mesolithic use.

One further flint (131) could perhaps be a small chip from a polished flint axe. However, the surviving remnant of ‘polished’ surface, although smooth and with some striations, is too small to make this identification anything but very tentative.

The remaining flints are otherwise mostly small fragments of unworked pebbles, many of which are worn and undoubtedly natural in origin—being typical of the components of local drift deposits. None are definitely artefacts.

There are 10 other stone objects, 9 of which are artificially modified pebbles or cobbles. With the exception of a spindle whorl (405), of an unidentified rock, the pebbles are of various raw materials typical of those available on local beaches.

Four cobbles (104, 417, 418, 421), one a fragment (104), are heavily abraded over parts of their surfaces, the abrasion being confined to two or more distinct facets. For want of any distinct functional interpretation these could be described as mauls or hammerstones.

Four other cobbles or pebbles (419, 519, 528, 528) are more elongated in shape and are distinguished by more or less light pecking or impact scars on one end. One (528) may also have some polish on its flank. These all seem best described as hammerstones.

One ovoid disc-shaped pebble (582) has polish on part of one face, and may be a polisher or burnisher.

The spindle whorl (405) (Fig. 18) is plain and undecorated. It is almost circular, 35–36mm in diameter, 7mm thick and with a 5.4mm central cylindrical perforation. It was recovered from the upper fill of a gully (134) in Area 1.

The four ‘mauls’ and the ‘polisher’ do not, to my knowledge, have parallels in Wales prior to the Bronze Age – Iron Age, and the spindle whorl is more certainly of Iron Age type. The remaining hammers may, by association, also be of this age although they could be earlier. The stone assemblage as a whole seems to be in keeping with the Iron Age nature of the site. None of the tools show macroscopic evidence for metalworking.

Fragment of orpiment (416) by Sally J. Morgan (analysis by Phil Parkes)

A small fragment (416) of what was originally thought to be degraded yellow glass was recovered from under the stone in wall (278) in the back edge of the third phase of the inner bank in Area 2 (Fig. 7). The fragment was analysed using a scanning electron microscope with EDX detection and ISIS analysis software at the University of Wales, Cardiff. The analysis revealed that the sample is an arsenic sulphide compound and from its physical appearance and chemical nature, it is probably orpiment (*auripigmentum*). The orpiment does not appear to be on a substrate of any sort, and it would appear that the sample is a piece of orpiment in its raw state, rather than used as a pigment.

Orpiment, a yellow pigment used extensively in medieval times, is a mineral compound based on arsenic and sulphur. This compound was found naturally in the areas around Kurdistan, and in parts of Italy, and was originally brought to Britain as an import. In the late middle-ages however, it became common to manufacture the pigment locally through the sublimation of arsenic with, or without, the ingredient of sulphur (Wallert, 1998, 79). Also known as Auripigment, it was one of three arsenic sulphide-based pigments, the other two being ‘King’s-yellow’, and ‘Rusch-yellow’. Despite the fact that all three of these pigments were very poisonous, unstable in terms of colour-fastness, destructive to the colours around them, and had a ‘corrosive effect on [their] binding media’ (Thompson, 1966, 177), they were

extremely popular with medieval scribes and illuminators as a substitute for gold. Theophilus emphasises the common appliance of the pigment in the following passage:

In their proper places you [make] the crosses on the head of [Christ] in Majesty, or a book, or an enrichment of a hem of robes [these] things ... In painting are made of gold or orpiment. (Theophilus [trans. Hawthorne and Stanley-Smith], 1979, 71)

Because of its tendency to discolour and become black over time when exposed to the air, orpiment was not much used for murals or for painting on wooden panels, and so it tends to be most associated with medieval manuscript illumination. Having said this, there is some evidence to suggest that it was still in limited use until the nineteenth century (Wallert, 1998, 78; and Thompson, 1966, 177) despite the fact that other, safer, more stable colours were available. In that century Lambertus Simis is quoted as saying of king's-yellow:

This is superficially the noblest yellow known to us, having a beautiful and glowing colour, but it does not keep well because it is made of aurapigment or auperement (In Wallert, 1998, 79).

In the early middle ages manuscript painting was only done by monks, usually in small well-lit rooms, or outside in the relative shelter of the cloisters. As time went on, this function was passed on to lay brothers within the order, and then on to secular 'specialists'. Osmond suggests that such artists may have been attached not only to monasteries, but to the households of nobles, and may have had their workshops situated within the grounds of great country houses and castles (Osmond, 1961, 49). By the thirteenth century there were itinerant illuminators moving from place to place, possibly in teams including 'a boy to grind the colour' (Osmond, 1961, 49), 'working either in monastic scriptoria' (Pearsall, 1992, 24) or in other suitable, perhaps temporary workshops. By the 1330s, Pearsall goes on to tell us, there were a market of non-aristocratic patrons, such as 'London merchants and country gentlemen' (Pearsall, 1992, 31) willing to employ or commission work from these secular, itinerant illuminators, either for their own libraries or as gifts to local churches.

By 1403 the limners (illuminators) and scribes of London had formed themselves into a professional guild. It was those not within such a guild who were most likely to take up the itinerant life, 'roaming from abbey to church, and from church to manor house, finding what employment they could' (Osmond, 1961, 71). However, as the fifteenth century wore on there was a gradual decline in British illumination. The invention of printing in the 1450s meant that the 'cheap' end of the book production market, previously satisfied by the work of these local and travelling scribes and limners, was now satisfied by the mass production of the printing press. Although illuminators still found work in 'luxury manuscripts' for very rich upper classes (Harthan, 1983, 43) for a short time, by the end of that century illumination had ceased to be a viable trade for journeymen and itinerant craftsmen.

If the arsenic sulphide found at Great Castle Head is the un-ground, raw pigment 'orpiment' associated with medieval illumination—and if this is not a monastic site—the likeliest time frame for it is thirteenth- to early fourteenth-century. If it was a monastic site, then it could, of course, be earlier.

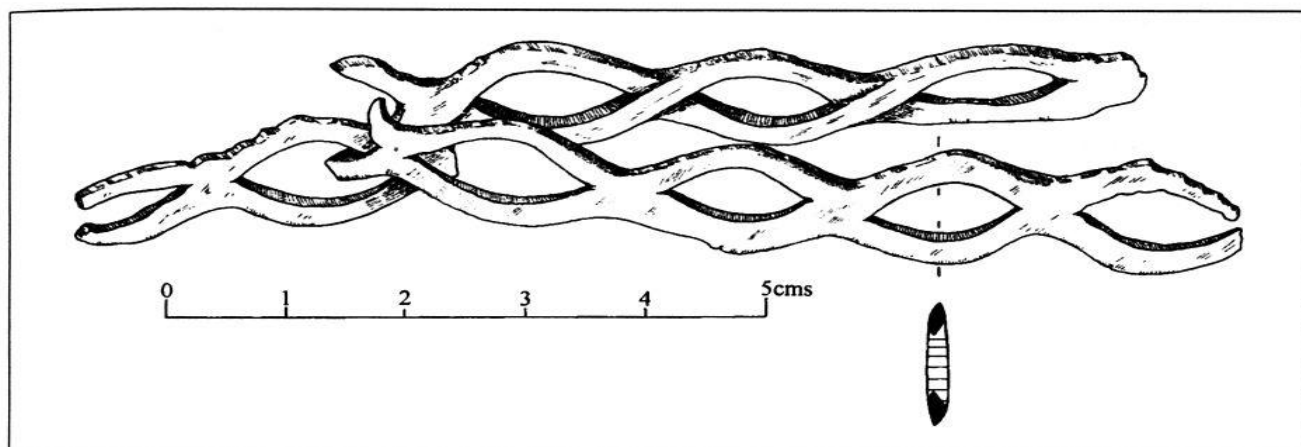


Fig. 19. Bronze binding (404).

Bronze Mount (404) by Hilary E.M. Cool (analysis by Phil Parkes)

A fragment of a possible bronze mount (404; Fig. 19) was found in the top fill of the drainage ditch (164) in Area 1. Cast length now in three pieces resembling two D-sectioned bars twisted together to form a series of conjoined oval loops, ten now extant. Fragment bent so that rounded face now innermost. Length (straightened) about 180mm, maximum width 10mm, section 3x1.5mm. The precise function of this broken and distorted object is difficult to suggest. The flat back is less well finished than the front, suggesting it was designed to fit flat against a backing with the rounded face outermost.

A small sample of gold-coloured metal was taken from the corroded surface of the object and analysed using a scanning electron microscope with EDX detection and ISIS analysis software at the University of Wales, Cardiff. The analysis revealed that the sample was gilding, containing gold, copper and a small amount of lead. It is likely that the entire object was gilded when manufactured, but only small amounts are left.

In form it is not reminiscent of any Roman object of which the author is aware. It has a superficial similarity to a possible bracelet from a late first- to mid second-century context at Wilcote, Oxfordshire (Hands, 1993, 38 no. 29). That has a similar row of conjoined loops, but is made from a single wire strand bent in sinuous waves, and is not cast as is this piece. A more exact parallel for the cast conjoined loops occurs on an artefact from Rayleigh Castle, Essex (Francis, 1913, 163, pl. C no. 12). On that item, two lengths of five loops, of similar size to the loops on the Great Castle Head object, project either side of a heart-shaped loop. Another similarity between the two pieces is that both appear to have been gilded.

Unfortunately the Rayleigh Castle piece too is crushed and distorted and its original shape is unclear. It can, however, provide useful dating *comparandum* as the castle had a relatively short life being built in the late eleventh century and deserted before 1277 when the site is recorded as being used as grazing land.

Bronze Cap Badge

Cap badge (414): Welsh Dragon cap badge of the 1st Brecknockshire Battalion, South Wales Borderers, Territorial Force. Found in upper layer within trial trench in Area 3. The 1st Brecknockshire Battalion was formed in 1909, moved to Fort Scoveston 15km to the east of

Dale, near Pembroke Dock on 5 August 1914, and moved to Dale on 28 September 1914 as part of the coastal defence duty. They moved back to Fort Scoveston on 19 October to prepare for foreign service (Atkinson, 1931).

Iron objects

All of the ironwork was sent for X-ray and conservation to Phil Parkes, Conservation Laboratory, School of History and Archaeology, University of Wales, Cardiff.

Possible Shaft (420): Shaft? ending in loop. Possible stamped mark halfway down shaft. Thin white outline on the X-ray may be indicative of a dissimilar metal coating, such as a tin alloy. Found in upper layer (907) in trial trench, Area 3.

Rivet: Appears to be a rivet of some sort. The smoother head and square sectioned shaft appear to be one piece. A disc has been passed over the other end and then hammered flat to keep it in position. Found in upper layer of slump or cascade (104) from inner bank, in evaluation trench in Area 1. This layer also contained medieval pottery.

Possible arrowhead fragment: Object is a socket 37mm long and 9mm maximum diameter, possibly an arrowhead tang. It appears to have remains of wood within the socket. Recovered from Area 1 (Evaluation), context 106. This layer also contained medieval pottery.

Iron strip: An iron strip tapering at one end with a loop attached halfway down. Possible dissimilar metal coating (possibly tin) indicated by fine white line on X-ray, although this could be due to corrosion. Recovered from Area 3 (906) located between layers 911 and 907 (Fig. 10). The upper layer produced the First World War cap badge.

Nails: There were approximately 30 nails or nail fragments and, except for two of these found in the fill of a posthole (257), all appeared to come from contexts that are medieval or later.

Iron Slag and other residues by Tim Young

Slag and residues from silty deposit (138) in Area 1

Context: This layer probably derives from the inner defensive bank and contained medieval pottery.

Description: A mixed assortment of materials including approximately 65g of iron pan formed around corroded iron. These pieces of iron included rather curious scales, approximately 15mm across, which might be smithing debris, or possible nail heads. Approximately 75g of the material are fragments of a dense slag, almost certainly a smithing hearth cake. A further 65g of the material comprise a rather curious iron-rich rock, possibly a weathered highly vesicular basalt, in which the vesicles are infilled by iron oxides. This rock is probably not sufficiently iron-rich to be considered an ore. Less than 10g are small fragments of vesicular fuel ash or lining dominated slag. These might have a common origin with the smithing hearth cake.

Comment: Only the smithing cake fragments are of metallurgical significance, but the fragmentary nature of the pieces, their weathered state, and stratigraphic context may make further analysis of limited value.

Burnt stone from a silty deposit (132) in Area 1

Context: This object was recovered from a layer which probably derived from the inner defensive bank and contained medieval pottery. Probably the same as context 138 above.

Description: A burnt stone. The fabric of the rock is highly altered, being extremely porous. This probably reflects an original high carbonate content. One of the most intensely burnt surfaces has droplets of a fairly clear, green glass, representing a calcic glass produced by a reaction fluxed by the fuel ash.

Comment: It would be difficult to evaluate the temperature of reaction, without further evidence of the original composition of the stone. The intensity of the reaction, however, suggests a likely temperature of around 1,000C. Such temperatures can be reached in many sorts of fires, and would be typical of a metallurgical hearth or furnace. This piece cannot be linked with certainty to metallurgical activity.

Material from the fill of posthole (529)

Description: A small piece which appears to represent 'iron pan' concretion around a highly decomposed piece of iron.

Comment: Not slag.

Material from fill of construction slot (584)

Description: A tiny quantity of fuel ash or lining dominated slag.

Comment: Probably, but not certainly, of metallurgical origin.

Pottery by Dee Brennan

A total of 109 fragments of pottery were recovered during the course of the excavation. Table 1 shows the range of fabrics and types of vessel. The bulk of material is medieval whilst the earliest identifiable vessel is mid first- to early second-century AD in date (context 141). A handful of unclassified sherds may well be Iron Age but certain identification is doubtful due to their very small size and poor survival. Table 2 shows the absolute minimum number of vessels where rims are seen to be from different vessels.

A late twelfth- to thirteenth-century date is given to the medieval pottery found on the site, dated by the presence of Ham Green wares (after Barton, 1963, and Vince, 1983) from the west of England (c.1140–1300). These non-local handmade vessels comprise sherds from unglazed cooking pots (54 sherds) and from glazed jugs (27 sherds). The two types are frequently found together, as is the case here. It is uncertain whether the simply decorated cooking pots are earlier products of the Ham Green tradition. Their distribution is not so widespread as the glazed wares, the cooking pots being most prevalent on Dyfed castle sites in early contexts (Papazian and Campbell, 1992, 32).

The relatively small number of locally-made vessels (18 sherds), all cooking pots, are in a fabric which falls into the Dyfed gravel-tempered ware tradition (O'Mahoney, 1985). These are assumed to represent the products (only 3 rims were recovered) of an early phase in what was seemingly a long-lived (twelfth to sixteenth-/early seventeenth-century) and widespread pottery tradition. An association here with Ham Green wares, and the complete absence of later local and non-local pottery would indicate a twelfth- or thirteenth-century date for their manufacture.

Context	Unclass Iron Age/Med	SV Ware Roman	HG UNG Med	HG GL Med	DGTW UNG Med	Total Sherds
101 Unstratified	1 ?		1 CP	3 J	1 CP	6
104					4 CP	4
106					3 CP	3
108				8 J	6 CP	14
129			12 CP			12
130			19 CP	7 J	1 CP	27
131			1 CP	1 J	1 CP	3
132	3 CP?		12 CP	4 J		19
135	4 ?					4
138			8 CP	3 J	1 CP	12
141		1 CP				1
201				1 J		1
570					1 CP	1
1106	1 ?					1
204			1 CP			1
Total sherds fabric	9	1	54	27	18	109

Table 1. Fabrics and types of vessel (sherds) in complete assemblage.

Abbreviations: SV = Severn Valley ware, HG UNG = Ham Green unglazed ware, HG GL = Ham Green glazed ware, DGTW UNG = Dyfed Gravel-tempered unglazed ware, ? = unclassified vessel, J = jug, CP = cooking pot.

IA/Med	SV Ware	HG UNG CP	HG GL JUG	DGTW	TOTAL
1	1	1	2	3	8

Table 2. Absolute minimum of vessels by fabric.

Unclassified and Roman pottery

The few unclassified sherds and single Roman sherd are not described in this report. Detailed descriptions are housed with the site archive.

The Medieval pottery

Ham Green unglazed cooking pots

There was only one rim recovered in this fabric yet the total number of sherds outnumber all other wares. Little can be said about the vessels as there are very few diagnostic pieces. All are from unglazed handmade pots, and are in a sandy reddish-brown fabric with variously coloured surfaces. The one rim is damaged and has an incomplete profile. A handful of sherds have decoration in the form of horizontal grooves.

Ham Green glazed jugs

All glazed sherds in this fabric belong to jugs. There are minor variations in colour and texture and glaze survival is variable. The earlier types are represented by one, possibly two jugs with rouletted decoration (from contexts (108) and (101), the latter is un-stratified). Ham Green

glazed wares are common to most sites in south and west Wales in the late twelfth century, becoming less frequent in the latter part of the thirteenth century (Papazian and Campbell, 1992).

Dyfed gravel-tempered ware cooking pots

As already noted there were relatively few sherds found of locally-made pottery. All would appear to come from one clay source. They are from rather crude handmade pots with simple rim profiles. The small sample and poor survival provide no real evidence for accurate dating.

The basic fabric is described in detail, with reference to excavated material from sites located along the south and west coasts of Dyfed, in O'Mahoney (1985). It is recognised that more than one production centre was involved in manufacture as variations in the fabric do occur. Defining the areas of manufacture is difficult as no early kiln sites have, as yet, been discovered. For a detailed discussion on fabric variation see the large sample of pottery recovered from Carmarthen Greyfriars (O'Mahoney 1995).

Conclusion

The pottery indicates an unknown length of occupation sometime during the mid to late first or early second century AD with quite possibly an earlier Iron Age presence. The ceramic evidence would suggest that the site was once again occupied in the late twelfth–thirteenth centuries. The assemblage reflects similar assemblages within the region. Local wares are consistently occurring contemporaneously with twelfth- to thirteenth-century Ham Green wares. This recurring association would confirm suggestions for a twelfth-century ceramic industry in this part of West Wales (Papazian and Campbell, 1995, 56), although a precise date of origin is as yet unclear.

Radiocarbon Dates

All the samples submitted were of charcoal. Sample 853 (Beta-135351) was analysed by Accelerator Mass Spectrometry technique due to the small amount of final carbon. The other three samples were analysed by standard radiometric techniques. The full results are presented in Table 3.

Lab No	Sample No / Context No	Results BP	Intersept date	Calibrated range at 1 sigma	Calibrated range at 2 sigma
Beta-135350	849/912	930 ± 70 BP	1050 AD and 1095 AD and 1140 AD	1020-1195 AD	990-1255 AD
Beta-135351	853/209	2460 ± 30 BP	740 BC and 710 BC and 535 BC	760-635 BC and 560-500 BC and 465-425 BC	770-410 BC
Beta-135352	860/549	2610 ± 60 BP	800 BC	820-785 BC	845-760 BC and 635 to 560 BC
Beta-135353	865/116	2100 ± 70 BP	115 BC	195-40 BC	365 BC - 55 AD

Table 3. Radiocarbon Dates.

Notes of the context of the samples

Beta-135350 (Sample 849, on Fig. 10) from internal layer (912) butting the retaining wall (903) in Area 3.

Beta-135351 (Sample 853, on Fig. 7) from layer or fill (209) in possible quarry pit or hut scoop (240) in Area 2. Possibly near contemporaneous with the primary inner defensive bank construction.

Beta-135352 (Sample 860, on Fig. 13) from the fill (549) of posthole (550) in Area 1.

Beta-135353 (Sample 865, on Fig. 13) from a heavily burnt layer (116) almost immediately above natural below the tail of the inner bank in Area 1 (Evaluation).

Environmental and Archaeobotanical Evidence by Astrid E. Caseldine

Although there was some environmental evidence available for the Iron Age and Romano-British period from archaeological sites in other parts of west Wales (see Caseldine, 1990, Fig. 20), there was no evidence from the Dale peninsula and, apart from the recent investigations at Porth y Rhaw (Caseldine and Barrow, forthcoming), no evidence from other west Wales promontory forts. The excavations at Great Castle Head therefore provided an opportunity to help redress these deficiencies. The sampling programme included taking pollen samples from a buried soil beneath the inner bank to find out the environmental conditions prior to its construction, bulk samples for the analysis of charred plant remains to ascertain the nature of any arable agriculture in the area and crop processing activity at the site, and charcoal samples to determine the nature of any woodland resources that might have been utilised in the area.

Pollen

Pollen samples (837) were taken using a spatula at 1cm intervals through the buried soil beneath the inner bank (Fig. 7) as sampling conditions were very difficult, preventing the use of a monolith tin. A second set of samples, unexamined, was taken in case the first set proved unsuccessful. The lithostratigraphy at the first location was as follows:

- 0–1 cm Slightly clayey silt loam (bottom of bank material).
- 1–2 cm Thin band of iron pan
- 2–11 cm Brown silty loam.
- 11–13 cm Iron pan

Methods - Selected samples were prepared using standard procedures (Moore *et al.*, 1991), including disaggregation in sodium hydroxide, micro-sieving and treatment with hydrofluoric acid because of the highly minerogenic nature of the samples, and acetolysis. *Lycopodium* tablets were added to enable pollen concentrations to be calculated (unpublished). The pollen was mounted in silicone oil and counted using a Leitz Laborlux microscope. A magnification of x400 was used for general counting with x630 or x1000 used for critical determinations. The pollen sum was based on a count of 300 total land pollens (TLP). Identification was by reference to modern type material and identification keys, including Moore *et al.* (1991), Andrew (1984) and Faegri and Iversen (1989). A diagram was prepared using TILIA and TILIAGRAPH (Grimm, 1991). Nomenclature is based on Bennett (1994) and Bennett *et al.* (1994). The results are presented in Table 4.

Discussion - The results from Great Castle Head must be treated with caution because of the problems encountered in soil pollen analysis of, for example, translocation of pollen down the profile, faunal mixing, and the possibility of differential pollen preservation. Lactuceae pollen is relatively resistant to decay and is comparatively well represented, whilst *Quercus*, which is more susceptible to decay, is virtually absent, perhaps indicating some differential preservation. The highest concentration values (unpublished) do, however, occur towards the top of the buried soil.

The assemblage essentially appears to indicate an open landscape in the area of the fort before construction of the bank. High Poaceae and *Plantago lanceolata* and Lactuceae values suggest grassland and pastoralism, but the occasional Cerealia type grain together with herbaceous taxa such as Chenopodiaceae and *Achillea* type, which are taxa indicative of cultivation, suggest some arable activity in the area. The Chenopodiaceae pollen could also represent disturbed ground at the site or coastal habitats in the area. Although woodland taxa are poorly represented, a slight decline in *Corylus avellana*-type pollen is discernible, perhaps suggesting some clearance of hazel scrub in the region. A similar decline in *Alnus* may suggest clearance of alder valley woods or fen woodland. Small amounts of *Calluna* pollen also indicate some heathland in the area.

Comparison with the evidence from other sites in west Wales indicates a similar picture. Analysis of pollen from a buried soil at Porth y Rhaw (Caseldine and Barrow, forthcoming) suggests a predominantly grassland environment, but cereal-type pollen is also present. The occurrence of cereal pollen from a buried soil at Merryborough Camp (Webley, 1964) is interpreted as evidence of arable farming, whilst an increase in *Plantago* pollen on the old ground surface at Knock Rath (Bartley and Webley, 1965) is considered to indicate grazing. At Penycoed (Walker, 1985), much further to the east, a mainly pastoral landscape with only limited cereal cultivation is indicated. Woodland is scarce but, as at Porth y Rhaw and Great Castle Head, alder and hazel are the species most strongly represented. The pollen record from the Roman road site at Whitland (Caseldine *et al.*, forthcoming) also suggests a largely pastoral economy and increased clearance during the Iron Age. It is difficult to draw comparisons with complete certainty with other long pollen sequences from west Wales, namely those from Esgyrn Bottom (Slater and Seymour, 1977) and Llanllwch (Thomas, 1965), because of inadequate dating. However, pollen changes attributed to this period at the former are interpreted as the result of clearance and grazing.

Charred plant remains

Samples were taken from a range of contexts most of which were considered to be either of Iron Age or Romano-British date, the exception being (847) which was thought to be from a medieval context. The sample contexts were as follows:

- 829 - from front of inner bank, possibly from upper fill 263 of palisade trench (Area 2).
- 836 - from fill 174 in posthole 173 (Area 1).
- 839 - from fill 185 of possible cooking pit 184 (Area 1).
- 840 - from upper part of fill 533 from posthole 532 (Area 1).
- 841 - from lower part of fill 533 from posthole 532 (Area 1).
- 843 - from fill 544=176 from posthole 175 (Area 1).
- 845 - from fill 185 of possible cooking pit 184 (Area 1).

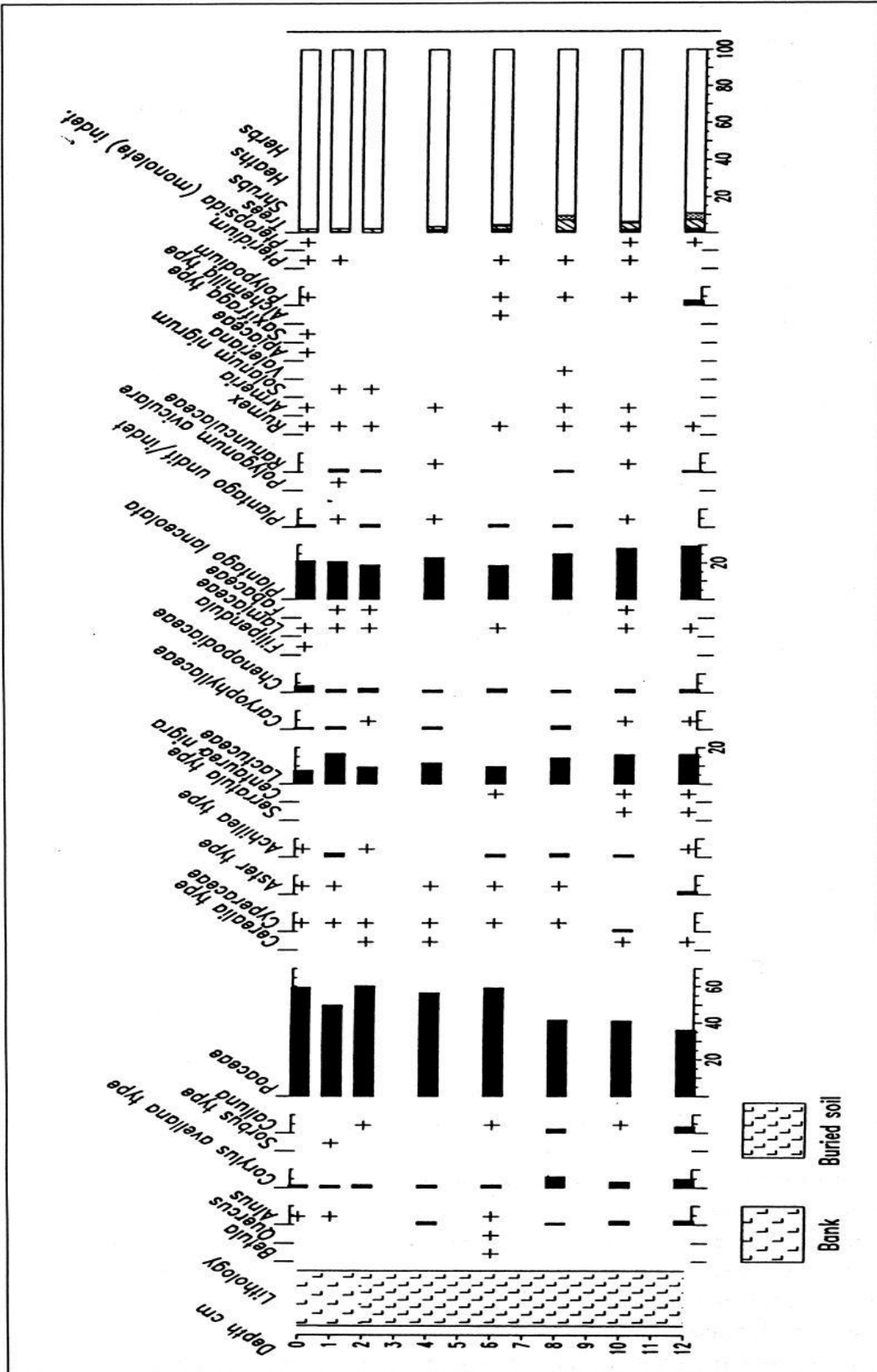


Table 4. Pollen analysis from Great Castle Head.

- 847 - from lower fill of ditch 164 (Area 1).
 848 - from fill 549 in posthole 550 (Area 1).
 851 - from fill 581 of posthole 1114 associated with gully 584 (Area 1).
 854 - from fill 582, probably re-deposited gravel, surrounding a post in large posthole 594 (Area 1).
 856 - from ?large posthole 592 (Area 1).
 859 - from layer 117 (Area 1, Evaluation). Burnt deposit above subsoil. LIA radiocarbon date from associated deposit 116 (Beta-135353).

Method - Thirteen samples were processed for plant macrofossil analysis. A simple wash-over technique was used to process the samples. Hydrogen peroxide was added to the water to aid flotation of the charred remains. The flots and residues were collected in a stack of sieves. The finest mesh used was 250 microns. Identification was by comparison with modern reference material and by reference to standard works, including Bertsch (1941), Beijerinck (1947), Berggren (1969, 1981) and Jacomet (1987). Nomenclature follows Stace (1991). The results are given in Table 5.

Results - The dominant cereal present was wheat (*Triticum*), represented mainly by chaff, notably glume bases. Much of the cereal grain and chaff could not be assigned with certainty to a particular species and was placed in a broader category such as *Triticum dicoccum*/*T. spelta* (emmer/spelt) or *Triticum* sp. (wheat). Morphologically there can be considerable overlap between the grains of different types of wheat, but some grain could be attributed to emmer, spelt and bread/club wheat (*T. aestivum*). Further confirmation was provided by the chaff, which can be more diagnostic in determining the wheat species present. The glumes of one spikelet fork displayed the right angles and distinctive keels typical of einkorn (*T. monococcum*), whilst the other spikelet forks and glume bases displayed the characteristics typical of emmer and spelt. Hulled barley (*Hordeum sativum*) was also present in small amounts and the presence of asymmetric grains indicated six-row barley. Awn fragments demonstrated the presence of oat, but poor preservation meant that possible oat grain was allocated to an *Avena*/large Poaceae group. The absence of floret bases or pedicels meant that it could not be determined whether or not cultivated oat was present. A number of weed seeds were present in varying amounts, including *Rumex acetosella* (sheep's sorrel), *Polygonum aviculare* (knotgrass), Chenopodiaceae (goosefoots), *Danthonia decumbens* (heath grass), *Plantago lanceolata* (ribwort plantain) and *Aphanes arvensis* (parsley piert). Other plant remains included leaf fragments of *Pteridium aquilinum* (bracken).

In general a similar range of taxa was present in the samples, but with variations in the frequency of any one taxon. Chaff and weed seeds dominated rather than grain. The richest sample was (859) from layer (117). This sample contained frequent grain, chaff and weeds, the latter dominating. Spelt predominated in the cereal assemblage, but some emmer and bread wheat occurred. Most of the weed seeds that were present are commonly associated with arable agriculture, including *Chenopodium album* (fat-hen), *Atriplex* sp. (orache), *Stellaria media* (common chickweed), *Spergula arvensis* (corn spurrey) *Persicaria maculosa* (redshank), *Polygonum aviculare*, *Rumex acetosella*, *Tripleurospermum inodorum* (scentless mayweed) and *Fallopia convolvulus* (black bindweed). Other samples in which weed seeds were particularly abundant were samples (836 and 854) from postholes (173 and 594), respectively. They were also dominant in (840) from the upper fill of posthole (532). Chaff was slightly more frequent

Sample		829	836	839	840	841	843	845	847	848	851	854	856	859
Context		263	173	184	532	532	175	184	164	550	584	594	592	117
Sample size (ml)		25	8000	2000	6000	8000	100	2000	2000	11000	5000	8000	1500	4000
Cereal Taxa														
<i>Triticum monococcum</i> (Einkorn)	spklt. fks.	-	-	-	-	-	-	-	-	1	-	-	-	-
<i>T. dicoccum</i> (Emmer wheat)	grain	-	-	-	-	-	-	-	-	2	-	-	-	4
	gl. bases	-	-	3	-	-	-	-	-	1	-	-	5	-
	spklt. fks.	-	-	-	-	1	-	1	-	-	-	-	1	-
	basal rachis	-	-	-	-	-	-	-	-	-	-	-	-	1
<i>T. cf. dicoccum</i> (Emmer wheat)	grain	-	-	-	-	-	-	-	-	-	-	-	-	15
	gl. bases	-	-	-	-	-	-	-	-	-	-	2	1	-
	spklt. fks.	-	-	-	1	-	-	-	-	-	-	-	4	1
	rachis	-	-	-	-	-	-	-	-	-	-	1	2	-
<i>T. dicoccum/ T. spelta</i>	grain	-	-	-	-	2	-	-	-	1	-	-	-	21
	gl. bases	-	1	-	3	32	-	1	-	6	22	27	8	12
	spklt. fks.	-	-	1	-	2	-	-	-	-	1	-	-	6
	rachis	-	-	-	-	1	-	-	-	-	-	-	-	-
<i>T. spelta</i> (Spelt wheat)	grain	-	-	-	-	-	-	-	-	-	-	-	-	27
	gl. bases	-	1	-	1	19	-	-	-	-	1	-	-	47
	spklt. fks.	-	-	-	-	1	-	-	-	-	1	-	-	9
	rachis	-	-	-	-	3	-	-	-	-	2	3	2	4
	basal rachis	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>T. cf. spelta</i> (Spelt wheat)	grain	-	-	-	-	2	-	-	-	1	-	-	1	-
	gl. bases	-	-	-	2	2	-	-	-	-	-	2	-	4
	spklt. fks.	-	-	-	-	-	-	-	-	-	-	-	-	1
	rachis	-	-	-	1	1	-	-	-	-	-	-	2	2
<i>T. spelta/ T. aestivum</i>	grain	-	-	-	-	-	-	-	-	-	-	-	-	2
	rachis	-	-	-	-	-	-	-	-	-	-	-	-	1
<i>T. aestivum</i> s.l. (Bread/club wheat)	grain	-	-	-	-	-	-	-	-	-	-	-	-	6
<i>T. cf. aestivum</i> s.l. (Bread/club wheat)	grain	-	-	-	-	-	-	-	-	-	-	1	-	-
<i>Triticum</i> sp. (Wheat)	grain	-	1	-	1	-	-	-	-	-	-	1	-	16
	gl. bases	-	1	-	-	2	-	-	-	-	-	-	3	-
	spklt. fks.	-	1	-	-	-	1	-	-	-	-	-	-	-
	rachis	-	3	-	-	3	-	-	-	1	-	3	3	4
	basal rachis	-	-	-	-	-	-	-	-	-	-	-	1	-
<i>Hordeum sativum</i> (Barley)	(hulled) asym. grain	-	-	-	-	-	-	-	-	-	1	1	1	-
	(hulled) indet. grain	-	-	-	-	1	-	-	-	3	-	-	-	-
	grain	-	-	-	-	-	-	-	-	1	-	-	-	-
	rachis	-	-	-	-	-	-	-	-	-	-	-	2	-
	top of culm	-	-	-	-	-	-	-	-	-	-	-	1	-
<i>Avena</i> sp. (Oat)	awn frags	-	1	-	-	1	-	-	-	-	2	1	-	-
<i>Avena / Bromus</i> (Oat/Brome)		-	-	-	-	-	-	-	-	-	-	-	-	10
<i>Avena / Large Poaceae</i> (Oat/large grasses)		-	1	-	-	2	-	-	-	2	-	1	-	1
Cerealium indet.	grain	-	3	2	3	4	-	-	-	14	-	3	4	57
	embryos	-	-	-	-	-	-	-	-	-	-	-	-	2
Cerealium indet. / Large Poaceae		-	-	-	-	-	-	-	-	-	-	-	1	1
	node	-	-	-	-	-	-	-	-	-	-	-	-	1
	rhizome	-	-	-	-	1	-	-	-	-	-	-	-	-
Non-cereal Taxa														
<i>Ranunculus</i> sp. (Buttercups)		-	-	-	-	-	-	-	-	-	-	2	-	-
<i>Chenopodium album</i> L. (Fat-hen)		-	3	-	-	1	-	-	-	-	-	6	-	12
<i>Chenopodium</i> sp. (Goosefoots)		-	-	-	-	-	-	-	-	-	-	-	1	-
<i>Atriplex</i> sp. (Oraches)		-	32	-	4	5	-	-	-	2	-	30	-	31
Chenopodiaceae (Goosefoot family)		-	55	-	8	11	-	-	-	7	5	51	-	20
<i>Montia fontana</i> L. (Blinks)		-	-	-	-	-	-	-	-	-	-	4	-	-
<i>Stellaria media</i> (L.) Villars (Common chickweed)		-	3	-	-	-	-	-	-	-	2	-	-	10
<i>Stellaria</i> sp. (Stichworts)		-	-	-	-	-	-	-	-	-	1	-	-	-

<i>Stellaria/Cerastium</i> (Stitchworts/Mouse-ears)	-	-	-	-	1	-	-	-	-	-	-	-	-
<i>Spergula arvensis</i> L. (Corn spurrey)	-	-	-	1	-	-	-	-	-	-	1	-	14
Caryophyllaceae (Pink family)	-	1	-	-	-	-	-	-	-	-	2	-	1
<i>Persicaria maculosa</i> Gray (Redshank)	-	5	-	-	1	-	-	-	-	-	4	-	18
<i>Persicaria lapathifolia</i> (L.) Gray (Pale persicaria)	-	-	-	-	-	-	-	-	-	-	1	-	1
<i>Persicaria</i> cf. <i>laxiflora</i> (Weihe) Opiz (Tasteless water-pepper)	-	1	-	-	-	-	-	-	-	-	-	-	-
<i>Persicaria</i> sp. (Knotweeds)	-	1	-	-	2	-	-	-	-	-	-	-	3
<i>Polygonum aviculare</i> L. agg. (Knotgrass)	-	3	-	-	-	-	-	-	-	1	4	-	35
cf. <i>Polygonum aviculare</i> L. agg. (Knotgrass)	-	-	-	1	-	-	-	-	1	-	2	-	8
<i>Fallopia convolvulus</i> (L.) A. Love (Black-bindweed)	-	1	-	-	3	-	-	-	-	-	6	-	5
<i>Rumex acetosella</i> L. agg. (Sheep's sorrel)	-	16	-	3	10	-	-	-	3	3	28	-	31
<i>Rumex crispus</i> L. /type (Curled dock)	-	1	-	1	-	-	-	-	-	-	1	-	-
<i>Rumex</i> sp. (Docks)	-	4	-	2	8	-	-	-	-	1	2	-	7
Polygonaceae (Knotweed family)	-	1	-	-	1	-	-	-	-	1	3	-	-
<i>Viola</i> sp. (Violets)	-	-	-	-	-	-	-	-	-	-	-	-	1
<i>Brassica</i> sp./ <i>Sinapis arvensis</i> L. (Cabbages/charlock)	-	-	-	-	1	-	-	-	-	-	-	1	8
<i>Calluna vulgaris</i> (L.) Hull (Heather) flowerhead	-	-	-	2	-	-	-	-	-	-	-	-	-
<i>Erica</i> sp. (Heaths) leaf frags.	1	-	-	-	-	-	-	-	-	-	-	-	-
<i>Anagallis arvensis</i> L. (Scarlet pimpernel)	-	1	-	-	-	-	-	-	-	-	1	-	8
<i>Potentilla</i> sp. (Cinquefoils)	-	-	-	-	-	-	-	1	-	-	-	-	-
<i>Aphanes arvensis</i> L. (Parsley-piert)	-	1	-	-	-	-	-	-	-	-	-	-	-
<i>Vicia</i> sp. (Vetches)	-	-	-	-	-	-	-	-	1	-	1	-	2
<i>Vicia</i> / <i>Lathyrus</i> (Vetches / Peas)	-	-	-	-	-	-	-	-	-	-	1	-	-
<i>Trifolium</i> type (Clovers)	-	2	-	1	-	-	-	-	-	1	-	-	-
<i>Ulex</i> sp. (Gorse) spines	-	-	-	-	-	-	-	-	-	1	-	-	-
<i>Galeopsis</i> sp. (Hemp-nettles)	-	-	-	-	-	-	-	-	-	-	1	-	-
<i>Plantago lanceolata</i> L. (Ribwort plantain)	-	2	-	2	1	-	-	-	1	-	1	-	1
<i>Galium</i> sp. (Bedstraws)	-	1	-	1	-	-	-	-	-	-	-	-	-
<i>Tripleurospermum inodorum</i> (L.) Schultz-Bip (Scentless mayweed)	-	-	-	-	-	-	-	-	-	-	1	-	21
Asteraceae (Daisy family)	-	1	-	-	-	-	-	-	-	-	-	-	-
<i>Carex</i> sp. - trigonous (Sedges)	-	-	1	1	1	-	-	-	-	1	1	-	-
Cyperaceae (silicified) (Sedge family)	-	-	-	-	1	-	-	-	-	-	-	-	-
<i>Bromus</i> sp. (Bromes)	-	-	-	-	-	-	-	-	1	-	-	-	1
cf. <i>Bromus</i> sp. (Bromes)	-	-	-	1	-	-	-	-	-	1	-	-	1
<i>Bromus</i> /Large Poaceae (Bromes/large grasses)	-	1	-	-	-	-	-	-	-	-	-	-	-
<i>Danthonia decumbens</i> (L.) DC. (Heath-grass)	-	10	-	2	5	-	-	-	2	4	17	-	4
cf. <i>Danthonia decumbens</i> (L.) DC. (Heath-grass)	-	-	1	2	-	-	-	-	-	-	1	-	-
Poaceae > 2mm (Large grasses)	-	1	-	-	1	-	-	-	-	-	-	-	1
Poaceae < 2mm (Small grasses)	-	3	-	1	1	-	-	-	4	1	5	1	23
Poaceae culm base/ rhizome culm frags	-	9	1	-	4	-	-	-	-	4	12	-	3
Flower	2	-	-	-	-	-	-	-	-	-	-	-	-
Thorn	-	1	-	-	-	-	-	-	-	-	-	-	-
<i>Pteridium aquilinum</i> – leaf frags. (L.) Kuhn (Bracken)	-	1	-	-	16	-	-	-	7	2	-	1	-
Total number of items	3	175	9	45	155	1	2	1	62	59	235	46	535
Other remains													
Calcined bone frags.	-	-	-	-	-	-	-	-	1	-	-	-	-

Table 5. The charred plant remains from Great Castle Head, Dale.

than weed seeds in samples (841) and (851) from the lower fill of posthole (532) and posthole (1114), respectively, and dominated in (856) from ?large posthole (592) which contained few weed seeds. In contrast to the previous samples, apart from (859), which contained only a few cereal grains, (848) contained almost equal amounts of cereal grains and weeds seeds with a lesser amount of chaff.

Charred plant remains were scarce in the remaining samples. Only an *Erica* (heath) leaf fragment and two small flowers were recovered from (829), a very small sample from the fill of the palisade trench at the front of the inner bank. Samples (839) and (845) from a possible cooking pit (184), and (843) from posthole (175) contained only occasional chaff fragments, grain and other seeds. Finally, only a *Potentilla* (cinquefoil) seed was recovered from (847) from the possible fill of the medieval ditch (164).

Discussion - Most of the samples are thought to date to the Iron Age and Romano-British period and the dominance of spelt wheat in the cereal assemblage is consistent with evidence from other sites in Wales dating to that period (Caseldine, 1990). Unfortunately, the majority of the samples cannot be assigned to a particular date within that period which makes it difficult to determine whether or not changes in crop husbandry were occurring during that time. However, there are some tentative indications that changes were taking place. Spelt dominates in the richest samples, including (859) which is from directly beneath a layer dated to 365 cal. BC–55 cal. AD at 95% probability (Beta-135353, Table 3). Emmer and bread wheat are also present in (859). In contrast, emmer appears to dominate in one or two samples, although present in very small amounts, or be equally as important as spelt. In (848) most of the cereal remains are assigned to an emmer/spelt category but emmer and einkorn are present and the context is dated to 845–760 and 635–560 cal. BC at 95% probability (Beta-135352, Table 3). It is therefore possible that while emmer may be a contaminant or of lesser significance as a crop by the late Iron Age and Romano-British period in the Great Castle Head area, it may have played a more significant role during the earlier Iron Age. It is also possible that bread wheat was beginning to be more important during the later period.

Barley also occurs in small amounts in the samples and may have been grown as a crop in the area but could be present simply as a contaminant. It is also possible that barley may have played a more significant role in the economy than is immediately apparent, as it is more likely to be destroyed rather than preserved as charred grain than the glume wheats (Boardman and Jones, 1990). Charred cereal remains dating from the Bronze Age are extremely scarce in west Wales but barley was recovered from Stackpole Warren (Caseldine, 1990). Unfortunately, with so little evidence, it is difficult to draw any firm conclusions about changes in crop husbandry from the Bronze Age to the Iron Age.

The predominance of chaff and weed seeds in most of the samples indicates the samples mainly represent waste from crop processing. The chaff largely consists of glume bases and the weed seeds are generally small, indicating that the remains are probably fine-sieving residues. Although the 'cleanings' could have been used for fodder, it has been suggested (Hillman, 1981a) that, particularly in wet climates, if the cleaning with sieves was undertaken in small batches it is quite likely it was thrown straight onto the fire. Of the four richest samples, sample (841) consists of relatively large quantities of chaff and weed seeds and probably represents crop processing stage 12 (Hillman, 1981a), whereas samples (836 and 854) consist predominantly of small weed seeds with only small amounts of chaff and grain, particularly in (836), and may represent a further sieving stage (Hillman, 1981a, stage 13). All three samples

are from postholes and (848) was from a posthole (550), possibly forming part of an arc centred on hearth (528). The other two samples are from adjacent postholes (173 and 594). Although perhaps less likely, another possible explanation for the high numbers of weed seeds in these samples is that they perhaps represent weed seeds from a structure that was used for grain storage but was largely cleaned out, apart from weed seeds, prior to destruction by fire. The fourth sample, which is the richest sample from the site, is sample (859). This sample was from a layer in the evaluation trench and in contrast to the previous samples contained relatively large amounts of grain, mainly prime grain, and chaff as well as large quantities of weed seeds. The ratio of glume bases to grain suggests that this sample may represent glume wheats which have been pounded to release the grains from the chaff but not yet sieved to remove the chaff and weed seeds. The products of pounding are not usually exposed to fire and whether or not the remains were accidentally or deliberately charred is impossible to say. Alternatively, the sample could represent fine sievings and processed grain which became mixed together when thrown onto a fire.

In wet areas, such as an area like west Wales, a crop like emmer or spelt is likely to have been stored and traded in spikelet form and therefore the presence of spikelet chaff cannot necessarily be taken as an indicator of the cereal being grown locally, although it is likely. Evidence from the earlier stages of crop processing would confirm local activity but such evidence is more likely to be destroyed and, as a comparatively limited number of samples have been examined from the site, the almost total absence of the heavier straw nodes and bases cannot be taken as evidence that the site was simply a 'consumer' site. The presence of straw nodes is difficult to interpret in any case, as they could derive from straw used for bedding, fodder or thatch.

The weeds present are mainly those associated with cultivation or disturbed ground. The presence of *Danthonia decumbens*, a species which today is not found as a weed of cultivation, amongst the weed seeds is consistent with evidence from other Iron Age/ Romano-British sites in Wales and other parts of Britain (Hillman, 1981a; Veen 1992). The occurrence of *Danthonia* as a weed of cultivation in the past is attributed (Hillman 1981a) to the use of the ard for ploughing and its disappearance to the introduction of the mouldboard plough. Other weed seeds in the samples also give some indication of crop husbandry practices. The weed seeds reflect a range of growth habits, ranging from low growing weeds, such as *Rumex acetosella*, to taller weeds, such as *Chenopodium album* and *Rumex* spp (docks), and climbing weeds, such as *Fallopia convolvulus*. The presence, or absence, and growth habit of the weed seeds can be used as an indicator of the harvesting method. As the samples contain a mixture of weed seeds and glume bases it is likely that the cereals were harvested by cutting the straw and ears together rather than separately. Cutting the ears separately would have resulted in very low amounts of weed seeds in the fine-sieve residues. The presence of low growing weeds, such as *Rumex acetosella*, *Spergula arvensis*, *Aphanes arvensis* and *Plantago lanceolata*, points to reaping fairly low on the stem. Other agricultural activity, such as manuring, is likely to have favoured species such as *Chenopodium album*, *Atriplex* spp, *Persicaria maculosa*, *Persicaria lapathifolia* (pale persicaria), *Stellaria media* and small grasses are annual species which are known to increase with the application of manure (Veen, 1992).

Charred plant remains have been recovered from relatively few sites in west Wales, and although large quantities have not been recovered from Great Castle Head they do make a significant contribution to the agricultural record of the area. The only other promontory fort from which charred remains have been obtained is Porth y Rhaw (Caseldine and Barrow,

forthcoming), but were very scarce. However, even with this limited assemblage a similar picture emerges with both emmer and spelt represented and spelt dominating. Barley is also present. A much more extensive sampling programme was carried out at the Llawhaden group of enclosures (Caseldine and Holden, 1998) which lie inland in the basin of the Eastern Cleddau river in central Pembrokeshire. Once again wheat, mainly spelt, predominated but emmer and barley were also recorded. Oat was also present and there was some evidence for bread/club wheat. At all these sites chaff makes up a significant proportion of the charred assemblage, suggesting either local production, storage in spikelet form, or trading in spikelet form.

In contrast to the evidence from Great Castle Head the charred remains from the Court Wood Enclosure at Pembrey (Hillman, 1981b) consist almost entirely of grain with chaff and weed seeds being very rare. The predominant crops were, however, the same, namely emmer and spelt. A radiocarbon date of 335±45 bc was obtained from the pre-rampart deposit which yielded the richest remains. The remains are interpreted as evidence of grain roasting and it is argued that the lack of carbonised chaff is due to there being an abundance of wood, thereby negating the need to use chaff and straw except as tinder, and that hot hardwood fires would generally result in the destruction of any chaff. Indeed it has been demonstrated that grain always survives charring as well or better than the glumes (Boardman and Jones, 1990). However, alternatively, the absence of chaff could mean that cleaned grain was being brought to the site, although it is argued that nearby cultivation terraces relate to agricultural activity during the Iron Age. Finally, at Penycoed (Nye, 1985) the environmental evidence points to a dominance of pastoralism rather than cereal cultivation. Charred cereal grains were scarce but wheat appeared to be the main cereal.

Charcoal identification

Eighteen samples were received for charcoal identification from a variety of contexts. The provenance of the samples examined is as follows:

- 827 - from front of inner bank, possibly from upper fill 263 of palisade trench.
- 830 - from front of inner bank, possibly from upper fill 263 of palisade trench.
- 832 - from fill of medieval ditch 164.
- 834 - fill 174 in posthole 173.
- 835 - fill 174 in posthole 173.
- 842 - fill 533 in posthole 532.
- 844 - fill 185 of cooking pit? 184.
- 846 - fill 533 in posthole 532.
- 850 - from fill 569 in posthole 569.
- 852 - is probably from the surface of 209.
- 855 - from fill 593 from ?posthole or ?gully 592.
- 855a - from fill 593 from ?posthole or ?gully 592.
- 857 - from fill 1105 from posthole 1106.
- 858 - from fill 1117 of gully 1116.
- 861 - from layer 116.
- 862 - from fill 174 of posthole 173.
- 863 - from lower part of 209. Fill of quarry scoop possibly associated with the Phase 1 bank.
- 864 - layer possibly part of later bank construction.

Method - Identification was by obtaining clean fractures along three planes, i.e. transverse, transverse longitudinal and radial longitudinal. A Leitz binocular microscope with incident light was used to examine the charcoal and identification was by comparison with reference material and by reference to wood identification texts, including Schweingruber (1978). The results are presented in Table 6.

Sample	830	832	834	835	842	844	846	850	852	855	855a	857	858	861	862	863	864
Context	263	164	173	173	532	184	532	569	209	592	592	1106	1116	1116	173	209	233
Taxa																	
<i>Ulmus</i> sp. (Elm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
<i>Quercus</i> spp. (Oak)	8	2	1	2	11	4	12	5	1	2	9	4	10	12	1	3	2
<i>Alnus glutinosa</i> (L.) Gaertner (Alder)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
<i>Corylus avellana</i> L. (Hazel)	3	-	-	-	-	1	1	-	1	1	1	-	-	-	-	7	2
<i>Salix</i> sp. (Willow)	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	1
<i>Prunus</i> sp. (Blackthorn/Cherry)	-	-	-	-	-	-	-	-	1	7	2	-	1	-	-	1	1
Pomoideae type (Rowan/Hawthorn)	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2
<i>Fraxinus excelsior</i> L. (Ash)	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
Total	12	2	1	2	12	5	12	5	5	10	12	4	12	12	1	12	12

Table 6. Charcoal identifications from Great Castle Head, Dale.

Discussion - The charcoal identified is from samples that were 'hand-picked' rather than recovered by flotation, which may have resulted in some degree of bias in the results, particularly in terms of the frequency of a particular taxon. However, in any case, the charcoal identified from a site does not necessarily provide an accurate representation of the woodland in the surrounding area because of the element of human selection. All the samples contained identifiable charcoal, apart from (829). The species identified include elm (*Ulmus* sp.), oak (*Quercus* spp.), alder (*Alnus glutinosa*), hazel (*Corylus avellana*), willow (*Salix* sp.), blackthorn/cherry (*Prunus* sp.), rowan/hawthorn type (Pomoideae type), and ash (*Fraxinus excelsior*).

Although there is some uncertainty over the date of some of the contexts, the assemblage probably largely reflects woodland during the Iron Age and Romano-British period. Oak dominates the assemblage and is either usually the only species or the dominant species in the samples from the postholes, suggesting the use of oak for construction purposes. Hazel is the second most frequently occurring species from the site, occurring most abundantly in sample (863) from context (209), dated by radiocarbon to 770 to 410 cal. BC at 95% probability (Beta-135351, Table 3). Also present in this sample were blackthorn/cherry and rowan/hawthorn type. The other samples in which blackthorn/cherry occurred were those from gully (1116), the ?posthole / gully (592) and the later bank construction. The other rowan/hawthorn-type charcoal identified both came from bank samples (830 and 864). The greatest variety of taxa came from sample (864) but, as stated above, the frequency of individual taxa may be biased as the samples were 'hand-picked'.

The evidence tends to suggest some oak woodland with a hazel understorey in the area. Alternatively, the hazel, blackthorn/cherry and rowan/hawthorn could be from local scrub woodland, or another possibility is that wood could have been collected from hedges. The presence of elm and ash is also indicated. Small amounts of willow and alder may indicate that wetter environments were also being exploited.

There is a possibility that sample (864) from the bank could be medieval rather than Iron Age in date but, apart from the slightly greater variety of species, it differs little from the other samples. The only certain medieval context examined was from ditch (164) and it contained only oak.

There is remarkably little charcoal or wood evidence dating from the Iron Age or Romano-British period in west Wales. A small amount of oak charcoal (Hyde, 1952) of Iron Age, or later, date is recorded from Clegyr Boia but, more interestingly, a larger range of species was recorded from a wood assemblage (Morgan, 1971) recovered from Walesland Rath. The assemblage included oak, hazel, ash, ?blackthorn and ?hawthorn, as at Great Castle Head, as well as birch (*Betula* sp.), ivy (*Hedera helix*) and field maple (*Acer campestre*). It is also interesting that all the worked wood is oak, which is consistent with the suggestion above that oak was used for structural purposes at Great Castle Head.

Environmental summary

The results suggest that the local area was already largely open immediately prior to the construction of the fort. However, the persistence of some woodland or scrub is indicated by the charcoal record, although another possibility is that at least some of the charcoal could derive from the presence of hedges. Although the pollen evidence suggests a predominantly pastoral economy prior to the construction of the fort, there is some evidence for cereal cultivation. The charred plant remains from the fort itself indicate that the glume wheats, spelt and to a lesser extent emmer, were the main cereals during the Iron Age although bread/club wheat also appears to be present in later samples. Barley is present but only in small amounts, suggesting it was less significant as a crop. The limited evidence for oat perhaps indicates wild rather than cultivated oat. Although the earliest stages of crop processing are not demonstrated, clearly there was some crop processing going on at the site and it seems likely that cultivation was taking place not far from the fort.

Great Castle Head during the Iron Age

Chronology

Very few dateable prehistoric artefacts were recovered during the course of the excavation. Consequently, the dates for the earliest phases of the fort are dependent upon two Early Iron Age or Middle Iron Age radiocarbon dates. One of these dates 770 to 410 cal. BC at 95% probability (Beta-135351), was for charcoal recovered from the lower fill of a hollow immediately to the rear of the inner bank. This may have been a quarry for material for the first phase of the inner bank. Consequently, it may provide indirect evidence for the earliest construction of the bank. This possible early date for the establishment of the fort is supported by the second date, 845 to 560 cal. BC at 95% probability (Beta-135352), which was for charcoal recovered from one of the postholes within the interior of the fort.

There was no direct dating evidence for the more massive, second phase of the inner bank, although it overlay the hollow containing the early date referred to above. However, charcoal dated to the Middle or Late Iron Age (365 cal. BC to 55 cal. AD, Beta-135353) was recovered from under the rear of the inner bank in Area 1 (the Evaluation Area) and there was no apparent turf line or development of wind-blown silts between Phases 1 and 2 of the inner bank which might have suggested a major hiatus between these constructional phases. The massive form of the Phase 2 bank and the overall plan of the twin dispersed defences would also appear to be

consistent with an Iron Age date (Forde-Johnstone, 1976), although it is uncertain when the outer defences were added. The only early artefactual evidence to support this dating are the few basic stone tools and the spindle whorl. However, this lack of early evidence is to be expected as little has been recovered from other excavated coastal or inland defended sites in the area. The single sherd of Severn Valley ware hints at continuing activity into the Romano-British period.

The fragment of orpiment under the inner wall of the Phase 3 bank and the associated sherd of medieval Ham Green ware indicate a much later date for the Phase 3 structure. A medieval re-use of the site is also supported by the radiocarbon date of 990–1255 cal. AD at 95% probability (Beta-135350) from charcoal found in a layer butting against the retaining wall of the inner bank in Area 3. The spread of medieval pottery recovered from the deposits overlying the interior features probably derives from the Phase 3 bank construction and suggests that this phase of activity centred on the late twelfth and thirteenth centuries. The implications of this medieval re-use of the promontory fort is discussed in detail below.

The First World War cap badge, recovered from Area 3, may have been just a casual loss. However, the find could suggest that the promontory fort was re-used as a lookout post as part of the coastal defence in 1914. Subsequently, the 2nd Line Battalion of the Brecknocks were based in Dale from April to December 1915 (South Wales Borderers Museum Fact Sheet, 1997) and they may well have continued the lookout on this site. The cap badge was found some way down and it is considered that this may have been from the fill of a cut feature (possibly a latrine as the location is less exposed than much of the site). It would appear that the retaining wall of the inner bank was uncovered if not reduced in height.

The Defences

The surface evidence indicates that the two major banks and ditches at Great Castle Head are as massive as any other site on this part of the coast. The similarity between the inner and outer defences suggests that they are contemporaneous in their final form. The height of the outer bank would have obscured an area of ground immediately outside the fort when observed from the top of the inner defence; it would therefore appear logical that this outer defence could be occupied and held during attack.

The Phase 1 inner bank appears to have been quite modest in height. The majority of the material for this primary bank probably derived from the immediate subsoil, either from the ditch in front or quarry pits immediately to the rear. The relatively low surviving height of the inner bank in the landslip area, Area 3, is more comparable with the supposed primary bank seen in the section to the north, in Area 2. In fact, the retaining wall seen in Area 3 could be part of the same structure as that represented by the large stone to the rear of the Phase 1 inner bank in Area 2. However, it is possible that the inner bank in Area 3 was altered by activity during the First World War.

The material for the much larger, Phase 2 bank is likely to have come from a more dispersed source, although some may have derived from further deepening of the ditch. This second phase appeared to have a timber and stone outer face and perhaps a small inner retaining wall. The creation of large counterscarp banks for both the inner and outer ditches suggest that both ditches were deepened or cleared after the construction of the main banks was complete. The Phase 3 structure, which is almost certainly medieval in date, also had rear retaining walls.

The present entrance through the outer defence appears to be later than 1912, and it is unlikely that this area could have been so overgrown that it would have been missed during

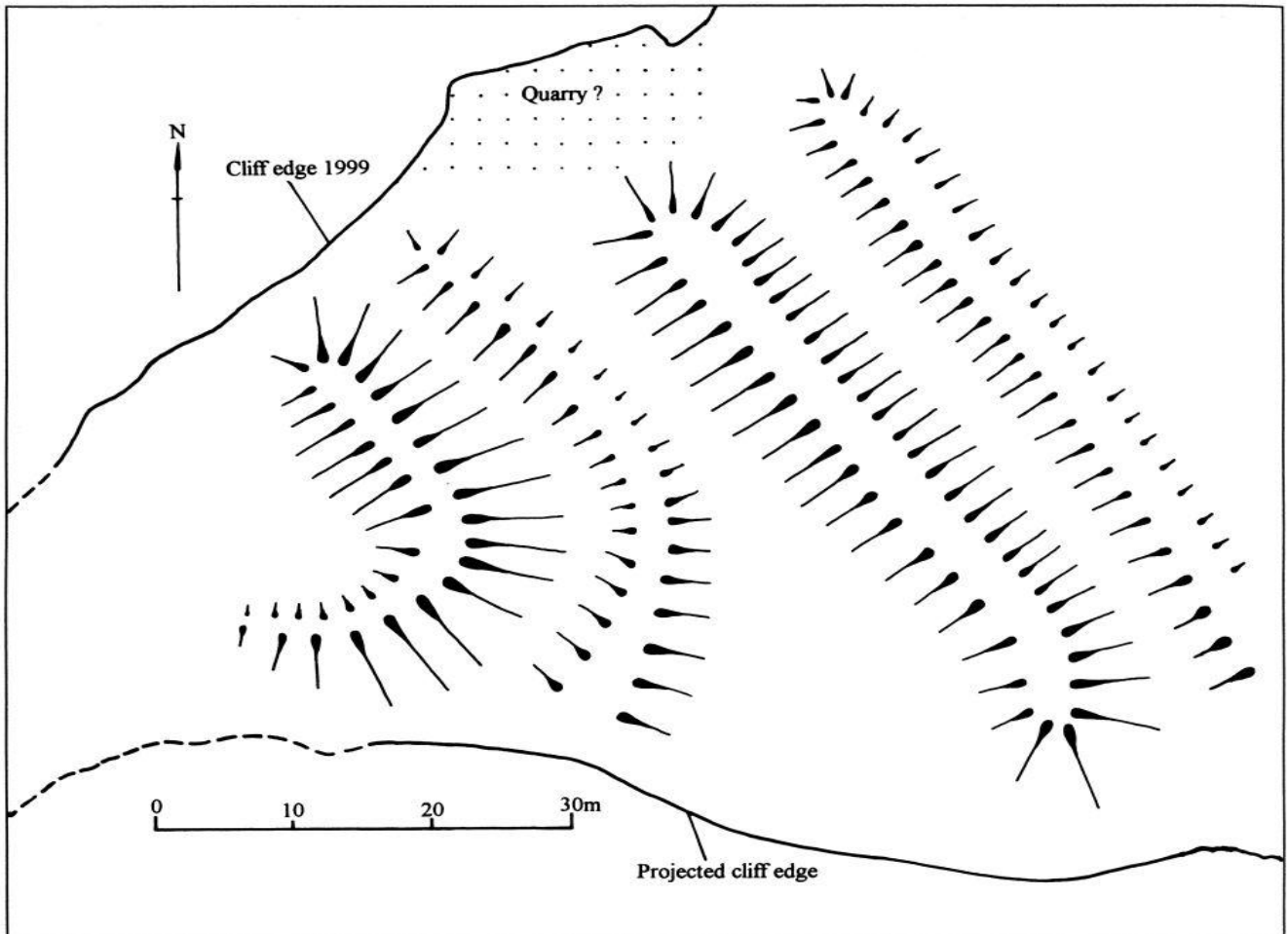


Fig. 20. Reconstructed pre-landslip plan.

Downman's survey or the earlier OS survey of 1875. This entrance shows clearly on an RAF photograph of 1946 but does not appear to be a new feature. It would appear probable, therefore, that the First World War is the most likely date for the gap in the outer defences. The longitudinal profile of the inner bank (Fig. 4, Profile 2) rises to an unusual peak just to the north of the landslip, at the edge of the section in Area 2. The apparent posthole seen in the section (Fig. 7, 282) at the top of this peak could be the setting for a flagpole on a raised area, possibly also dating to this period or to the Second World War, and perhaps functioning as a signalling post.

The original entrance is more likely to have been to the north where there are suggestions of an entrance way on the northern edge of the inner bank and partly in the area between the defences. Any evidence further to the east has been lost either to a landslip, or more probably quarrying activity, although evidence may still survive outside the defences, buried below the hedge bank. It could be possible to investigate this postulated entrance further, although this would need to be undertaken soon because there are already massive fissures in this area and this part of the cliff edge appears particularly vulnerable to continuing erosion. Whether or not banks were situated to the north of this possible entrance way cannot be determined, although the surviving landform suggests that the cliff edge did not extend much further to the north.

The landslip that drastically cuts across the southern side of the site must have occurred after all three phases of the defences were constructed, otherwise the banks and ditches would have extended down the fault line. It is therefore probable that the landslip occurred after the deposition of the medieval pottery and before the OS survey of 1875. In fact, the slighting of the defences by the landslip may have been the reason for the abandonment of the site in the medieval period. Although the ground may not have slipped overnight, such movement would not encourage sustained occupation in the area. If the plan of the site is redrawn removing the landslip (Fig. 20), it can be seen that the southern parts of both the inner and outer defences curve westwards, indicating that little flat ground is likely to have been lost on this side of the site. There is no indication of an entrance on this side of the site nor, given the curve of the banks, does it seem to be a particularly well-suited location for one.

Both the inner and the outer defences at Great Castle Head are considerably larger than those at Dale Point, a single defence fort, at the other end of the valley. However, Dale Point appears to have always enclosed a greater area, even allowing for subsequent erosion at Great Castle Head. It is quite possible that both sites were in use simultaneously. Great Castle Head's stronger strategic position and its outlook to the open sea may have dictated the greater defensive development of this site.

Although dispersed defences are not a common feature in west Wales, examples do occur at Flimston Bay promontory fort and Fishponds Camp on the south Pembrokeshire coast and further to the north in Ceredigion, at Castell Bach Fort, Newquay. However, none of their defences are as massive as those at Great Castle Head. Further to the east in Glamorgan, on the Gower peninsula, there is a cluster of promontory forts with ramparts spaced 16 to 40m apart (Fox, 1937). Where there are dispersed ramparts in the south-west of England such as at Embury Beacon in Devon (Jefferies, 1974) they appear to be large ramparts and further dispersed than those in Wales.

Settlement and economy

The results of the evaluation within the landslip area indicated that the archaeology in this area had not been badly affected by fissuring. By contrast the intact interior (Area 1) was disturbed by a large number of fissures. The area of the interior that was excavated was too small to enable many conclusions to be drawn regarding the nature of the occupation. Although there was considerable density and diversity of cut features, there was no clear identification of any roundhouses. The only features that hinted at a possible structure were the arc of postholes in the north-western part of Area 1 which appeared to surround a hearth. An early date of 845–760 and 635–560 cal. BC at 95% probability (Beta-135352) was obtained for charcoal recovered from one of these postholes although this material could be residual. Several other structures were suggested by the various gullies recorded (see above page 109) including two sides of a possible rectangular structure. However, there was little or no evidence from any of these structures and some of them may relate to the later medieval activity. The identified charcoal from the various postholes was dominated by oak which suggested that this may have been the most important species used for construction purposes. The absence of clear structures is in stark contrast to the recent excavation at Porth y Rhaw where the partial remains of at least eight roundhouses were identified.

The postholes seen in the western part of the main section in Area 2 (Fig. 7), the three gullies seen in Area 3 and the features noted in the spring trial trench suggest there is evidence of

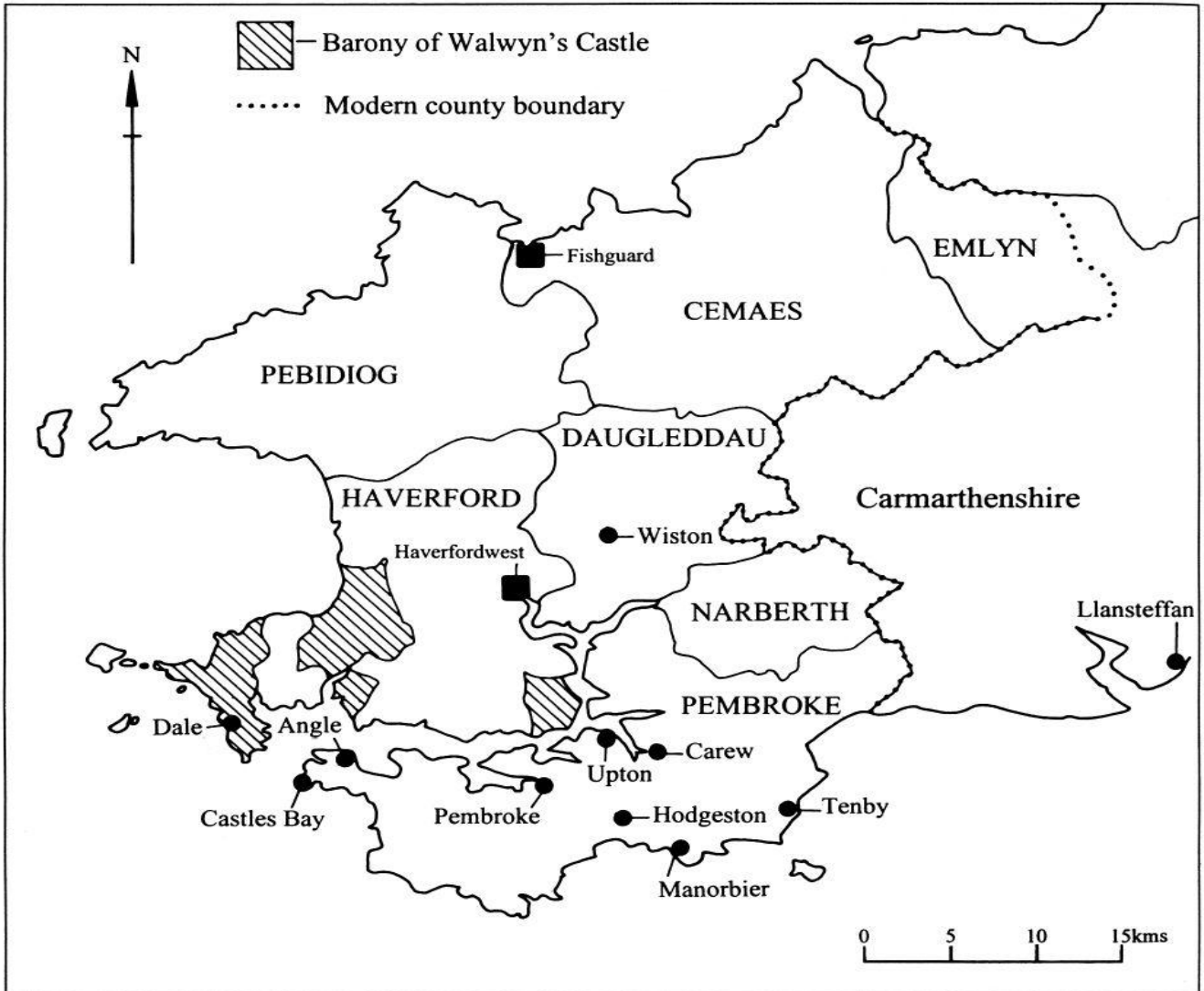


Fig. 21. Medieval Pembrokeshire showing sites mentioned in the text.

Modified from Rees, 1932.

activity to be found throughout the interior, probably of a similar density to that seen in Area 1 (Fig. 13).

The pollen evidence from the buried soil beneath the inner bank indicates an open landscape prior to the construction of the fort. This suggests grassland and pastoralism although there is some evidence of cereal production. There is insufficient evidence to draw too many conclusions from the few datable samples containing charred plant remains. However, there is a tentative suggestion that spelt is predominant during the later Iron Age with bread wheat also becoming of greater importance. By contrast, emmer may have been equally as important during the earlier Iron Age (see above page 124). Most of the samples contained chaff and weed seeds suggesting waste from crop processing on site. The marine environment may also have provided a large part of the food resource. However, the soil conditions on the site are not suitable for the survival of bone and shell, and therefore the extent of exploitation cannot be assessed.

Great Castle Head during the Medieval Period - A medieval castle?

by Neil Ludlow

(See Fig. 21 for sites mentioned in text)

The excavated evidence suggests that a considerable amount of activity occurred on the site during the medieval period, ceasing at the end of the thirteenth century. This includes refurbishment, or even heightening of the defences, which appears to belong to the twelfth or early thirteenth centuries. None of the features or structures relating to occupation of the interior itself can, however, be firmly attributed to the medieval period, but this must be viewed against the general paucity of dating evidence, and the small size of the excavated area.

What then was the context for the medieval re-use of the site, and its nature? It will be argued below that Great Castle Head was the site of a medieval castle—the *caput* of the manor of Dale—prior to the establishment of the present Dale Castle. The alternative—that Great Castle Head may have been a defensive outpost, a kind of ‘watch-tower’—is unlikely. There are no real parallels for such a purely military function in later twelfth- and thirteenth-century Wales, while the quality of the pottery is noted below.

Promontory fort re-use

Great Castle Head lies in an area within which the establishment of medieval castles on or within Iron Age promontory forts has been suggested at a number of sites. Excavation by the University of Wales, Lampeter, has demonstrated that the celebrated masonry castle at Carew, Pembrokeshire, which was the *caput* of an extensive barony, was established in c.1100 within a multivallate, inland promontory fort, the occupation of which had continued into the Roman and early medieval periods (Gerrard, 1990, 45). The early medieval phase may well have been a *llys* of the princes of Dyfed, Carew apparently forming part of their patrimony (Austin, 1992, 5–6). Its plan and topography, and artefactual evidence, suggest that the inner ward of the main regional castle at Pembroke was also an inland promontory fort during the Iron Age (Ludlow, 1991, 25–6); here, too, documentary sources suggest that an administrative centre which predated the Anglo-Norman conquest was later re-used. Both presumed forts are of comparable area to Great Castle Head.

The early medieval re-use of a *coastal* promontory fort may have occurred at Tenby, Pembrokeshire, which may be the ‘small fort’ in the ninth- to tenth century-poem *Etmic Dinbych*, ‘The Praise of Tenby’ (Davies, 1982, 211) and was the site of the Norman castle. Topographical and place-name evidence suggests the possibility that the nearby Manorbier Castle may have similar origins (Kissock, 1993, 7), while Castles Bay, near Angle, Pembrokeshire, occupies an exposed, west-facing headland similar to Great Castle Head. The latter site is a promontory fort which has no recorded history but was described, in 1811, as ‘separated from the main land by a very deep foss, where in Queen Elizabeth’s time stood the remnant of a tower (mentioned by George Owen), built to guard the pass ... The tradition is, that this was a place of retreat for the new Norman settlers’ (Fenton, 1811, 404). A similar site may have existed at Castell Trefiffith in the north of the county where the promontory fort was described, in about 1600, as exhibiting a ‘small sign of a Castle’ which ‘resembleth quod fundum the castle of Tintagel’ (Charles, 1948, 269); the site has now been mainly lost to erosion. Like Great Castle Head, there is no evidence for any continuity of use from pre-Anglo-Norman conquest settlement at either site and they may also have been abandoned at a relatively early date; however, the implied presence of masonry is significant.

If even a small proportion of this possible re-use actually occurred, it would still represent the densest concentration of such sites in Britain. Further afield, the medieval Llansteffan Castle, Carmarthenshire, has been proved by excavation to occupy the major part of a slightly larger promontory fort, the basically trivallate defences of which have produced a number of secure radiocarbon dates within the Iron Age (Avent, 1991, 170–72; Guilbert and Schweiso, 1972, 79–90; Guilbert, 1974, 37–48).

North Wales is characterised by a less dense concentration of such Iron Age sites and the small promontory fort at Castell, Anglesey is an exception. Its defences were refurbished in the eleventh–twelfth century, and a hall-house constructed within, possibly under Norman occupation, but more likely as a result of native, or even Norse, re-use (Longley, 1991, 81–4). Degannwy Castle, Conwy, is not a promontory fort but occupies a coastal location, was fortified in the Iron Age, possibly refortified under the native princes and the site of a castle from c.1073 to 1088 (Alcock, 1967, 190–201).

Comparable sites in south-west England are few. Tintagel Castle, Cornwall, apparently represents the only medieval castle to occupy a coastal promontory fort (King, 1988, 72–80); its early medieval associations are celebrated in history and folklore. It is in the north-east of England that a number of coastal castle sites occur, for instance at Bamburgh where excavation has demonstrated Iron Age occupation of the headland (Hope-Taylor, 1972, 2–3), at Scarborough and at Tynemouth which also features Iron Age ‘buildings’ (Hadcock, 1952, 7).

The hesitation to acknowledge the re-use of earlier earthworks which has been shown by many authors of castle studies may be commented upon in passing —Spurgeon (1987), for instance, fails to mention the phenomenon at all, even though there are many proven examples of inland hill-fort re-use within his study area. Exposed coastal locations could, however, occasionally be chosen for castle sites regardless of any previous occupation as appears to have been the case at the *de novo* Aberystwyth Castle (Ceredigion), Cricieth Castle (Gwynedd) and possibly Dunstanburgh Castle (Northumberland).

Medieval history of Dale

As already stated, the post-Conquest history of Dale and the surrounding region is dominated by the establishment of the marcher lordships of Pembroke and Walwyn’s Castle. The Anglo-Norman settlement of the region began in 1093 with the invasion of Dyfed under Roger de Montgomery, the Norman earl of Shrewsbury, and his establishment of a castle at Pembroke (Ludlow, 1991, 25). Roger’s son, Arnulf, used Pembroke as his main base and, by 1100, he had subdued the greater part of Cantref Penfro (in the southern part of the present county), Cantref Rhos (west of Haverfordwest) and Cantref Daugleddau (in the central part of the present county). These were reorganised as a county under King Henry I and later became a palatinate of the earls of Pembroke. In about 1100, as a subordinate of Martin ‘of Tours’, Arnulf also invaded Cantref Cemaes (around Fishguard). Cantref Rhos was reorganised as the Lordship of Haverford, initially subject to the earls of Pembroke. From 1247 onwards, this also contained the large barony or sublordship of Walwyn’s Castle, commonly independent of Haverford.

The manor (and parish) of Dale formed a subordinate, *mesne* lordship of the barony of Walwyn’s Castle, assessed as one knight’s fee (Owen, 1918, 78–81) with a *caput* probably in the vicinity of the present village, which is first mentioned, as ‘Valle’, in 1207 (Charles, 1992, 583). All further references to its name are variations of ‘vall’ for valley, e.g. *dael*, *dalr*, *val* (ibid.).

The manor had, by the thirteenth century at least, been acquired by the de Vale (or Valle) dynasty. The de Vales are not mentioned in the earliest governmental document for Pembrokeshire, the Pipe Roll of 1130 (Hunter, 1929, 136–7), but are supposed to have been descended from one Hubert de Vale who allegedly accompanied the Norman Martin in *c.*1100, and was accordingly rewarded with lands in Cemaes (a tradition mentioned by Stickings, 1972, 95, *et al.*). The family appears to have been named after the location of its manor, rather than vice versa, and if this ‘Hubert’ existed it would suggest—significantly—that the place-name had become fixed by the early twelfth century. The de Vales had certainly acquired their lands in Dale by the early thirteenth century at least, by which time the family had acquired considerable influence; in 1246 Gilbert de Vale was seneschal of Pembroke Castle (Owen, 1918, 2–3). By 1247 the de Vales were also possessed of a half knight’s fee at the nearby manor of Mullock and Bicton, held of the lordship of Pembroke (Walker, 1950), and by *c.*1300 they held a half knight’s fee from Walwyn’s Castle at Walton West (Owen, 1918, 78–81) and the manor of Redwalls from the Lordship of Cemaes (Cal. Charter Rolls 2, 433).

The *Inq. Post Mortem* of Guy de Brian, Lord of Laugharne and Walwyn’s Castle, in 1307 (Owen, 1918, 78–81), described the Dale holding and the nature of the tenure by which it was held, thus:

Guy de Brian held one barony of the March, called the Barony of Castle Walwain (containing 9 knight’s fees and 3 carucates of land), in chief of the (de Clare) Earl of Gloucester, by homage and service of 1? knight’s fee, and doing suit ... at the county court of Pembroke, which barony is in the king’s hand by reason of the minority of Gilbert de Clare, son and heir of Sir Gilbert late Earl of Gloucester ...

The heirs of Robert de Vale hold one knight’s fee at Ladale (Dale) containing 10 carucates, and half knight’s fee in Waltone (Walton West) containing 5 carucates, by homage and service of 1? knight’s fee, and doing suit of court (at Walwyn’s Castle every fortnight).

The Charter Rolls (Cal. Charter Rolls 2, 433) record that in 1293 Robert de Vale, the last of the line, from Edward I a grant of a weekly market and a three-day annual fair for his manor of Dale:

Grant to Robert de Val and his heirs, of a weekly market at his manor of Val, co. Pembroke, and a yearly fair there on the vigil, the feast and the morrow of the Exaltation of the Cross.

The grant was referred to by the antiquarian Richard Fenton in *c.*1811, who also attributed burghal status to the medieval settlement, thus: *in the time of de Vale ... (Dale) had the title of a borough, had a market and other privileges* (Fenton, 1811, 164). No source for its being a borough has, however, been identified by the present author.

Dale parish church (St James), a perpetual curacy appurtenant to Haverfordwest Priory, had been established by 1291 when, as *Ecclesia de Valle*, it was assessed at £5 6s. 8d. (Green, 1911, 288). The foundation date is, however, unknown and none of the present fabric is any earlier than the thirteenth–fourteenth century (Ludlow, 1998). Along with the present Dale Castle, the church forms an apparent settlement nucleus at the west end of the present village and valley. There is little further topographical evidence for the medieval settlement, and the windmill immediately north of the present village is post-medieval (Nash, 1986, 45).

North of the village lay commons on which the tenants preserved the right of de-pasturing cattle, after the lord of the manor had cleared off the hay, into the nineteenth century (Lewis, 1833). This privilege was apparently granted by Henry VII (*ibid.*). The nearby Dalehill Farm is probably to be associated with the ‘Hill’ (or ‘Le Hull’), where Robert de Vale ‘and his ancestors’ held their manorial tenants’ court (Owen, 1911, 6) and with ‘*Le Hull iuxta vallem*’ (‘The hill next to Dale’) recorded in 1376 (Owen, 1911, 122). Rees (1932) locates a third holding, ‘*Mount*’, to the north of the village, but may be mistaken for ‘*de Monte*’ (or ‘Mons’), a manorial court of the earls of Pembroke in Haverfordwest (Owen, 1911, 6, 42 and 68; Walker, 1950); it was not listed with de Brian’s barony in 1307 (Owen, 1918, 78–82).

Robert de Vale died in about 1300 and the manor of Dale was divided between his daughters as co-heiresses (Jones, 1996, 53). It found its way into the hands of the Walter family of Rosemarket and, in 1594, property belonging to Richard Walter of Dale was sold by his widow (*ibid.*). The Walter family, later of Haverfordwest and Roch Castle, continued to hold Dale until 1669 when Richard Walter, Esq. sold his interest in the manor to David Paynter of the nearby Broomhill Farm (*ibid.*). His daughter married William Allen of Gelliswick. The Allens maintained Dale, residing at what is now called Dale Castle, until 1767 when the heiress married John Llwyd of Mabws, Ceredigion (Lewis, 1833). From them descended the Lloyd-Philipps family who still possess Dale Castle.

The de Vale caput

The de Vale dynasty was established in the twelfth century and were possessed of vast holdings, and prestige, by the thirteenth century. Their administration appears to have been carried out from ‘Hill’ (see above); this may not have been the site of a permanent building, but instead may have been a meeting-place like the ‘Court of the Castle Gate’ at Pembroke (Owen, 1897, 522) and Longstone Field, Lydstep, the original site of a manorial court of Manorbier (Walker, 1992, 135; Ludlow, 1996, 9). However, it may be assumed that they also established a residence of some quality and although there is a possibility that it lay within one of their other holdings, it is more likely to have been situated within their primary manor of Dale.

A number of alternatives to the Great Castle Head site exist. The residence may have occupied, for example, a lost site within Dale manor. There is also the possibility that it occupied the same site as the present Dale Castle, the mansion-house lying immediately north of the parish church at the west end of the present village, to which the earliest secure reference was made in 1699, as ‘Castle’ or ‘Castle House’ (Charles, 1992, 585). The present house comprises a neo-Gothic block. It lies within a rectangular yard, entered from the west, on the south side of which is a lower, thick-walled building. The Pembrokeshire Archaeological survey (1896–1907) stated

The south wing of Dale Castle is part, if not the whole, of the original building. The lower part is vaulted: the floor above the vaulting is used as a stable, and the floor above as a corn loft and man-servant’s room. Probably the original building was a small oblong block of buildings. The north wing was built (in c.1910) by the late Mr Lloyd-Philipps (Jones, 1996, 53).

It would appear therefore that this southern element is of late medieval or early post-medieval construction. However, the Cadw: Welsh Historic Monuments listed buildings database

describes the entire building as of c.1910 and does not mention any earlier history, surviving structural elements, plan-form etc. and appears therefore to be limited to just the main block (Rec. No. 11990). In c.1811 it had been described as

... retaining nothing or very little of castellated appearance, (but) a handsome mansion ...
(Fenton, 1811, 163).

It had clearly been at least partly rebuilt by 1833 when it was

an embattled structure ... modernised and greatly improved, by the addition of two spacious wings, communicating with the centre by two circular projecting towers (Lewis, 1833).

Most of this structure appears to have been swept away in the rebuilding of c.1910.

In summary, there is now no structural evidence for any fabric earlier than the fifteenth to seventeenth century and the present regular plan-form is suggestive of a late medieval layout, uninfluenced by earlier features. There is no evidence for a moat, ditch, curvilinear plan or earthwork. Neither, admittedly, is there such evidence at a number of Pembrokeshire manorial centres that are known to have been occupied in the thirteenth century. The local families closest in status to the de Vales were the likes of the Malefants with a small but fully-developed masonry castle at Upton (RCAHM, 1917), the lords of Hodgeston with a moated site (*ibid.*), and the Shirburns and rectors of Angle, each with a semi-fortified house (Ludlow, 1997).

In 1599, George Owen included a castle at Dale in a list of nineteen 'ancient castles' in Pembrokeshire (Owen, 1897, 401 n. 1). The list also included, *inter alia*, Castle Pill and Castlemartin, both of which were only ever earthwork sites and probably abandoned by 1599. The castle proposed at Great Castle Head would have been of similar type. However, the list also included Stackpole, which was, until recently destroyed, an entirely unfortified mansion house. A lot depends on Owen's definition of 'ancient castle'—it clearly does not include the blockhouse constructed at the tip of the peninsula in the sixteenth century (see above), but may refer to the present Dale Castle site. At any rate, it indicates that there was a medieval castle site of sorts at Dale in 1599. Great Castle Head itself is first specifically mentioned, as 'Great Castle', in 1758 (Charles, 1992, 584).

The pottery: comparisons

The assemblage from Great Castle Head, which features Ham Green wares from near Bristol, is comparable with that from Carew Castle, implying that the two sites were of similar status during the late twelfth and early thirteenth centuries. There are few published pottery assemblages from excavations at castle/manor house sites within Pembrokeshire, the best analysis being that of the Carew and Wiston Castle assemblages. The large assemblage from Carew Castle (3,099 sherds, in 1993) included local gravel-tempered wares of the twelfth and thirteenth centuries and a sherd of twelfth-century Malvernian ware (Freeman, 1995, 16). Imports from further afield, however, were only found in later medieval contexts. A previously excavated area of the Carew site had produced considerable quantities of twelfth- and early thirteenth-century sherds including Ham Green cooking pots and jugs, and North Devon gravel-tempered wares (Gerrard, 1987, 63).

Only a small area was excavated at Wiston Castle and, consequently, the assemblage was very small (18 sherds) and of a generally non-intrusive nature but included local wares and Ham Green wares (Brennan, 1995, 88–91). No imports from further afield were present.

Morphological evidence

In settlements in south-west Wales which have both medieval churches and castles, these often lie some distance from each other. In some cases, this may be due to their pre-Anglo-Norman origins as *llan* and *llys* sites. In fact, in the majority of early urban foundations, the church lay outside the initial defended area, e.g. Cardigan, Carmarthen, Kidwelly, Laugharne, St Clears, Tenby and probably Pembroke (but not apparently Haverfordwest or Wiston). The phenomenon is mentioned, but not discussed, in Murphy (1997, 154), and can also be seen at a number of smaller, non-urban settlements including Amroth, Carew, Castlemartin and St Ishmaels. At Dale, the present Dale Castle and parish church are next to each other, which may imply that they are late foundations, or that one or other has moved at a later date.

The present Dale Castle does occupy a route node—the head of a T-junction—but the trackway leading west may formerly have continued to Great Castle Head, continuing the present road as a straight line past the church. Moreover, a disused trackway leading to St Ann's Head at the tip of the Dale peninsula formerly passed close by Great Castle Head (Ordnance Survey, unpublished drawings, 1814).

Conclusion: the abandonment of Great Castle Head?

The pottery assemblage suggests that Great Castle Head was occupied into the thirteenth century, but no later. Robert de Vale may have granted a market and fair to Dale in 1293. Might the latter represent a context and general date for the removal of a *caput* from the promontory to the present Dale Castle, next to a (?pre-existing) church site?

A date of 1293 is an unusually late one for the establishment of commercial and population centres in the settled areas of Britain, being contemporaneous with the establishment of royal *bastides* in frontier zones such as North Wales and Gascony, and it may signal a change in the relationship between the de Vales and their manor and residence. It might have followed a move from the exposed Great Castle Head to a more 'civilised' location—i.e. the present Dale Castle site. Such a move is also chronologically consistent with a period in which gentry families were seeking more comfortable accommodation.

The mercantile venture at Dale was not, in the long run, commercially successful, but economic decline appears to have been a feature of late medieval Pembrokeshire where it affected some boroughs e.g. Llawhaden, New Moat and Templeton (Soulsby, 1983, 177–9, 198–9 and 248–9), as well as Wiston (Murphy, 1995, 75). It also affected the large number of smaller commercial centres that appear to have developed in the region during the later medieval period, which are more closely analogous to Dale e.g. Templeton (possibly a borough—its property-holders were termed 'burgesses'—but without a documented market or fair), St Florence (not a borough, but with a market and fair), Rosemarket (with a market) and the de Vale's own manor of Redwalls with a market and three-day fair (*Cal. Charter Rolls* 2, 433) all of which are now overwhelmingly rural. There was also a large number of fairs. In this sense, the region may be compared with south-east Wales which was, like Pembrokeshire, a relatively prosperous region during the later medieval period, giving rise to an 'over-urbanised' economy with too many small towns, not all of which could succeed (Courtney, 1998, 197–202).

Future work at Great Castle Head

It would appear that the archaeology in the southern part of the site is relatively intact, despite the displacement caused by the landslip. However, much of the western end of the promontory has been lost and it is evident that the greatest risk of further loss is along its northern edge. Therefore, any future work should target the north side of the site and possibly resolve whether or not there was an entranceway along this side. Erosion on these sites is inclined to be a very slight annual loss with occasional minor to massive losses. It is impossible to predict when these large bursts of erosion will occur.

It would also be worth considering cutting back the vegetation and undertaking a geophysical survey. Here and at Porth y Rhaw permanent survey stations have been established for accurate monitoring of the rate of erosion. Having now established that at least some of these sites are likely to have been very intensively occupied it would be desirable to survey and monitor closely those other coastal forts considered to be most at risk.

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Archive Deposition - Final deposition of the report and finds will be at Scolton Manor Museum, Haverfordwest. A copy of the archive report and archive list will be lodged with RCAHMW, Aberystwyth.

BIBLIOGRAPHY

- Alcock, L. 1967 'Excavations at Degannwy Castle, Caernarfonshire', *Archaeological Journal*, **124**, 190–201.
- Andrew, R. 1984 *A practical pollen guide to the British Flora*. Technical Guide 1. Cambridge: Quaternary Research Association.
- Atkinson, A.T. 1931 'WW1 History of the South Wales Borderers' (extract only). London: Medici Society Limited.
- Austin, D. 1992 'The context and the research design', in D. Austin (ed.) *The Carew Castle Archaeological Project: 1992 season interim report*, 5–10, St David's University College Lampeter unpublished report.
- Avent, R. 1991 'The Early Development of Three Coastal Castles', in H. James (ed.) *Sir Gâr: Studies in Carmarthenshire History*. Carmarthen: Carmarthenshire Antiq. Soc., 167–87.
- Baring Gould, S. 1899 'Explorations of the stone camp on St. David's Head', *Arch. Camb.*, 5th Series xvi, 105–131.
- Bartley, D.D. 1965 'Results of pollen analysis', in D.W. Crossley, 'Excavations at Knock and Webley, D.P. 1962', *BBCS* **21**, 269–270.
- Barton, K.J. 1963 'A Medieval Pottery Kiln at Ham Green, Bristol', *Trans. Bristol and Gloucestershire Arch. Soc.* **82**, 95–126.
- Beijerinck, W. 1947 *Zadenatlas der Nederlandsche Flora*. Veenman, Wageningen.
- Bennett, K.D. 1994 *Annotated catalogue of pollen and pteridophyte spore types of the British Isles*. Cambridge: Department of Plant Sciences, University of Cambridge.
- Bennett, K.D., 1994 'Recent plant nomenclatural changes and pollen morphology in the Whittington, G and Edwards, K.J. British Isles', *Quaternary Newsletter* **73**, 1–6.
- Benson, D.G. 1987 'Dale Promontory Fort', *Archaeology in Wales* **27**, 43.
and Williams, G.H.
- Berggren, G. 1969 *Atlas of seeds and small fruits of Northwest-European plant species with morphological descriptions. Part 2. Cyperaceae*. Stockholm.
- Berggren, G. 1981 *Atlas of seeds and small fruits of Northwest-European plant species with morphological descriptions. Part 3. Salicaceae-Cruciferae*. Arlow.
- Bertsch, K. 1941 *Früchte und Samen. Handbücher der praktischen Vorgeschichtsforschung*. I. Stuttgart: Ferdinand Enke.
- Boardman, S. 1990 'Experiments on the effects of charring on cereal plant components',
and Jones, G. *J. of Archaeological Science* **17**, 1–12.
- Brennan, D.F.M. 1995 'The pottery from Church Field and the rubble fill of the keep', in Murphy, 1995, 88–91.
- Calendar of Charter Rolls **2**, Henry III - Edward I (1257–1300). London: HMSO, 1906.
- Caseldine, A. 1990 *Environmental Archaeology in Wales*. Lampeter: St David's University College.

- Caseldine, P. forthcoming and Barrow 'Environmental Evidence' in P. Crane (forthcoming) *Porth y Rhaw Coastal Promontory Fort 1995–1998*.
- Caseldine, A.E. 1998 and Holden, T.G. 'The carbonised plant remains' in G. Williams and H. Mytum, (ed. K. Blockley), *Llawhaden, Dyfed: excavations on a group of small defended enclosures, 1980–4*. BAR British Series 275, 105–118, 121.
- Caseldine, P. forthcoming A.E. *et al.* 'Palaeoecological investigations associated with the Whitland Bypass Roman Road, Carmarthenshire', in N. Page *Whitland Bypass*.
- Charles, B.G. 1948 'The Second Book of George Owen's Description of Pembrokeshire', *NLW J.* 5, 265–85.
- Charles, B.G. 1992 *The Place-Names of Pembrokeshire*, 2. Aberystwyth: N L W.
- Clement, R.W. 1995 'A Survey of Antique, Medieval and Renaissance Book Production', in Garrett-Fisher and Scott (eds) *Art into Life: Collected Papers from the Kresge Art Museum Medieval Symposia*. East Lansing: Michigan State University Press, 9–47.
- Courtney, P. 1998 'New Radnor in the Regional Context' in N.W. Jones, 'Excavations within the Medieval Walled Town at New Radnor, Powys, 1991–92', *Arch. J.* 155, 197–202.
- Davies, W. 1982 *Wales in the Early Middle Ages*. Leicester: University Press.
- Downman, M.S. 1913 'Plans of Pembrokeshire Earthworks' compiled 1910–1913 by the Revd E.A. Downman. Held in Haverfordwest Public Library.
- Dresser, B.J. 1959 'Land use and Farm Practice in the Parish of Dale', *Field Studies* 1, no. 1, 1–23. London: Field Studies Council.
- Edwards, N. 1988 and Lane, A. *Early Medieval Settlement in Wales*. Cardiff and Bangor: University of Wales Press.
- Faegri, K. 1989 and Iversen, J. *Textbook of Pollen Analysis*. 4th edn (revised by K. Faegri, P.E. Kaland and K. Krzywinski). Chichester: John Wiley & Sons Ltd.
- Fenton, R. 1811 *A Historical Tour through Pembrokeshire*. London: Longman, Hurst, Rees, Orme & Co.
- Forde-Johnston, J.L. 1976 *Hillforts of the Iron Age in England and Wales: A survey of the surface evidence*. Liverpool: University Press.
- Fox, Cyril 1937 'Field Survey of Glamorgan: The Defensive Earthworks of Gower', *BBCS* 8, 364–70.
- Francis, E.B. 1913 'Rayleigh Castle: new facts in its history and recent explorations on its site', *Trans. Essex Arch. Soc.* 12, 147–85.
- Freeman, C. 1995 'Pottery' in D. Austin (ed.) *The Carew Castle Archaeological Project: 1993 season interim report*, 16–18, St David's University College Lampeter unpublished report.
- Gerrard, S. 1987 'Carew Castle', *Archaeology in Wales* 27, 62–4.
- Gerrard, S. 1990 'The Carew Castle Project, 1986–1990', *Fortress* 6, 45–50.
- Green, F. 1911 'Pembrokeshire Parsons', *West Wales Historical Records* 1. Carmarthen: W. Spurrell & Son, 288–9.
- Grimm, E. 1991 *TILIA and TILIAGRAPH*. Springfield: Illinois State Museum.
- Grimes, W.F. 1966 'Dale: interim report', *Archaeology in Wales* 6, 9.

- Guilbert, G. 1974 'Llanstephan Castle: 1973 Interim Report', *Carms. Antiq.* **10**, 37–48.
- Guilbert, G.C. 1972 'Llanstephan Castle: An Interim discussion of the 1971 excavation', and Schweiso, J.J. *Carms. Antiq.* **8**, 75–90.
- Hadcock, R.N. 1952 *Tynemouth Priory and Castle*. London: HMSO.
- Hall, G.W. 1993 *Metal Mines of Southern Wales*. Kington: Griffin Publications.
- De Hamel, C. 1992 *Medieval Craftsmen: Scribes and Illuminators*. London: British Museum Press.
- Hands, A.R. 1993 *The Romano-British Roadside Settlement at Wilcote, Oxfordshire I Excavations 1990–92*, BAR British Series **232**. Oxford: British Archaeological Reports.
- Harthan, John 1983 *Illuminated Manuscripts*. London: (HMSO) Victoria and Albert Museum.
- Heslop, T.A. 1992 'The Visual Arts and Crafts' in Boris Ford (ed.), *Medieval Britain: The Cambridge Cultural History*. Cambridge: Cambridge University Press, 154–72.
- Hillman, G. 1981a 'Reconstructing crop husbandry practices from charred remains of crops', in R. Mercer (ed.), *Farming Practice in British Prehistory*. Edinburgh: Edinburgh University Press, 123–62.
- Hillman, G. 1981b 'Appendix. Possible evidence of grain-roasting at Iron Age Pembrey', in G. Williams, 'Survey and excavation on Pembrey Mountain', *Carms. Antiq.* **17**, 25–32.
- Hope-Taylor, B. 1972 'History', in Anon., *Bamburgh Castle*. Alnwick: Watson- Armstrong, 2–3.
- Hunter, J. (ed.) 1929 *The Pipe Roll of 31 Henry I*. London: HMSO.
- Hyde, H.A. 1952 'Appendix. Report on carbonised wood from Clegyr Boia', in A. Williams, 'Clegyr Boia, St David's (Pemb.): excavation in 1943', *Arch. Camb.* **CII**, 46–47.
- Jacomet, S. 1987 *Prahistorische Getreidefunde*. Basel: Botanisches Institut der Universität Abteilung Pflanzensystematik und Geobotanik.
- Jefferies, J.S. 1974 An Excavation at the Coastal Promontory Fort of Embury Beacon, Devon, *Proceedings of the Prehistoric Society* **40**, 136–56.
- John, B.S. 1995 *Pembrokeshire Past and Present*. Newport: Greencroft Books.
- Jones, Frs. 1996 *Historic Houses of Pembrokeshire and their Families*. Newport: Brawdy Books.
- King, D.J.C. 1988 *Castellarium Anglicanum*. New York: Kraus International Publications.
- Kissock, J. 1993 *Historic Settlements project: South Pembrokeshire*. Dyfed Archaeological Trust unpublished report.
- Kissock, J. 1997 'God Made Nature and Men Made Towns: Post-Conquest and Pre-Conquest Villages in Pembrokeshire', in N. Edwards (ed.), *Landscape and Settlement in Medieval Wales*, Oxbow Monograph **18**, 123–38.
- Laws, E. 1880 'Pembrokeshire Earthworks', *Arch. Camb.* 4th series, xi, 241–8.
- Laws, E. 1908 *Pembrokeshire Archaeological Survey*. Held in Haverfordwest Public Library.
- and Owen, H.

- Lewis, S. 1833 *A Topographical Dictionary of Wales* 1. London: S. Lewis & Co.
- Longley, D. 1991 'The Excavation of Castell, Porth Trefadog, Coastal Promontory Fort in North Wales', *Med. Arch.* **35**, 64–85.
- Ludlow, N.D. 1991 'Pembroke Castle and Town Walls', *Fortress* **8**, 25–30.
- Ludlow, N.D. 1996 *Lydstep Palace, Pembrokeshire: archaeological recording and structural analysis*. Dyfed Archaeological Trust unpublished report.
- Ludlow, N.D. 1997 *Angle Dovecote, Pembrokeshire: archaeological recording and structural analysis*. Dyfed Archaeological Trust unpublished report.
- Ludlow, N.D. 1998 'St James Church, Dale', *The Cadw Welsh Historic Churches Project: Preseli Churches 1*. Dyfed Archaeological Trust unpublished report.
- Moore, P.D., 1991 *Pollen Analysis*. 2nd edn. Oxford: Blackwell Scientific Publications.
Webb, J.A and Collinson, M.E.
- Morgan, G.C. 1971 'Appendix 1. Report on the wood', in G.J. Wainwright, 'The excavation of fortified settlement at Walesland Rath, Pembrokeshire', *Britannia* **2**, 103.
- Murphy, K. 1995 'The Castle and Borough of Wiston, Pembrokeshire', *Arch. Camb.* **CXLIV**, 71–102.
- Murphy, K. 1997 'Small Boroughs in Southwest Wales: their Planning, Early Development and Defences', in N. Edwards (ed.), *Landscape and Settlement in Medieval Wales*, Oxbow Monograph **18**, 139–56.
- Nash, G. 1986 'The Windmills of Pembrokeshire: an historical view', *Melin* **2**, 32–53.
- Nye, S. 1985 'Plant macrofossils', in K. Murphy, 'Excavations at Penycoed, Llangynog, Dyfed 1983', *Carms. Antiq.* **21**, 106–108.
- O'Mahoney, C. 1985 'West Wales fabrics - an interim note', *Medieval and Later Pottery in Wales* **8**, 20–4. Cardiff: Bulletin of the Welsh Medieval Pottery Research Group.
- O'Mahoney, C. 1995 'Pottery, ridge tile and ceramic water pipe', in T. James (ed.), *Excavations at Carmarthen Greyfriars 1983–1990*. Carmarthen: Dyfed Archaeological Trust Occasional Papers Number 2.
- Osmond, E. 1961 *The Artist in Britain From the Eighth to the Twentieth Centuries*. London: Studio Books.
- Owen, H. (ed.) 1897 *The Description of Pembrokeshire by George Owen of Henllys, Lord of Kemes* 2. London: Cymmrodorian Record Series 1.
- Owen, H. (ed.) 1911 *A Calendar of Pembrokeshire Records* 1. London: Cymmrodorian Record Series 7.
- Owen, H. (ed.) 1918 *A Calendar of Pembrokeshire Records* 3. London: Cymmrodorian Record Series 7.
- Papazian, C. 1992 'Medieval pottery and roof tiles in Wales A.D. 1100–1600', *Medieval and Later Pottery in Wales* **13**, 1–107. Cardiff: Bulletin of the Welsh Medieval Pottery Research Group.
and Campbell, E.

- Pearsall, D. 1992 'The Cultural and Social Setting: The Middle Ages' in Boris Ford (ed.), *Medieval Britain: The Cambridge Cultural History*. Cambridge: CUP, 2–41.
- Ramsey, R. 1992 'Dale Promontory Fort', *Archaeology in Wales* 32, 68–9.
and Williams, G.
- RCAHM 1917 *Inventory: Pembrokeshire*. London: HMSO.
- Rees, Wm. 1932 *Map of South Wales and the Border in the XIVth Century*. London: Ordnance Survey.
- Richards, M. 1969 *Welsh Administrative and Territorial Units*. Cardiff: UWP.
- Riley, H.T. 1975 'Petition of the Limners and Text-Writers of London, 1403', extract published as 'Limners and Text-Writers, 1403' in A.F. Scott (ed.) 'Every One a Witness: The Plantagenet Age'. London: Purnell Book Services Ltd., 108–9.
[trans]
- Salter, M. 1996 *The Castles of Southwest Wales*. Malvern: Folly Publications.
- Schweingruber, 1978 *Microscopic Wood Anatomy*.
F.H.
- Slater, F.M. 1977 'Esgyrn Bottom - the most westerly raised bog in Wales', *Proc. Birmingham Nat. Hist. Soc.* 23, 193–205.
and Seymour, E.J.
- Soulsby, I. 1983 *The Towns of Medieval Wales*. Chichester: Phillimore.
- South Wales 1997 'The Great War 1914–1918 The Brecknockshire Battalion (Territorial Borderers Force)' *South Wales Borderers' Museum Fact Sheet 6*.
- Spurgeon, C.J. 1987 'Mottes and Castle-ringworks in Wales', in J.R. Kenyon and R. Avent (eds) *Castles in Wales and the Marches: essays in honour of D. J. Cathcart King*. Cardiff: UWP, 23–49.
- Stace, C. 1991 *New Flora of the British Isles*. Cambridge, CUP.
- Stickings, T.G. 1972 *The Castles and Strongholds of Pembrokeshire*. Tenby: H. G. Walters.
- Theophilus 1979 *On Divers Arts*. New York: Dover.
[trans: Hawthorne and Stanley-Smith]
- Thomas, K.W. 1965 'The stratigraphy and pollen analysis of a raised peat bog at Llanllwch, near Carmarthen', *New Phytologist* 64, 101–17.
- Thompson, C. 1980 'Dowsing Rods, 21–8', in Clive Thompson, *Site and Survey Dowsing*. Wellingborough: Turnstone Press.
- Thompson, D.V. 1966 *The Materials and Techniques of Medieval Painting*. New York: Dover.
- Veen, M. 1992 *Crop Husbandry Regimes*. Sheffield: J.R. Collis Publications.
van der
- Vince, A.G. 1983 'The Medieval Ceramic Industry of the Severn Valley', unpublished PhD thesis, University of Southampton.
- Wainwright, 1971 'Excavations at Tower Point, St. Brides, Pembrokeshire', *Arch. Camb.* G.J. CXX, 84–90.
- Walker, M.J.C. 1985 'Pollen analysis', in K. Murphy, 'Excavations at Penycoed Llangynog, Dyfed 1983', *Carms. Antiq.* 21, 108–9.

- Walker, R.F. 1950 *Richard Marshal and the Rising of 1233–34*, unpublished MA thesis, University of Wales, Aberystwyth.
- Walker, R.F. 1978 'Tenby', in R. A. Griffiths (ed.), *Boroughs of Medieval Wales*. Cardiff: UWP, 289–320.
- Walker, R.F. 1992 'The Manor of Manorbier, Pembrokeshire, in the Early Seventeenth Century', *NLW J.* 27, 131–74.
- Wallert, Arie 1998 'Orpiment, deterioration of arsenic sulphide pigments,' in L.J. Hartgring and J.J. Boon, *A Multidisciplinary NOW PRIORITEIT Project on Molecular Aspects of Aging in Painted Works of Art: Progress Report 1995–1998*. Amsterdam: MOLART, 78–81.
- Webley, D.P. 1964 'Results of pollen', in D.W. Crossley, 'Excavations at Merryborough Camp, Wiston: a Pembrokeshire protected enclosure, 1963', *BBCS* 21, 108.
- Wright, C.J. 1989 *A guide to the Pembrokeshire coast path*, second edition. London: Constable.

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