

Recent excavations at Parc Bryn Cegin, Llandygai, near Bangor, North Wales

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An excavation in 2005 carried out by Gwynedd Archaeological Trust investigated about 23 hectares of farmland to the south of Bangor, Gwynedd, in advance of development. This revealed features dating from the Early Neolithic to the medieval period overlaid by eighteenth and nineteenth-century field boundaries. The most significant discovery was the remains of an Early Neolithic rectangular timber building. It was well preserved with numerous related features and assemblages of artefacts and charred plant remains. This structure was radiocarbon dated to between 3760–3700 cal. BC and 3670–3620 cal. BC. There were several clusters of Mid to Late Neolithic pits, which contained a large assemblage of pottery and other artefacts. Sixteen burnt mounds were found, some very well preserved, dating from the Neolithic and Bronze Age. The remains of a Mid Iron Age ring-groove roundhouse were found, overlaid by early medieval smithing activity. A Late Iron Age/Romano-British settlement was almost completely excavated and the associated finds included a Roman seal box and evidence for glass bead making. A large cache of glass beads dating to the Roman period was probably related to the settlement despite being found some distance from it. Medieval activity was represented by a corn drier, but the post-medieval field system could be traced in surviving ditches.

INTRODUCTION

Background

This report summarises the excavations carried out in advance of the creation of a business park to be called Parc Bryn Cegin in an area of fields at Llandygai,¹ south of Bangor (Fig. 1) no more than 90m apart at the closest point to the south of the excavations undertaken by Christopher Houlder in 1966 and 1967 and fully described in the report by Frances Lynch and Christopher Musson in *Archaeologia Cambrensis* 150, published in 2001. The more recent excavations, the principal phase of which ran between 21 February 2005 and 9 February 2006, were undertaken by Gwynedd Archaeological Trust. The work was commissioned by JacobsGIBB on behalf of the Welsh Assembly Government (then the Welsh Development Agency), and monitored by Gwynedd Archaeological Planning Service on behalf of the Local Planning Authority.

The two sites together form an area of landscape in which the prehistoric activity is more extensively and intensively recorded than any comparable area in North West Wales. A summary of the results of the excavations in the 1960s is provided here in view of the important bearing these have upon the present excavation. A low level of Mesolithic activity was detected but the earliest significant features dated from the Early Neolithic, in which period a rectangular timber building was constructed. One pit was contemporary with the building, but no other features could be confidently assigned to this phase. A single-entranced henge (Henge A) with a broad ditch and internal bank was constructed around



Fig. 1. Location of Parc Bryn Cegin. Sites excavated in the 1960s are shown in red.

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3200–3100 cal. BC. This had a circle of cremation pits at its entrance and another pit with a cremation and a stone axe polisher close to the axis of the henge. There were also a group of pits near the centre of the henge and other pits, including one containing a mint-condition Langdale (Group VI) stone axe. Probably somewhat later, although its date was not established, another henge was built to the south. This henge (Henge B) had two entrances and presumably an external bank around its ditch. At its entrance this henge had a cremation burial in a timber box, and there were several pits in the interior including one pit with Peterborough Ware and three pits with Beaker pottery. The former also contained an axe polisher. Another pit contained a broken Graig Lwyd (Group VII) stone axe and flakes of the same stone.

A cursus monument was constructed at about the same time as Henge B. This was defined by ditches interrupted by at least four causeways and may have had internal banks. In use at about the same time was a circular ditch about 35m in diameter with an entrance on its eastern side. This may have been another, smaller henge. A much smaller hengiform feature was also found. Activity on the site continued with an Early Bronze Age round barrow containing an un-urned cremation burial and a Food Vessel in a separate pit.

Henge A was reused for a later prehistoric settlement with a central roundhouse, a second house and numerous pits and postholes, some defining four-poster structures. There was no dating material from these features but they were suggested as being possibly Early Iron Age. There was also Romano-British activity in the partially filled henge ditch. This included hearths, furnaces and postholes and seem to result from a short-lived settlement. In the early medieval period, probably about the sixth to eighth centuries AD, an extended inhumation cemetery was created over the cursus. This had at least 62 graves and a small rectangular mortuary enclosure with a central grave. Post-medieval trackways and field boundaries also ran across the site.

Topography of the Parc Bryn Cegin site

The development site covered about 35 hectares of improved pasture to the south of Bangor (Fig. 1, centred on SH 592 705). To the north is the slight basin or plateau, now occupied by the present industrial estate, on which the Late Neolithic henge complex excavated in the 1960s was located. The eastern end of the site covers the crest of a ridge forming the watershed between the Ogwen and Cegin valleys. The ridge reaches *c.* 75m OD within the development area but rises further to the south. The site slopes down to the west from this ridge, with the western boundary on the banks of the Afon Cegin. Most of the site is sloping, some parts more steeply than others, and the slopes generally face north-west.

In broader terms the site is located on the narrow, undulating coastal plain between the mountains of Snowdonia and the Menai Straits. The present coast is about 2 kilometres from the site and various routes crossed the Straits from this area to Anglesey in different periods. To the north-east where the Menai Straits open out there is the large expanse of intertidal sand and mud known as Traeth Lafan. The Afon Ogwen, which empties into Traeth Lafan, is a fast flowing stream running down from Llyn Ogwen in the heart of the mountains. Nant Ffrancon, the steep sided valley down which it flows, provides a routeway through the high mountains that was used by Telford's London to Holyhead road. The Afon Cegin is a smaller stream originating from the foot of the mountains but its mouth provided an important harbour from at least the medieval period (Davidson 2005).

The geological setting. By David Jenkins

The solid geology of the site at Llandygai comprises relatively uniform grey to dark grey, hard, non-calcareous mudstone or siltstone of Ordovician age (British Geological Survey 1985). In addition, the geological map indicates a mafic igneous intrusion, a Palaeozoic dolerite dyke running north to south, probably recorded in the adjacent railway tunnel, and there is also an ironstone bed within the mudstones to the south of the site which was mined in the nineteenth century.

The landform on which the site occurs is part of the Arfon platform fringing Snowdonia at around 80m OD. It has been moulded by successive glaciations with ice from both Snowdonia and also from the Irish Sea, resulting in glacial tills. Associated with these are glacialfluvial deposits linked to the lake impounded on the Arfon platform between the Ogwen and Seiont valleys (Addison *et al.*, 1990), and a buried peat was observed during earlier excavations in the Cegin valley. In the Late Glacial these deposits would have been further modified by periglacial processes which have been recorded elsewhere on the platform, though they were not well expressed on the site. Finally, the site was influenced by temperate post-glacial processes such as colluvation and by agricultural practices through to the present day.

The soils formed on this landscape have been described by Ball (1963). They are mainly developed on glacial deposits of local or Irish Sea origin. On free draining slopes this gives rise to acid 'brown earths' with a clayey silt texture and to 'stagnogley' soils where drainage is poor at depth; on more strongly drained sites 'brown podzolic soils' may develop. In more recent terminology (Avery 1980) these would correspond to 'typical orthic brown soil', 'stagnogleyic orthic brown soil' and 'typical podzolic brown soil' respectively. The brown earths were represented on the upper, sloping parts of the site, while the lower, more level western parts were covered by the stagnogley soils.

Project methodology and presentation of this report

Aerial photographs and a magnetometer survey of the whole site (Stratscan 2005) provided relatively little information to enable targeted evaluation. The latter did identify some features of interest, but the problems of background noise and the difficulty of identifying small features by geophysical survey,



Fig. 2a Aerial view of the site during excavation from the south-west, showing the stripping of the ploughsoil. © Crown copyright: Royal Commission on the Ancient and Historical Monuments of Wales.

meant that many features could have been missed. There was a high risk that the traditional evaluation trenches would miss the small, scattered archaeological features that were anticipated. The technique of 'strip, map and sample' was chosen as the most appropriate means to evaluate the development area. This involves the removal of the ploughsoil under archaeological supervision to expose the natural virgin ground, in which cut features should be recognisable. These can then be identified and evaluated and excavated in detail if required.

The stripping of the ploughsoil was done by mechanical excavators with toothless buckets under the constant supervision of archaeologists (Fig. 2). All potential archaeological features were identified, surveyed and evaluated. The visibility of archaeological features was generally good, but depended on the local nature of the subsoil and the degree of animal burrowing. A total of over 23 hectares was stripped, mapped and sampled in this way and several areas identified for more intensive investigation. The post-medieval linear features, including ditches and drains, were investigated by excavating sections across them, and recording in plan by Total Station Theodolite. Other areas, with a higher archaeological potential, were intensively cleaned and, where relevant, fully excavated.

An extensive environmental sampling strategy was employed across the site. This was concentrated on significant features and, wherever possible, bulk samples of *c.* 20 litres of soil were collected, floated and wet sieved. The main aim of the sampling strategy was to recover carbonised macroscopic plant remains, but the method also enabled the recovery of small artefacts particularly knapping debris and evidence for metalworking. The carbonised plant remains were studied by Palaeoecological Research Services, Co. Durham and the residue was sorted to check for small artefacts and to recover burnt bone. Samples from



Fig. 2b. Aerial view of the site during excavation from the north, showing the stripping of the ploughsoil. © Crown copyright: Royal Commission on the Ancient and Historical Monuments of Wales.

the roundhouse settlement and the burnt mounds were tested for the presence of magnetic metal working debris using a magnet. All samples were visually checked for non-magnetic metal or glass working debris. For details of the study of charred plant remains see Schmidl, Carrott and Jaques 2008.

The present paper is intended as a summary of the results of the excavations and post-excavation analysis. A much more extensive report has been produced with more detailed descriptions and full specialist reports (Kenney 2008). This report is lodged with the Gwynedd Historical Environment Record and is also available in PDF format from the National Monuments Record of Wales' Coflein website (www.coflein.gov.uk). The paper record and a copy of the site database and all other digital material are held by the Royal Commission on the Ancient and Historical Monuments of Wales in Aberystwyth. The artefactual archive is held by Gwynedd Museum and Art Gallery, Bangor.

An extensive programme of radiocarbon dating has formed an important element of the project. The procedures used for choosing samples and analysing the radiocarbon dates are discussed in Appendix I where full details of each date are given, including the date quoted in radiocarbon years BP and the laboratory number. In the main text individual dates will be quoted as calibrated date ranges at 2 standard deviations unless stated otherwise.

MESOLITHIC ACTIVITY

Traces of Mesolithic activity at Parc Bryn Cegin were very slight, but a scatter of finds hints at a low-level presence (Fig. 3). Parts of three Late Mesolithic microliths were present as residual finds in Neolithic pits towards the western end of the site; a complete narrow-blade scalene triangle (SF 979.2) and two fragments of narrow-blade microliths. Another small scalene triangle microlith (SF 1228) was recovered from a posthole in the middle of an Iron Age roundhouse settlement. A serrated blade (SF 712) was found in a disturbed area where a post-medieval ditch cut through the same settlement. Although not particularly diagnostic this could also be Mesolithic. A blade core of Mesolithic type (SF 701) was found just south of an early Iron Age roundhouse, and another Mesolithic-style core (SF 693) was found unstratified at the western end of the site (Fig. 4) (Smith 2008).

These few scattered artefacts, mainly found as residual pieces in later contexts can do no more than suggest a very low-level presence in the area in the Late Mesolithic. Slight features associated with a Mesolithic settlement might have been destroyed by ploughing but any concentration of flints in the ploughsoil would probably have been spotted during the monitoring of the ploughsoil stripping and the wet sieving program would have detected microliths surviving in later features. The scarcity of evidence can therefore be accepted as the result of a genuine scarcity of Mesolithic activity on the site.

Mesolithic evidence was equally sparse on Houlder's site, although one pit outside Henge B had a number of Mesolithic style flints and a microlith (Lynch 2001, 24). Mesolithic groups do seem to have been present in the area but the results of these two large excavations demonstrate that their occupation sites were elsewhere.

THE EARLY NEOLITHIC BUILDING AND SURROUNDING FEATURES

The building structure and associated activity (Figs 5 and 6)

Located on the north-west facing slope in the eastern part of the site (SH 59438 70546), at an altitude of 56m OD, was a group of features that defined the remains of a rectangular timber structure (Fig. 3). As will be discussed below it was considered that the size and plan of the structure was consistent with a



Fig. 3. Plan of the site showing location of all main features.
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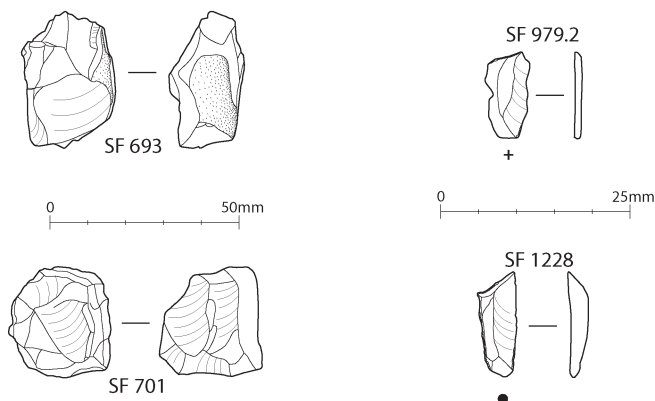


Fig. 4. Mesolithic worked flint: blade cores from near Roundhouse E (SF 701) and trench 8 (SF 693); microliths from pit group VI (SF 979.2) and from a posthole in the roundhouse settlement (SF 1228).

roofed building. The structure was aligned east-north-east to west-south-west, and the artefacts present suggested an Early Neolithic date. There was very little stratigraphy as the soil cover was rarely over 0.2m deep. Ploughing had removed the floor level and any occupation deposits inside the structure, although some survived in hollows nearby. Traces of interior detail, however, had survived, and it is estimated that the original floor level had lain only a few centimetres above the exposed surface. Other pits and postholes surrounded the structure. One pit, part of a group of six near the south-western corner of the structure, contained later Neolithic Grooved Ware pottery. These pits are discussed in a later section as pit group VIII. Intensive cleaning of the area revealed narrow linear features initially thought to be related to the structure. However, closer examination of both the nature of the features and their stratigraphy suggested that these were periglacial features, probably parts of ice polygons. Other periglacial features were noted in the south-eastern corner of the structure.

The Early Neolithic activity in this area can be divided into three phases: *phase I* representing the construction of the rectangular building, *phase II* its use, and *phase III* its abandonment. Some comparisons will be made to other similar structures, particularly the building under Llandygai Henge B. For convenience the Henge B building will subsequently be referred to as Llandygai I, with the current building as Llandygai II (Fig. 7).

The majority of the postholes belonging to *phase I* were restricted to a rectangular area measuring *c.* 12.5m by 8m externally. Two parallel rows of four postholes ran down the centre of this area, its southern side was defined by a parallel line of smaller postholes, while the northern side was less well-preserved. The careful spacing and alignment of the eight large postholes suggests that they were contemporary. It is possible that they contained freestanding posts, but the combined evidence of the features from this and comparable sites (see below) would suggest they are better interpreted as aisle posts supporting the roof of a single rectangular structure. This would leave relatively little weight on the walls, explaining the smaller, shallower postholes defining the northern and southern walls of the structure. The four central postholes (1406, 1519, 1532 and 1539) were between 0.28 and 0.45m in depth. All contained the ghost of the post, which had survived as a 'post-pipe', a soft dark deposit with near vertical boundaries, created where the post had rotted *in situ*. These were of variable clarity but seemed to represent posts of around 0.25m in diameter, packed in place with stones and the subsoil dug from the hole. The postholes that would have supported the gable-ends of the structure (1483 and 1495 at the eastern end and 1689 and

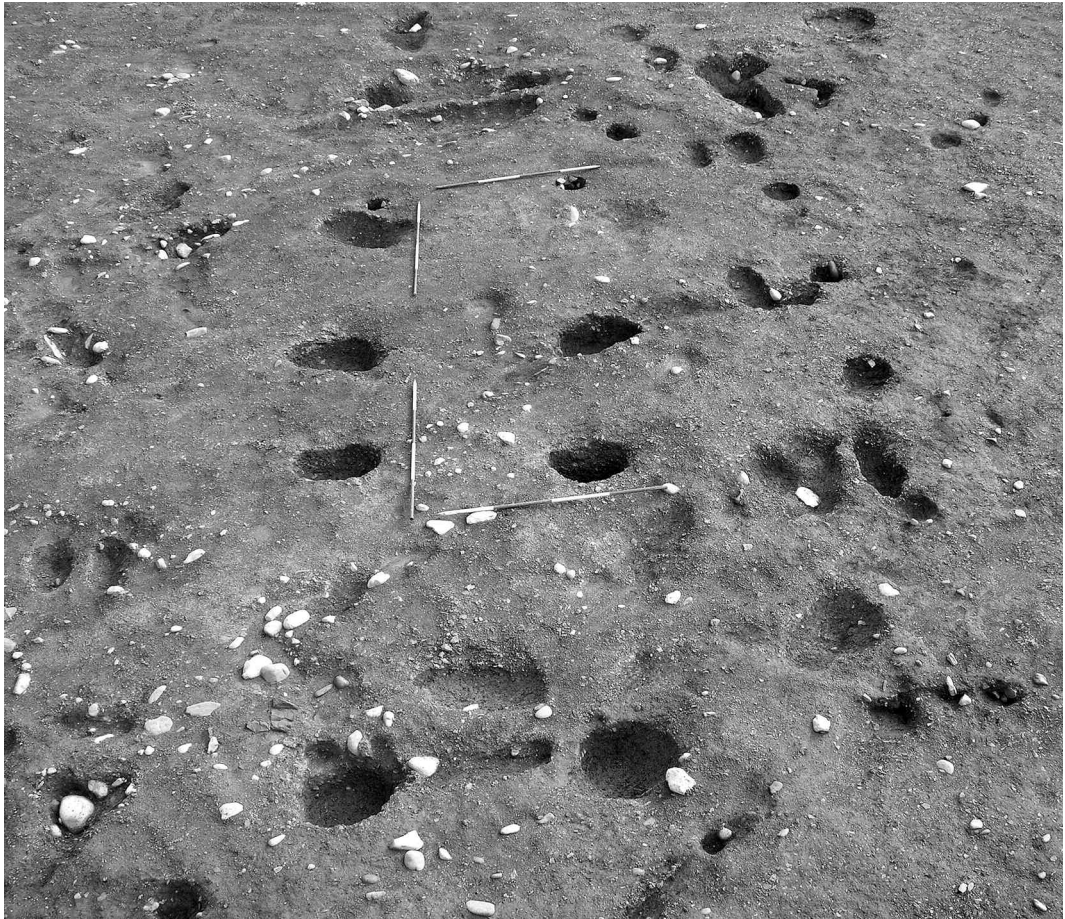


Fig. 5. Photograph of Early Neolithic building from the west. Scales 2m.

1691 at the western end) were of a similar depth. Neatly placed packing-stones in posthole 1691 indicated a post about 0.3m in diameter.

Both pairs of gable-end posts had slots joining them. Slot 1690 at the western end was only 0.1m deep, but well-defined, with faint lines of organic staining in the fill, possibly traces of planks. The slot between the posts at the eastern end (1505) was more amorphous in shape, and also only *c.* 0.1m deep, with a posthole in each end. These slots probably indicate that the gaps between the gable-end posts were blocked with planking and posts, making it unlikely that there was a doorway in either end. Inside and parallel to the eastern gable-end was a broad slot (1404), packed with medium sized stones. These had been disturbed by ploughing, but represented packing stones for three posts. These posts seem to be too close to the gable-end to be structural, but they might have been freestanding, with a symbolic function, or they may have supported some type of fixed furniture, possibly even a 'dresser' similar to the stone ones at Skara Brae (Clarke 1976). At the western end of the building there was a shallow cut (1548) in approximately the same relative position, but there was no evidence that this had held posts. Although not exactly comparable it is worth noting the slots and postholes in the Neolithic building at Balbridie, Aberdeenshire (Ralston 1982). These were immediately inside both gable-ends and impeded access

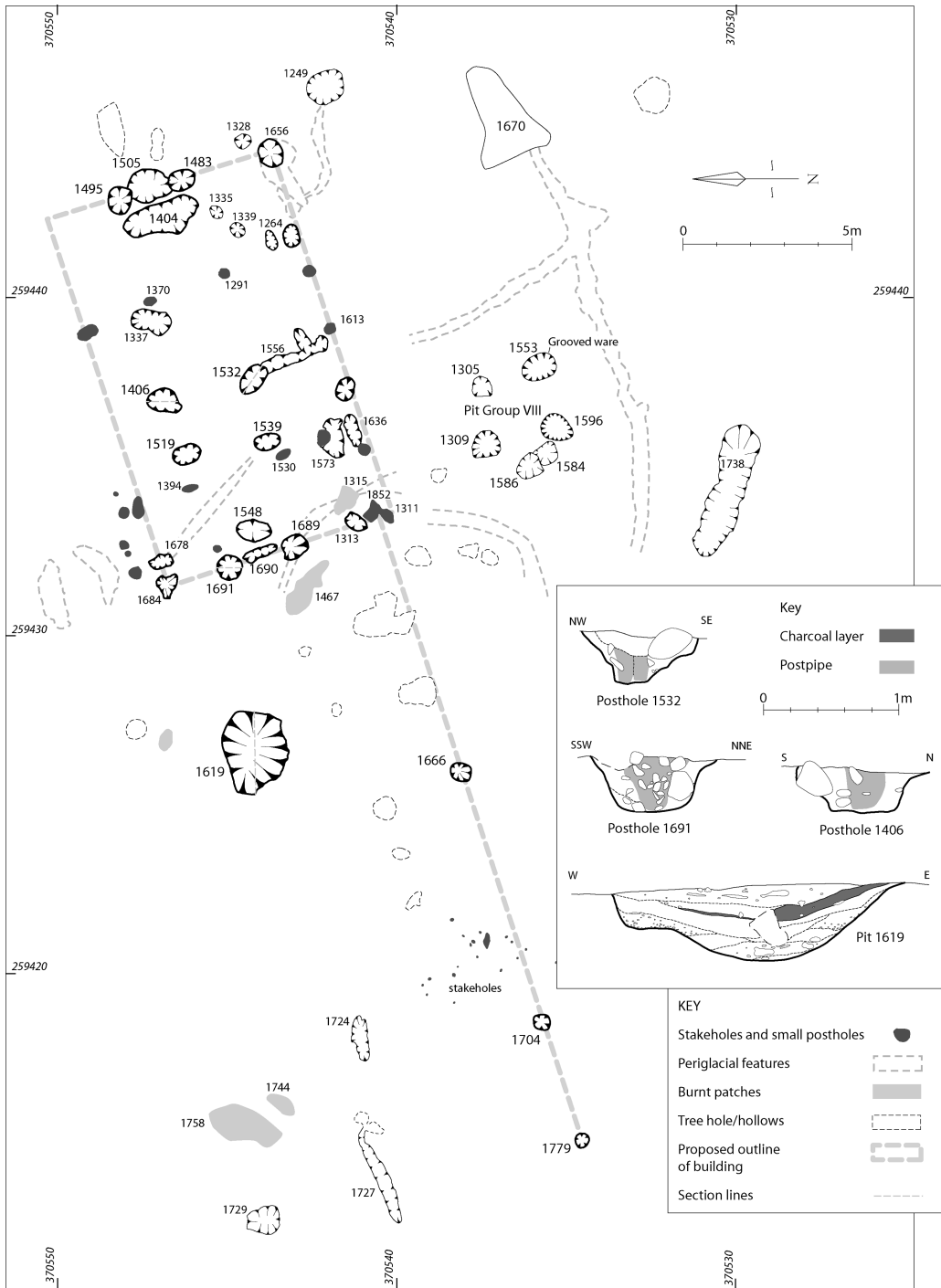


Fig. 6. Plan of Early Neolithic building and surrounding features, with sections of the large pit and major postholes.

through a proposed doorway. The Neolithic building at Claish, Stirlingshire had similar features, though not as close to the gable-ends (Barclay 2003, 78).

The southern wall of the structure was clearly defined by a line of postholes, starting at the eastern end from posthole 1656, and varying between 0.35m and 0.15m in depth. Some had packing stones and some had post-pipes, indicating posts about 0.15m in diameter. A group of three rather irregular features (1311, 1313 and 1852) formed the south-western corner. There was a gap of *c.* 1.8m between these and two parallel slots (1573 and 1636) to the east. The two slots were quite different to the other features forming the south wall, and 1636 had substantial stone packing, with some evidence that a post had been removed. The presence of these slots may suggest a specific feature in this corner, possibly an entrance; the gap of 1.8m would be an appropriate width for a door, but the exact form of the proposed entrance is unclear. In contrast the northern wall was severely truncated and disturbed. The north-western corner was represented by two fairly well-preserved features (1678 and 1682), up to 0.18m deep, with other very shallow features, lying on or just north of the line.

Inside the structure was evidence for internal partitions. The clearest was defined by a shallow slot (1556) between the postholes 1532 and 1613. Evidence for a comparable slot on the northern side of the building may have been lost to erosion. Two deep but narrow postholes (1291 and 1370), 0.4m and 0.27m deep respectively, on the line of the aisle posts could have supported a partition or other internal feature. They may have been matched at the western end by features 1394 and 1530, but these were hollows no more than 0.05m deep.

Some details of the contemporary activity in and around the building in *phase II* were identified. The potential partitions could have been added at any point in the life of the building, but were likely to have been integral to the building's design. A few internal features might represent the use of the building. Three features (1264, 1335 and 1339) could have held posts dividing off the south-east corner, but these had bowl-like profiles and no packing stones, and were more likely to have been small pits. There was a larger sub-rectangular pit (1337), 0.23m deep, on the line of the aisle posts. This was not another posthole as it was too shallow and lacked packing stone. No convincing hearth had survived in the building. Within and just beyond the western end were irregular orange-brown patches of burnt subsoil (1314 and 1468). These seemed to be too close to the walls to be hearths contemporary with the building. The whole site was scattered with similar burnt patches, presumably resulting from gorse burning and other clearance of probably post-medieval date. It is likely that any contemporary hearth had been eroded away, although the presence of probable fuel-wood charcoal and burnt stones in various features does suggest that the building did originally have a hearth.

Other features surrounded the building, but there was no proof that they were all contemporary. However, their spatial relationship to the building, the extensive scatter of Early Neolithic pottery and the absence of activity in other periods, except for the group of later Neolithic pits, suggests that most belonged to the lifetime of the building.

There was a small amount of activity close to the eastern end of the building, but most of the Early Neolithic activity extended to the west. The function of the large pit (1619) close to the western end of the building is unclear, although the water-borne silts in the lower fills might indicate water catchment and storage. As will be discussed below one radiocarbon date and the presence of Early Neolithic pottery do suggest that this pit was in use at the same time as the building. The pit was filled initially by waterlogged silts, then a layer of charcoal and burnt stones was deposited, and the remainder of the pit filled by colluvial deposits. The absence of heat-alteration to the silts in the pit showed that the burning had not taken place *in situ* and the charcoal layer could be interpreted as rubbish or cooking debris dumped into a convenient, abandoned pit. The presence of a broken axe and a quartz crystal may indicate a more symbolic aspect to the activity. The use of crystal quartz and Graig Lwyd stone on the site are

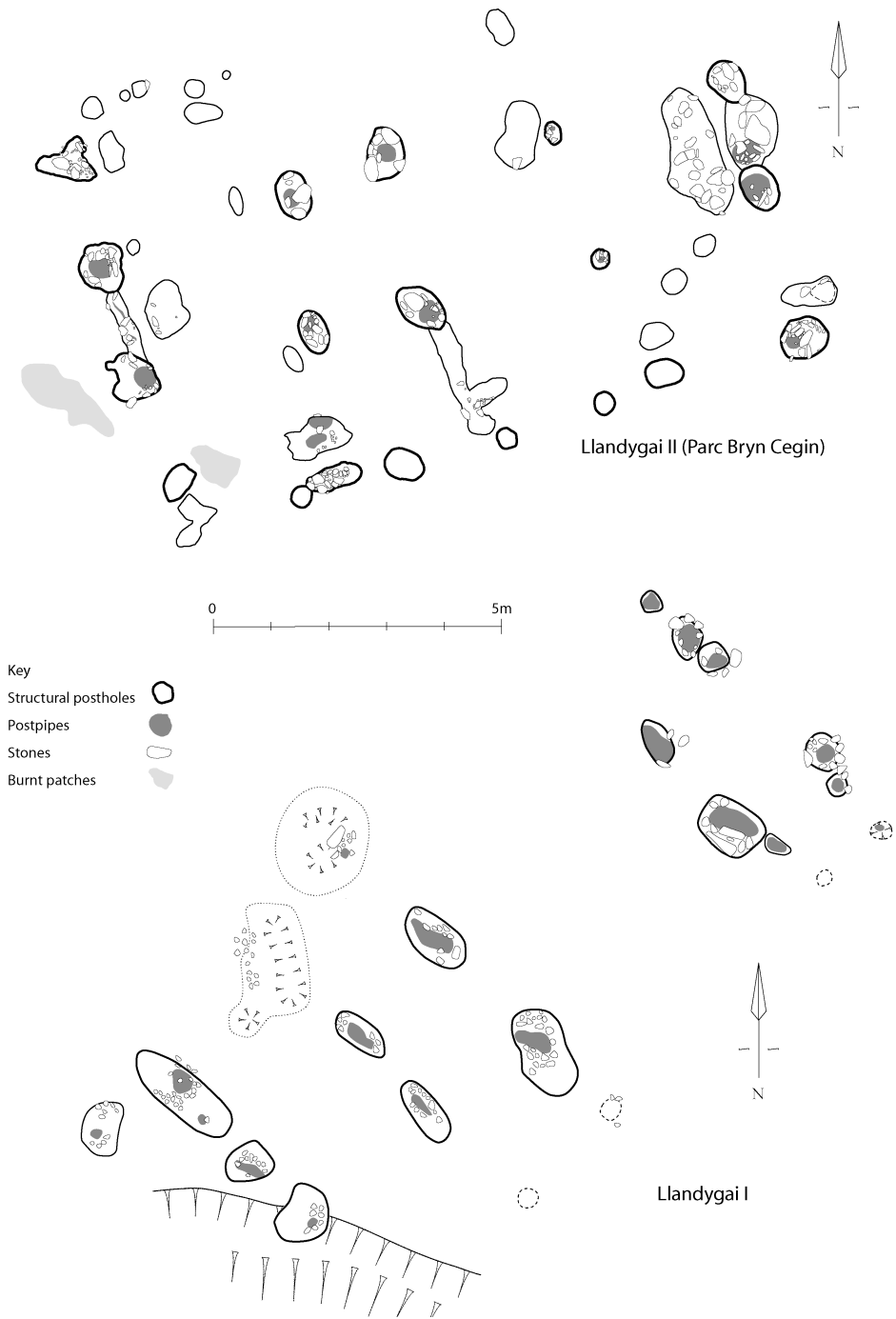


Fig. 7. Comparative plans of the Llandygai I and Llandygai II Early Neolithic buildings.

discussed below and the Neolithic tradition of burying material in pits is discussed in relation to the later pit groups. The large pit itself was presumably dug during the life of or before the building, but the colluvial upper fills and a second, later date on charred material suggest that the pit was left open to fill gradually.

Three postholes (1666, 1704 and 1779) lay to the west of the building on the same alignment as its southern wall. All had packing stones and were originally probably over 0.4m in depth, but had been truncated to varying degrees. Posthole 1779 had traces of a post-pipe in the base suggesting that the posts had been left to rot *in situ*. These postholes were too far apart to represent a continuation of the main building, and there was no other evidence to support such an extension. They must, therefore, be seen as a separate, though related structure. If the postholes represented a fence-line intermediate posts or stakes might be expected bridging the gaps. The posts may, therefore, have been freestanding. The Early Neolithic building at Yarnton, Oxfordshire had four posts continuing the line of the north wall (Hey forthcoming). At Lismore Fields, Derbyshire, there were two lines of large postholes, which Garton (1991, 13) considers to have held freestanding timbers for visual effect.

Nearly parallel to postholes 1704 and 1779 ran a slot (1727), 0.16m deep and fairly straight, although disturbed by burrowing at one end. To the east was another shorter, less regular slot or hollow (1724). It may be possible that, in combination with the postholes, these slots formed the remains of a slight, lean-to shelter. However, despite their straightness, these slots are more likely to have been animal burrows. A group of possible stakeholes in this area are also more likely to have been burrows or root-holes, but Early Neolithic potsherds from two of them suggest that this area represents disturbed remains of an occupation deposit. To the north of the slots were two irregular patches of burnt soil (1744 and 1758) composed of orange burnt clayey silt.

There were fewer features beyond the eastern end of the rectangular structure and most of these seemed to be of minimal importance, with the exception of a circular pit (1249) and a small pit (1327). The fill of the latter contained a high proportion of burnt non-human animal bone fragments. About 9m south of the rectangular structure was an elongated, stone-filled hollow (1738). Within its stony fill was a lens of charcoal (1726), which contained a single large rim-sherd of an Early Neolithic pot. Also in this southern area was an irregular shallow hollow in which had survived a remnant of an old ground surface or occupation layer (1670). This produced seven sherds of pottery as well as other small fragments.

Also to the south of the building was a group of six pits laid out in a roughly oval pattern. One of these produced Grooved Ware pottery indicating that this group belongs to a later period than other activity in this area and these features will be described in the next section as pit group VIII. Some of the other features could have belonged to this phase of activity, particularly a shallow pit (1729) with *in situ* burning on its sides to the west of the Early Neolithic building. This contained a fragment of a Graig Lwyd axe, similar to one in pit group VIII.

Beyond the activity immediately surrounding the building there was no significant prehistoric activity for a radius of over 80m and no other major Early Neolithic features on the rest of the site. However, slighter evidence in the form of occasional sherds of pottery and widely scattered pits indicate wider occupation of the landscape, and this is discussed further below.

Evidence survived in several postholes to indicate how the building's life ended in the *phase III* abandonment or demolition. The four central postholes all had well-defined, undisturbed post-pipes indicating that the posts were left to rot *in situ*. In contrast there was evidence that all the gable-end posts had been removed. Postholes 1483 and 1495 exhibited considerable disturbance of their fills, most probably due to the removal of the posts.

Postholes 1689 and 1691 were also disturbed but the evidence was much better preserved in these cases and indicated a complex sequence of events. The evidence suggests that the posts were carefully

levered out of their postholes and the resulting hollows carefully filled with material including fire-cracked stones and artefacts. This material could have originated from occupation deposits within the building.

Many of the postholes on the south wall had clear post-pipes, and had therefore been left to decay *in situ*. The substantial and carefully placed stone-packing for slot 1636, however, only survived at the western end of the cut, and the disturbance at the eastern end would be consistent with the post being levered out. The resulting hollow was deliberately infilled with material containing quantities of fire-cracked stones, in a sequence reminiscent of the western gable-end postholes. The features on the northern wall were generally too truncated to be sure whether or not the posts had been left in.

It seems, therefore, that while many of the posts were left to rot undisturbed the largest and most prominent posts at the gable-ends were removed along with one post from the proposed entranceway. These could have been removed for reuse, but a more symbolic demolition might have been intended.

A large proportion of Early Neolithic rectangular buildings in Ireland ended in conflagration (Moore 2004, 147), as did most of the large Scottish structures (Ralston 1982, 239; Murray 2005b; Barclay *et al.* 2002a and b; Barclay and Maxwell 1998). House 2 at Clegyr Boia, Pembrokeshire, was probably destroyed by fire (Williams 1952), but few other buildings in England and Wales are discussed in these terms. However, the Llandygai I building also seems to have burnt down; large chunks of charred oak from the posts were recovered and the charcoal was intensely incinerated (Lynch 2001, 31).

The evidence for burning elsewhere means that this is a factor that should be considered at Parc Bryn Cegin. Direct evidence of burning on the ground beneath the building is limited, although there were the two burnt patches at the western end of the building (1314 and 1468), and a lump of burnt clayey soil in the base of a posthole. Some slivers of charred oak typical of structural timbers were recovered from features within the building, but not enough was found to argue for general incineration. Where oak charcoal was found in the base of postholes it can be explained as originating from the charring of post-bases to prevent decay. If the building had burnt down oak charcoal would be expected in quantity in all the internal features in the form of large, easily identifiable chunks, as it was in Llandygai I. It is also probable that the walls were made of wattle and daub, which would have survived well as fired material if the building had been burnt, yet was not found on the site. In conclusion, it appears that while Llandygai II was partially demolished it does not seem to have been burnt.

Finds associated with the Early Neolithic building

A low level of finds was recovered from across this area but the majority was concentrated within the rectangular building. The postholes 1406 and 1532 were particularly rich in finds, and the material came from both the post-packing and from the post-pipes. The eastern end postholes contained relatively little but post-trench 1404 was quite productive of finds. At the western end the material in postholes 1689 and 1691 came mainly from the spaces left by the removal of the posts. Only a few finds were recovered from the smaller postholes.

A slight scatter of Early Neolithic pottery and lithics as recovered from features to the west of the building. Of particular interest was the large pit 1619, which contained the butt end of a polished stone axe within a single charcoal-rich layer associated with fragments of Early Neolithic pottery, a burnt flint flake, and a clear quartz crystal.

There were few finds to the east of the rectangular structure but pit 1249 was quite rich in finds, including a burnt flint scraper, and pit 1327 contained the largest deposit of burnt animal bone fragments. Finds to the south were mainly preserved in the old ground surface (1670). These were mainly small, eroded sherds of pottery, but hollow 1738 produced the largest Early Neolithic pot sherd on the site.

Pottery. By Frances Lynch²

All the pottery contained within contexts associated with the rectangular building structure was exclusively Early Neolithic, mostly normal 'Irish Sea Ware' shouldered bowls but with very little of any one vessel surviving (Fig. 8). There was one large segment of rim and body of an unshouldered bowl (SF167) from the elongated pit 1738, but its fabric is much the same as the other vessels, as is the surface treatment and the shape of the rim. Most sherds are small and abraded, suggesting that they are essentially domestic rubbish. A very few joins can be made between ancient breaks but they remain small pieces, except the large sherd of the unshouldered bowl (SF 167). This sherd broke along old breaks as it was lifted but was found in the ground as a single piece laid flat with its exterior facing upwards. It might be considered a deliberate 'deposit' but the rest of the smaller sherds seem to be accidental inclusions. The nature of the finds is closely comparable to those from the Early Neolithic building found under Llandygai Henge B in 1967.

The remnant of old ground surface (1670) also included predominately Early Neolithic material, again small quantities of several different vessels. One sherd might not be Early Neolithic but it is not far from the norm. Two sherds (SF 131 and 143) were chosen for residue analysis (Stern 2008). Both came from the old ground surface deposit and were chosen because they had possible sooting. SF 143 failed to produce traces of lipids but SF 131 produced traces of a triacylglycerol oil or fat probably indicative of a plant oil. The fragmentary and eroded nature of most of the sherds makes the survival of residues on other sherds unlikely but this analysis has demonstrated that it is possible. Whether further analysis would produce sufficiently enlightening results to justify the damage to this small but important pottery assemblage is a matter for debate.

Petrological analysis of the fabric of selected sherds indicated their local origin but highlighted SF 167 as unusual, because of the absence of lithic clasts and the sophistication of its fabric, which might indicate a more distant origin (Williams and Jenkins 2008).

Lithics. By George Smith³

The flint assemblage associated with the rectangular building structure contained an unusually high ratio of retouched and utilised pieces to waste pieces, despite extensive sieving of deposits to recover knapping debris (Fig. 8). Only a single flint core was found. The flint tools consisted of a broken arrowhead (SF 88), two scrapers (SF 61 and 173), two spurred pieces or concave scrapers (SF 156 and 1238), one piercer, two casually retouched pieces and three other utilised flakes. This varied tool assemblage suggests domestic use, not the inclusion of newly manufactured or carefully selected objects. The scarcity of debitage suggests that most knapping took place away from the rectangular structure. Microwear analysis showed that several of the tools had been used and identified a small flake as a component of a hafted composite sickle (Debert 2008).

All the flint pieces were from pebble flint and therefore small, with the exception of the arrowhead. The pebble-backed scrapers are comparable with examples from beneath the Trefignath chambered tomb, Holyhead, Anglesey (Healey 1987, 50–9) and in the tomb at Din Dryfol, south-west Anglesey (Lynch 1987), where pebble flint was also the main raw material used.

The arrowhead (Fig. 8, SF 88) is the only non-domestic object. It is a large example, particularly for Western Britain, and may have kite-shaped. Kite-shaped arrowheads are recorded as most common in Ireland and Scotland with a few recorded from Northern England from special burial deposits (Green 1984, 32). In north Wales one was found at the chambered tomb of Dyffryn Ardudwy, Meirionnydd and two at the chambered tomb of Pant y Saer, Anglesey (Lynch 1969, 156). One of the latter was a large example, 60mm long, comparable to that from Parc Bryn Cegin.

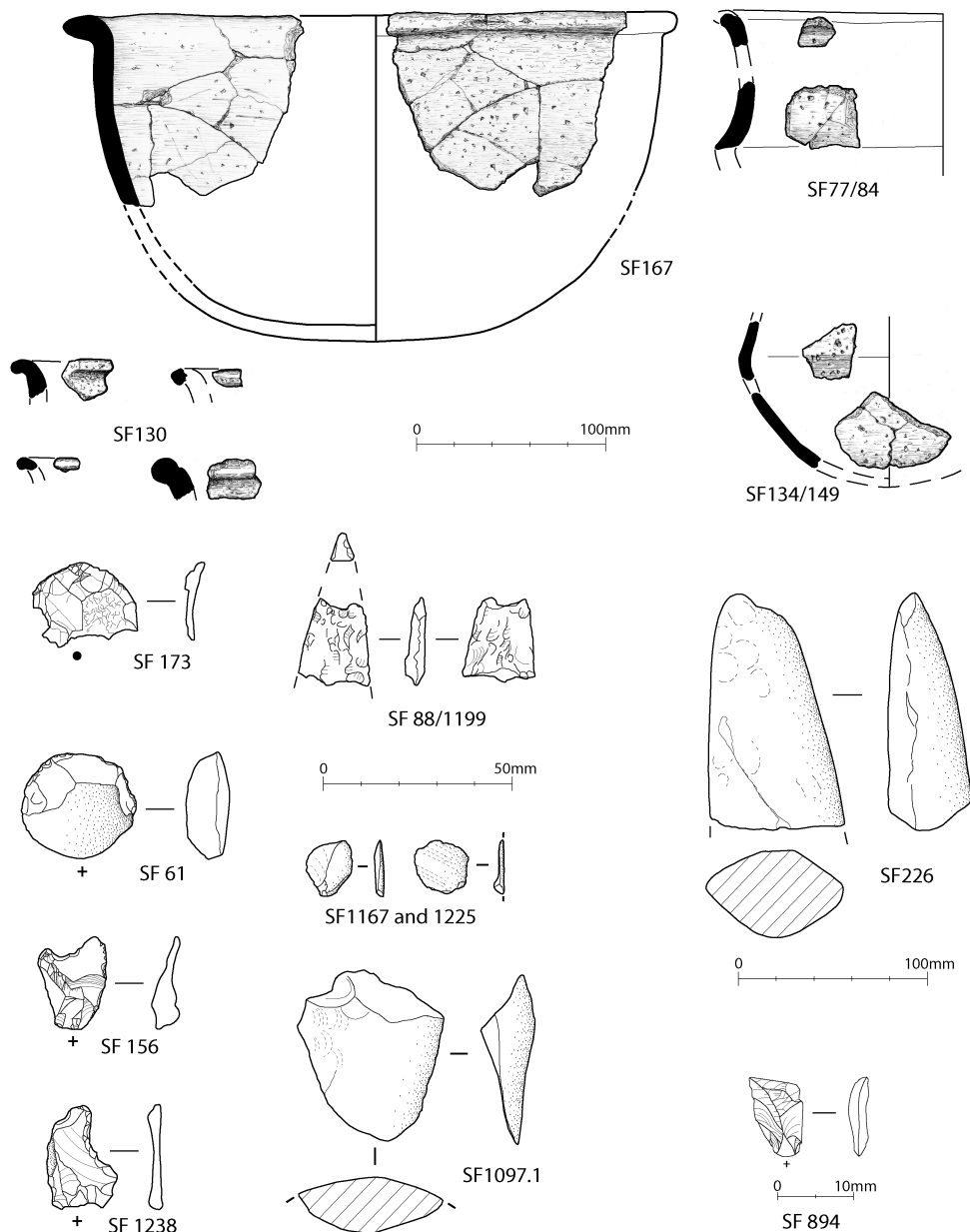


Fig. 8. Finds from the Early Neolithic building and surrounding area. Irish Sea Ware pottery: large rimsherd from hollow 1738 (SF167); sherds from aisle posthole 1406 (SF77/84); sherds from the patch of old ground surface 1670 (SF130, 134/149). Flint: burnt and broken arrowhead from aisle posthole 1406 (SF88/1199); burnt scraper from pit 1249 (SF61); burnt scraper from gable end posthole 1691 (SF173); spokeshave (SF1238) from slot 1724; concave scraper (SF156) from aisle posthole 1406. Crystal quartz: retouched piece from internal pit 1339 (SF894). Graig Lwyd waste material: reduction flakes with polish (SF1037, SF1167, SF1225), polished axe fragment (SF1097.1). Broken and burnt polished stone axe (SF226).

The arrowhead, larger in size and better in quality of raw material than the rest of the assemblage, could have been imported. It was certainly a delicate and probably special object. Its position, in a primary context amongst the packing of one of the main posts of the building may indicate a deliberate and meaningful deposit.

The crystal quartz assemblage, although much smaller, matched the flint assemblage. There was a wide scatter of debitage and two fragmentary cores were recovered. Two pieces appeared to be tools, a truncated piece (Fig. 8, SF 894) and a piercer, although the transparency of the material made retouch difficult to detect. The debitage was almost impossible to see on site and was only recovered by wet sieving. Most of the assemblage came from the area of the rectangular structure but a crystal fragment weighing 3g came from the charcoal-rich deposit in pit 1619. This was in association with a broken stone axe, crystal debitage and one of the possibly retouched crystal pieces. The quantity of debitage demonstrates that this was not an isolated experiment but that items were regularly being made of rock crystal on the site.

Seventeen flakes and twenty-three chips of stone were identified by John Llywelyn Williams as originating from the stone source at Graig Lwyd, near Penmaenmawr, quarried for stone axes (Williams 2008). These pieces were recovered from the area of the building and surrounding pits, with distribution concentrated on the central postholes. Pieces were recovered from both packing and post-pipe deposits in the postholes. Not all the flakes found may be related to the Early Neolithic activity as four pieces were found in pit group VIII with Grooved Ware pottery (this pit group and its finds will be discussed below). However, the location of flakes within the main postholes of the structure, especially in the lower parts of the post-pipes, shows that these were genuinely related to its use. Some of the flakes from the building had remnants of polish (Fig. 8, SF 1167 and 1225), demonstrating that they were from polished stone tools, most likely axes.

A broken stone axe (Fig. 8, SF 226) from the large pit 1619 west of the building was found in association with fragments of Early Neolithic pottery. Petrological analysis (Jackson 2008) proved that the axe was made of an Ordovician volcanic tuff, not from stone from the Graig Lwyd axe factory site. This appeared to have been intensely burnt after being broken.

Plant and animal remains associated with the Early Neolithic building⁴

A total of 103 samples from features associated with the Early Neolithic building were studied. Most contained modern intrusive or contaminant remains and the ancient remains were largely restricted to charred plant material. Most of the charcoal was represented as small fragments of a single wood type. Some of the larger charcoal fragments were identified as oak, hazel and, in small quantities, pine. Most of the features forming the building had a low level of charcoal. The largest quantities were concentrated in posthole 1406, post-trench 1404 and in several postholes on the south wall. In most of these larger deposits oak was dominant with some hazel, although no oak was identified from 1406. In several of these features the oak charcoal was in the form of 'slivers', probably derived from structural timbers, possibly from charring the base of timbers to aid preservation as discussed above. Fairly large quantities of oak charcoal were found in pit 1249, at the south-eastern corner of the rectangular structure, and in the old land surface to the south, but this material was not characteristic of charred timbers. The charcoal around the large rim-sherd in feature 1738 was also mainly oak, but the charcoal-rich layer in pit 1619 failed to produce identifiable material. Pine charcoal was recovered from a shallow posthole on the north wall and a possible stakehole nearby.

Postholes 1406 and 1532 contained the largest amount of charred hazelnut shells and a few poorly preserved cereal grains. Small quantities of charred hazelnut fragments and identifiable cereal grains were also recorded from most of the features at the eastern end of the building. Pit 1249 produced an

assemblage dominated by hazelnut shell and five cereal grains. Some features at the western end of the structure contained small amounts of hazelnut shell. There were also a few cereal grains but most were unidentifiable. Only postholes 1666 and 1691 at this end produced identifiable grains, including barley, emmer wheat and naked wheat. There is, therefore, a suggestion of food processing being concentrated at the eastern end of the structure.

Other foods were represented by one charred fruit stone of blackberry and evidence of weeds associated with crop fields were restricted to finds of (*Galium aparine* L.), and sun spurge (*Euphorbia helioscopia* L.) and knotweed (*Persicaria*).

Soil conditions were unfavourable to the preservation of unburnt bone, so animal bone was represented only by tiny fragments of burnt bone, which was largely unidentifiable. Postholes 1406 and 1532 contained small amounts, as did pit 1339, but the small pit 1328 close to the line of the eastern gable-end contained most with 56g. This was the only collection with larger fragments (to 32mm), some of which resembled pieces of horn-core but this could be sheep/goat or cattle.

Dating of the Early Neolithic building

With the exception of the pit group VIII all pottery found in this area dated to the Early Neolithic. Early Neolithic pottery and flints were recovered from both the post-packing material and post-pipe fills in the structural postholes. It is difficult to separate artefacts deposited during construction from those dropped during use, as finds might be worked into post-packing material by trampling or other processes. The burnt arrowhead (SF 88) from aisle posthole 1406 was situated against the edge of the cut and may have been deliberately placed during construction. The artefacts in the post-pipes, typical of occupation debris, could have been introduced as the building decayed. Similarly the material placed in the top of posthole 1691 after its post had been removed might also have been derived from occupation debris, accumulated during the use of the building, but their careful deposition seems to have been significant.

Many of the other features around the rectangular structure also contained Early Neolithic pottery and other artefacts consistent with an Early Neolithic date. The only exception was considerable quantities of Grooved Ware in pit 1553. The wide distribution of Early Neolithic finds and very limited distribution of later material does indicate that most of the activity in this area was Early Neolithic.

The aim of the radiocarbon dating programme (see Appendix I) was to obtain a range of dates covering the full period of use of the building and to ensure the activity itself was dated by selecting short-lived samples from secure contexts related directly to its use. Hearth deposits are ideal for this purpose, but in their absence material from the postholes was used, with some material from other internal features. In order to ensure both early and late material was dated samples were taken from post-packing deposits and from the fill of the post-removal event in posthole 1691. To avoid accidentally restricting the dating to specific events samples were taken from all parts of the structure with an emphasis on the deeper features, where contamination was less likely. Both hazelnut shells and cereal grains were dated to increase the range of activities dated. Two samples were dated from each of four features, three postholes and one pit, to test the assumption that the material in the features was of the same actual age. These duplicate measurements all proved to be statistically consistent. Fourteen samples were submitted from features interpreted as structural elements and from one internal pit. One date was on oak charcoal of indeterminate age and has been excluded from the following calculations.

The thirteen measurements from the structure are statistically consistent and could have been all exactly the same age. Using the assumption that the structure was in continuous use for a period of time a Bayesian model was produced from the dates (Marshall 2008; Bayliss *et al.* 2007). The model provides estimates for the start of the use of the building of 3760–3700 cal. BC at 68% probability (3800–3670 cal. BC at 95% probability) and the end of use of 3670–3620 cal. BC at 68% probability (3690–3610 cal.

BC at 95% probability). The span of use of the structure is estimated at 10–140 years at 95% probability and 40–110 years at 68% probability. Due to the number of samples dated and the consistency of the results the 68% probability results can be accepted as the most probable dates (Marshall 2008).

No attempt was made to date all the numerous features around the building but two samples from the charcoal-rich layer in pit 1619 were submitted for dating. The aim was not only to date the activity in this large pit but also to provide a date for the deposition of the polished stone axe found within the same layer.

The two dates from pit 1619 proved to be very different. One date (KIA31089, 3800–3640 cal. BC) is consistent with the dates from the rectangular building, while the other (KIA31088, 3520–3350 cal. BC) is later, and suggests contamination of the deposit. The presence of Early Neolithic pottery and lack of any later finds does support the earlier date and suggests that most of the material was related to the use of the structure. However, the uncertainty means that KIA31089 cannot be used as a date for the stone axe.

Other Early Neolithic activity identified at the site

Two pits lay halfway across the site on the hillslope (SH 59191 70399, 51–2m OD). These were about 4.5m apart and the closest was *c.* 4m from pit group VII (Fig. 14). Pit 3121 was 0.21m deep, with a bowl-shaped profile. It produced no finds. Pit 3146 was 0.26m deep and had steep sides, which, although dug into soft subsoil showed no erosion. The fill contained charcoal and heat-cracked stone and some large stones in the base. It also contained several fragments and one larger featureless sherd of pottery in a vesicular fabric, and a small, rod-shaped fragment of crystal quartz.

Pit 3146 produced two consistent Early Neolithic dates (3650–3520 cal. BC and 3640–3370 cal. BC). The pottery, although not typical, was not inconsistent with Early Neolithic wares. The quartz piece was certainly manufactured, and supports the use of crystal quartz in the earlier Neolithic but not in the mid or later Neolithic. The similarity of the dates suggests that there was no mixing or contamination and that this was a purely Early Neolithic deposit, perhaps dating from just after the Early Neolithic building was abandoned, and representing small-scale, isolated Neolithic activity between the use of the building and the digging of the first pit groups. Pit 3121, lying close by, may have been of a similar date, but the contents were not dated and the pit produced no finds.

Two sherds of Early Neolithic pottery were recovered from pit group I on the eastern edge of the site. These were residual in the contexts in which they were found, but presumably originated from activity in the area. All other evidence of this activity may have been destroyed by the modern road and its predecessors, but this is a hint that there was Early Neolithic activity on the top of the ridge.

Elsewhere on the site two earth ovens (3133 and 6033) were dated to the Early Neolithic, as discussed in the section on earth ovens below. A comparable single date from a similar feature in trench 1 (1259) was also obtained, and two stray Early Neolithic sherds came from the Mid Neolithic pit group I. These isolated features with no associated structural evidence offer a marked contrast to the large timber building. It is argued that these features are traces of slight, temporary occupation, though it is possible that they were associated with structures that have left no archaeological record.

Discussion of the Early Neolithic evidence

The aisled timber building as proposed above would fit well into Darvill's type A of Neolithic buildings (Darvill 1996). The Llandygai I building (Lynch 2001) can be seen to be of very similar design, even though the wall-lines were less well preserved (Fig. 7). The Llandygai II building had a possible internal area of 10.5m by 6.5m, i.e. 68.25m², and a total area of about 100m². In general terms structures of a similar form and date throughout Britain and Ireland vary in size between Balbridie, Aberdeenshire

(Fairweather and Ralston 1993) with an area of 288m² and small structures such as Gwernvale, Powys (Britnell and Savory 1984) and the Clegyr Boia, Pembrokeshire (Williams 1952) houses at 13.3 and 13.8m². Llandygai II falls within the range of the second rank buildings, and is one of the largest of these buildings in Wales.

Many Early Neolithic buildings in Ireland, and to a lesser extent in England, Scotland and Wales, have foundation trenches. The survival of charred timbers on several sites demonstrates that these supported walls constructed of planks set vertically in the ground. Such trenches are often deep, those at Corbally, Co. Kildare were over 1m deep (Purcell 1999, 2002), and the existence of many well-preserved post-built structures without trenches shows that their lack is not just an artefact of differential preservation. The absence of foundation trenches in the current building shows that it did not have the plank walls. It is assumed that the walls were of wattle and daub, although there was no firm evidence for this. Stakes would have been necessary to support the wattles but these may not have penetrated the ground deeply and so no traces survived. Other types of walling are possible, for example turf or cob, but perhaps less likely. Ó Riordáin (1954) suggested brushwood or turves for the walls of Lough Gur A, Co. Limerick, but the walls there had a double line of posts, presumably to restrain material between them.

Internal partitions are also typical of this building type, with a tripartite design often suggested. Llandygai II only has one definite partition, dividing it in half, the west half containing most of the postholes and the east half being relatively unobstructed. It is possible that there were up to four compartments divided by partitions supported on posts or stakes, but the division into halves, with one clear end has been noticed at Claish, Stirlingshire (Barclay *et al.* 2002a), and can also be seen in Llandygai I. Barclay *et al.* (2002a) suggest that the concentration of posts may be to support an upper story at one end of these buildings. Alternatively the design may be related to the use of space within the building. It is notable at Llandygai II that finds and charred plant remains are generally concentrated around the eastern end of the building, suggesting more activity at this end. This could be interpreted as a simple domestic dichotomy with a cooking/activity area compared to a sleeping area, but I would argue that more detailed comparisons between sites are necessary before this interpretation can be accepted.

It is tentatively proposed that there was an entrance in the south-western corner of the Llandygai II building. In other comparable buildings doorways are often difficult to define, though entrances have been proposed facing all aspects. However, slightly more are recorded as facing north or west as opposed to east or south, contrary to the conclusions of Topping (1996).

The building was aligned east-north-east to west-south-west, almost along the contour of the hill. Llandygai I was orientated more towards the north and a survey of similar structures throughout the British Isles reveals alignments to all points of the compass. This may indicate that the orientation of these structures was due to local topography rather than tradition or ritual. The orientation of the building and the position of the door therefore may have less to do with maximising light into the building than has been supposed. There is, however, some preference for doorways in the corner of walls, often in the corner of an end wall. Cooney (2000, 62) notes that there are screened areas sometimes just inside the doorway and a possible emphasis on the right-hand side of the building. If the entrance to the present building was in the south-west corner it would have led into an apparent partitioned area at the west end of the structure, and on entering one would be forced to turn right into the building.

The alignment along the contours at Llandygai II meant that there was a gentle but noticeable slope of *c.* 1 in 17 south-north across the building. The slope as excavated, however, may not accurately reflect that on which the structure was built. The loss of most of the north wall suggests that the building had been constructed on a level terrace and that ploughing subsequently smoothed out the slope, differentially eroding the outer edge of the terrace. However, this erosion is unlikely to have removed all trace of a terrace of the size necessary to level the slope for a building platform. Sloping floors are noted elsewhere

in Early Neolithic buildings at Drummenny, Co. Donegal (Dunne 2003, 170), Ballyglass (Ó Nualláin 1972) and Lough Gur A (Ó Riordáin 1954). At the last site the southern end was 0.6m lower than the northern end. It should be noted that all the later roundhouses at Parc Bryn Cegin also had sloping floors.

Armit *et al.* (2003b, 148) state that Irish rectangular buildings are restricted to the first half of the fourth millennium BC and it seems that this date applies across the British Isles. As Hayden (2006, 57, 58) has noted most seem to be restricted to a period 3900–3600 cal. BC at the beginning of the Neolithic, while sites with later dates tend to be atypical in either structure or function. If the dates are used at 68% probability activity at Llandygai II started around 3760–3700 cal. BC and ended about 3670–3620 cal. BC, towards the end of the national range (at 95% probability the period of use is 3800–3670 cal. BC to 3690–3610 cal. BC).

Mature oak charcoal has been used to date many Early Neolithic rectangular buildings because it can often be demonstrated to be part of the structure itself. This material was not used at Parc Bryn Cegin because although the relationship between the sample and the activity to be dated is very close the age of the oak when felled is unknown. This age-at-death error can potentially be hundreds of years, even assuming that the timber was not reused from a previous structure. This element of uncertainty negates the value gained from the close association. The Llandygai I building was dated by four radiocarbon dates (Lynch and Musson 2001, 117). Three of these dates were on bulk charcoal samples all containing substantial quantities of mature oak and gave date ranges of 4350–3700 cal. BC (NPL-223), 3950–3780 cal. BC (GrN-26824) and 3960–3760 cal. BC (GrN-26823) at 2 standard deviations. One sample is specifically described as containing ‘large pieces which were part of the core of the oak post’ (Lynch and Musson 2001, 117). The fourth date was an AMS date on a single charred hazelnut shell from a posthole. This date (3770–3620 cal. BC, GrA-20012) is much more reliable and suggests an old wood effect of at least 200 years. A similar old wood effect can be seen in several of the dated ‘timber halls’ from Scotland (Sheridan 2007). This has biased the dates from some sites and several may be significantly later than usually quoted in the literature. A detailed reassessment of the dates from these structures could produce interesting results. The current evidence suggests a short period over which these buildings were constructed. The discarding of poor dates and Bayesian analysis of good suites of dates has a very good chance of tightening this range even further. When the influence of old wood effect is removed it is probable that more of the dates will group towards the later end of the presently proposed range.

The absence of evidence for the replacement of structural elements or the rebuilding of Llandygai II suggests that the building had a single phase of use. Cooney (2000, 63) points out that earthfast timber structures of this sort would be unlikely to survive for more than a generation without maintenance. Wainwright and Longworth (1971, 224–5) consulted the Forest Products Research Laboratory to obtain an estimate for the lifespan of earthfast oak timbers based on experimentation. Their rule of thumb of 15 years for each inch (2.54cm) radius of oak heartwood gives an estimate of 75 years for the main structural posts at Llandygai II. Bayesian analysis of the dates from Llandygai II allows an estimation of the span of its use to be produced (Marshall 2008). The span of use is estimated at 10–140 years (95% probability) and probably 40–110 years (68% probability). This strongly supports the assumption that the building was used until the main timbers failed and then abandoned. This period might be seen as possibly three generations, although a much shorter period is possible; long enough for the impressive and substantial structure to be perceived as permanent but not ancient.

It has already been argued that the finds support an Early Neolithic date for the building and much of the activity around it. There was a concentration of artefacts and ecofacts inside the building, where the main internal postholes produced the largest number of most find types. It is argued above that this suggests most finds were deposited accidentally during the use of the building. Finds in the west gable-

end postholes appear to have been deliberately deposited after the partial demolition of the building but may still originate from the building's use.

The style of pottery and its fragmentary abraded state is very similar to that from Llandygai I (Lynch 2001, 34 and Lynch 2008). The condition of the sherds is consistent with being accidentally deposited as domestic rubbish, except perhaps the large sherd of the unshouldered bowl (SF 167). The analysis of residues on sherds in this assemblage was not extensive (Stern 2008) but the single positive result suggests that some vessels were used for containing foods.

The flint assemblage at Llandygai II can be described as a small assemblage of domestic character but with a high proportion of tools to waste flakes. Lithic assemblages in other comparable buildings are varied; a few are very large, particularly Ballygalley, County Antrim (Simpson 1995; 1996b) with several thousand flint artefacts, and some are very small, such as Claish, Stirlingshire, for example, with a single flake of Arran pitchstone (Barclay *et al.* 2002a). The proportion of tools to debitage can be either low, as at Coolfore, County Louth (Ó Drisceoil 2003) and Tankardstown, County Limerick (Gowen and Tarbett 1988), or high, as at Drummenny Lower, Co. Donegal (Dunne 2003), with evidence in some cases that debitage had been collected and disposed of off site (Hayden 2006). Llandygai II fits with the latter sites as it has a high proportion of tools to debitage despite an intensive wet sieving regime to recover small pieces. Few flints came from the postholes at Llandygai I, but several of these were retouched (Lynch 2001), suggesting a similar pattern of flint use. The usewear analysis (Debert 2008) revealed sickle gloss on two pieces and usewear on one convex and one concave scraper, showing that the tools were used and they performed a variety of functions.

The scatter of crystal quartz debitage, cores and two possible tools shows that this material was being repeatedly worked at Llandygai II. The only other record of its use in north-west Wales comes from the Lledr valley in central Snowdonia where it was found in a mixed but predominantly Later Mesolithic assemblage, which includes one possible narrow-blade microlith in crystal quartz (Smith 1999a).

Crystal quartz or rock crystal has been found in association with other Early Neolithic rectangular buildings. At Lismore Fields there were 'several struck flakes of crystal' found in pits near the building (Garton 1991, 13), and 64 pieces of quartz or rock crystal were found at Corbally (Purcell 2002). Quartz was knapped at other sites such as Drummenny (Dunne 2003), Gortaroe (Gillespie 2002), Ballyglass (Ó Nualláin 1972), Lough Gur A (Ó Riordáin 1954) and Ballygalley (Simpson 1995), but in most cases this seems to have been white quartz, not small clear crystals. A single flake of rock crystal was recorded from posthole 5 in Llandygai I (Lynch pers. com.), but the lack of more material is probably related to the lack of a wet sieving programme, as most of the material at Parc Bryn Cegin was recovered from sieving. A full survey of other Neolithic sites would be necessary to determine whether the presence of this material in rectangular timber buildings is significant or part of the common technological repertoire.

The two retouched pieces from Llandygai II closely resemble microliths in their abrupt retouch and small size, which is necessitated by the very small size of the raw material (Fig. 8, SF 894). Unlike white, opaque quartz clear crystals are relatively rare and because of their size would have been difficult to work. The resulting tools would have had to be hafted to be used and could have formed composite tools like Mesolithic microliths. In a world without glass clear crystal quartz must have seemed a remarkable material and it is probable that these tiny implements had a symbolic significance.

The most significant difference between the finds from the two Llandygai buildings is that Graig Lwyd flakes were found at Llandygai II, but not at Llandygai I (Lynch 2001, 34–5). Houlder (1968) attributed the Llandygai I building to the 'middle men of the axe-trade' (*ibid.*, 219), due to Graig Lwyd axe fragments in a pit 5m from the building. However, this pit (FB151) was subsequently dated to the Late Neolithic and also contained a transverse arrowhead consistent with this date. The Graig Lwyd stone found in and around the Parc Bryn Cegin building is therefore of considerable significance as this site is

one of the very few to have produced worked Graig Lwyd stone from Early Neolithic contexts. Graig Lwyd flakes were present on the terrace under the chambered tomb of Bryn yr Hen Bobl (Lynch 1991, 108), but as these were associated with Peterborough Ware pottery (*ibid.*, 106) they were presumably of a Mid Neolithic date.

In Llandygai II many of the flakes were securely stratified within the main postholes of the building, some from the lower parts of the post-pipes. Three of the dated contexts from the building contained Graig Lwyd flakes, but the evidence suggests all the flakes were deposited during the use of the building, and are therefore contemporary with it. As discussed above it is justifiable to use the 68% confidence limits for the combined dates and the use of the building can be said to have started between 3760–3710 cal. BC and ended between 3660–3620 cal. BC. This can be taken as the date for the earliest use of Graig Lwyd stone on this site.

The earliest date from the Graig Lwyd axe factory site was 4350–3990 cal. BC (SWAN-142), associated with a flaking floor under cairn 67 (Williams and Davidson 1998). The current site provides the earliest date for the use of this stone away from the source, and the polished flakes show that the stone was being used to make axes at this date.

However, the types of flakes demonstrate that this material does not represent axe production or axe sharpening, but the breaking down of axes into flakes and debitage (Williams 2008). This process is more clearly demonstrated in the later pit groups and will be discussed in more detail below but it does seem to apply to the activity in the building. The broken axe found on the site was, however, not made of Graig Lwyd stone but of an ungrouped tuff.

Stone axes are associated with several Irish Early Neolithic buildings, and axe flakes have also been reported from some sites, such as Ballyglass (Ó Nualláin 1972), Ballynagilly (ApSimon 1976), Ballygalley (Simpson 1995), Ballyharry 1 and 2 (Moore 2003), Tankardstown (Gowen and Tarbett 1988) and Cloghers (Kiely 2003). At Ballygalley axe manufacture and finishing was suggested but at Cloghers some flakes are described as being from the reuse of axes. At Ballyharry 1 the reworking of stone axes is specifically suggested (Moore 2003), and Ó Riordáin (1954, 310) states that the use of flakes from stone axes as scrapers was common on sites on the Knockadoon peninsula. There are also examples from British sites, such as Padholme Road, Peterborough (Pryor 1991), Garth Dee, Aberdeen (Murray 2005a), and Lismore Fields, Derbyshire (Garton 1991, 13).

The axe found at Llandygai II was not only broken but also burnt to a high temperature. It must have been broken before being burnt, as the broken surface is also heat-altered, and the burning caused a crack in the axe, which would certainly have failed with the force of the blow that broke the axe. Cooper and Hunt (2005) describe a flint axe from Rothley, Leicestershire, which had been ‘completely calcined by intense heat to the point of exploding’. This axe had been deposited in a pit with Grooved Ware pottery and other significant items. The breaking and burning of the Parc Bryn Cegin axe may also indicate a more ritually charged treatment of the axe and associated deposit than the simple discarding of rubbish.

It has been argued that cereals were much less economically important in the Neolithic than traditionally thought (Thomas 1996), because of the relatively sparse nature of the evidence for cereal grains on many Neolithic sites. The predominance of charred hazelnut shells and small number of charred cereal grains from the Early Neolithic building on the present site might be seen to support this argument. However, the comparison of cereal grains and hazelnut shells as an index of their relative importance in the diet is highly problematic. The hazelnut shells are waste products from preparing food and are most likely to be disposed of by burning on a fire. Cereal grains are the food product itself and will not be charred except by accident. A very small number of charred cereal grains may therefore result from frequent use of this food and large numbers of charred hazelnut shell fragments may result from the

shelling of a relatively small number of nuts. The presence of even a small number of cereal grains should be taken as an indication that cereals were grown in the vicinity and consumed or stored on site. Across Britain and Ireland cereal grains are consistently present in Early Neolithic rectangular buildings, and occasionally as at Balbridie (Fairweather and Ralston 1993) and Lismore Fields (Garton 1991) they can be very numerous. Cross (2003, 199) claims that wheat has been found on every such site where botanical studies have been carried out, and saddle querns are also found on some sites, as for example at Corbally houses 1–3 (Purcell 2002), Ballyharry 1 (Moore 2003) and Eilean Domhnuill (Armit 2003, 94, 98).

Emmer wheat, barley and naked wheat were all present in the Parc Bryn Cegin building, with emmer being found in the greatest quantities. The remains represent parching and dehusking hulled cereals, and this process seems to have been carried out in or near to the eastern end of the building. The evidence suggests that cereal cultivation was part of the subsistence economy in this area, but its dietary, economic and social importance is difficult to estimate.

The presence of hazelnuts in Early Neolithic rectangular buildings is also very common and in some cases they considerably outnumber cereal grains, as for example at Claish (Barclay *et al.* 2002) and Corbally houses 1–3 (Purcell 2002), although Hayden (2006) claims that generally cereals are more frequent than hazelnut shells. However, cereal grains and hazelnuts cannot be contrasted as domesticated and wild foods. Hazel is an understory shrub, which produces most prolifically in open secondary woodland or on woodland margins, and would fit well into a farmed landscape. A pollen core taken at Llyn Cororion, 2km to the south, showed that hazel initially declined with the arrival of the climax forest but it subsequently recovered and remained a significant presence throughout the prehistoric period (Watkins 1990). It is likely that its recovery was due to human activity increasing favourable habitats.

The hazel charcoal common in some features is best interpreted as fuel for fires, and in the absence of a definite hearth site suggests the presence of a fire in the structure. Hazel could have been used in the roof and wattle walls but this would only be preserved if the building had burnt down, which would have resulted in greater quantities more widely distributed. The pine charcoal recovered is problematic. Pine was rare in the Neolithic period and its presence may indicate Mesolithic activity but it is more likely to be intrusive from very much later activity. On Houlder's site at Llandygai pine was unusually common from early contexts (Lynch 2001, 32) and this may represent a real presence of pine in the Late Mesolithic and Early Neolithic.

There is general agreement that Wales, like much of the rest of Britain, in the Early Neolithic was covered in dense forest with occasional, localised, short-term clearances (Caseldine 1990; Richmond 1999). Elm declined sharply in the forests across Britain early in the Neolithic. Although its relationship to farming has been questioned human activity was probably connected in some way with the decline and it is often associated with a rise in agricultural activity (Kenney 1993). The elm decline has been dated at Llyn Cororion to 4985±65 BP (3950–3650 cal. BC) (Watkins 1990, 135) and at Nant Ffrancon to 5160±70 BP (4230–3780 cal. BC) (Hibbert and Switsur 1976). At Llyn Cororion the elm decline was not associated with significant clearance indicators, but at Nant Ffrancon values of non-arboreal pollen did increase after the elm decline, suggesting more clearance activity. Although these dates are very general the evidence suggests the elm decline was roughly contemporary with the occupation of the buildings at Llandygai I and II.

The study of Early Neolithic buildings has been hampered for many years by a lack of evidence. However, commercial archaeology in advance of development has greatly increased the number of known sites, mainly in Ireland but also in Britain. That process has only just started in Wales. Darvill (1996) could only list three sites with Early Neolithic structures in Wales, Clegyr Boia, Dyfed, Gwernvale, Powys and the original Llandygai building. Lynch (2000, 53) adds a rectangular structure on Moel y Gaer, Flintshire (Britnell 1991). The discovery of the present site in 2005 and a similar structure found

near Holyhead, Anglesey by Gwynedd Archaeological Trust in 2007 (unpublished) indicates that there could be many more to find. It is significant that these two recent sites were found using strip and map techniques over large areas, a methodology that has proved very productive of Early Neolithic buildings in Ireland.

The arguments put forward by many authors including Thomas (1996), Whittle (1997), Pryor (2004) and Cross (2003) preclude the automatic assumption that these structures had a primarily domestic function. The present publication is not the place for an extended discussion of these issues, which it is hoped to explore in a future paper. However, the evidence produced at Llandygai II does have considerable potential to contribute to the wider debates. Not least is the suite of secure and carefully selected radiocarbon dates and their Bayesian analysis, which will allow the site to contribute directly to the reassessment of the date of the Neolithic currently being undertaken largely under the impetus of Alasdair Whittle and Alex Bayliss (Bayliss *et al.* 2007).

The extensive area investigated at Parc Bryn Cegin, combined with the earlier excavations by Houlder, help place the site in its spatial context. It can be categorically stated that there were no contemporary structures within 100m of the Llandygai II building and almost certainly not within a 150m radius, but the presence of Llandygai I *c.* 500m away reflects the intervals found between some similar sites in Ireland. Unfortunately the one reliable date from Llandygai I is insufficient to indicate whether the buildings were contemporary or sequentially constructed. The identification of non-structural features elsewhere at Parc Bryn Cegin provides evidence for occupation of a different kind. These are further discussed in the section on earth ovens below.

MID AND LATER NEOLITHIC PIT GROUPS

The pit groups

Several groups of small pits were found, mainly scattered on the ridge running along the eastern side of the site, but one group was located on lower ground further west (Fig. 3). The layout out of these groups varied, but none had more than eight pits. Most of the groups contained Peterborough Ware pottery, but a subgroup within pit group VI had Grooved Ware, as did pit group VIII adjacent to the Early Neolithic building. Another group of pits (group VII) did not produce Neolithic pottery and proved to be Bronze Age, but apparently represented an activity similar to the others.

Pit group I (Fig. 9)

This group, which lay close to the eastern boundary of the site (SH 59595 70449, *c.* 61m OD), consisted of six small pits and one larger possible pit. The six pits forming the main part of the group were small, circular and between 0.12–0.20m in depth. They had charcoal-rich fills; most contained heat-cracked stones, and some contained pot sherds, flints and pieces of Graig Lwyd stone. Pit 1052, although very shallow, was packed with pot sherds belonging to a single large Peterborough bowl in the Mortlake style.

Three of the pits (1036, 1049 and 1052) formed a line running almost exactly magnetic north to south. To the east of pit 1052 was a cluster of three pits, two of them severely truncated by a later field boundary ditch (1034). Pit 1094, to the west of the other pits, was rather larger and 0.33m deep. It was not very well-defined but the fill was charcoal-rich and contained some larger stones and burnt stones. However, it was rather amorphous, produced no finds, and might have been the result of root activity. It is possible that the pit group had continued to the south, but had been removed by various phases of the modern and late post-medieval road and roadside ditches.

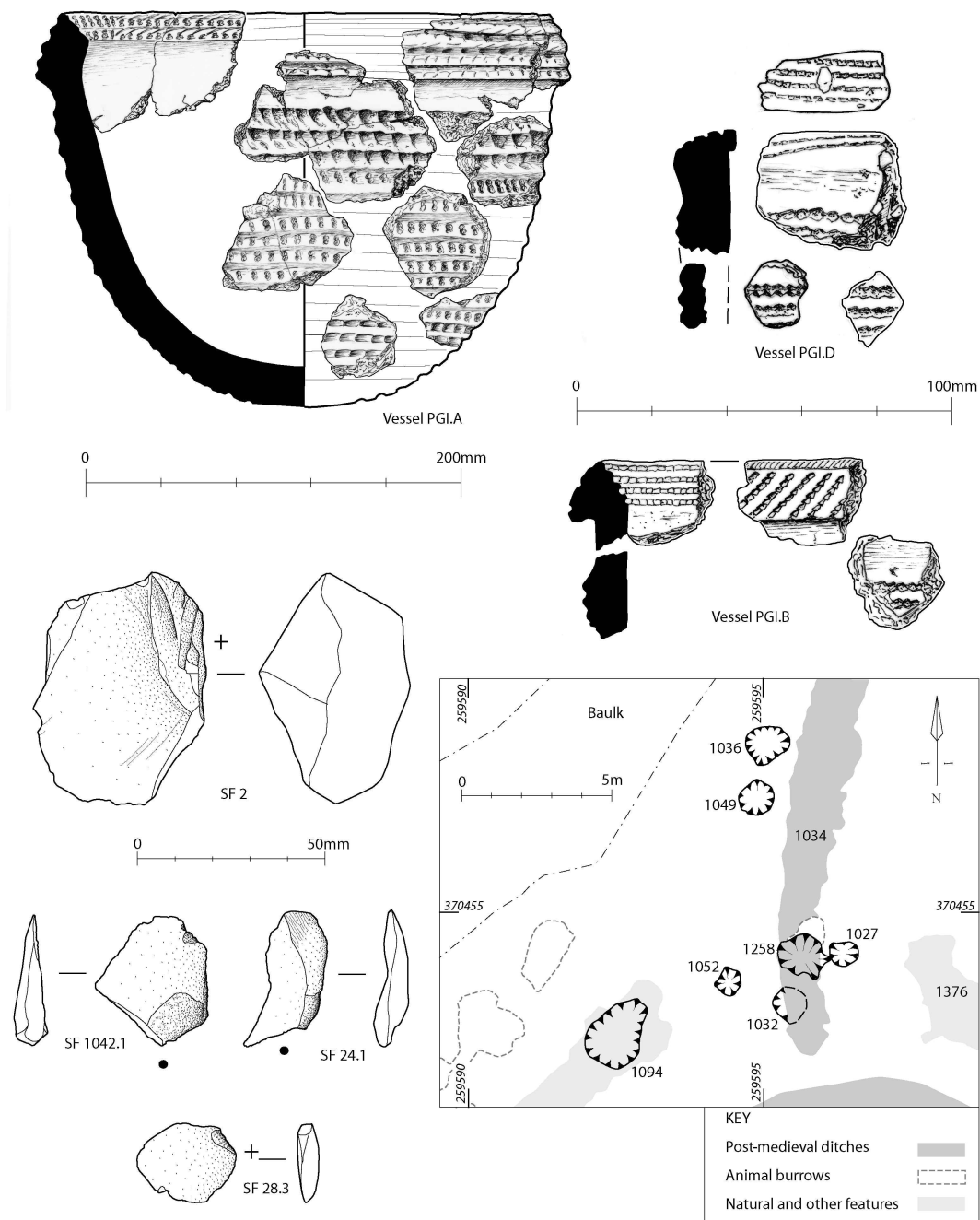


Fig. 9 Plan and finds from Pit Group I: Mortlake style vessel from pit 1052 (PGI.A); other Peterborough Ware sherds from pits 1048 (PGI.D) and from pit 1035 (PGI.B); Graig Lwyd pieces – possible axe sharpening flake (SF 2), flakes with polished surfaces (SF 24.1, 28.3, 1042.1).

To the west of the pits was a very irregular linear feature (1376) filled with burnt soil, some pockets of clay being fired quite hard. This seemed too irregular to be a deliberate cut and may have been a burnt-out animal burrow, or some other effect caused by probably quite recent burning.

The six pits forming the core of this group created a fairly coherent cluster and contained artefacts indicating a Mid Neolithic date. None of these pits had evidence for complex or gradual filling; all had a single fill, which had been deposited in one event. This was clearly shown in pit 1052, where sherds of a Mortlake bowl were distributed throughout the fill. There was no erosion of the pit edges, despite being cut into soft silty subsoil.

Pit groups II–V (Fig. 10)

Further south along the ridge more pits containing pottery were found. There were three groups each containing three principal pits, and an isolated pit (referred to for convenience as pit group V). There were numerous hollows and burnt patches scattered around the area, especially on the top of the ridge. Most of the hollows were caused by tree or shrub roots and as none of these produced any finds they could have been created at any period before land improvement in the nineteenth century. The burnt patches were probably related to scrub clearance. None were closely associated with the pit groups and there is no evidence to associate the burnt patches with prehistoric activity.

Pit groups II–IV appear to have been neat, well-defined groups, laid out in a regular manner, and isolated from other contemporary activity. The depth and steep sides of the pits in group III are suggestive of postholes, but no convincing post-packing stones were found in either this group or any of the others. Several of the pits had homogenous fills, but others showed sequential filling, and pit 4062 in pit group III displayed a complex sequence.

Pit group II was situated at 70m OD just west of Rhos Isaf (SH 59456 70335). The three pits 4012, 4021 and 4049 were laid out in a nearly regular isosceles triangle. The pits varied in depth from 0.1m to 0.21m, and all were sub-circular with steep sides. The fills were generally homogenous with no visible tip lines or other evidence of gradual filling. Pit 4049 contained some burnt stone and 4021 had three larger stones apparently placed in its base. All three pits contained small quantities of Fengate-style pottery. The number of sherds from this group was much less than in pit group I, although four vessels are represented.

Four metres west of these three pits was an arc of five smaller, very shallow pits (4016, 4018, 4020, 4024, and 4413). They contained few finds but quantities of charcoal and 4020 also contained large numbers of charred hazelnut shells. The three larger pits and the five smaller pits formed two subgroups, but their layout indicates that they respected the same central space and were probably all contemporary. The small pits were so shallow that it is impossible to say whether they were pits or the base of postholes, perhaps representing a small curving shelter to provide protection from the prevailing westerly winds.

Pit group III (SH 59418 70298, 71m OD) lay about 52m south-west of pit group II. It was composed of pits 4062, 4069 and 4092, which were laid out in a triangle. The pits were roughly oval in plan and up to 0.44m deep. Pit 4062 had a complex depositional history; the interface between the main fill and the surrounding redeposited subsoil was nearly vertical and both of these fills rested on a charcoal-rich primary fill. Within the main fill was a large stone placed in the centre of the pit. This sequence could have included a post which was later removed, but alternatively may have resulted from the pit being redug. Pit 4069 contained thin lenses of charcoal and sand, suggesting sequential infilling, but the fill in pit 4092 was quite homogenous. This last pit contained many pot sherds, mainly from a single Fengate vessel, distributed throughout its fill, while the other two pits contained fewer sherds.

Pit group IV was located further down the slope at *c.* 67m OD (SH 59360 70338). Two pits 4100 and 4109 were only 0.2m apart with pit 4103 *c.* 1.2m to the east. They were all steep sided sub-circular pits

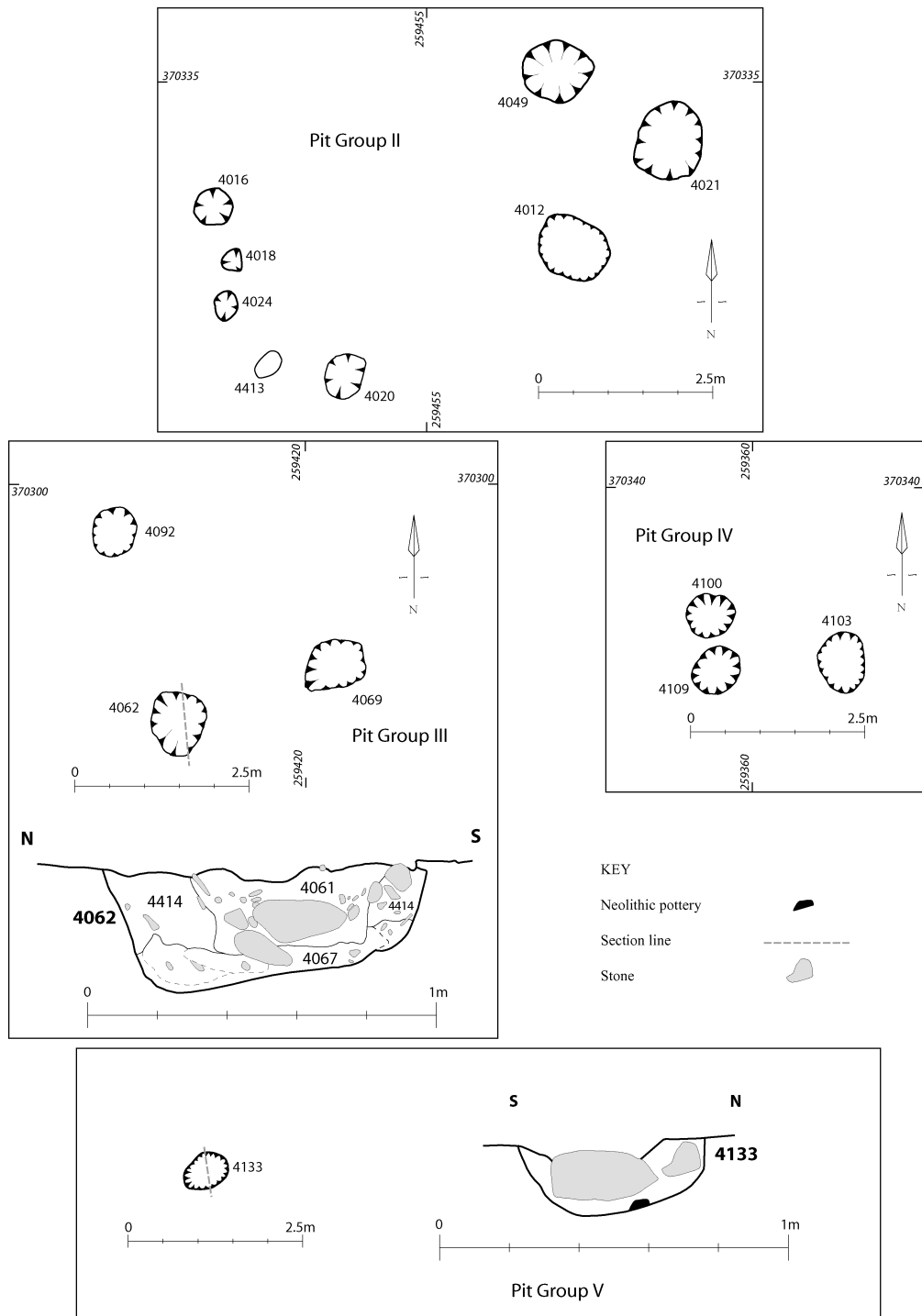


Fig. 10. Plans of Pit Groups II to V, with selected sections.

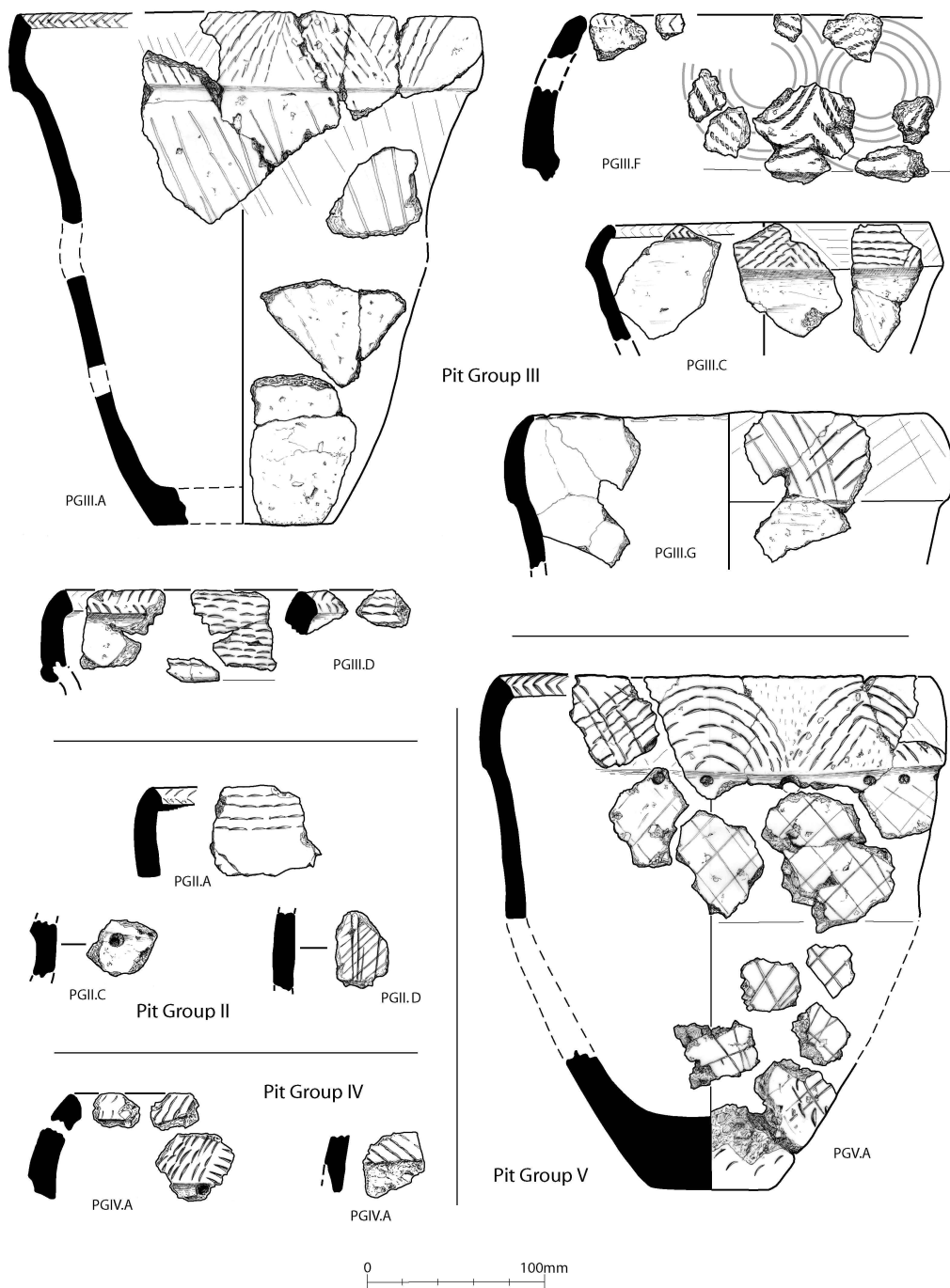


Fig. 11. Fengate pottery from pit groups II to V. Pit Group II: sherds from pits 4014 (PGII.C and D) and 4021 (PGII.A). Pit Group III: the main vessel from pit 4092 (PGIII.A); subsidiary vessels from pit 4092 (PGIII.B, C, D and F). Pit Group IV: rim-sherds from pit 4103 (PGIVA). Pit Group V: the main vessel from pit 4133 (PGVA).

between 0.28m and 0.4m deep. Pits 4100 and 4109 were placed very close together, but it is possible that they functioned contemporaneously.

The fills contained charcoal, burnt stone and in some cases small pot sherds (representing four vessels) or pieces of burnt flint. All the pits contained large stones; most notably a large, severely heat-cracked stone in pit 4109. This was placed horizontally and centrally near the top of the pit within a deposit of burnt material. The degree of burning on the stone suggests it may have been a hearthstone and although probably not an *in situ* hearth, it seems to have been quite carefully placed within the pit fill. All three pits had some evidence of erosion of their sides. This was quite extensive in the case of 4103, where slumping of the sides had occurred. In 4100 and 4109 the erosion appeared as sterile deposits in the base of the pits, as if they had been left open for some time before the main fill was deposited. In 4103 this sequence seems to have been reversed. The charcoal-rich material was deposited and then the pit left open so that the sides started to collapse and the rest of the pit was filled with eroded material.

Towards the southern edge of the site was a single small pit 4133, referred to as pit group V (SH 59328 70301, 68m OD). This was an oval pit measuring 0.67m by 0.52m and 0.25m deep. The centre of the pit was taken up by a rounded stone nearly 0.3m in length. Underneath and to the east of this stone, within a charcoal-rich deposit, were numerous sherds, some quite large, and most from a single urn-like vessel. There were very few sherds in the western half of the pit, suggesting that the pottery was deliberately placed on the eastern side. The pit was then infilled. This pit appeared to be isolated, although it was only 7m from the trench edge, and the existence of other pits outside the excavated area cannot be ruled out. There was another pit lying between it and pit group IV, 22m from pit 4133 and 29m from pit group IV. This pit (4127) was circular with steep, well-defined sides and measured 0.77m in diameter and 0.2m in depth. The fill contained occasional charcoal flecks and abundant large fire-cracked stones. It was very similar to the other pits with Neolithic pottery but contained no finds at all.

Pit group VI (Fig. 12)

Pit group VI was situated in the low-lying western part of the site, and so in a very different location to the other groups, which were on the ridge. The pit group was on top of a slight knoll in the glacial deposits at about 30m OD. This pit group included three separate subgroups. To the north up to seven pits were situated close together amongst irregular features probably caused by tree roots (SH 59032 70698). Two more pits lay about 22m to the south-west (SH 59015 70681) and a single pit 40m to the south-east (SH 59071 70681). Some of the pits produced Mid Neolithic pottery and several flint tools made in a very fine dark brown flint rarely found elsewhere on the site. There were two well-defined pits 6041 and 6044 situated 1.2m apart, and up to 0.3m deep. Pit 6041 contained burnt stones and 6044 was largely filled with stones but most were not burnt. The surface of the fill of 6044 and the area around it were reddened by heat suggesting that there had been a fire directly above the infilled pit. Pit 6041 was particularly rich in finds, producing fine flint tools and Grooved Ware pottery.

Close to these pits were several other features, which were less diagnostic. The recognition of anthropogenic features was made harder by the presence of tree-root hollows and animal burrows in the area, and a pipe-trench that cut through the middle of the group. Two features were almost certainly genuine pits (6043 and 6055), both containing charcoal. Three other features may have been pits (6047, 6061 and 6079). It is probable that the tree hollows were contemporary with or pre-dated the pits.

About 22m south-west of this first cluster were two more pits (6034 and 6072). Although 6034 was little more than a hollow 0.15m deep it contained quantities of pottery from a single Fengate vessel. Pit 6072, 0.23m deep, was also artefact-rich but was a more complex feature. A hollow in the middle of the fill was lined with large rounded stones and this had been filled in by a charcoal-rich loam containing

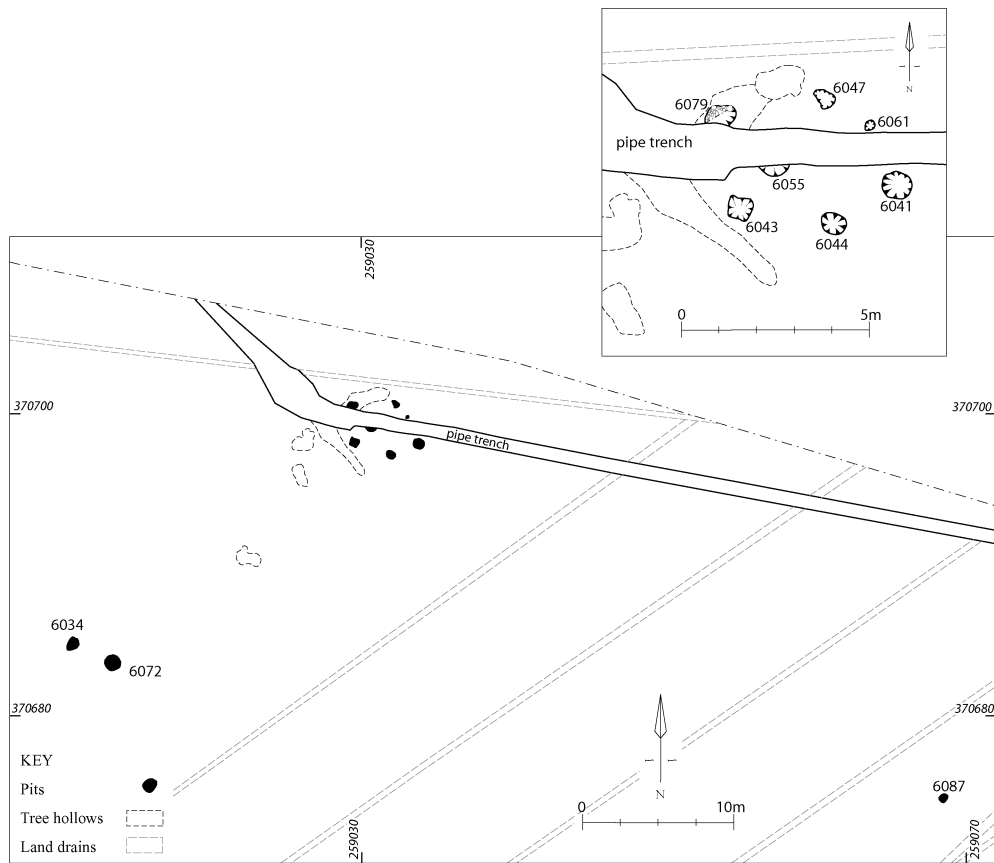


Fig. 12. Plan of Pit Group VI, with inset showing detail of the main sub-group.

most of the artefacts, including Fengate pottery. Fifty-four metres to the east was a single small pit (6087), only 0.12m deep, but containing charcoal, fragments of pottery and flint debitage.

This pit group lay about 370m south-west of the southern Llandygai henge and at about the same altitude. Their position on a drier knoll in this rather wet area was probably of significance. The ground was also fairly flat where the pits were situated but sloping elsewhere, making this an obvious site for occupation activity. The main group of pits were little over 4m from the trench edge, so it is possible that there are further features beyond. In the main group, if all seven features are accepted as pits, it can be seen that they were laid out in a rough oval with pit 6055 close to the centre. The stones in some of the pits could represent packing stones but there was no firm evidence that these features were postholes.

Pit group VII (Fig. 14)

This cluster of five closely grouped pits was situated about halfway across the site on the hillslope (SH 59191 70399, 51–2m OD). Another nearby pit (3146) was dated to the Early Neolithic and this, with its undated neighbour (3121) are discussed above with the other Early Neolithic features. Around an area of burnt subsoil, presumably a fire site, were five pits (3111, 3139, 3143, 3155, and 3190) varying in size from 0.45m in diameter and 0.13m deep to 1m in diameter and 0.4m deep. Most had steep sides and flat

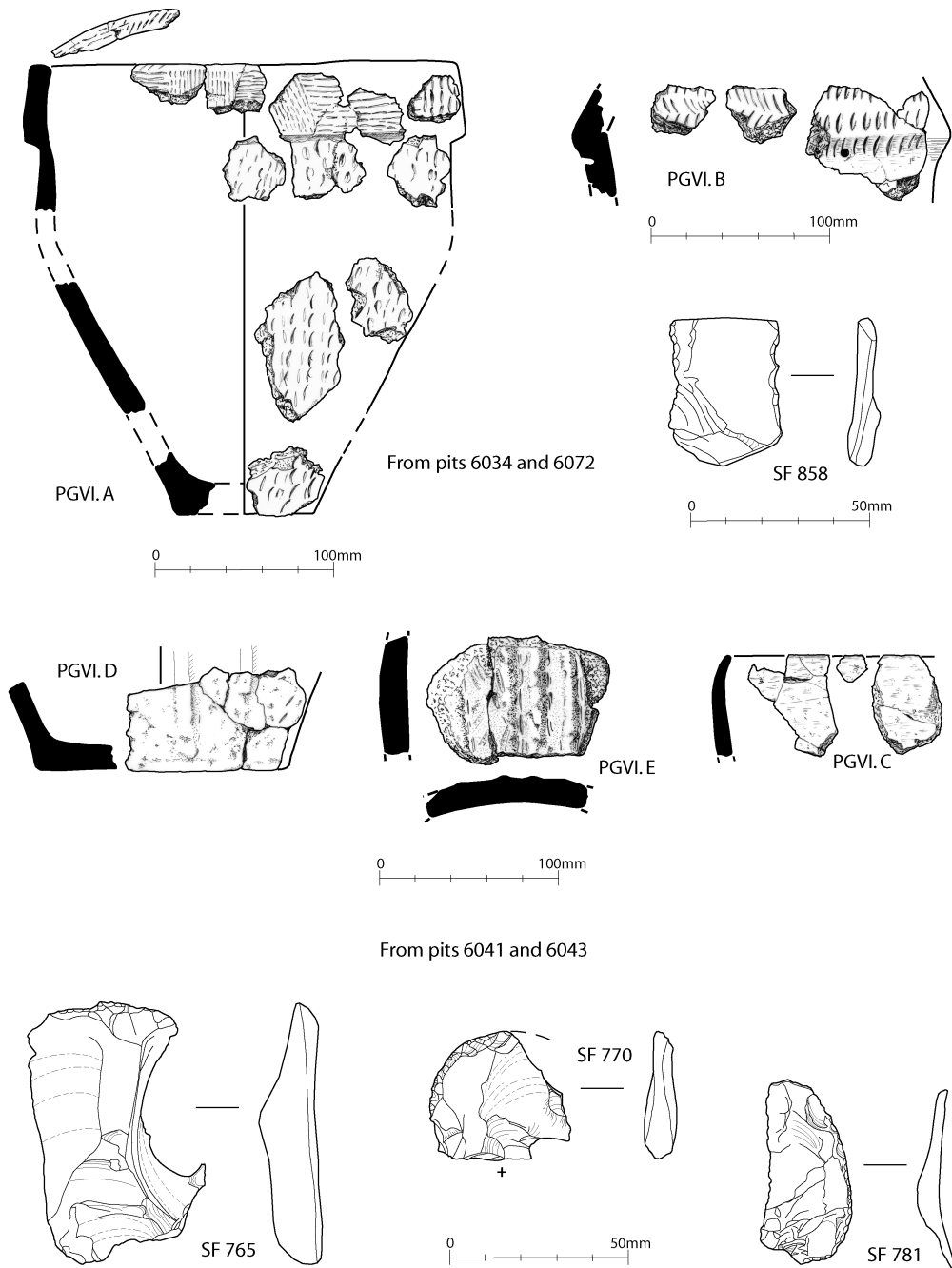


Fig. 13. Finds from Pit Group VI. Grooved Ware vessels from pit 6041 (PGVI.C and D); fine flint tools from pit 6041, multi-tool end scraper (SF 765) and convex scraper (SF 770). Fine flint tools from pits 6072 (utilised blade SF 858) and 6043 (backed serrated knife SF 781). Fengate vessels from pits 6034 (PGVI.A) and 6072 (PGVI.B).

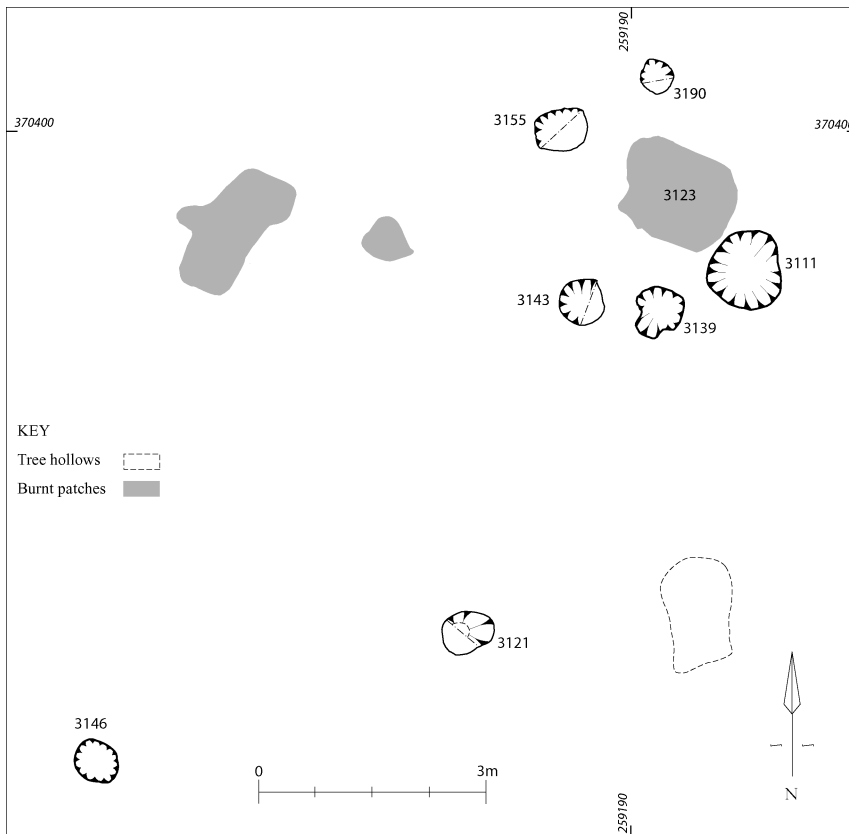


Fig. 14. Plan of Pit Group VII with Early Neolithic pit 3146.

bases, although 3190 had a bowl-shaped profile. All contained some charcoal in their fills and 3143, 3155 and 3190 had fire-cracked stones. Pits 3155, 3139 and 3143 also contained small fragments of burnt bone and flint and 3155 had unidentifiable fragments of pottery. While the fills of 3155 and 3190 were fairly homogenous the other pits had two or three distinct fills. In the middle of pit 3139 was a large, unworked stone spanning the width of the pit, and the fill of pit 3111 was composed almost entirely of cobbles. There were other patches of burning in the area but these could not be directly related to the pit group. A large pit (3186) located 8.5m from the main pit cluster was undated but probably post-medieval.

The shape and size of this pit group compared closely with the Neolithic pit groups described previously. The presence of charcoal and heat-cracked stones in their fills was also similar. The big difference was the scarcity of any artefacts, especially pottery. The location on a fairly steep slope was different to both the pit groups on top of the ridge and to pit group VI on its low knoll. The five pits lay on a rough circle around the burnt patch, recalling the layout of the main cluster of pits in group VI. With the scarcity of finds the interpretation of this group depended heavily on the radiocarbon dates, as discussed below.

Pit group VIII (Fig. 6)

Pit group VIII was located close to the south-western corner of the Early Neolithic building (SH 59436 70536, 56.5m OD). This group consisted of six pits, one with complicated fills and possible evidence for recutting, and one containing Grooved Ware pottery. The pits, therefore, appear to date from much later than the building, but also possibly later than the majority of other pit groups that contained Peterborough Ware pottery. The six pits were arranged in a rough oval and were between 0.12m and 0.36m deep. All contained charcoal and most had quantities of charred hazelnut shells. Feature 1305 had a simple single fill, but pit 1309 had three fills, the lowest being richest in charcoal, and two large stones had been placed in the middle of it. Pit 1586 clipped the edge of pit 1584, both being shallow and rather irregular. Pit 1596 was the deepest, with lenses of charcoal within the primary fill, and evidence that part of the sides had collapsed. The upper part of the fill was a sequence of deposits, including a charcoal layer covered by reddish silt, the colour apparently from heating, perhaps material from a hearth dumped in the pit. The sixth pit (1553) had steep sides and a slightly rounded base. Distributed throughout its fairly homogenous fill was a great deal of pottery from perhaps six different Grooved Ware pots, none complete but present in quite large pieces.

The oval arrangement of the pits is similar to that in pit groups VI and VII, but unlike both these groups there was no central feature. The size and shape of the pits was also consistent with the other groups. The fills of 1596, with their complex sequence of lenses were quite different to the homogenous fills of most of the other pit groups. Pit 1553, however, appeared to have had a very similar function to the pits in the other groups as it had a single homogenous fill with pot sherds throughout. The sherds of different vessels were mixed together, with no indication that large pieces of each vessel had been inserted separately. The similarities with the other pit groups suggest that pit group VIII had a similar function to the others. The presence of Grooved Ware, however, may be taken to suggest a later date.

Pit group VIII lay on the edge of the area of Early Neolithic occupation. It is possible, therefore, that not all the pits in this group were contemporary. Small fragments of Early Neolithic pottery from both pits 1305 and 1553 can be explained as being residual. The presence of igneous rock flakes in four of these pits does suggest activities in common, although Graig Lwyd flakes also came from features related to the Early Neolithic building.

The characteristics of some of the Graig Lwyd pieces were quite distinctive, as discussed below, and similar pieces were also contained in a pit (1729) on the western limit of this area. This pit produced no other diagnostic material and was not dated. The Graig Lwyd pieces may indicate that it was contemporary with pit group VIII rather than the building.

Pottery associated with the Mid and Later Neolithic pit groups (Figs 8, 10, 11 and 13). By Frances Lynch⁵

The pit groups, with the exception of group VII, all produced either Peterborough Ware or Grooved Ware. The following discusses each style in turn.

Peterborough Ware: Mortlake Style

In pit group I there were up to seven vessels of the Mortlake style of Peterborough Ware. The most complete (Fig. 9, PGI.A) was the main pot in pit 1052 and the pieces seem to have been placed in the pit with some care. Many of the sherds rested against the sides of the cut, some with the rims upwards, but two large rim-sherds were also found at the base of the pit. It appears that although the sherds were fairly large there was little evidence that whole sections of pot had been placed upright in the pit. Within Llandygai Henge B, pit FB 39 had a large piece of Mortlake Ware deposited in a very similar way (Lynch 2001, 69).

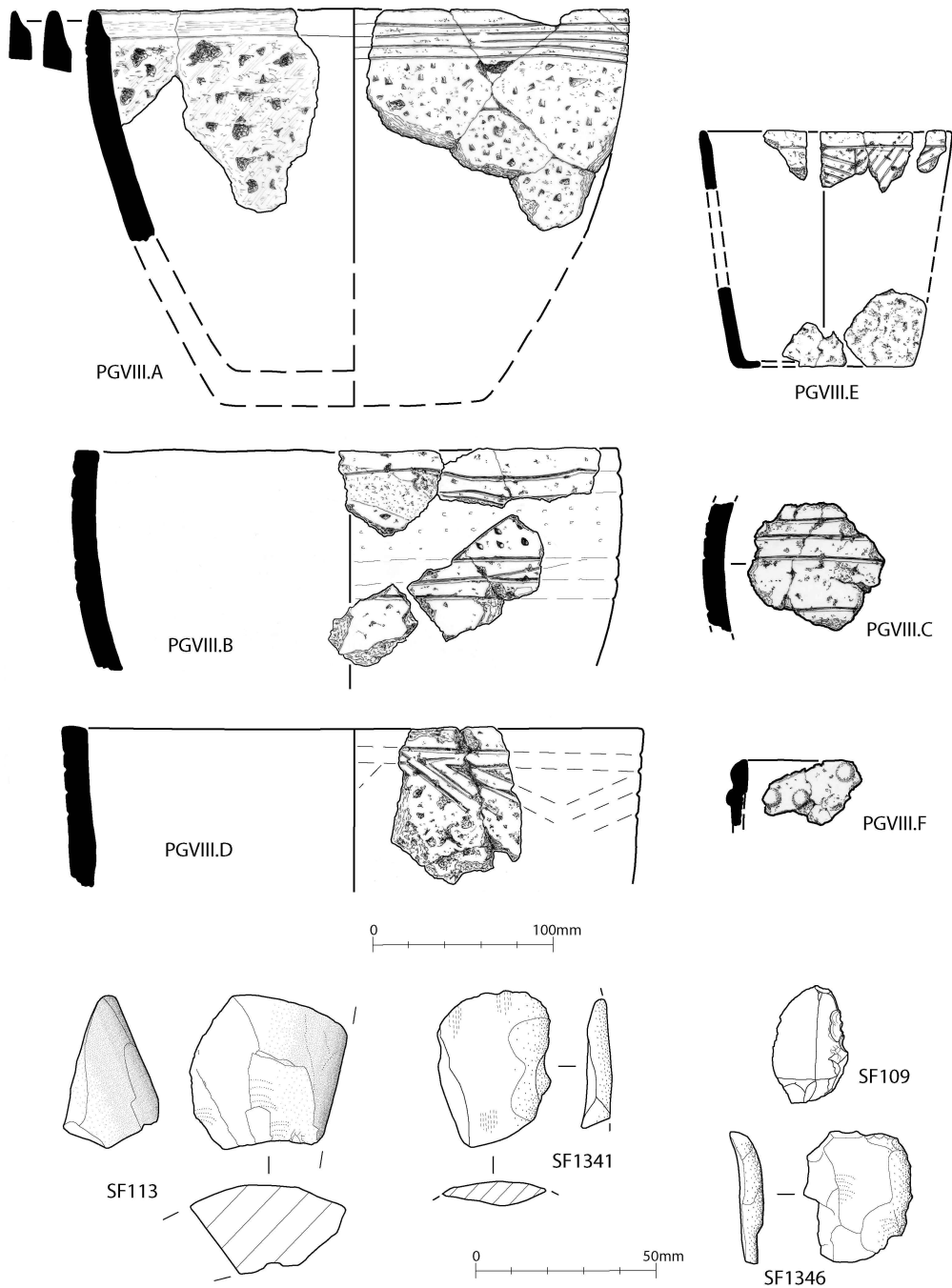


Fig. 15. Finds from Pit Group VIII. Grooved Ware: vessels PGVIII.A–E. Sherd with pellets: PGVIII.F. Graig Lwyd stone: polished axe fragment from pit 1553 (SF113), and flake with polished surface from pit 1596 (SF1341). Stone of unknown source: retouched pieces from pits 1553 and 1305 (SF109 and SF1346).

The other vessels were represented by only a few small sherds in pit 1052 and in the other pits. Pit 1036 held the remains of several pots, and pit 1049 had a few body-sherds from what might be a single pot, but in both instances there were additional featureless sherds.

The very heavy collar-like rim of vessel PGI.A is unusual but may prove to be a regional preference since similar forms occur in Anglesey at Bryn yr Hen Bobl and Trefignath (Lynch 1991, fig. 28.17 and 4a.B), the mouth of the Clwyd at Gop (Ellis Davies 1949, 274–80, summarising and updating Boyd Dawkins' excavation account of Gop Cave in *Archaeologia Cambrensis* for 1902, 161–81), and in Cheshire at Gawsorth (Manby 1977). The short concave neck and heavily-textured body with horizontal grooving is typical for the style throughout Britain, as is the use of stab-and-drag techniques and various complex impressions.

Peterborough: Fengate Style

Approximately 27 vessels from across the site are judged to belong to the Fengate style of Peterborough Ware. Most of the material came from the pit clusters on top of the ridge in the south-eastern corner of the site: pit group II had four pots, pit group III perhaps 11 vessels, pit group IV had only three, and pit 4133 in pit group V contained the remains of five vessels. Pottery identified as probably Fengate was also found in pit group VI, at the lower, western end of the site. This pottery style was found in the pair of pits (6034 and 6072) and in the isolated pit (6087). Although most probably attributable to the Fengate tradition these vessels had similarities to Early Bronze Age Collared Urns. Pit 6034 contained pieces of a single urn-like vessel (Fig. 13, PGVI.A), pit 6072 contained parts of four vessels and the isolated single pit 6087 had other featureless sherds similar to vessel PGVI.B in pit 6072.

The dominant pot form present in pit groups II, III, IV and V is a medium-sized urn-shaped vessel, some 250mm in diameter, with a curved collar and in-turned bevelled rim with two lines of fingernail marks in a herringbone pattern. The collar has a distinct overhang and on some pots there are pits beneath this overhang.

The nature of the profile below the collar is less certain. Some pots suggest a conical, shoulderless profile, as favoured in many other reconstructions. However, on PGV.A the angle is well-established and it is much more vertical and seems to demand a more Bronze Age silhouette, even though the base is a narrow one. Moreover, pieces of the neck and the upper part of the lower body show a slight outward curve which suggests that there was indeed a lightly defined shoulder. Though no obvious pieces of shoulder can be recognised on any of the pots there is one sherd (PGIII.M) which might be part of just such a lightly defined shoulder. A flat base 80–100mm across is present in some cases.

Typologically the Llandygai Fengate vessels form quite a tight group dominated by these collared pots with bevelled rims and fingernail decoration. In pit group III there is a smaller group of vessels with pointed rims and probably a more conical shape and there is a wider range of decorative techniques, such as incision, cord and stabbed impressions. Looking at Fengate pots from other sites in Wales, it is clear that the predominant type at Llandygai is also predominant elsewhere and may turn out to be regionally distinctive.

The Fengate style was first defined by Isobel Smith (1956, 106–19) and it has been found widely within Britain. In Wales the style may, in the light of these better preserved pots from Llandygai, be recognised among the pottery from Walton (Gibson 1999a, Pots 1, 6, 8, 12, 15, 16, 18 and 42), Hendre, near Mold (Brassil and Gibson 1999), Ogmores on the Glamorgan coast, at Castell Bryn Gwyn in Anglesey, and at Brynderwen near Abermule, Powys (Gibson 1998, Pot 10; Lynch 1991, 101; Gibson 1995, fig. 3:7, vessel 14). In several instances these pots have been previously identified as Mortlake or Grooved Ware since the in-curved collars are similar to Durrington Walls style jars.

Were it not for the presence of heavily decorated lower body-sherds, pits beneath the collar and the dominance of fingernail, especially paired fingernail, decoration it is probable that pots PGVI.A and PGV.A would be identified as Collared Urns. The preference for heavy deep collars on both the Mortlake and Fengate styles in north Wales raises interesting questions about the ancestry of that ubiquitous vessel which it is hoped to discuss on another occasion in the context of a wider group of recently discovered north Welsh pottery. This material includes finds from the Gwynedd Archaeological Trust sites near Clynog and Holyhead, as well as vessels from Llanbedrgoch that have not yet been published.

Grooved Ware

The Grooved Ware from Llandygai is an important addition to the limited assemblages from Wales because of its size and variety (Longworth and Cleal 1999, 203–4, 206). Nine Grooved Ware vessels can be recognised, one (Fig. 15, PGVIII.A) present in substantial quantity, the others represented by only a few sherds. Grooved Ware comes from two find spots widely separated across the site. Pit group VIII, close to the Early Neolithic building, contained six pots, all from one pit (1553). The other pits within pit group VIII did not contain pottery, with the exception of crumbs of Early Neolithic pottery from pit 1305. Sherds of the most complete pot (PGVIII.A) were found close together in the southern part of pit 1553, but sherds of the other vessels were mixed together, often lying directly one on top of the other as if deposited together. The Grooved Ware in pit 1553 was, therefore, deposited in exactly the same way as in the pits containing Peterborough pottery, with one major pot broken into large segments and a few sherds of other vessels. This pit was isolated from the Peterborough pits by at least 175m. It was also isolated from the other Grooved Ware find spots (Pits 6041 and 6043) over 400m away amongst the main pit cluster in pit group VI. Pit 6041 contained pieces of three vessels, one of which (PGVI.D) was represented by 58 sherds and another (PGVI.E) by 22. Pit 6043 contained only featureless sherds but of a fabric similar to the Grooved Ware sherds in pit 6041. The central pit 6055 within this main cluster contained pottery judged to be Fengate Ware, but this was in the form of tiny crumbs. A small pit 6061 also in this cluster produced a tiny thin-walled sherd with well-crushed grits, which, though featureless, is reminiscent of Beaker fabrics from Llandygai Henge B. It is noteworthy that this is the only hint of Beaker pottery on this large site.

The main pot from pit 1553 is a flared bowl with an upright rounded rim thinned on the inside and encircled by a band of 4–5 shallow grooves below which the body seems to be covered with random stab marks. Pots PGVIII B–D are broadly similar, C more rounded and D with more complex decoration. Pot PGVII.E is a smaller version of D. All the features of these pots suggest that they belong to the Grooved Ware tradition: the light poorly fired fabric, the simple flared profile, the shallow horizontal grooving at the bevelled rim and the random stabbed decoration of the body. Parallels can be found at Hunstanton in Norfolk (Healy *et al.* 1992) and in Yorkshire and Scotland where the relative restraint of ornamentation is comparable (Cleal and MacSween 1999). The pottery from pit group VI includes part of the lower body or base of two large jars with vertical ridges or ribs, common on Grooved Ware in many parts of the country. Both groups include a few sherds of thin small bowls, one with applied pellets. Whereas most assemblages include some fineware bowls with applied pellets are very rare. There is one from Walton (Gibson 1999a, P48) and possibly another from Trelystan (Britnell 1982, P15) in Grooved Ware contexts, but the closest comparisons come from Newgrange in Ireland where small pellets occur on three bowls in a thin dark fabric similar to PGVIII.F (O’Kelly *et al.* 1983, fig. 37).

Comparisons with the small assemblages from below the barrows at Trelystan (Britnell 1982) seem somewhat closer than with the larger group of material from Walton (Gibson 1999a). Although both these sites are ascribed to the Durrington Walls style, the material from Llandygai, certainly from Pit 1553, should perhaps be deemed Clacton Style, now thought to be somewhat earlier than true Durrington Walls material (Garwood 1999, 157–9).

Scientific analysis of the pottery from the Mid and Later Neolithic pit groups

Eight sherds were chosen for residue analysis (Stern 2008). Two each of these came from pit groups I, VI and VIII and one each from pit group III and IV. Base or lower body-sherds were chosen and most had traces of possible sooting or more obvious residues. Of these both sherds from pit group I, and the sherds from pit groups III and IV, produced no traces of lipids. The remaining sherds from pit groups VI and VIII yielded traces suggesting they had contained a triacylglycerol oil or fat, possibly from plant oils. The sherd (SF 852) from pit 6072 in pit group VI also yielded these compounds produced by heating oil or fat, and therefore indicative of cooking. The sherd (SF 95) from pit 1553 in pit group VIII yielded a possible wax ester and a number of long chain alcohols. The origin of these cannot be identified with certainty but one possibility is beeswax. Stern (2008) considers it fairly typical for about 50% of sherds in a residue study to yield no lipids, so the results must be considered to be positive and this could prove to be a fruitful area for further analysis in future.

Petrological analysis of the fabric of selected sherds was carried out and generally suggested a local origin for all the pottery (Williams and Jenkins 2008). The one possible exception was the main vessel in pit group V (PGV.A). The inclusions in this fabric were predominately metaquartzite, which may indicate a more distant origin for this vessel (Williams and Jenkins 2008). There is a distinct preference in the Peterborough Ware fabrics for light-coloured lithics as inclusions, particularly quartz and quartzite. This preference for quartz in Welsh Peterborough Ware has been noted by Gibson (1995), but Williams and Jenkins (2008) believe that the present assemblage provides the 'the best example' of this so far found in north Wales.

Flint associated with the Mid and Later Neolithic pit groups. By George Smith⁶

Pit groups I to V contained flint debitage including microdebitage indicative of flint knapping. For the microdebitage to be retained the knapping must have either occurred close to the pits or the pits were filled by material collected en masse from a source where flint knapping had occurred. The small size of the pieces, the lack of distinct forms, the mix of colours and the scatter through several pits in a group suggests casual, probably domestic use and deposition.

Pit 1049 in pit group I was notable for containing a large number of pieces of microdebitage. The fact that most are of the same colour suggests that they derive from a single knapping episode but only one of the five larger waste pieces is of the same colour, so the full range of knapping waste is not represented.

Most of these pit groups lacked diagnostic pieces. Pit 4012 in pit group II contained a serrated piece of later Neolithic type, with sharp and fresh serrations, and pit 4109 in pit group IV contained a scraper, again more characteristic of the later rather than earlier Neolithic.

The flint used was mostly pebble flint from the local boulder clay, but pit group II produced several pieces of finer, probably imported flint. Pit group IV also had two pieces made from good quality mottled flint. A few pieces of better-quality imported flint were also recorded at the Early Neolithic settlement at Trefignath, Anglesey, where pebble flint was the main source of raw material. It was suggested that the better-quality flint found there was from the Irish Sea drift (Healey 1987).

Pit group VI had quite a different assemblage to those discussed above. Eight pieces are on pebble flint but most are on dark brown, better quality flint, probably imported from chalklands elsewhere in the country. The varied colours of the microdebitage suggest pebble flint and it appears that the larger implements were made elsewhere or brought to the site as blanks that needed little working while primary working was confined mainly to pebble flint.

There were more tools in this pit group including convex scrapers typical of the Middle or Later Neolithic (Fig. 13). These are more comparable to scrapers from sites in southern Britain, like Durrington

Walls (Wainwright and Longworth 1971, 163–9), than with examples from closer at hand, like Capel Eithin, Anglesey (Aldhouse-Green 1999, 43–4). A fine serrated piece from pit 6041 is comparable to D-shaped backed knives of the Middle or Later Neolithic, as for example at Fengate (Pryor 1978) or Durrington Walls (Wainwright and Longworth 1971, 174). Also included were edge-retouched knives and spurred pieces, which are common tool types that are not diagnostic of period but both the knives are on good quality flint that must have been imported. Two Late Mesolithic microliths were found, as discussed above, but these must have been residual.

Only a single flint flake fragment in yellow-brown flint was recovered from pit group VII, and only three pieces came from pit group VIII. From the latter pit group came a flake fragment from a pebble core, a small flake fragment and an irregular fragment probably struck from a pebble by the anvil or *ecaillé* technique. These pieces give no suggestion of date or function and the small number suggest accidental or even residual inclusion.

Usewear analysis (Debert 2008) indicated that scrapers from the pit groups were used on a variety of materials from soft to hard. Cutting tools were also identified that had been used on materials of varying hardness.

A small number of crystal quartz flakes were found in pit groups III (pit 4092), VI (pit 6041), and VIII (pits 1553 and 1596). Those in pit group VIII were probably residual from the Early Neolithic activity and it is possible that the rest are also residual or accidental.

Graig Lwyd waste material associated with the Mid and Later Neolithic pit groups⁷

The reduction of stone axes to produce flakes has been discussed in relation to the Early Neolithic building but the same process also seems to have been associated with the pit groups. Thirty-six flakes of Graig Lwyd stone came from pit group I, fifteen of those from pit 1049 (Fig. 9). There were five from pit group III and four from pit group VI, but several of these were very small. In pit group VI only pits containing Fengate pottery produced Graig Lwyd flakes. Pit group V produced one flake and pit group VIII had two, although these were of particular importance and this group also contained two flakes of unidentified stone. Five of the flakes from pit group I could have originated from the manufacture of stone axes but the majority of the assemblage represented a destructive sequence in which axes were broken down. Most significant in this respect are medallion-shaped flakes with areas of polish resulting from the removal of part of the polished surface of an axe. Two such flakes were found in pit group VIII and three in pit group I. The presence of one of these flakes in pit 1729, 18m west of the Early Neolithic building, may suggest that this pit was contemporary with pit group VIII rather than with the building. However, this must remain uncertain as the Graig Lwyd flakes found in the building were also largely from a destructive sequence.

Williams (forthcoming) argues that the fresh, sharp edges of the flakes and the lack of retouch may indicate that the destruction of the axes was not aimed at producing useful tools. Despite the scarcity of flint and the suitability of the Graig Lwyd stone, tools made on Graig Lwyd flakes are not found in north Wales, with the exception of Bryn yr Hen Bobl (Hemp 1935), where three scrapers were found (Lynch 1991, fig. 29, nos 10, 11, 13). One of the flakes of unidentified stone from pit group VIII was retouched into a scraper. These two flakes were on stone similar to that from Mynydd Rhiw, although not provably from that source, and were not from Graig Lwyd (Jackson 2008). It is possible, therefore, that the stone type influenced how it was used.

The assemblage of flakes from pit group I can be compared to that from pit FB 151 on the Llandygai Industrial Estate site (Lynch 2001, 71, fig. 35). Pit FB151 contained a broken Graig Lwyd axe and four pieces struck from polished axes as well as other Graig Lwyd flakes without polish. It was dated to 2880–2570 cal. BC, which makes it approximately contemporary to the Grooved Ware related activity in

pit group VIII rather than pit group I. Pit FB151 confirms that axe exfoliation was undertaken at the main henge monument site, and its location within Henge B makes its interpretation as a ritual deposit likely (Lynch 2001). However, there may also have been axe finishing associated with the site as pit FB39 in Henge B and FA370 in Henge A contained slabs interpreted as axe polishers and the site has been described as an axe finishing site (Lynch 1991, 110).

More work is necessary to demonstrate whether the axes were flaked to produce useful tools or as a ritual destruction. In either case only a small proportion of the resulting flakes were included in the pit fills, indicating that the material had been gathered elsewhere. The presence of Graig Lwyd flakes in the Neolithic building demonstrates that this tradition of destructive flaking started in the Early Neolithic, and the pit groups indicate that it continued throughout the Neolithic period. In the Mid Neolithic it was associated with the Mortlake Ware in pit group I and to a much lesser extent with the Fengate Ware in the other pit groups, but it is not clear whether these differences are chronological, cultural or relate to different activities taking place. The flakes in pit group VIII were fewer but most clearly related to the exfoliation of axes.

Burnt stone and bone associated with the Mid and Later Neolithic pit groups⁸

Burnt stone was present in some pits of most groups, although it was not recorded in pit groups III and VIII. It was not present in every pit in a group and seemed to be a variable inclusion like the pottery and flint. Burnt bone was similarly generally but not consistently present. It was only present as very tiny fragments, although pit 4133 did have about 1g. Pit groups III, VI and VIII did not contain any burnt bone, but most pits in group VII had some. All the bone was very fragmentary and could not be identified to species but it appeared to be from animals rather than humans.

Plant remains associated with the Mid and Later Neolithic pit groups⁹

Remains from 76 samples were studied and most contained modern uncharred contaminants. Charcoal and small numbers of cereal grains formed the bulk of the ancient plant remains recovered. While charcoal was common in all the pit groups, for the most part it survived as unidentifiable fragments. However, in pit group IV most of the charcoal identified was hazel, with some oak. Both hazel and oak were identified in pit groups V and VI, with hazel generally dominant except in the burnt deposit over pit 6044, where oak was dominant and pine was also present. Hazel charcoal was found in pit group VII. The dominance of hazel charcoal suggests fuel wood rather than burnt timber.

Burnt hazelnut shells were common in all the pit groups, sometimes in large quantities. In contrast charred cereal grains were very rare, with traces of cereal grains in just three deposits. Of the Neolithic pit groups only pit 4012 in pit group II produced grains, one charred barley grain and one unidentifiable cereal grain. Pit group VII (dated to the Bronze Age, see below) also produced a very small number of charred cereal grains; one barley grain came from pit 3139 and a barley grain and a wheat grain from pit 3143.

Radiocarbon dating of the Mid and Later Neolithic pits

As discussed above the pits were divided into eight fairly well-defined groups. In these there were a total of up to 35 pits, depending on interpretation, of which 24 contained pottery and 25 had suitable samples for dating; most but not all of those with pottery contained material suitable for radiocarbon dating. The samples to be dated were selected to fulfil specific research aims; principally to establish the intrasite chronology and allow extrasite comparisons. Samples were selected from examples of each pottery type in order to calibrate the stylistic typology and aid in the dating of Neolithic pottery in Wales.

It is argued from the close physical association of the pits within the groups, and their isolation from other activity, that the pits within each group were roughly contemporary. This is generally supported by the presence of the same pottery style within pits belonging to a single group. However, the mix of pottery styles from pit group VI, the proximity of pit group VIII to the Early Neolithic building and the scarcity of finds from pit group VII raised particular dating problems, which it was hoped could be solved by radiocarbon dating.

It was intended that the dating programme would contribute to the knowledge of the development of Peterborough and Grooved Ware pottery in Wales. However, for this to be successful it was important to ensure that the dated material was closely related to the manufacture of the pottery. As will be discussed below most authorities assume that the material in the pits was redeposited from an earlier holding deposit, such as a midden. The pit fills could not, therefore, be assumed to be simple sealed deposits, with a known chronological relationship between the pottery and charred plant material. The degree of mixing and contamination was tested by always dating two independent samples from the same pit. A more accurate chronology can be achieved by dating residues adhering directly to pot sherds. Gibson (1994, 175) refers to a date from residue on a Fengate vessel from Horton, Middlesex, which confirmed the other six dates from the same context. On the present site a suitable residue deposit was found on a Fengate pot from pit 4133 in pit group V, and it was hoped that the results from this sample, by comparing it to the dates obtained from the pit fills, would help establish a relative chronology of the pottery deposition.

Seventeen samples were submitted for radiocarbon dating from the various late Neolithic pit groups (see Appendix I). Samples were chosen from pits distributed across the site, and from pits representing each pottery type. Additional pits without pottery were dated to test issues of contemporaneity.

In most cases the two dates from each pit were statistically consistent, indicating a lack of contamination or mixing and suggesting that, whatever the origin of the material, it was all of roughly the same date. The only exceptions are the dates from pit 6041 (pit group VI) and from pit 3155 (pit group VII). These do indicate some mixing and it is recommended that the youngest dates are tentatively used to provide a *terminus post quem* date for these pits. The implications of this will be discussed in more detail below. The date on the residue adhering to the Fengate sherd is statistically consistent with the dates from the other dated Fengate pits and indeed with the dates from the Mortlake pit. The consistency of the dates suggests that there is no detectable chronological difference between the use of the pottery and the associated pit fill. If this is accepted, then the Peterborough pottery on the site can be considered to date from between 3360–3090 cal. BC to 3330–2920 cal. BC.

The similarity of the dates for Mortlake and Fengate Ware does not support a typological succession between these styles, but the large date ranges due to the plateau in the calibration curve could obscure such a succession. The Grooved Ware dates are, however, clearly distinct from the Peterborough Ware dates, even with the large date ranges.

Grooved Ware was dated in pit group VIII, where four consistent dates between 2900–2670 cal. BC and 2880–2580 cal. BC were obtained. The other Grooved Ware on the site was found in pit group VI and this was less convincingly dated. The two dates from pit 6041 in pit group VI were completely different. The earliest date, 3490–3120 cal. BC (NZA-26680), is very similar to the dates associated with Peterborough Ware. As pit 6072 nearby produced a similar date it is reasonable to assume that residual material from this activity was introduced into the fill of pit 6041. The later date of 2580–2460 cal. BC (NZA-26681) can provisionally be accepted as the date of the pit and the pottery it contains but without further corroboration that this is the latest material in the pit it should be treated with some caution. However, Lynch (2008) believes that the pottery is most likely to be of Durrington Walls style Grooved Ware and the date falls within the range for this style.

The spread of dates from pit group VI confirmed that the presence of different pottery styles within the group indicated different periods of activity. This issue of contemporaneity of pits within each group was further tested in pit group VIII. The four dates from two pits in this group were statistically consistent, indicating that the two pits (1309 and 1553) were contemporary. The presence of Graig Lwyd flakes and flakes of similar stone in three of the pits (1305, 1553, and 1596) also supports contemporary usage. The fragments of Early Neolithic pottery from pit 1305 are best interpreted as being residual.

Pit group VII appeared to be anomalous compared to the other pit groups because of the scarcity of artefacts and the radiocarbon dates showed that the pits were significantly later than the other groups, whilst an outlying pit (3146) was much earlier, as discussed above. The two dates from pit 3155 are not statistically consistent but they are quite similar and clearly represent Bronze Age activity. The dates from pit 3139 are statistically consistent and similar to those from 3155, giving a date of between 1980–1770 cal. BC and 1750–1610 cal. BC for the group. The pattern of pits on the ground suggests that they were roughly contemporary and the slight differences in radiocarbon dates are not enough to argue otherwise. Despite the later date the similarity of the layout of the pits and their fills to the earlier groups implies a similar type of activity. The fragments of flint, pottery, charcoal and burnt bone suggest a deposit where midden soil, complete with whatever fragments of rubbish it happened to contain, was collected for deposition in the pits. The burnt stone could also indicate domestic cooking activity but there was not enough to suggest that the pits themselves were used for cooking.

The Parc Bryn Cegin dates fit very well with other dates for Peterborough and Grooved Ware in Wales (see Kenney 2008, table 4). These indicate that Peterborough Ware rarely occurs after 2900 cal. BC and Grooved Ware is rarely found before that date (Gibson 1995). The similarity of the dates on the residues from pots at Parc Bryn Cegin and Brynderwen (Gibson and Musson 1990) is confirmation of this, and helps confirm that charred remains from pit fills provide reliable dates for the associated pottery. The dates for the Grooved Ware pottery from pit group VIII compare closely to other dates for this pottery, especially from Upper Ninepence (Gibson 1999a). The late date from pit 6041 in pit group VI falls at the later end of this range.

Discussion of the Mid and Later Neolithic pit groups

The contents and characteristics of the pit groups will be compared and conclusions drawn where possible. Comparisons will be made with Neolithic pit clusters within Wales and beyond and the more general issues will be discussed, particularly whether these pits can be interpreted as indicators of settlement.

Form and layout of the pit groups

The pit groups at the eastern end of the site (groups I – V) had many features in common and they appear to form a coherent group sharing many characteristics. The pits were all sub-circular, no larger than 1m diameter and no deeper than 0.45m. Their original depth is difficult to determine as some have clearly been heavily truncated. Where preserved to sufficient depth they were generally steep-sided. Those in pit group III were the deepest and could originally have been up to 0.6m deep. The numbers of pits in each group varied but never exceeded eight. Small isolated clusters of pits are typical of these features elsewhere (Manby 1999), with clusters of three pits being common on Rudston Wold in association with Peterborough Ware (Harding 2006). Despite their different landscape position the pits in group VI were similar in size and shape to the eastern groups. There were three distinct clusters within group VI, none of which exceeded eight pits. Group VII and group VIII also fit this pattern.

In most cases the pits were laid out to form specific patterns. Most of these patterns repeated themselves in more than one pit group. Pit group I was the only group to have pits in a straight line, with

three pits quite accurately aligned. In groups II, III and IV three pits were located close together to form a triangle. Together all the pits in group II formed an elongated oval measuring *c.* 7.5m by 3.5m externally and 5.5m by 2m internally. Whether both clusters in this group should be seen together is not clear but other pits also seem to form sub-circular patterns.

If all seven features in the main cluster of group VI are accepted as pits they can be seen to form a rough oval measuring *c.* 5.8m by 4m, with 6055 close to the centre. While none of the pits in this group can be securely identified as postholes the stones in 6044 make this a possibility. Feature 6061 might also be better interpreted as a large stakehole rather than a very small pit. The oval shape made by the six pits in this area suggests a structure. However, it would be a very small one as the internal dimensions would be *c.* 4m by 2.5m, and most of the features seem rather large to be postholes for such a small structure. However, it may be wrong to think in terms of a small roofed shelter; the structure could have been more monumental in nature and unroofed. The intentional nature of this sub-circular layout is supported by the plans of other pit groups on the site. The six pits of group VIII were arranged in a rough oval measuring 3.8m by 3.3m externally and about 2m diameter internally. In this case there was no central feature and these features were clearly pits and not postholes.

The five pits in group VII lay on a rough circle around a burnt patch, with an external diameter of *c.* 4m and an internal diameter of *c.* 2.5m. Although pit 3155 did contain large cobbles, there is no evidence that any of these features were postholes and the large stone across the middle of 3139 strongly argues that this was not a posthole. This group, therefore, seems to offer clear evidence for a rough ring of pits around a fire site or hearth.

The combined evidence from all the groups, therefore, suggests that the features were not postholes but rather groups of deliberately laid out pits. If this is the case, the pits within each group must have been dug within a relatively short time frame, when it was still possible to identify the location of the earlier pits. It is possible that the cluster patterns have chronological significance. For example the pit groups with an oval layout are associated with Grooved Ware pottery. The exception is pit group II, but this has more in common with the triple pit clusters typical of the Peterborough Ware groups. The continuation of apparently similar practices into the Bronze Age is suggested by pit group VII.

The pit fills and their contents

There were some significant differences in the way in which the pits were filled. In pit groups I and II all the pits had single fills with no evidence of erosion of the pit sides before filling. In contrast in pit group IV all the pits had evidence of weathering of their sides, suggesting they had been dug and then left open for some time before filling. Lenses of charcoal and sand in pit 4069 suggest a gradual process of filling, while another pit (4069) in the same group (pit group III) was rapidly backfilled with a single fill containing a large part of one vessel. Most of the pits in groups VI and VII had homogenous fills, although pit 3143 did have a charcoal-rich deposit in the base, but this is similar to the deposition patterns in pit group IV.

The pits in group VIII showed some complexity in their fills. Pit 1553 seemed to have been filled rapidly in a single event, with pottery mixed throughout the fill, but pit 1309 had three identifiable fills. The most complex was 1596, which appeared to have been left open for long enough for the sides to start collapsing. It was then filled by several discrete lenses, many associated with burning. Two other pits had complex filling sequences. Pit 4062, in pit group III, was difficult to interpret but the evidence suggests two phases of digging and filling occurring sequentially in exactly the same place. Pit 6072 in pit group VI could also be interpreted as having two phases, the later cut being lined with stones and containing quantities of pottery.

The placing of stones in the fills seems to have been of some importance. Pit 4133 in pit group V had a stone over the main concentration of pottery, pit 4109 (PGIII) had a heavily burnt hearth stone in its upper fill, and pit 3139 had a large stone sloping across its width. Pits 4062 (PGIII) and 6072 (PGVI) each had a large stone in the middle, blocking what might otherwise be interpreted as post-pipes. These large stones seem to have been placed within the pits as part of a sequence of deposition. Several pits in the Llandygai henges featured material sealed beneath stones (e.g. pit FA 370, FB 39 and FB 147; Lynch 2001).

In summary, minor differences are observable in the fills, though the significance of these is not always apparent. In essence, soil, including burnt material and artefacts, was placed in a small pit generally soon after the pit was dug, though with an occasional time lapse before deposition. The deposition was usually a rapid single event, but this was occasionally lengthened by subsequent deposition into the redug pit.

All the pit groups, including the chronologically later group VII, had similarities in the range and type of finds they contained. This usually included burnt material although none showed signs of *in situ* burning.

Mid or late Neolithic pottery was present in the majority of pits, though this was rarely distributed evenly, and even within a single group some pits had many sherds and some very few. However, in general where there were many sherds they came from a single vessel, so there were rarely more than three vessels represented per pit. Where large pieces of single vessels were present there was some evidence that these had been carefully placed and the pieces of pot specially selected. The residue analysis suggests that several of the vessels had been used for cooking or containing foods, and one of the Grooved Ware pots in pit group VIII may have contained beeswax.

In all instances, except pit groups II and IV, there was one vessel that was represented by a substantial number of sherds, normally representing almost half the circumference of the rim, with some of the body and base. The deposition of these larger pieces of pot in the pits suggests careful placing of segments of an already broken vessel. In the case of vessel PGVI.A the sherds had become somewhat weathered since it had been broken. This same pattern of deposition occurred with the Mortlake style vessels from pit group I, the Fengate pots and the Grooved Ware in pit 1554 (pit group VIII) where sherds of the most complete bowl (PGVIII.A) were found close together in the southern part of pit 1553, but sherds of the other vessels were mixed together, often lying directly one on top of the other as if deposited together.

Sherds from any one vessel were always confined to a single pit. Within pit group III it is possible that vessel PGIII.H from pit 4069 and vessel PGIII.G from pit 4092 are in fact part of the same pot, and in pit group I there were some body-sherds in pit 1027 that might belong to pot PGI.A from pit 1052, but such suggestions are very tentative.

There was also no mixing of styles between pit groups. The Mortlake Ware in pit group I is well separated from any of the Fengate pits. The only place where Fengate sherds were found near Grooved Ware was in pit group VI, but even here pits with Fengate and pits with Grooved Ware were in separate clusters about 20m apart. The main cluster containing Grooved Ware did also have fragments of possible Fengate and Beaker pottery, but the small number and size of these pieces suggests that they were residual and intrusive material.

The flint assemblages include waste, broken, burnt and previously used pieces, so it is difficult to see them as specially selected items. The scarcity of retouched pieces and quantity of microdebitage suggests the inclusion of domestic debris. However, the lack of complete knapping sequences, most noticeable in pit 6041 where the microdebitage and the larger pieces were of different flint types, suggests that only very partial samples of the domestic debris found their way into the pits. The fine flint pieces in this pit may have been specially selected for inclusion. The absence of arrowheads from the pit groups seems to

be significant since oblique or transverse arrowheads are a typical occurrence on classic Grooved Ware sites, such as Woodhenge (Wainwright 1979) or Fengate (Pryor 1978).

Burnt or heat-cracked stones were present in the fills of four out of the seven pits in group I, three out of eight pits in group II, all three pits in group IV, one out of two pits in group V, three out of seven pits in the main cluster of group VI, and three of the five pits in group VII. No burnt stones were recorded in groups III and VIII. With the exception of group VII, there were no potential hearths close to the pits on which stones could be heated, and little can be concluded other than that pit fills were derived from a source that included burnt stone, and also, therefore, the site of activities resulting in burnt stone. The significance of the lack of burnt stones from pit groups III and VIII is difficult to determine.

The assemblages of charred plant remains did not contribute greatly to the understanding of the pits as they consisted largely of unidentifiable charcoal. All the pits contained charcoal, except pit 1586 in pit group VIII. This pit group in general had less charcoal than most, although it contained numerous charred hazelnut shell fragments. Charred hazelnut shells were generally very common, although less so in pit group VII, which also had relatively little charcoal. It is probable that the hazelnut shells originated from the practice of throwing nutshells on fires to dispose of the waste. The hazel charcoal, which predominated amongst the identifiable pieces, was probably fuel-wood. The rarity of cereal grains in the Peterborough Ware and Grooved Ware pits suggests that the two examples (one unidentifiable and one of barley) from pit 4012 in pit group II were intrusive. However, grain was found in two pits in pit group VII, one grain of barley from pit 3139 and one barley and one wheat grain from pit 3143, perhaps indicating that grain was more closely associated with the source of the pit fill in these later pits. Burnt bone was present in very small quantities but quite widely distributed.

To conclude, it can be seen that the finds allow differences to be discerned between the pit groups. Pottery styles were strictly separated, and in the rare occasions where there was admixture the extraneous sherds were small and almost certainly residual or intrusive. Mortlake pottery was only found in pit group I, Fengate was from groups II to V and the outlying pits in group VI, and Grooved Ware was recovered from the main cluster in group VI and from group VIII. Although most of the pits had evidence for flint knapping significant numbers of Graig Lwyd flakes came only from pit groups I and VIII. Most of the flint used was local pebble flint but pit group VI contained fine imported flint. The fine dark brown flint from pit 6041 came from chalk deposits and must have been exchanged over a very considerable distance. This pit contained Grooved Ware and the flint suggests different social contacts perhaps linked to the use of Grooved Ware.

The presence in the Parc Bryn Cegin pit groups of charcoal, other charred plant remains, burnt animal bone fragments and burnt stone suggests a domestic origin for much of this material. Pottery fragments and flint knapping debitage supports this interpretation. The inclusion of very small items suggests the bulk collection of already mixed material from an occupation deposit or midden.

However, the extent to which the pits also contained special objects needs to be considered. It is noted above that some large sherds of pottery appear to be carefully placed within the pit, and that this might also have involved careful selection of the sherds. The flint in pit 6041, pit group VI, was fine imported material with a high proportion of tools. The flint debitage recovered by wet sieving was generally not of the same material so it can be suggested that specific fine pieces were selected for inclusion. However, in other pits there were few flint tools and the presence of debitage suggests the bulk collection from a midden deposit. The occasional Graig Lwyd flakes in most pit groups may be considered in the same way, with the exception of pit group I, which contained 36 flakes. These seem to be the product of breaking down polished axes and the quantity in these pits suggests that this material was specially chosen for inclusion. It is possible that axes were broken down purely for the purpose of burying their flakes.

The impression is that the bulk of the material deposited in the pits resulted from domestic activities, and that it was collected from a specific location, perhaps a midden or floor deposit. Given that complete pots are not represented, it is unlikely to form the full extent of the source material, but rather a selected sample from it. The evidence also suggests specific items were added to this more general deposit. The origin of the source material has not been identified, with the possible exception of the fire sites close to pit group VII. This practice of deposition in pits was continued over a long time period, from the Mid Neolithic into the Early Bronze Age.

The function of the pit groups

Pit groups or pit clusters are often seen as a specific Neolithic or Bronze Age site type defined by spatially discrete groups of pits with little associated structural evidence. However, the genuine isolation of these pit groups is often difficult to determine, and they may be the truncated remains of settlement. The pits are too small for storage as implied by Smith (1964), and more recent studies have favoured a ritual function.

Thomas (1991; 1999) has characterised this class of features as having ‘almost universally shallow, bowl-shaped forms’, which were backfilled soon after digging, contained burnt material, and broken pots, but rarely whole vessels (Thomas 1991, 62). Unusual and high value items can be included, there is often a high tool to waste ratio in the lithic assemblages and the deposit can include fragments of human bone. Although some items may have been specially selected for inclusion in most cases the deposits resemble that of a midden (Garrow *et al.* 2005, 144).

Case (1973) was one of the first to suggest a ritual function for such pits and most recent writers follow his ideas. It is now widely thought that these pits represent ‘structured deposition’ (Gibson 2003, 141) or ‘purposive filling’ (Edmonds 1999, 18). It is generally assumed that while the deposition was the result of a ritual activity this was closely associated with domestic life and settlement. At Kilverstone near Thetford, Norfolk (Garrow *et al.* 2005), where 236 of these pits were excavated, the conclusion reached was that these pits were related to the ritual burial of midden material, the ritual presumably being directly chronologically related to settlement events. The spatial relationship of the pits to the settlement is difficult to establish as no traces of the latter survive on most sites of this type. However, Harding (2006) argues that the digging and filling of pits was part of everyday activity on an occupation site and not physically or temporally removed from settlement.

However, pits of this nature occur in close association with various monument types. For example pits with Peterborough Ware and possibly Grooved Ware are found within the adjacent Llandygai henges (Lynch and Musson 2001), whilst in the Upper Thames region Barclay (1999, 20) discusses the restriction of pits with Grooved Ware to ‘specific locations within an organised landscape’, with a focus on monuments including those of earlier periods. Harding (2006) discusses the possibility of an association between pit clusters and feasting, and suggests concentrations of these pits indicate sites of aggregation rather than everyday settlement, reflecting the use of pits at causewayed camps (Pryor 2004). The pits can also contain cremated human remains as found in pit FA370 in Llandygai Henge A, and the pits in area A at Llanilar (Briggs 2000).

At Parc Bryn Cegin many of the pit clusters were distributed along the ridge overlooking the henges on the plateau below. While they could represent settlement at a prescribed distance from the ceremonial complex they could refer more directly to the complex. Pollen in a Neolithic buried soil horizon under the bank at Llandygai Henge A showed that the site was built in open country, probably on pastureland (Dumbleby 2001). ‘Major deforestation’ was dated to 4255±50 BP (3020–2670 cal. BC) in a pollen core from Nant Ffrancon (Hibbert and Switsur 1976), so it is reasonable to imagine the area around the henge complex to have been cleared at this date. The pit groups might, therefore, represent activity which required observation of the henges, or of activity within the henges.

The date of Henge A is closely comparable to the dates from the Peterborough Ware pits at Parc Bryn Cegin. Lynch (2001, 76) admits that the date of construction of Henge B is not known, but a date of 2300–1900 cal. BC might be tentatively suggested. This means the pits containing Peterborough Ware and Grooved Ware that initially appeared to be inside the henge are earlier than the henge, and therefore should be seen as part of a tradition similar to that which created the pit groups at Parc Bryn Cegin. A similar tradition continued into the Early Bronze Age, as represented by three Beakers buried in pits in Henge B.

Polished axes seem to have been a feature of the pits in the henges, with an axe polisher in the cremation pit FA370 and an unused Langdale axe in pit FA536, but most relevant is pit FB151 (Lynch and Musson 2004, 45–6, 69–71). This contained a broken Graig Lwyd axe and flakes of the same rock, some with polished surfaces. These flakes suggest the same axe reduction process as seen in pit group I and in a smaller way in pit group VIII, the latter being of a similar date to pit FB151. The Parc Bryn Cegin pit groups, therefore, not only overlooked the henges, but are also evidently of the same tradition as pit groups found within and immediately adjacent to the henges. The restricted nature of exploratory stripping in 1966 could mean that pits were present elsewhere on that site, but never found.

The location of pit group VIII next to the Early Neolithic building may indicate the deliberate association of the Grooved Ware pits with the earlier site. With potentially 1000 years between the use of the building and the digging of the pits it is difficult to imagine what may have marked this spot as special. Other Early Neolithic rectangular timber structures have been found associated with pits containing Grooved Ware, as for example at Yarnton, Oxfordshire (Hey forthcoming), Littleour, Perthshire (Barclay and Maxwell 1998), and Chigborough, Essex (Adkins and Adkins 1991).

It has been suggested (George Smith pers. com.) that the shallow pits (1584 and 1586) were in fact a single elongated hole that held a stone. Such a standing stone would have been directly opposite the proposed door of the building and may have stood for millennia after the building was demolished, neatly explaining the positioning of the later pits. The excavated evidence prevents a reinterpretation of these two pits as a single feature but does not exclude their sequential function as supports for a small stone. This might explain the scarcity of artefacts and charcoal from these features.

In summary, although it has not been possible to identify a specific function for the pit groups, they can be seen to be part of a widespread and long-standing tradition that involved the burial of domestic refuse in groups of pits. The refuse was apparently sampled from a larger quantity of material, and might therefore have been specifically chosen as being representative of a particular event or location. The general separation of pottery styles between the groups also suggests deliberate sampling of particular source material, as does the occasional inclusion of specific items. There is evidence that some groups form particular shapes, though the pits are not thought to form remains of standing structures. They may, however, be associated with structures that have not left any archaeological trace. Whatever their ultimate purpose, it is highly probable their presence at Bryn Cegin formed part of a relationship intertwined with the contemporary henge complex visible on the plateau below.

BURNT MOUNDS

By Roland Flook and Jane Kenney

Scattered across the site were 16 significant spreads or mounds of burnt stone of varying dimensions and depth (Fig. 3). Most of these had at least one associated pit or trough and these too varied in size and shape. The majority of the mounds were situated either on the wet, clayey, lower parts of the site or along a natural boundary in the geology where the ground water was close to the surface. Few artefacts

were recovered. The sites described below are identified by the context number for the main mound deposit.

At Parc Bryn Cegin stones from the local Snowdonian glacial deposits were used in the burnt mounds but there was a slight preference for doleritic and mafic rock types, presumably selected for their resistance to fracturing (Jenkins 2008). It has been assumed in south Wales (James 1986) and Ireland (O’Kelly 1954) that sandstone was the main rock used in burnt mounds, but igneous rocks were also used and were probably more efficient as they shatter less readily than sandstone (Buckley *et al.* 1987). Sandstone was used at Bryn Cefni, Anglesey but dolerite was preferred at burnt mounds elsewhere on Anglesey (Jenkins 2002). It was assumed that limestone could not be used because it would form calcium hydroxide on heating in water (O’Kelly 1954), but it was used at Stackpole Warren (Williams 1990) and the mound at Ballycahane Upper, Co Limerick was composed mainly of burnt limestone (Gowen 1988, 132). In general, it would appear that local stones were used whatever their properties, though where possible more heat resistant rocks were selected.

The eastern group of burnt mounds

The largest and best-preserved burnt mounds were concentrated in the eastern part of the site, just below the ridge (SH 59558 70548, 57m OD). Five (1097, 2031, 2167, 2176 and 2287) were located close together along the base of a slight scarp, which indicated a natural boundary in the geology. The sixth (4199) occurred as a single isolated site over 200m to the south-west, but on the same geological boundary. In trenches 1 and 2 a shallow, silt-filled channel (1187/2172) ran along the base of the scarp. The silt demonstrated that the channel had held standing water in the past and it was very wet during excavation. Colluvium had built-up at the base of the slope helping to preserve the mounds from plough damage.

The largest of the mounds (Fig. 16, 2176) was a roughly circular spread of fire-shattered stone 13m in diameter and up to 0.4m thick. The mound sealed three pits, each with an adjacent hearth. The deepest pit (2197) was rectangular and 0.85m deep. A ledge cut in one side may have been for access into the pit. The other two pits (2186 and 2202) were sub-circular and no more than 0.52m deep. All were filled by a series of deposits of burnt stone and charcoal and had stakeholes surrounding them. Each pit had an associated hearth, all of which were on the eastern side of their pits and therefore downwind of the pits in the prevailing westerly winds. This may have been to prevent ash from blowing into the pits or to keep the smoke away from those tending the pits.

Other mounds in this group were similar extensive spreads of burnt stone associated with small pits or larger troughs. A rectangular pit under mound 2031 had evidence in its fill of the presence of a timber lining. Mound 1097 was situated 25m to the south of the main group on the same scarp. It had an oval pit 0.82m deep, filled with collapsed mound material, and rather diffuse burning of the underlying relict soil horizon indicating the site of a fire (Fig. 16).

Another 210m further south-west was mound 4199 (SH 59358 70404, 61.5m OD). Although less well-defined here the slope was a continuation of the scarp on which the other burnt mounds were located. Mound 4199 formed an irregular crescent-shaped spread of heat-cracked stone and charcoal, 4.8m by 2.7m by 0.13m thick, although an area of leached subsoil (4207) suggests that the mound was originally larger (Fig. 16). The crescent opened towards the east, upslope, where there was a circular pit (4208), 0.52m deep. Unlike the other pits this was mainly filled with sandy clays rather than burnt stone.

The middle group of burnt mounds

A small number of burnt stone spreads were found towards the middle of the site in trench 5 and the northern part of trench 3 (Fig. 3), away from the two main groups. Two of these lay partially beyond the limits of the excavation and were not fully investigated. They were much less well-preserved than the

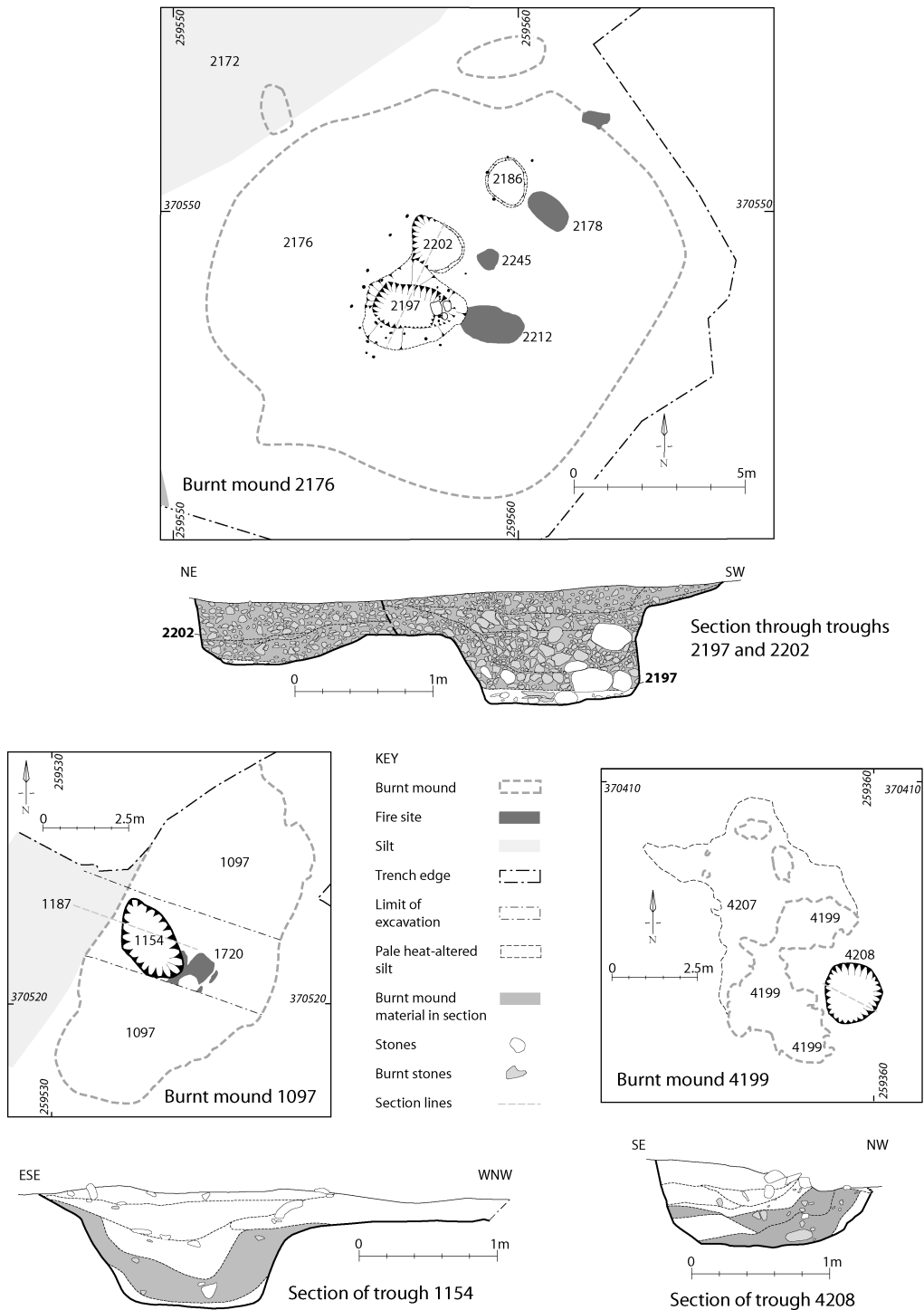


Fig. 16. Plans of burnt mounds 2176, 1097 and 4199, and sections of their troughs.

eastern group, mound 5027 being no more than erosion material from a burnt mound probably concealed under the baulk. Mound 5023 a very small spread of burnt stones located in a rather dry location (SH 59315 70631, 43.5m OD), where the terrain slopes down fairly gently to the north-west. It was only 4.8m long and had two small circular pits. The main part of mound 3830 (SH 59312 70586, 47m OD) was under the baulk and not excavated. It was associated with two very small pits and overlain by a dump of boulders, probably much later field clearance.

The western group of burnt mounds

In the low-lying, clayey, western part of the site (trenches 6 and 7) the remains of six burnt mounds were identified (Fig. 3). In the extreme north-west corner two mounds were located close together (6016 and 6094), while the others (6019, 6056, 7035, and 7039) comprised single isolated features. All of these mounds were badly degraded and dispersed, some barely surviving as thin scatters of heat-shattered stone. All had pits associated with them.

Mound 7035 was located on a gentle north-west facing slope (SH 58937 70449, 34m OD). The mound comprised a shallow, rather discontinuous spread of fire-reddened and shattered stone. Two small pits were located on the western, downslope side of the stone spread. Mound 7039 was located at the base of the slope on the north-eastern side of a slight valley in the boulder clay (SH 58954 70516, *c.* 30m OD). Although the mound was only 5.4m long several adjacent small patches suggested that it had formerly covered a larger area. It had a single oval pit 0.2m deep. Burnt mound 6019 was located in the bottom of a shallow valley (SH 59008 70638, 29m OD). This mound was a large L-shaped spread of concentrated fire-reddened and heat-shattered stone. Below the north-south arm of the burnt mound was a shallow pit and enclosed within the arc of the burnt mound was another small pit.

Mounds 6016 and 6094 were located at the base of the slope on the western side of a slight rise (SH 58986 70683, 28m OD). Mound 6094 was an irregular, thin spread of burnt stone with a regular rectangular pit to the north. Mound 6016 was a more extensive spread, 9m long, with a small oval pit 2–3m to the south-east. Mound 6056 appeared as an isolated feature located on the general north-west facing slope (SH 59070 70599, 32m OD). It was a roughly linear spread of small fire-shattered stones measuring 11.36m long, and only 0.05m thick. Partly sealed by the mound on its northern and downslope side was a large, shallow sub-rectangular pit.

Isolated feature 7055

An isolated feature (7055) is included in this section because it had many features of a burnt mound trough, although there were also some significant differences. This feature was found in the lower, eastern half of the site (SH 59014 70464, 36m OD). It was situated towards the base of the ridge slope, not far from where the ground levelled out towards the river (Fig. 3). Feature 7055 was a shallow pit roughly oval in plan measuring 2.7m by 2.0m and 0.3m in depth (Fig. 17). It was aligned with its long axis north-east to south-west parallel to the slope. Around the edge of the base and in the sides were 13 stakeholes up to 0.14m in diameter and up to 0.24m in depth. Many of the stakeholes were angled so that the stakes in them would have met over the middle of the feature. Sealing the stakeholes in the base of 7055 was a soft, black, charcoal-rich deposit, which also spread up the north-west side of the pit. A dark-grey silty clay overlay this especially around the edges of the feature, but the main fill was composed of small heat-fractured stones. This appeared to have been tipped in on the north-western side, leaving much of the south-eastern side to be filled in later by an erosion deposit. There were small eroded patches of burnt stone around the pit, but not in the same quantity typically found at other burnt mound sites. To the north-west were two possible postholes, with a third further away.

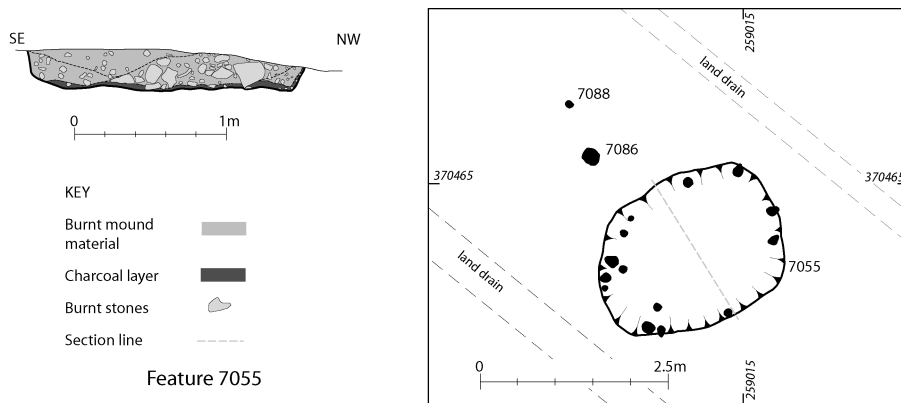


Fig. 17. Plan and section of burnt stone feature 7055.

Although pit 7055 could have been a trough for a burnt mound it was rather shallow for its size and the traces of a burnt mound were very slight. The burnt stones indicate hot stone technology, but the shallow pit may suggest their dry use rather than for heating water. There were no traces of *in situ* burning on the pit sides but the charcoal-rich layer in the base of the pit could have been the remains of the last fire in the pit. The stakeholes in the base of 7055 seem to have held stakes that could have been tied together at the top to produce a small tent-like structure. This could have supported a covering over the pit or items could have been suspended from the structure.

Small stake-built huts are known from other sites. Under the burnt mound at Ballyvourney I, Co. Cork (O’Kelly 1954, 126), as well as the trough and hearth, were two huts. The earliest hut is described as ‘a small oval depression 25cm deep’ with seven small postholes around its edges, mostly inside the cut, which was 2.4m along the long axis. This was interpreted as a small hut with a framework of light branches tied together at the top. It had no hearth and was considered perhaps to have been a meat store rather than a domestic structure. As the whole area was covered by a burnt mound the hollow was filled with burnt stones. It is probable that both the Ballyvourney ‘hut’ and feature 7055 were structures relating to the use of hot stone technology not necessarily requiring the traditional water trough, perhaps the hot stones were used in the covered pit, perhaps for drying. However, the stones in feature 7055 were cracked in a way usually interpreted as resulting from dousing hot stones in water. The stakes are also problematic. If they were present when the fire was lit they would presumably have been burnt; perhaps they preceded the lighting of the fire. The function of this feature, therefore, remains uncertain, but could probably be best explored through experimental reconstructions.

Finds and plant remains associated with the burnt mounds

Burnt mounds are generally known to produce very few artefacts and those on this site were no exception. Flint was most frequently found, although limited to one or two pieces per mound. Embedded in the natural clay beneath mound 2176 was part of a simple form of plano-convex knife (Fig. 18, SF881) indicating a date in the second millennium BC, somewhat later than the main use of the mound as discussed below. Two irregular fragments of flint came from the adjacent mound 2130. Another knife on dark, good quality flint (Fig. 18, SF585) was found in a root-hollow next to mound 4199, while a flake came from the mound itself. Microwear analysis showed that the knife had been hafted and used (Debert

2008). The colluvium sealing trough 1154 under mound 1097 produced a broken flint flake and pit 6015, associated with mound 6056, contained an irregular burnt fragment of flint (Smith 2008).

The extensive sieving programme recovered some small items that would otherwise have been missed. Mound 1097 contained a tiny fragment of prehistoric pot, probably Late Neolithic or Bronze Age, and pit 2149 under mound 2130 produced similar small fragments. These could be residual but it is possible that the pottery was related to the burnt mound activity. Tiny crumbs of a red abrasive pottery tentatively identified as Food Vessel were found near mound 4199 (Lynch 2008).

Mound 3830 produced an eroded Samian base-herd dating to AD 70–110 and the heap of unburnt stones overlying it (3829) contained a sherd of a mortarium dating to *c.* AD 220–350 (Evans 2008). The disparate dates and eroded character of these sherds suggest that they were scattered in manure over the fields and became trapped by soil movement amongst the stones. With the exception of the flint from mound 6056, no finds were recovered from the burnt mounds further west.

Ancient botanical remains recovered from the 59 samples studied were restricted to quite large quantities of mostly unidentifiable wood charcoal, with a few charred grains and hazelnut fragments. Most samples also contained modern contaminants. A small number of charred cereal grains were recorded from mound 1097 and from trough 2197 under mound 2176, and a single grain from feature 7055. These included barley and emmer wheat, but the small quantity of material makes it unlikely that crop processing (or domestic activity relating to food preparation) was taking place on any scale in the immediate vicinity. Other food plant remains were restricted to occasional fragments of charred hazelnut. Amongst the identifiable charcoal hazel was the most frequently recorded species, although there was also some oak. The fills of trough 4208 associated with mound 4199 contained slivers of charcoal typical of structural oak timbers, raising the possibility of a timber structure associated with this burnt mound (Schmidl, Carrott and Jaques 2008).

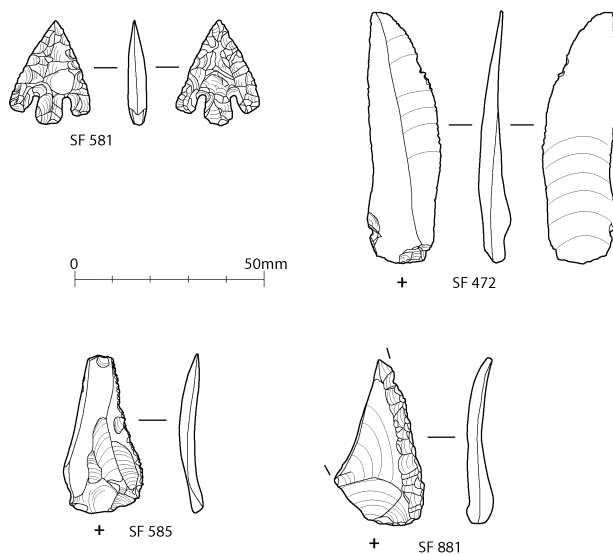


Fig. 18. Finds from burnt mounds and other Bronze Age features: SF581 from a possible burial cairn (4112); SF 472 from earth oven 3133; SF585 from beneath burnt mound 4199; SF 881 from beneath burnt mound 2176.

Feature 7055 also produced large amounts of wood charcoal, most of the identifiable pieces being of hazel. There were lumps of fused ash suggesting a fire had been set in the pit (Schmidl, Carrott and Jaques 2008).

Radiocarbon dating of the burnt mounds

Thirty samples were submitted from eleven of the sixteen burnt mounds, mostly on charcoal of short-lived wood that was probably used as fuel. The aims of the dating programme were twofold, first to see if the mounds were in contemporary use across the site or if there was a chronological progression, and second to see if the longevity of use of a particular mound could be ascertained. In order to achieve this two samples were dated from each trough, and nine samples were submitted from the largest mound (2176). The size of the mound suggested that it could have been in use over a long period, but the consistent layout of the troughs and fire sites hinted that it may have had a restricted duration. The samples from four features under the mound, including a hearth deposit, were chosen to try and detect all phases of activity on the mound. Three samples were also submitted from feature 7055 to test whether its similarities to the burnt mounds indicated a similar date.

The results (see Appendix I) indicate a long period of use from the mid fourth millennium BC to the start of the second millennium BC. However, the mixed nature of burnt mound material makes the dates somewhat difficult to interpret. The trough fills were not sealed contexts, and the origin of the dated samples is difficult to determine, as they could have been produced at any point during the use of the mound. This is reflected by six of the troughs producing dates that were not statistically consistent (Marshall 2008). In the case of trough 1154 under mound 1097 and trough 2179 under mound 2176 a third date was obtained. In both cases two of the three dates were statistically significant, and it is argued in the detailed report that the third, anomalous date results from contamination (Marshall 2008).

Where there are only two inconsistent dates from a trough it is harder to determine whether they represent reuse or contamination. In the case of mounds 6094 and 7035, where the dates are close, they might represent the duration of a single phase of activity. In contrast, the very different dates from mounds 6019 and 7039 could represent either contamination from other sources or two widely separated phases of use. The two early dates from these mounds fit very well with the peak of burnt mound activity on the site. However, the later dates are not dissimilar to the consistent pairs of dates from mounds 2167 and 2287. Their reuse cannot, therefore, be ruled out. Mound 6019 had two pits near or under the mound and another was not far away, so it is a suitable candidate for multiple phases. Mound 7039 had only one trough so contamination may be more likely in this case.

The dating results suggest an initial phase of use in the mid fourth millennium BC, a principal phase of use in the mid to late third millennium BC, and slighter continuation of use throughout the first millennium BC. The following table summarises the three main phases of activity.

The earliest mound appears to have been 6094. Although the two dates are not statistically consistent they are close enough to be from a single extended phase of use in the Mid Neolithic, which is very early for burnt mounds in this area, but overlaps significantly with the deposition of Peterborough Ware in pits on the site (between 3360–3090 cal. BC to 3330–2920 cal. BC, see above). It may also overlap with the construction of Henge A in roughly 3300–2900 cal. BC (Lynch 2001).

The largest number of mounds fall within the late Neolithic phase. All this activity was not restricted to one area but spread over most of the site. The last phase covers much of the Bronze Age, and some earlier mounds may have been reused in this phase.

These phases are well demonstrated in the group of mounds at the eastern end of the site. This is the greatest concentration of mounds on the site and includes many of the largest mounds, including mound 2176, for which an intensive range of dates was obtained to try to ascertain its period of use. The results

Table 1: Summary of the main phases of burnt mound activity at Parc Bryn Cegin

Phase of burnt mound use	Approximate date range of phase	Mounds included in phase
Early phase: Mid Neolithic	3490–3120 cal. BC to 3340–3020 cal. BC	6094
Main phase: Late Neolithic	2490–2290 cal. BC to 2290–2020 cal. BC	2176, 4199, 6016, 6019, 7039 (2031, 7035 start in use and continue slightly later)
Later phase: Bronze Age	1630–1450 cal. BC to 1120–900 cal. BC	1097, 2167, 2287, and possibly also 6019 and 7039

indicate that this mound was the earliest of the group, but although there was stratigraphic evidence that trough 2179 cut through trough 2202 the dates failed to pick up any chronological differences. If the latest date is discarded (this is thought to represent intrusive material) modelling the other dates gives a start date for the activity of 2570–2370 cal. BC and an end date of 2390–2010 cal. BC (Marshall 2008). This suggests a duration of use of 1–310 years at 95% probability and 80–260 years at 68% probability. In human terms this represents use by successive generations, and makes it probable that the troughs were sequential, but it does suggest continuous, though perhaps sporadic, use and rules out reuse at widely separated periods. The general area, however, was repeatedly reused. Probably slightly after mound 2176 the trough associated with mound 2031 was in use (2280–1970 cal. BC to 2030–1770 cal. BC). Next was mound 1097, dating from 1630–1450 cal. BC to 1530–1420 cal. BC, then two mounds (2167 and 2287) at roughly the same time (1420–1210 cal. BC to 1310–1040 cal. BC).

Two of the three dates from feature 7055, the atypical site, were statistically consistent, while the third was not (Marshall 2008). This third date was on a charred cereal grain (so eroded as to be unidentifiable) found in the loose burnt stone fill of the feature. It seems probable that this grain was intrusive to this deposit. The other two samples from the charcoal layer in the base of the feature and from the fill of one of the stakeholes give a date of 1500–1310 cal. BC to 1440–1260 cal. BC. This places the feature within the earlier part of the second main phase of burnt mound activity on the site.

Discussion of the burnt mounds

The recorded features were generally typical of burnt mounds that have been recorded elsewhere. The number of pits per mound varied from one to three, some of which were regular rectangular troughs, but many were small shallow pits. Most of the mounds were fairly large, those further west were reduced by erosion but probably originally covered a wider area. Mounds 4199 and 5023 were noticeably smaller and were probably used on only a few occasions. Few mounds had the classic horseshoe-shape and in many cases the mounds entirely sealed their pits. The three pits within mound 2176 suggest prolonged use. The large mound may have built up close to the edge of the pits and the unstable deposits could easily have collapsed over the pits once the site was abandoned.

The pits associated with the mounds can be classed as either rectangular troughs or sub-circular pits; in the case of mound 2176 both types were present under the same mound. All the sub-circular pits were filled by burnt stones and seem to have been integral to the use of the mounds, but their often small size and shallow depth implies a different use to the deeper, larger troughs. In both pits and troughs the fills were randomly dumped with little discernible stratigraphy, and probably originated from mound material. The only exception is pit 4208 associated with mound 4199. This had relatively little burnt stone in its

fill. The mound, being small and downslope, was unlikely to collapse into this pit and the fill of largely eroded deposits washing in from upslope suggests that there was no attempt to deliberately infill the pit.

The three pits under mound 2176 allow some investigation of the use and chronology of a mound. The layout out of the pits, all roughly aligned and with their hearths in comparable locations, suggests a rough contemporaneity. Pits 2202 and 2186 were more similar to each other than to 2197 and were spaced at a distance that would allow their contemporaneous use. Their sides were undercut, suggesting erosion by water. These two pits may have been contemporary, but the larger rectangular pit 2197 cut through the fill of 2202 and seems to have replaced them. The neat rectangular shape of the base of this pit suggests that the sides were protected by a lining, although no firm evidence for one was found, although there was some evidence for a lining in the trough beneath mound 2031. Pit 2197 had other additional features including a step to allow easier access and more stakeholes, possibly to provide screens against the wind. The step was presumably necessary because the pit was much deeper than the earlier two, at 0.85m.

Burnt mounds are generally assumed to be related to the heating of quantities of water and are often located close to streams. At Parc Bryn Cegin none of the mounds were close to running water; the silt-filled channel next to the eastern group represented a stagnant wet area rather than a running stream. The deeper and low-lying pits could have accessed the natural water table. Generally, the mounds had a tendency to be located at the foot of local slopes and in slight valleys where the water table would be closest to the surface. It was notable that the deep trough (2197) under mound 2176 regularly filled with ground water after excavation, whereas the other two pits were well above the present ground water level. These and other shallow pits did not seem to be well positioned or deep enough to work effectively. The pit next to mound 4199 rarely filled with water after excavation and seemed to be in a well-drained area. This may account for its probable short period of use. There was no evidence of clay linings to hold rainwater and many pits were dug into free-draining deposits. The sides of a small pit under mound 2167 in the eastern group had been reddened by intense heating, suggesting that this pit was either a hearth or cooking pit. Possibly it had been used for cooking with dry hot stones, although it was filled with heat-fractured stones similar to in the other burnt mounds. Some of the other small pits would have functioned better with dry hot stones than as receptacles for water to be heated. At 0.64m in diameter the pit under mound 5023 was the smallest and the location of this mound on a dry hillslope was also not conducive to collecting water.

Other burnt mounds have been found nearby, beyond the boundaries of the site (Fig. 34). Two burnt mounds were found to the south of the site during the work on the A55 and related service station. One mound (PRN 815) was found to the east of Rhos Uchaf next to a boggy patch. It was at least 6–7m across and 1m high but could not be fully excavated, so neither its full shape nor the presence of a trough was determined (Kelly 1982 and notes on PRN 815 in Gwynedd Historic Environment Record). Near woodland formerly known as Wet Covert (PRN 877), largely cleared to make way for the service station, were found two patches of blackened earth and fire-shattered stone about 1.5m across and up to 0.3m deep (Kelly 1990). A third mound may have existed within the henge complex as a watching brief in 1975 identified a probable burnt mound trough (White 1975). The evidence would suggest, therefore, that these mounds are widely spread over the Arfon plateau, though because of agricultural improvements they can rarely be identified from surface remains alone.

Burnt mounds are a very common site-type in Ireland and many parts of Britain, but for many years they were undervalued as an archaeological resource. In the 1970s they were seen as essentially a new site-type in north Wales (White 1977) despite previous discussion in Ireland. In the last 20 years there has been a greater awareness of their potential, but their function is still much debated. In Ireland, where over 20,000 are known, they are called *fulachta fiadh* (O’Kelly 1989), but in Britain the term ‘burnt mound’ is used to define a site-type with evidence for the use of a specialised hot stone technology. These

sites are usually identified by a mound of heat-shattered stone; the residue from the primary activity associated with a pit or trough dug into the ground. Many of these troughs were lined with stone, timber planking, or clay and were intended to hold water. Often a hearth or site of burning is located nearby, and there are sometimes associated light timber structures (O’Kelly 1989).

The siting of these features is also quite specific: they are generally located on the margins of wet, waterlogged areas or near to a stream or other water source. Though there is usually dry ground immediately adjacent to burnt mounds, it is rare to be able to identify a contemporary settlement site nearby.

The heating of water in a trough by the addition of hot stones is generally accepted as the function of classic burnt mounds, but the purpose of the heated water is contentious. Cooking is the most commonly assumed function (O’Kelly 1954), although bathing (Barfield and Hodder 1987) and industrial processes have been suggested (Jeffery 1991; Barfield 1991). Any explanation must account for specific features of these sites. The trough, carefully dug with some effort, often carefully lined and centrally placed, was a principal rather than incidental part of the site’s function. None of the many ethnographic examples of bathing and saunas listed by Barfield and Hodder (1987) required such a trough, especially when there was often a stream nearby. The large quantities of burnt stones must also be explained. Most of the industrial uses of hot stones either do not require a trough or would produce relatively few shattered stones. The size of the mounds suggests that the water in the trough was raised to boiling point and kept boiling for some considerable period of time. Numerous experiments into the use of burnt mounds (O’Kelly 1954; James 1986; Ó Drisceoil 1988; Allen 1994) have demonstrated that this was an effective way of cooking meat. The process also produces exactly the sort and quantity of burnt stone debris found on the archaeological mounds.

The interpretation of burnt mounds as cooking places comes originally from Ireland where the terms *fulachta fiadh* or *fulachta fian* (‘cooking places of the wild/of the deer’ and ‘cooking places of the roving hunters/warriors’ respectively) were recorded in literature since at least the ninth century AD (O’Kelly 1954; Ó Drisceoil 1990). The stories, often written down in the seventeenth or eighteenth centuries, must be treated with caution, but some contain detail that corresponds very closely with excavated examples (especially Keating’s ‘*Forus Feasa ar Éirinn*’ and ‘The Romance of Mis and Dubh Ruis’, quoted at length in Ó Drisceoil 1990). Although these sources are very much later in date it is hard to discard the evidence, tested by experiment, that they were used for cooking and perhaps secondarily for washing.

The main argument against cooking is the almost total lack of bones from the sites. This may be partly due to soil acidity and bone has been recovered from less acid locations such as Fahee South, Co. Clare (Ó Drisceoil 1988) and Ballycahane Lower, Co. Limerick (Gowen 1988, 134). Elsewhere, some robust bones or teeth may survive, such as a single cattle tooth at Bryn Cefni, Llangefni, (Smith and Kenney 2002), and burnt bone at Graeanog, Clynnog (Kelly 1993, 84). However, this cannot explain the lack of bones on all sites; the soil acidity at Cob Lane, Bournville was tested and found to be neutral (Barfield 1991, 60). It is possible that the use of the mounds involved the removal of bone from the site, probably in the form of the cooked joint of meat (Barber 1990b).

Finds of any kind are rare on burnt mounds, suggesting they were not part of or close to ordinary domestic activity. Finds where they occur are usually a few flint flakes or very occasional pot sherds. In Scotland and Ireland hammerstones and stone discs interpreted as pot lids by Hedges (1975, 68) seem to be the most common finds (Hedges 1975; Cherry 1990; O’Kelly 1954). Small pieces of bronze slag from mounds on Anglesey led White (1977) to suggest metalworking on the sites but such evidence is very rare. Occasional sites with significant quantities of pottery contradict the general rule, as for example at Tangwick, Shetland (Moore and Wilson 1999) and Bestwall, Dorset (Ladle and Woodward 2003).

The relationship of burnt mounds to settlements has not been fully established. Their distribution in many places in lowland areas on good land (Hedges 1975; Ehrenberg 1991) implies they were sited not far from settlements, possibly towards the margins of the settled landscape (Moore and Wilson 1999; Pryor 2004, 289–93). Occasional sites have revealed burnt mounds close to contemporary settlements, as for example at Blairhall Burn, Dumfriesshire (Strachan *et al.* 1998) and Reading Business Park, Berkshire (Pryor 2004, 312). Burnt stone spreads, sometime associated with troughs, are found on settlement sites dating to the Bronze Age and Iron Age (Barber 1990a; Barfield 1991; Benson *et al.* 1990; Kelly 1991). While most of these burnt stone deposits are not burnt mounds in the sense of isolated mounds near streams they used similar hot stone technology. Establishing the relationship of burnt mounds to settlements is, therefore, to some degree hampered by the circular argument that burnt mounds were isolated from settlement, therefore burnt stone found on settlement sites cannot be remains of classic burnt mounds.

Most burnt stone deposits on settlement sites are associated with domestic refuse and seem likely to be related to cooking. Small-scale cookery is more efficiently done using a hide to hold the water or in dry hot stone ovens. The time and labour expended in creating and using large troughs would only be justified when large quantities of meat were to be cooked. Burnt stone deposits without troughs may represent everyday activity, while mounds with troughs could indicate larger aggregations of people and feasting. The latter seems to be most graphically illustrated by a classic burnt mound at Bestwall, Dorset (Ladle and Woodward 2003). This was associated with demolition and abandonment of a roundhouse and the artefacts suggest the use of the mound for feasting, perhaps to mark the end of the house.

In north Wales most burnt mounds are known from the uplands, where they are preserved as earthworks. There were few mounds known on Anglesey until recently when development archaeology demonstrated that they are also common on the lowlands (see Davidson 1998a, and Maynard forthcoming). The large area stripped at Parc Bryn Cegin allowed not only 16 mounds to be found but also the areas around many of them to be explored.

Welsh burnt mounds are much like those elsewhere. Shallow pits or amorphous hollows are found under burnt mounds (Williams *et al.* 1987; James 1986) as well as large troughs. Troughs at Glyn, Llanbedrgoch (Redknap 2004) and Nant Porth, Bangor (Davidson 1998b) had planks lining their bases and although no wood survived the outline of timbers forming a lining was detected at Bryn Cefni, Llangefni (Smith and Kenney 2002). Postholes and stakeholes representing some kind of structure that seems to have burnt down were found on Anglesey under site 6 on the Shell Oil Pipeline (White 1977), and mound A at Carne, Pembrokeshire (James 1986), had stakeholes for a windbreak around the hearth. There were stakeholes around the edge of one pit under the mound at Graeanog (Kelly 1993). At site C2/3 Cefn Cwmwd, Anglesey (Maynard forthcoming) a rectangular structure defined by a gully was located 25m north-west of a mound, but there was no dating evidence for the structure.

The Parc Bryn Cegin mounds fit the general pattern. Several had substantial troughs, but some had small scoop-like pits, more suited to baking than boiling. Feature 7055, with its tent-like superstructure, may represent yet another variation, perhaps involving drying as well as, or instead of, cooking. Particularly intriguing is the presence of slivers of oak characteristic of structural timber in most of the fills of the trough at mound 4199. This might indicate the presence of a structure nearby the remains of which have not otherwise survived. Alternatively old timbers might have been used as fuel.

The absence of a stream rules out a process such as fulling that requires clean running water to wash the cloth afterwards (Jeffery 1991). The mounds at the eastern end of the site were in locations suitable for settlement but no evidence of contemporary settlement was found within the excavated areas. However, the adjacent flatter ridge top was not excavated. The lack of any significant metalworking debris from the mounds, despite an intensive search, demonstrates that this was not a function of the Parc

Bryn Cegin mounds. The small number of charred hazelnut shells and charred cereal grains recovered indicate a possible low level of plant food processing or consumption but these cannot have been very important activities on or near the mounds. Although the late date for a cereal grain from feature 7055 does warn that others may also be intrusive and not representative at all of the burnt mound activity.

Despite early suggestions of a long date range (O’Kelly 1954) by the early 1990s the evidence strongly suggested that burnt mounds throughout Britain and Ireland were a Bronze Age phenomenon (Brindley *et al.* 1990; Hodder 1990; Russell-White 1990). More recent work indicates a rather wider date range (see Kenney 2008 for tables of dates). Late Neolithic dates have been produced from a few burnt mounds throughout the British Isles, suggesting a probable start to this type of activity in the Late Neolithic. There are hints of an earlier Neolithic start from Scotland and Ireland, at Greenlaw, Dumfries and Galloway (AHDS), Gortalea, Co. Kerry (Connolly 2001, 12), and Cloghaclocka, Co. Limerick (Brindley *et al.* 1990, 27), but these early dates need confirmation. The main range of burnt mound dates runs into the Early Iron Age. Later dates are rare and usually single, with some occasional medieval dates from Ireland and Scotland, as for example at Catstown, Hugginstown, Co. Kilkenny (Ryan 1990, 46), Fannybane, Co. Down (Brindley *et al.* 1990, 28), Peter Street, Waterford (Walsh 1990), and Auld Taggart, East Rhins, Dumfries and Galloway (Russell-White 1990, 91).

Currently, 49 radiocarbon dates are currently available for 30 mounds in Wales (see Kenney 2008, table 5). Most dates are obtained from on bulk samples of unidentified charcoal and must include some older wood; this effect can be specifically demonstrated at Nant Porth, Bangor (Davidson 1998b, 98). Many of the sites have single dates the reliability of which cannot be tested. Despite the potential problems with the dates, the current evidence indicates burnt mound activity starting about 2600 cal. BC and the majority of dates do not extend much after 600 cal. BC.

No other site has produced dates on so many burnt mounds in one area as Parc Bryn Cegin, making it uniquely possible to demonstrate the chronological range and frequency of these sites in landscape terms. Apart from a very early date of 5910–5610 cal. BC (CAR-721) from beneath the Graeanog burnt mound (Kelly 1993, 84) none of the other Welsh sites approaches the Mid Neolithic date of 3490–3120 cal. BC to 3340–3020 cal. BC from the earliest mound at Parc Bryn Cegin. However, as discussed above, there are a few equally early dates from mounds in Ireland and Scotland.

The subsequent peak of burnt mound activity at Parc Bryn Cegin from 2490–2290 cal. BC to 2290–2020 cal. BC fits well with the earliest dates from other Welsh mounds. Direct comparisons are difficult because of the larger errors on many of these dates. The general Welsh dates show a continuous range from the earliest dates through to about 1020–660 cal. BC. Although there are some peaks in activity, the Parc Bryn Cegin dates also provide a continuous range, which in reality probably conceals very discontinuous use. The two latest dates from Parc Bryn Cegin are open to some doubt as they are not supported, but activity here could continue as late as 1120–900 cal. BC.

Parc Bryn Cegin suggests that Mid Neolithic burnt mounds are possible in Wales, but does not extend the date range at the later end. It does appear probable that burnt mounds were first used in Wales in the Neolithic and that they continued in use throughout the Bronze Age. The fact that this full chronological range can be seen on a single site shows that the same general areas were used repeatedly over a long period of time even when individual mounds may have had a relatively short history.

The availability of only single dates for the majority of mounds hinders the fuller chronological reassessment of use of these mounds or the identification of contamination. Only the Graeanog burnt mound (Kelly 1993) is comparable to mound 2176 at Parc Bryn Cegin in that nine samples were dated. These reveal two distinct, short periods of use separated by up to 1,000 years. The four dates from Bryn Cefni (Smith and Kenney 2002) indicate a single, fairly short duration. These support the results from Parc Bryn Cegin that even large mounds probably only had relatively short phases of use, although their location could be

reused at widely separated periods. The only other well-dated mound, Carne mound B (James 1986), could have been the result of two or more short phases over a long period of time, but the dates are more broadly spread and the separate phases cannot be easily recognised. The single dates from the other mounds could be masking multiple phases over similarly long periods. Any attempt to understand the normal duration of use of a burnt mound will require much more extensive radiocarbon dating of these features.

EARTH OVENS

Description of the earth ovens (See Fig. 19)

Seven small pits scattered across the site were identified as belonging to a distinct class of feature (Fig. 3). The pits were circular or sub-circular and no more than 1.5m in diameter and 0.4m deep. Some of them had clay linings and all were filled with heat-cracked stone. Only two produced artefacts, which suggested a prehistoric date for these features.

The best-preserved was pit 1072, found in trench 1, just below the ridge (SH 59538 70468, 61m OD). It was a nearly circular pit, 0.69m in diameter and 0.32m deep, with regular steep sides and a flat base. It was lined with a 0.12m-thick layer of friable red-brown pinkish silty clay. This clay was thickest over the base of the cut and extended up the sides. In places at the top on the south side the clay projected out over the fill in a way suggesting the start of a sealing deposit. The main fill was largely composed of heat-cracked stone and comminuted charcoal. The clay was not a strong red colour, suggesting fairly gentle heating as might be expected from hot stones being placed in the pit, rather than *in situ* burning. Two small fragments of prehistoric pot were recovered from the fill. A nearby burnt patch might have represented the site of the fire on which the stones were heated.

There were two other pits (1230 and 1259) within 50m of pit 1072. Pit 1510 was further west in trench 1, pits 3133 and 3314 were part-way down the slope in trench 3, and pit 6033 isolated towards the western end of the site in trench 6. These were all sub-circular, with fills containing a high proportion of heat-cracked stones. They varied in size from 1.5m by 1.4m to 0.6m in diameter and in depth from 0.38m to 0.15m. Pits 1259, 1510 and 6033 had traces of a clay lining and pit 3133 was reddened by heat on its base and sealed by a silt deposit. Pit 1230 was next to a large charcoal spread, which seemed to be related to the use of the pit. It was also 7m from a collection of seven postholes and two larger pits. Pit 1510 formed part of an approximately straight line incorporating two small pits and a possible posthole. Whether any of these other features were related to 1510 or each other is not known and the apparent alignment may be coincidental.

Finds and plant remains associated with the earth ovens

No artefacts were recovered from these features with the exception of pit 3133, which produced a blade on fine brown flint (Fig. 18, SF 472) and two small fragments of prehistoric pot from pit 1072. Microwear analysis showed that both edges of the blade had been used for cutting and it had probably been hafted (Debert 2008). The 18 samples of charred plant remains studied from these features produced a large quantity of wood charcoal, and most of the samples also contained lumps of fused ash. The fill of pit 1072 contained two charred cereal grains (barley and wheat) and a small number of charred hazelnut fragments; occasional fragments of the latter were also present in pits 1259 and 3133. The identifiable charcoal was predominantly hazel, with lesser quantities of oak (Schmidl, Carrott and Jaques 2008). The presence of ash supports the argument that fires were set directly in the pits and most of the charcoal must have been fuel, but otherwise the plant remains give little indication of the function of these features. The

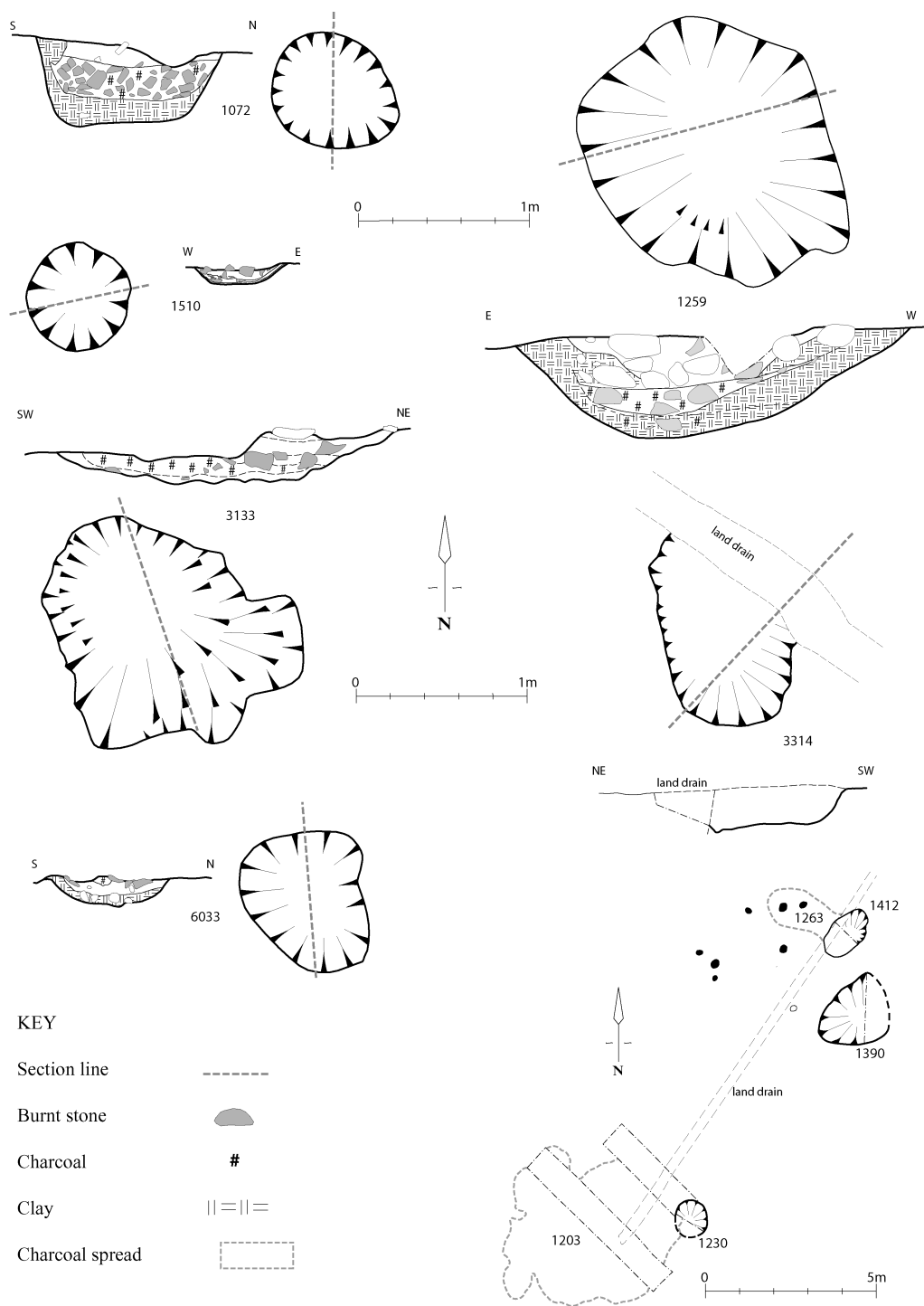


Fig. 19. Plans and sections of earth ovens and the Bronze Age complex including pit 1230.

low frequencies of plant remain suggests that processing grain and hazelnuts would seem not to have been carried out in or near the pits.

Radiocarbon dating of the earth ovens

Fourteen samples were submitted for radiocarbon dating, two each from the seven main pits. Three samples were also submitted from the group of features north of pit 1230. The duplicate measurements from each pit were statistically consistent except for those from pits 1259 and 3314 (see Appendix I). These demonstrate some mixing and contamination of the deposits and it may be best to treat the latest dates as providing a *terminus post quem* for these features. The earliest date from pit 1259 is much earlier than any other activity recorded on the site, except for the very ephemeral Mesolithic presence, while its later date compares very closely to other dates for these pits. The earliest date from pit 1259 should, therefore, probably be discounted. If pit 1259 is tentatively accepted as being of Early Neolithic date it means that three of the seven pits were of this early date (also pits 3133 and 6033). This early group covers the date range 3940–3650 cal. BC to 3640–3370 cal. BC. These appear to have been roughly contemporary with the Early Neolithic building, though pit 1259 may have been somewhat later (Marshall 2008). The dates from pits 1072, 1230 and 1510 fall within the Bronze Age, between 1630–1450 cal. BC and 1010–820 cal. BC. If the date of 1690–1500 cal. BC from pit 3314 is taken as the *terminus post quem* for this feature it could also fall within this time span. These dates reflect quite closely the range of the later peak of burnt mound activity on the site, from 1630–1450 cal. BC to possibly 1120–900 cal. BC (Marshall 2008). The flint blade from pit 3133 fits with its Early Neolithic date, although blades can be found in assemblages of other dates and are also typical of the Mesolithic.

Of the three samples from the group of features north of pit 1230 two were from the primary fill of pit 1390 and one from the charcoal spread sealing some of the postholes. All these dates were statistically consistent and consistent with the two dates from pit 1230. These features, therefore, seem to form a roughly contemporary complex dating to between 1490–1310 cal. BC and 1420–1210 cal. BC.

Discussion of the earth ovens

These features were characterised by their small size, sub-circular shape and well-defined, often steep-sided cuts, and could be differentiated from burnt mound troughs and other indeterminate patches and hollows containing burnt stone. Typical of this group of features was pit 1072, a small, sub-circular pit lined and sealed with clay which had been altered by heat. The pits contained a large proportion of heat-cracked stone and often charcoal. Finds were rare, and many of the features were quite isolated from other contemporary features. It has been demonstrated elsewhere that pits of this nature were used as ovens. Similar technology is still used for cooking in Papua New Guinea, Polynesia and Australia (Hurl 1990; Wright 2000), and has been described in ethnographic records from Canada (Campling 1991).

In continental Europe archaeological earth ovens are a relatively common find. They are best known from Switzerland but are also found in France, Germany and elsewhere. The typical earth ovens are large rectangular pits filled with burnt stones, but in France circular earth ovens are sometimes found, measuring on average 1.7m in diameter. The classic earth ovens date from the mid Bronze Age to the mid Iron Age but some in France have been dated as early as the Neolithic (Ramseyer 1991). Most of these examples do not have a specific clay lining, but all do have burnt stones and functioned by being covered in earth to seal in the heat.

While burnt mounds are widely discussed the term ‘earth oven’ is not generally used in British archaeology, although earth ovens dating from the Neolithic were identified at Clacton, Essex (Hedges 1980, 27). The dates of the Parc Bryn Cegin examples indicate that they belong to two periods—the Early Neolithic and the Bronze Age. The two earth ovens (3133 and 6033) closest in date to the Early Neolithic

building were the furthest away from it (330m and 430m away respectively). This indicates relatively widespread activity, though the nature of the activity is difficult to ascertain. Structures adjacent to the pits might have existed but not left any archaeological record, though the scarcity of artefacts in their vicinity would argue for limited or occasional use. Both these pits were in suitable locations for settlement and it is suggested that they represent short-lived occupation sites.

Similar arguments apply to the Bronze Age examples, which could also represent short-term settlement. None of the Bronze Age examples were immediately adjacent to burnt mounds, though 1510 and 1230 were only 55m and 77m respectively from contemporary mounds. However, it is not possible to determine the relationship between the two site types.

One area, however, provided evidence for greater concentration of use. Pit 1230, with its associated charcoal spread, resembled a burnt mound, although the heat-cracked stones were only numerous in the pit and not in the charcoal spread. The latter might represent repeated emptying of the pit. In addition, about 7m to the north-east was another spread of charcoal sealing a group of postholes and associated with two large pits (Fig. 19). The dates from one of the pits (1390) and the charcoal spread over the postholes were consistent with the dates from pit 1230 and it seems probable that these features were all functionally related. The stones within pit 1390 were not burnt and the complex did not have the typical characteristics of a burnt mound. However, the pit did penetrate the water table, and it might, therefore, have functioned as a well. If we assume that the charcoal spread (1263) represented the site of a fire, then the stakes could have been used for suspending items to be dried or smoked. This complex of features suggests a greater range of activities taking place, though the lack of contemporary finds and structures still makes it difficult to argue for the presence of permanent, long-term settlements.

A PUTATIVE BRONZE AGE BURIAL CAIRN

During ploughsoil stripping in trench 4 an area of stones (4112) was encountered (Fig. 3). A bifacial barbed and tanged flint arrowhead (Fig. 18, SF 581) made from light brown flint was found in the top of the stone deposit. It is of Conygar Hill type as defined by Green (1984), a type most commonly found in burials in association with Food Vessels and rarely found in Wales. It is complete and undamaged and so is unlikely to have been moved since its deposition, suggesting that it was not a stray loss, as is often the case with arrowheads, but a deliberate deposit (Smith 2008).

The stone deposit (4112) in which it was found was composed of loosely agglomerated rounded medium and large cobbles and covered an approximately oval area of about 5.8m by 4.1m. This deposit was located towards the western end of trench 4 at about 61.5m OD (Fig. 3; SH 59288 70361). Investigation showed that the stones were embedded into the boulder clay and were little different to other deposits of cobbles on site that appeared to be the result of colluvial or plough sorting. A small oval patch of charcoal within the area of stones appeared to be a burnt tree roothole and as no other evidence of anthropological activity could be detected the deposit was interpreted as natural.

The specific type of arrowhead found raises the possibility that the stone deposit represent the remains of a burial cairn. This is supported by the presence of numerous large rounded boulders in the top of a nearby natural hollow about 11m away. These stones were up to 0.9m in length and seemed to have been dumped in the hollow, possibly when the present field layout was created in the late nineteenth century. It is not impossible that they originated from a cairn over layer 4112, although this would have involved carrying the stones uphill. This evidence might be combined to tentatively suggest that the arrowhead belonged with a cremation burial under a cairn, but that the majority of the feature was destroyed during more recent agricultural improvements.

EARLY IRON AGE ROUNDHOUSE

By Roland Flook and Jane Kenney

Early Iron Age Roundhouse E (Figs 20 and 21)

In the western end of trench 4, part-way down the slope towards the Afon Cegin (SH 59272 70379, 59–60m OD), was a narrow circular groove cut into an area of exposed bedrock (known as Roundhouse E, marked on Fig. 3 as RHE). This was associated with numerous small pits and postholes both within and around the circle. Immediately to the north-east was another semicircular groove, and to the west was a deposit of charcoal containing metalworking slag, associated with more postholes. All the features were cut into the shale bedrock, which had been exposed during the last glaciation, as there were patches of glacial polish on its surface. The bedrock had strong bedding planes, and at its surface it became very friable and easily broke up, leaving hollows and fissures often running nearly perpendicularly across the orientation of the bedding planes. It was often difficult to distinguish between natural fissures and anthropogenic features, especially as some of the former had occasional burnt stones and charcoal fragments incorporated into their fills.

A narrow gully (4267) cut into the bedrock described a near perfect circle with an internal diameter of 8.63m. The gully measured up to 0.3m wide and 0.27m deep, being deepest on the north-west side, and



Fig. 20. Photograph of ring-groove Roundhouse E from the north-west. Scales 2m.

did not contain packing stones. Much of the western half of this groove was sealed beneath a deposit of stones (4196), some of them fire-cracked. This was an extensive linear deposit oriented south-west to north-east, with a further, similar spread of stones (4261) to the south-west.

On the western side of the circular gully there was a gap in the circle with a posthole marking the ends of the gully at each side. The postholes (4192 and 4318) were up to 0.48m deep and were densely packed with stones, presumed to have been deposited after the posts had been removed or rotted away. To the west of this gap was a charcoal-rich deposit containing iron slag (4250). The southern arc of the circular gully 4267 was truncated by a later feature (4283), with stones in its base and evidence for *in situ* burning. Features 4250 and 4283 proved to be much later than the rest of the activity in this area (see the section on the early medieval smithing site below).

Inside the circle were various hollows, pits and postholes. A group of four postholes (4226, 4228, 4246 and 4252) was located towards the western side of the centre of the circle. They formed a rough rectangular alignment and were up to 0.41m deep, some with possible post-packing stones. The two most northerly postholes were sealed by a deposit of burnt and fire-cracked stones (4197). Within the interior of the circle were many shallow hollows and several features more or less convincing as postholes, all less than 0.26m in depth.

Approximately 2m to the north-east of the circular gully 4267 was a further semicircle cut into the rock (4315). This comprised two arcs varying in depth between 0.15m and 0.03m. There was a gap of *c.* 1m between the two arcs and the eastern arc did not quite follow the circle defined by the western one so that

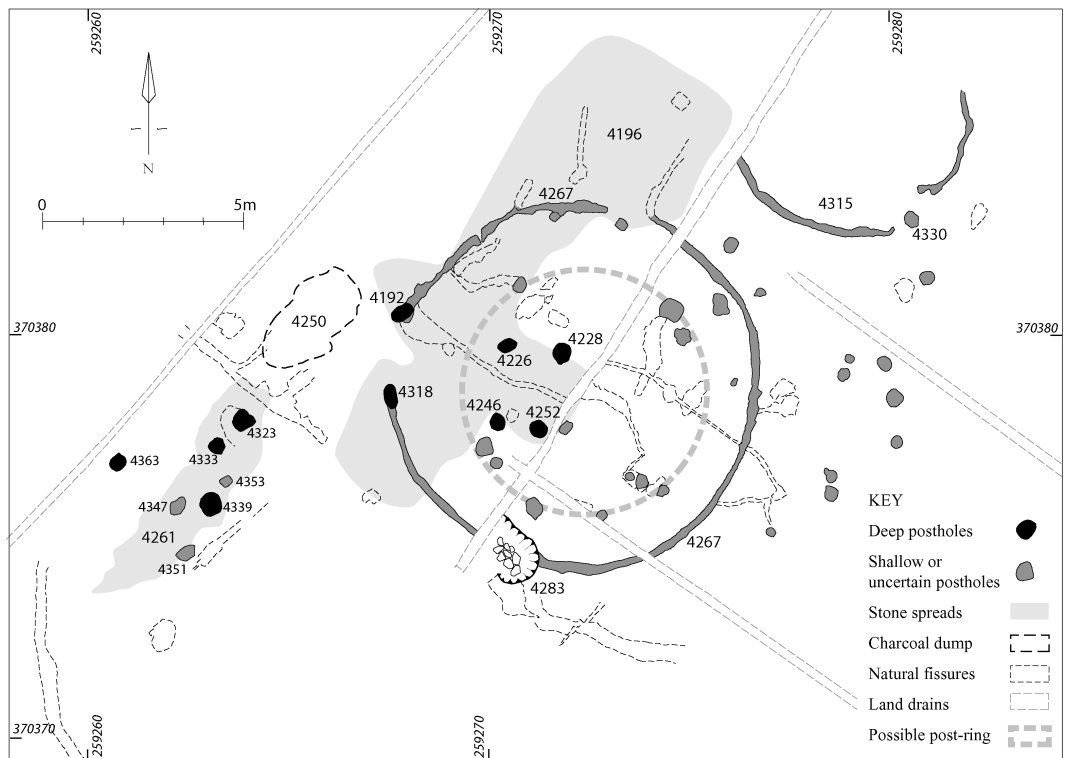


Fig. 21. Plan of the ring-groove Roundhouse E.

the gap was staggered. The complete feature measured 5.6m in internal diameter. Located almost centrally in the gap between the two arcs was a single rock cut feature (4330), possibly a posthole, 0.15m deep.

Various features, some apparently postholes, were distributed to the east of the two ring-grooves (4267 and 4315). The most regular of these were sub-circular, and up to 0.16m deep. Another group of features were arranged in a rough line to the west and south-west of the circular groove 4267. The line ran roughly north-east to south-west, with one feature (4363) situated off the line. The most clearly defined features were up to 0.49m deep, and two seemed to have post-packing stones. In this area there was also a hollow where a layer of stones (4310), some burnt, was covered by a layer of charcoal (4307) and this may have been a hearth. Other potential features in this area were probably natural fissures.

Stripping of this area showed these to be an isolated group of features, but a broad baulk, over 35m wide, between this and the building plateau to the west could have obscured further features.

Finds and plant remains associated with the Early Iron Age Roundhouse E

There were very few finds from this area, many of which were either intrusive or residual. A small Mesolithic-style core from a natural fissure to the south-west of the house could suggest Mesolithic activity somewhere in the area (Smith 2008), and a burnt flint flake was recovered from posthole 4248. A thin shaping flake of Graig Lwyd stone from posthole 4226 is assumed to be residual. This leaves only metalworking debris, which radiocarbon dating attributed to a much later period. This is discussed below in the section on the early medieval smithing site.

The charred plant remains from the 36 samples studied consisted of large amounts of mostly unidentifiable wood charcoal, charred grains and a few hazelnut shell fragments. A small number of cereal grains came from three of the four large central postholes and from other features inside the roundhouse, as well as from the ring-groove itself. Crop plants such as barley, emmer wheat, naked wheat, oat, and spelt wheat were identified, but there was very little chaff. More substantial grain assemblages were recovered from contexts relating to the metalworking activity, but these are discussed below. There was a small quantity of charred hazelnut shells and hazel was the most frequently recorded charcoal species, followed by oak. The fill of posthole 4228, one of the four central postholes, produced charcoal 'slivers' probably derived from structural oak timbers (Schmidl, Carrott and Jaques 2008).

Radiocarbon dating of the Early Iron Age Roundhouse E

Eight samples were submitted for radiocarbon dating from the area of Roundhouse E, but four of these proved to date to very much later than the roundhouse itself and are discussed below. This gives very few samples from which to establish the date of the structure. The problem is compounded by the poor relationship of any of the dated samples to the main roundhouse. The only features reliably related to this structure were the entrance postholes and the ring-groove. The postholes produced no datable material and the shallow ring-groove was too disturbed to be a secure context for dating, as demonstrated by a small fragment of post-medieval pottery recovered from it. The date for the main structure, therefore, relies on two samples from a posthole that appeared to form part of the proposed post-ring related to the roundhouse (Appendix I). The two dates were statistically consistent so suggesting minimum mixing of the posthole fill but the doubt about the feature's relationship to the structure is problematic. The other two dates were from one of the deep central postholes and from a charcoal layer sealing the posthole. As discussed below it is possible that these four central postholes were related to a different structure to the main roundhouse. The date from the central posthole was slightly earlier than that from the possible post-ring, although the charcoal spread was contemporary with the post-ring. The plateau at this point in the calibration curve makes detailed comparisons of the dates difficult, but it is possible that the four-post

feature pre-dated the main roundhouse. It is also possible that all this activity took place at roughly the same time or over a short timespan. The early activity in this area, therefore, seems generally to date from the fifth to sixth centuries cal. BC (Appendix I and Marshall 2008) but the archaeology suggests the existence of more than one phase of activity in this period. The problems with the calibration curve and scarcity of stratigraphy mean that, even if numerous samples were dated, these phases would not be clarified through radiocarbon dating.

Discussion of the Early Iron Age Roundhouse E. By Jane Kenney and George Smith

The settlement activity represented by Roundhouse E seems to date to the Mid Iron Age, about the fifth to sixth centuries cal. BC. The two or more phases of activity probably occurred within a fairly short space of time, although at this point in the calibration curve it would be difficult distinguishing activity even 100 years apart. It seems that this settlement was unenclosed. A search was made for an enclosure ditch but nothing convincing was found. The postholes to the west of the roundhouse may have belonged to the later activity found in this area, as discussed below.

The circular groove 4267 was so perfectly formed that it must have been deliberately dug. With the two postholes marking an entrance in the western arc this defined a circular building. The groove was not wide or deep enough to have held structural timbers and the way it ran into the entrance postholes demonstrated that it was not a drip gully. It is most likely to have supported a wall. Unless the roof was supported on rafters resting directly on the ground structural postholes would be expected inside the house. Four large cut features (4226, 4228, 4246 and 4252) seem to be good candidates. Their steep profiles and in some cases the presence of packing stones suggest they were postholes for quite substantial posts but their off-centre position seems unlikely for major roof supports. The difficulty in fitting these postholes into the main roundhouse raises the possibility that these belonged to a different phase of activity. The numerous postholes in this area provide some scope for imagining another roundhouse, although none can be made to define a circle. The four large postholes might have held a porch for this proposed structure; the similarity of its alignment with the entrance of the ring-groove roundhouse suggesting that one structure was built to directly replace the other. Alternatively, the four posts could have formed a four-poster structure, usually interpreted as a granary, again suggesting two phases of activity.

If the four large postholes were not part of the ring-grooved house this would have needed some other support, most likely a ring of posts. As the posts would be resting directly on bedrock and taking a vertical thrust from a ring beam, it is possible that they did not require deep postholes. Many of the features that were most convincing as postholes lay on a circle about 6m in diameter nearly concentric with the wall-line. The bedrock was most disturbed along the north-western half of this circle, which may explain the absence of postholes here. The lack of a complete circle and the irregular nature of some of the features makes the interpretation of this as a post-ring tentative, but reasonable. The semicircular gully (4315) to the north of the main roundhouse was more irregular and less well-defined than gully 4267, but in the context of the other structure it seems likely that it supported a similar wall, although this may have been an enclosure rather than a roofed structure. Feature 4330 did appear to be a posthole and might have given some structural support, although this would have prevented this gap from being used as an entrance.

It is not necessary to look far for parallels to the ring-groove roundhouse. About 800m north, in the middle of Henge A, the 1960s excavations revealed a very similar roundhouse (Roundhouse A2); although at about 15m in diameter it was much larger (Musson 2001). It was defined by a similarly narrow wall slot and had a well-defined post-ring to support the roof. Comparable settlements with origins in the first millennium BC were also found at Moel y Gerddi and Erw Wen, both near Harlech, Meirionnydd (Kelly 1988). Houses on both sites were defined by ring-grooves with packing stones to

support planks. The main house in Llandygai Henge A had impressions in the base of its ring-groove suggesting the wall was composed of substantial planks set on end (Musson 2001, 97). The lack of packing stones in the Roundhouse E ring-groove could be the result of erosion by modern ploughing, but cutting a narrow groove into bedrock may have removed the need for packing stones. Despite the presence of plough erosion at Parc Bryn Cegin the ring-groove of Roundhouse E was actually deeper than at the Harlech houses, possibly providing extra support without packing. It is also possible that the walls were composed of stakes and wattle, as stake-walled roundhouses have been found at Crawcwellt, near Trawsfynydd, Meirionnydd (Crew 1998).

Internal post-ring roundhouses are widely known in this period, for example in Wales at Walesland Rath, Pembrokeshire (Wainwright 1971) and Llawhaden, Dan y Coed and Woodside, Pembrokeshire (Williams and Mytum 1998) and in England at Danebury, Hampshire (Cunliffe 1984) and West Brandon, Co. Durham (Jobey 1962). Both houses in Henge A at Llandygai had well-defined post-rings, perhaps supporting the presence of such a structure in Roundhouse E. However, ring-grooves, possibly for wattle lining, were also found on the inside of clay-walled round houses of the Middle Bronze Age at Mellteyrn Uchaf on the Llŷn peninsula (Ward and Smith 2001). The same method of lining a clay-wall was still in use possibly as late as the second century AD at Pant on the Llŷn peninsula (*ibid.*). It is, therefore, also possible that Roundhouse E had a clay wall lined with wattle. If the internal post-ring is considered unconvincing this could explain how the roof was supported. Assuming that Roundhouse E and the smaller structure (4315) were contemporary a clay wall up to 1.5m thick might be possible.

The Crawcwellt stake-walled houses were all built on slight manufactured terraces, Moel y Gerddi was built on the fairly level top of a low rise whereas Erw Wen was built on a terrace on a gentle hillslope. Roundhouse E on the other hand seems to have been built on a marked slope without a terrace; the ground sloped down by about 1m across the diameter of the roundhouse, giving a slope of roughly 1 in 9. If it did have a terrace it must have been built up rather than cut into the slope, but the consistent depth of the ring-groove suggests otherwise. The wall might have been of different heights around the circumference to compensate for the slope and creating a level wall-plate. It may also be that the floor itself was terraced up above the slope.

The entrance of Roundhouse E was on the western, downhill side—facing the prevailing winds but avoiding flooding on the slope. If the four central postholes did represent the porch of another roundhouse, this too would have had its entrance on the same side. The same downslope but windy orientation was the case with the house at Erw Wen.

The slight ring-groove (4315) to the north-east of Roundhouse E might represent an ancillary building. The main house in Henge A (Roundhouse A2) also had an adjacent smaller structure (Roundhouse A1), although this was again much larger and more substantial than at Roundhouse E. In the latter case the position of the possible ancillary building in relation to the main house and the similarity of the ring-grooves suggest that they were contemporary, but this cannot be proved. The interpretation of the four central postholes as the porch of another house suggests that there were more phases and complexity to the Roundhouse E area than initially evident. Even if these features are seen as forming a four-poster structure they must represent activity either before or after the main roundhouse phase.

There was no evidence for storm gullies around Roundhouse E despite its location on the slope. Neither was there an enclosure ditch, and although it is possible that modern intensive ploughing had removed superficial features, this absence was probably genuine and significant. The settlement within Llandygai Henge A made use of a substantial banked enclosure and contained the largest roundhouse so far recorded in north-west Wales. This suggests it was either a dwelling of unusual status or performed some communal function, or perhaps both, and surrounded by scattered houses and farmsteads such as Roundhouse E of which further examples might be found in future.

LATE IRON AGE AND ROMANO-BRITISH ROUNDHOUSE SETTLEMENT

In the middle of the site, at a point where the slope becomes less steep but above the wetter low-lying areas, there was a complex of features interpreted as a Late Iron Age and Romano-British roundhouse settlement (Fig. 22). This consisted of a southern enclosure with at least one roundhouse (Roundhouse A, SH 59119 70414, *c.* 45m OD), joined by narrow ditches to a larger northern curvilinear enclosure around three roundhouses (Roundhouses C, D and H, SH 59160 70527, *c.* 41m OD). In the middle of this complex were more ditches and a dense concentration of postholes and a penannular ditch (structures F and G). There may have been a further outlying roundhouse to the south-east (Roundhouse B). Although the slope was more gradual here than further east it was still quite marked and appears to have influenced the design of the settlement, which was distributed along the contours. However, the slope did not result in the houses being built on terraced platforms.

The structures within the enclosures are interpreted as clay-walled roundhouses, based on comparisons with other sites in Gwynedd. Such clay walls rarely survive, although spreads of clay are sometimes found as at Pant (Ward and Smith 2001) and Bryn Eryr (Longley 1998). Generally, the wall is deduced from the position of other features, and the outer face of the wall is frequently marked by a curvilinear gully. This can be referred to as an eaves-drip gully, but the position of these features generally suggests that they were close to the base of the wall rather than under the ends of the roof eaves. Such gullies are referred to here as storm gullies and it is assumed that they protected the base of the wall from surface water that might undermine it. Roundhouses are typically reconstructed as having low walls about 1.5m high. In the case of clay-walled roundhouses the wall would have been at least equal in width; giving them sufficient strength to support the roof without the aid of posts, although in some cases posts do seem to have been used in addition (Davidson forthcoming). In most cases the few postholes present represent internal features or entrance posts. The features used to define clay-walled roundhouses on the present site were, therefore, concentric curvilinear gullies defining a circular area with few or no structural postholes.

Southern enclosure and Roundhouse A (Figs 22 and 25)

The southern enclosure was defined by two ditches that ran from south to north then curved north-westwards and continued after a gap, which might have been an entrance. The area enclosed was potentially *c.* 1140m², but the ditches did not so much enclose this area as protect its uphill side. Within this area one focus of activity was interpreted as the remains of a roundhouse (A) and another was detected in an evaluation trench extending to the west.

Enclosure Ditches (Figs 22 and 25)

Roundhouse A was surrounded on the eastern and northern sides by a series of ditches. The two main ditches (3157 and 3163) started to the south of the roundhouse, where both seemed to have had fairly well-defined rounded termini. No trace of the ditches could be found further south or south-west. The ditches ran fairly straight following the contours of the hill to the north-east, then curved downhill towards the north, where they terminated with a short ditch (3175) running perpendicularly across them. After a gap of about 5m the two ditches seemed to continue (now numbered as 3504 and 3506), running north down the slope.

The fills consisted of clayey silts, generally more grey in colour lower down and browner towards the top. In places where the ditches were deepest and best preserved there were numerous fills representing sediments deposited by water flowing along the ditch alternating with deposits eroding in from the uphill side. The depth of the ditches varied considerably, mainly, but not entirely, due to variations in the depth

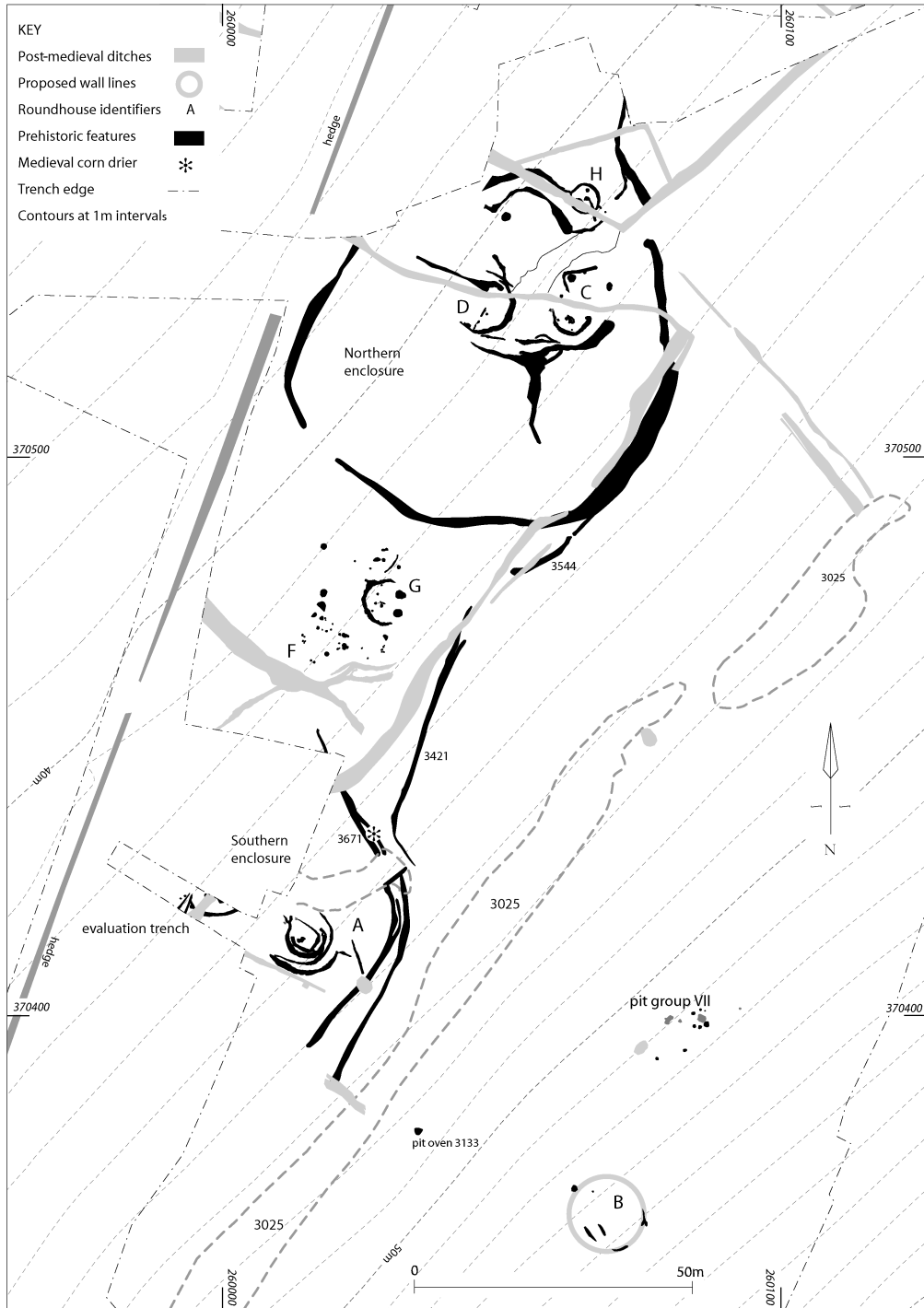


Fig. 22. Plan of Iron Age and Romano-British roundhouse settlement.

of truncation; the deepest section was 0.5m deep and had a well-defined U-shaped profile. Both ditches were up to 1.3m wide. A narrower curving ditch (3159) ran between the two ditches, cutting the edge of 3163.

Ditch 3163 to the south-east of Roundhouse A was cut by a pit 3491 containing a large rounded boulder, a cake of iron-rich slag from a furnace bottom and some smithing slag. This was probably a nineteenth-century attempt to remove a boulder from the reach of ploughing, although the slags are not strictly diagnostic of date and no other finds were discovered to confirm a late date.

The dating evidence for the ditches is slight. There were some post-medieval sherds from the upper fill of ditch 3157 but these are likely to represent the final infilling of the hollow during post-medieval ploughing. A sherd of a Roman jar was found in the primary fill of the cross-ditch (3175), which might support a Roman date for these features. It is the way in which they curved around Roundhouse A, nearly concentric with it, that suggests that they were related to the house. They seemed at least partially to enclose the area of occupation, although it is difficult to interpret them as defensive or boundary ditches as they only enclose the northern and eastern sides of the settlement. It is probable that the ditches were mainly for drainage. They were placed to run along the contours, presumably to gather water from the hill slope and then carry it downhill to empty out below the house. This would work very effectively if it were not for the gap, which would block the flow of water. A stony deposit (3116), representing an erosion and deposition event, ran through this area and sealed the ditch fills, so it is possible that shallow sections of the ditches had eroded away and that at one phase they continued through. The function of the ditches, however, remains problematic.

Along much of their length the ditches seemed to respect each other and their relationship to the cross-ditch suggests that all were contemporary. The narrow later ditch 3159 suggests some recutting of the ditch line in this area. This sequence is confused further north as here the outer ditch 3506 was earlier than the inner ditch 3504, as the latter cut the former. This presents contradictory evidence as the ditches in part of their circuit seem to be contemporary and in part they are sequential. It is also impossible to allocate any particular ditch to either phase of house construction.

The cross-ditch 3175 seemed designed to run across the ends of the ditches, creating a feature suggestive of an entranceway. This impression is enhanced by a narrow ditch (3421), which started near the north-east end of 3175 before running north-west down the slope, parallel to the line of the enclosure, then curving north-east to contour along the slope. There was a gap of 1m between these two ditches. Ditch 3421, which probably represents a contemporary boundary ditch, had been recut at least once and ran north towards the northern enclosure.

Roundhouse A (Figs 23 and 24)

This area of activity was defined by a confusing complex of roughly concentric semicircular gullies, which have been interpreted as the remains of a clay-walled Roundhouse A. The two outermost gullies were stone-free, whereas the fills of the inner gullies were stony and where least disturbed had flat slabs on top. The former gullies are interpreted as outer storm gullies and the latter as internal stone-capped drains. The presence of two storm gullies of different diameters suggests that there were two phases of house with an overall change in size.

There was no stratigraphic relationship between the two outer storm gullies, and the sequence of inner drains was far from clear. It is also difficult to demonstrate which outer gully each drain was associated with. However, it is most likely that the largest diameter inner drain was contemporary with the largest outer gully. The largest inner drain was probably the latest of the sequence of drains and it just clipped the edge of the smaller storm gully, adding to the evidence that the smaller house was earlier. It is therefore assumed that the roundhouse was rebuilt to be larger rather than smaller than its



Fig. 23. Photograph of Roundhouse A from the north. Scales 2m.

original size and the features have been phased on that assumption. The excavated evidence is insufficient to prove that this assumption is correct and it remains a possibility that the order of the structures was reversed. Three phases of activity are proposed below, but these can only be tentative suggestions.

Phase I. The exterior of the roundhouse in the first phase was defined by the semicircular gully 3058 less than 0.2m deep, with a V-shaped profile. This cut two charcoal patches (3434 and 3435), but otherwise no features seemed to pre-date it. It curved around the uphill side, on the eastern and southern sides of the house, and faded out downhill. It is not clear which of the internal features relate to this phase, but the earliest inner drain 3549 is most likely to do so. This was cut by the later, larger diameter drain 3266, which also just clipped the fill of 3058. This early drain 3549 was disturbed by later activity, and it was not always easy to follow, but it seemed to curve round and exit downslope towards the northwest. There were some undisturbed capping stones along part of this arc, demonstrating that it was indeed a drain. If the outer gullies defined the outside of the wall at each phase rough measurements of house size can be obtained. The earlier house could be up to 9.8m in diameter externally. The distance between the inner drain and the inner face of the wall is not known so the width of the wall is difficult to demonstrate, but an inner diameter of 7m fits the surviving features. This would give a wall thickness of about 1.2m. The unbroken storm gully around the eastern side of the house suggests an entrance on the western side, possibly matching the opening into the horseshoe of the inner drain, but there is no indication of its exact location.

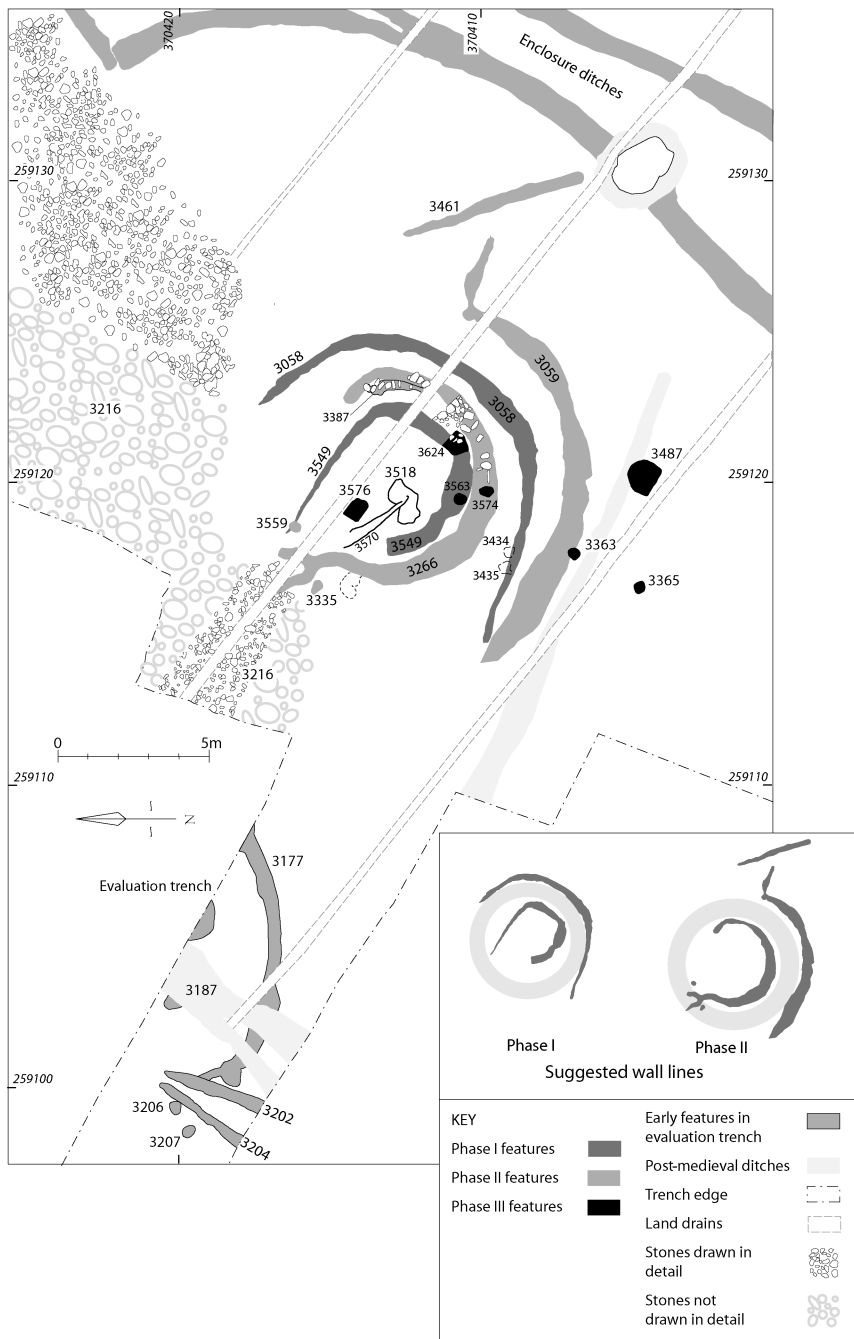


Fig. 24. Plan of Roundhouse A and features in the evaluation trench.

Phase II. The outer storm gully 3059 was about 0.2m deep, with a V-shaped profile. It curved round the southern and western sides of the house only and opened downhill at its western end. The straight gully 3461, running diagonally down the slope, may have been related and would have protected the remaining uphill arc of the house. The inner drain of the phase II building (3266) ran in a question-mark shape around the southern and western parts of the house, exiting on the downhill side. This cut through some of the phase I features and had enough flat stones in place to be identified as a capped internal drain. There seems to have been an earlier version of this drain, largely cut away at its southern end by the later drain. This earlier drain (3387) had capstones in its undisturbed northern end although its southern end was confused and difficult to trace. The arc of the outer gully could accommodate a building 11m in diameter externally. An internal diameter of 8m would give a wall width of around 1.4m and fits the inner wall face between two postholes (3335 and 3559). These may represent posts defining an entrance on the north-western, downhill side of the house. Posthole 3559 seemed to cut the end of the phase I inner drain 3549, so it is probable that these postholes belong to phase II. These postholes could have been on the line of either the inner or the outer face of the wall but they fit better with the other features if they are assumed to be on the inner face. The precise position and width of the wall is arguable but assuming that the wall was a constant thickness the proposed position and width fits best with the available evidence. The features in the interior of the roundhouse could belong to either construction phase and it is likely that some belonged to both. In the middle of the roundhouse was an irregular hollow (3518) with traces of *in situ* burning. This was confused apparently by animal burrowing but was probably a hearth, an interpretation supported by its central position. It may have been formed of more than one feature and can be compared to the better-preserved intercutting pits in the centre of Roundhouse C. A straight gully (3570) running from them was interpreted on excavation as an animal burrow, due to its irregular sides. It was, however, very straight and seems to have emptied out downslope. It may, therefore, have been another drainage feature. This is supported by the discovery of two sherds of Romano-British pottery from this feature. A very broad, shallow channel filled with loose stones (3216) curving around the northern and western sides of the house almost seemed to define the exterior of the house in these areas. It was not possible to establish a clear relationship between the stony fill of this channel and the features related to the house. The upper part of this layer overlaid the roundhouse enclosure ditches and was probably post-medieval. However, the phase II inner drain seemed to have emptied into this area and it is probable that the lower stone deposits were in existence when the house was occupied. It is concluded that this was a natural channel that filled with cobbles over a long period, mainly by the action of colluviation caused by ploughing.

Phase III. Three postholes seemed to post-date the house. Posthole 3363 cut the south-western edge of the outer storm gully 3059 and postholes 3574, 3563 and 3624 probably cut the fills of the inner drains of both phases. Although posthole 3365 had no stratigraphic relationship with any other feature it was sufficiently similar to 3363 to probably be contemporary. A possible posthole (3576) was aligned with postholes 3563 and 3574 and may also be part of this later phase. There was post-medieval activity nearby as demonstrated by pit 3487, which contained a sherd of Buckley Ware and a copper alloy button, so it is possible that these postholes were post-medieval.

Activity revealed in the evaluation trench west of Roundhouse A

The area to the west of Roundhouse A was not to be disturbed by the development but the possibility that the settlement continued had to be investigated to inform any future change to the development plans. A trench 28m by 5m was dug into this area from Roundhouse A (Fig. 24). The features found were evaluated, but not fully excavated, the archaeology being protected by protective matting before back-filling.

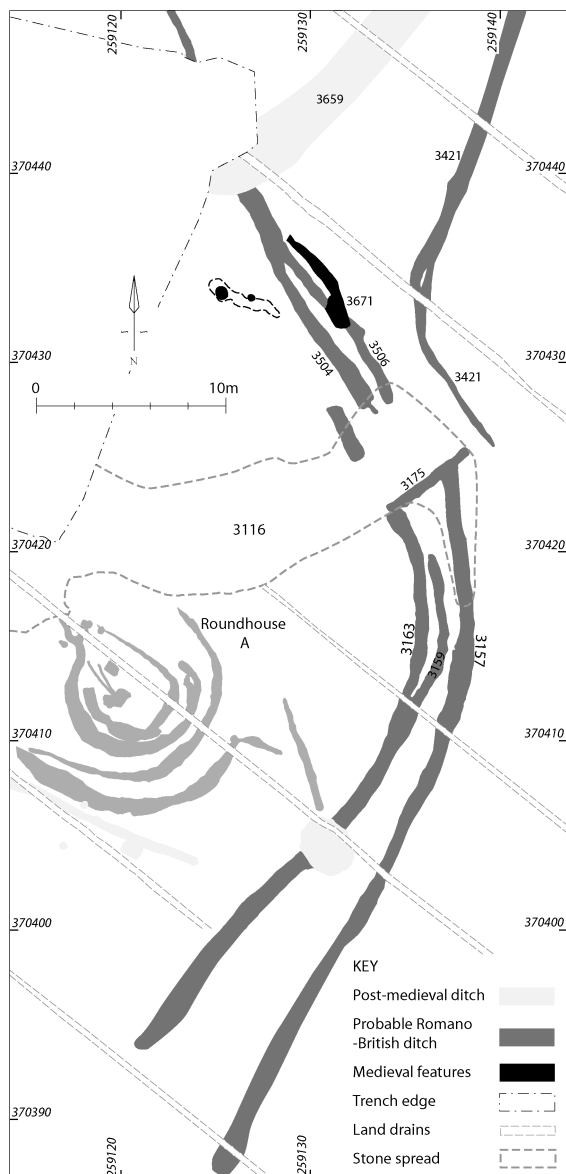


Fig. 25. Plan of possible entrance to southern enclosure.

All the potential archaeological features occurred in the eastern half of the evaluation trench. A narrow, curving gully (3177), 0.15m deep, ran north-east to south-west into the trench; its end confused by a post-medieval ditch (3187). The terminus of this gully appeared to be cut by one of two narrow slots (3202 and 3204), which had two possible postholes on their western side (3206 and 3207). The curving gully 3177 produced a sherd of eroded Samian Ware and 3204 contained a piece of Roman oxidised ware. The evaluation was not extensive enough to reliably interpret these features but they appeared to be structural

and were probably of a Roman date, strongly suggesting that settlement activity did continue into this area.

Finds associated with the northern enclosure and Roundhouse A

There were few finds from the area of the southern enclosure. Within the base of the ploughsoil immediately over Roundhouse A were a polished stone possibly for leather burnishing (SF 473), a stone spindlewhorl (SF 463), and two sherds from Black Burnished Ware jars (Fig. 26). Also found were two pieces of flint, a sherd of post-medieval pot and two nails, so this deposit is likely to have been very disturbed. A piece of the lower stone of a saddle quern was found within the stony deposit (3116) to the north of the house, and this presumably originated from the roundhouse, although again it was in a disturbed context.

There were a small number of finds from more secure contexts, although all the features were shallow and occurred immediately below the ploughsoil, so some disturbance must be assumed. The phase I inner drain (3549) also produced three sherds of Roman pottery (one Black Burnished Ware) and the central straight gully (3570) produced two pieces of Black Burnished Ware (Evans 2008). Also found in the inner drain was a Roman seal box (Fig. 26, SF 615), a small rectangular copper alloy box with a Celtic-style sinuous decoration on the lid in enamels. It still contained the red-stained beeswax that would have held the seal impression (Parkes 2008). The lid was hinged and the base was pierced by four holes for attachment to a packet or writing-tablet. The seal box dates to the second century AD (Chapman 2008).

The phase II storm gully 3059 produced five Black Burnished Ware sherds (e.g. Fig. 26, SF 574), one eroded piece of Samian Ware and a small smithing hearth slag cake. Most of these finds came from the downhill, western end of the gully. The inner drain 3266, assumed to be related to this storm gully, produced a Samian body-herd, 16 Black Burnished Ware sherds, one other sherd of Roman pot, and a piece of Roman tile (Evans 2008), but also a tiny piece of post-medieval pottery and a nail.

Evans (2008) concludes that overall material from this roundhouse dates from *c.* AD 100 to the late second century, with possibly third-century material also included, but the minimal date range might be AD 100–200. The number of sherds from the phase II inner drain suggests that most of these finds originated from the occupation of the house rather than being intrusive. This implies at least one phase of occupation dated to the mid second century AD. The presence of the seal box in a first phase context may indicate that the house was mostly used within the Roman period. Although no cut was seen during excavation it is possible that the box was buried in the floor of the later house and does not help in dating the earlier phase.

In the evaluation trench next to Roundhouse A a single South Gaulish Samian sherd dating to AD 70–110 was recovered from the curvilinear gully (3177), and a sherd of undiagnostic Roman pottery from gully 3204. Little can be made of a single dated sherd and while it may indicate an earlier use of Roman pottery this was not necessarily so. Ditch 3175 which crosses the line of the enclosure ditches produced a sherd of a Roman jar, but this is not closely dateable (Evans 2008).

Plant remains associated with the northern enclosure and Roundhouse A

Fifty-six samples were studied from Roundhouse A which included large quantities of wood charcoal (mostly unidentifiable), charred grains and a few nutshell fragments. Most of the samples were contaminated by modern material. Identifiable charcoal proved to be from oak, hazel and, in small quantities, ash and pine. A few charred cereal grains and some chaff were recovered from contexts within the building, especially from both phases of the inner drain. These represented a variety of cereals, but overall, the remains were too few to be of any real interpretative value, though clearly they indicated food waste and hence human activity. In contrast, the central feature (3518) and the gully leading from it

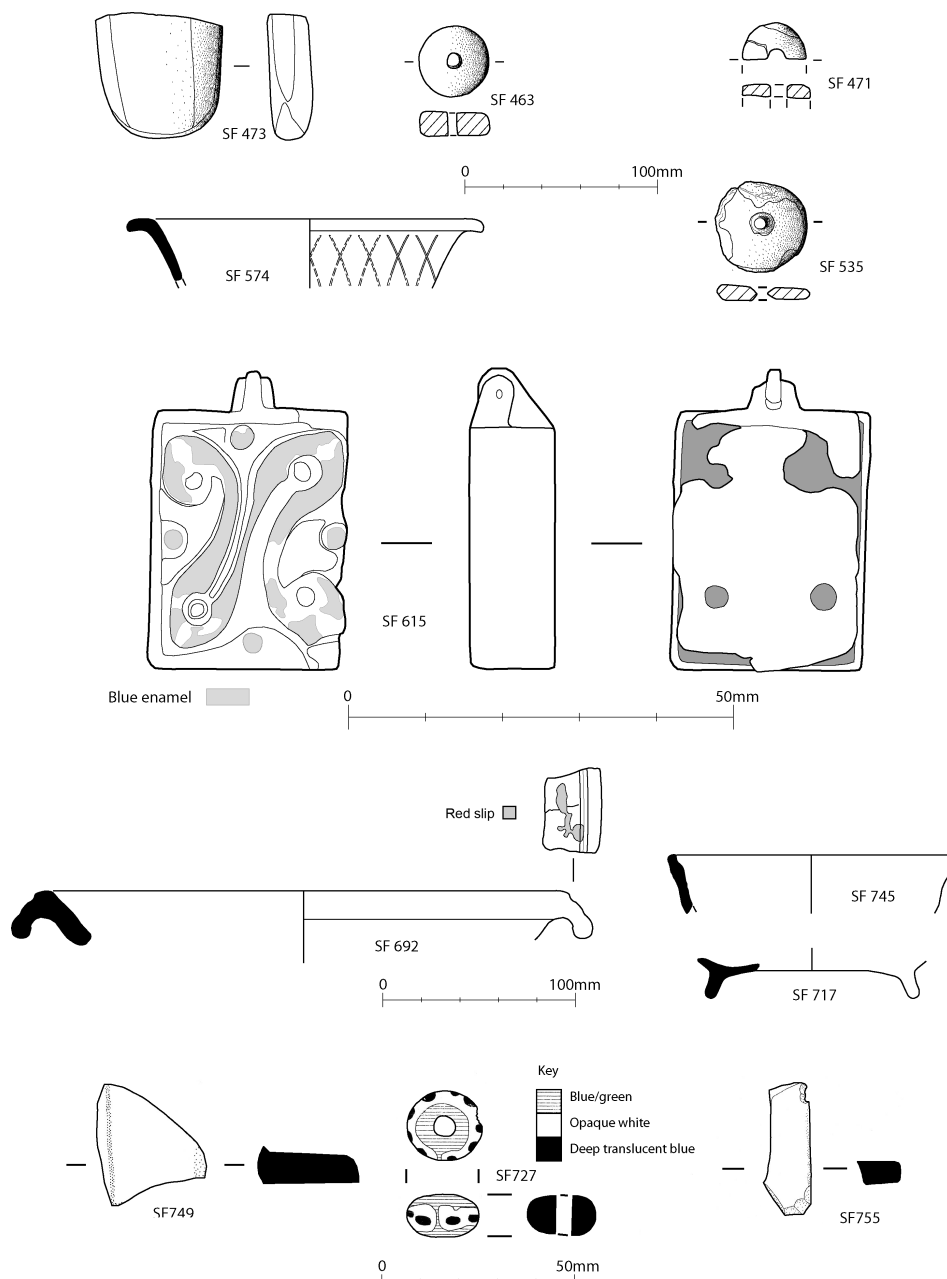


Fig. 26. Finds from the roundhouse settlement. From Roundhouse A: polishing stone (SF 473); stone spindlewhorl (SF 463); Black-burnished Ware rim-sherd (SF574); copper alloy seal box with enamel decoration (SF 615). From Roundhouse B: broken spindlewhorl (SF 471). From Roundhouse D: mortarium rim (SF 692); footring of Samian vessel (SF 717). From Roundhouse H: rim of Black-burnished Ware vessel (SF 745); Roman glass bottle fragments rubbed smooth to form blocks (SF 749 and SF 755); glass beads (SF 727 and SF 753). Spindlewhorl from boundary ditch 3421 (SF 535).

(3570) produced a valuable assemblage of cereal grains, including barley, rye, emmer wheat, spelt wheat and naked wheat, as well as quantities of chaff and some weed seeds (Schmidl, Carrott and Jaques 2008). The significance of this assemblage is discussed below.

Roundhouse B (Fig. 22)

About 60m south-east of Roundhouse A (SH 59174 70364, 52–4m OD) was a small group of features, two of which seemed to describe the arc of a circle. This was a particularly steep part of the hill slope and most of the features were heavily truncated by erosion. During excavation the curving gullies 3024 and 3083, no more than 0.18m deep, were considered to be part of a possible ring gully around a house. This interpretation might have been rejected but for the discovery of a broken stone spindlewhorl of Iron Age type in feature 3083 (Fig. 26, SF 471). The arc of the gullies could imply a circle of about 15.5m in diameter. Two parallel gullies (3026 and 3147) lay inside the putative circle but it is unclear what function they would have in a roundhouse. A possible posthole 3178, only 0.1m deep, also lay inside and could have been part of a post-ring. Other features in the area did not seem to be associated with this potential structure.

The presence of the spindlewhorl implies that some at least of these features represented the severely truncated remains of a roundhouse, but this cannot be proved. If this was a roundhouse it lay between the main settlement and Roundhouse E. The projected size of the house and the width of the gully are closer to the later roundhouses than to Roundhouse E. Two more spindlewhorls were recovered from contexts associated with the main settlement, so the potential Roundhouse B should probably be considered as an outlier to the clay-walled roundhouse settlement.

Few ancient plant remains were recovered from Roundhouse B. There was some unidentifiable wood charcoal, one grain of naked wheat and one fragment of hazelnut shell (Schmidl, Carrott and Jaques 2008).

Northern enclosure and Roundhouses C, D and H (Fig. 22)

A substantial ditch was found further north forming a curvilinear enclosure with an area of at least 3550m², which contained what appeared to be three roundhouses (C, D and H). Two of these (C and D) were close together, within 6m of each other, and seemed to have some drainage ditches in common. Roundhouse H was about 13m to the north, but all three seemed to be linked by a possible pathway. All the settlement activity was concentrated in the northern part of the enclosure, with the southern part apparently empty. This area was cut through by two major ditches forming part of the eighteenth- and nineteenth-century field systems. All three houses were cut by these ditches, causing some critical relationships between features to be lost. The enclosure ditch was confused by another ditch, which was also part of the late field system. Additional damage had been caused by the numerous field drains cutting through this area.

Northern enclosure ditch (Fig. 22)

The northern group of roundhouses was enclosed by a curvilinear ditch. This formed a teardrop shape, enclosing a large unoccupied area as well as the roundhouses. The two apparent breaks in the exposed length of the ditch were probably not original, but the result of truncation. The northern section of the enclosure was not fully investigated and it is possible that the diversion of the ditch to the north-east in this area may indicate the presence of the original entrance here.

The size and profile of the ditch varied considerably. The eastern side was best preserved, and here the ditch reached a maximum depth of 0.9m, with a broad U-shaped profile, but it changed within a distance of only 23m to a much narrower, V-shaped profile. The northern and western parts were much shallower,

about 0.45m deep where it had not been heavily truncated. Despite this variation there was no evidence of recutting at any point, and the ditch appears to have had a single phase.

The variation in profile may relate to the function of the ditch. If it functioned as a drain to keep water out of the settlement rather than as a defensive ditch the deeper, eastern, upslope side may have collected water. There was no obvious overflow channel on the western, downhill side, but the ditch in this area shows a lower lip in the western side, possibly where water stored in the ditch has overflowed and eroded the ditch side.

The lower fills of the ditches generally appeared to be water-laid clays, although this effect is as likely to be due to post-depositional gleying. There were few traces of a bank in the fills, the exception being a section on the southern arc of the ditch, where quantities of stony clay had slumped into the ditch from the inside of the enclosure.

Roundhouse C (Fig. 27)

Roundhouse C was defined by a semicircular linear gully and a complex of intercutting curving ditches. The semicircular gully (3630) is interpreted as the inner drain of a roundhouse, designed to drain water from inside the house and downhill to the west. It had an internal diameter of approximately 6m and was up to 0.19m deep but shallower at either end. A poorly-defined feature (3783) may have continued its line towards the north-west, but this is more likely to have been an animal burrow.

There were the remains of a stone lining or capping within drain 3630, but this had been heavily disturbed, probably by ploughing, which was further demonstrated by the discovery of a post-medieval clay pipe bowl from low within the fill. The arc of three postholes (3678, 3766 and 3780) were evenly distributed just inside the internal drain, and seemed to have been structural supports. The latter was truncated by a stone-filled pit (3704), which seemed to disturb the end of the internal drain.

In the centre of the roundhouse was a complex of intercutting pits (3325, 3586, 3589, 3667, 3673 and 3694). The stratigraphic sequence suggested that the four earlier pits were dug and used in pairs. Later in the sequence there was considerable evidence of burning, with 3673 probably used as a hearth. This was associated with a series of lenses strongly suggesting *in situ* burning, which spread more widely over the area. Pit 3694 contained burnt material and one piece of Samian pottery, probably waste from the hearth. Many internal features, including postholes, contained fire-cracked stones; presumably more generally distributed debris from cooking. It is noted that the roundhouse at Moel y Gerddi, despite being of a different construction type, had in its centre a complex of intercutting pits and scoops with a hearth in the top similar to those discussed here (Kelly 1988).

It is possible to discount the rest of the features within the middle of the house as animal burrows or other natural hollows. The group of possible stakeholes near the terminus to 3630 could, however, be genuine, and were possibly the trace of an internal division.

The outside of the roundhouse, on its uphill side, was defined by a complex of recut ditches, representing storm drains protecting the house. The north-eastern termini of most of the recuts aligned with the north-eastern terminus of the internal drain 3630 and their arcs shadowed that of the gully maintaining a fairly constant 1.5m distance between the two features. The north-eastern gap could indicate an entrance in this side of the house. This, however, seems impractical as the entrance would have faced upslope and would have been unprotected from rain run-off. A more likely entrance may be indicated by the two postholes (3839 and 3867) on the western side, the latter possessing a clear post-pipe. This would give an entrance facing north-west and down slope, but this interpretation is problematic as posthole 3839 cut the internal drain (3630), apparently post-dating it.

Over the several phases of recutting the profile and depth of the storm drain ditches varied. The profile of some were V-shaped, some U-shaped and ditch 9468 had a broad shallow profile, with a shoulder on

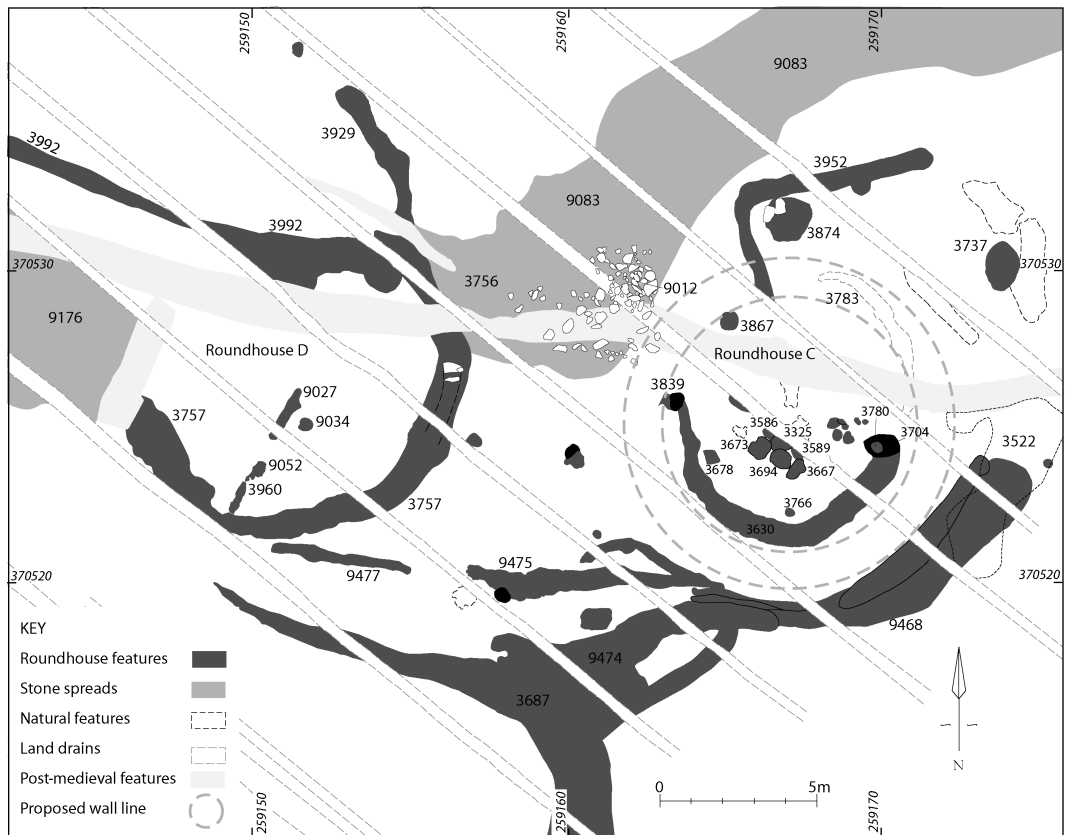


Fig. 27. Plan of Roundhouses C and D.

its western edge. This latter ditch may have started as a quarry for clay for the wall. The later ditches were generally narrower and shallower than the earlier ones, but none were over 0.55m deep. Most of the ditches seemed to empty into a marshy area (9474), and from there into a channel (3687) that ran from south to north and then curved west to peter out down the slope.

Sealing and confusing the upper fills of the ditches was the remains of a cobbled surface (3522). A number of horseshoes within this deposit suggested it was post-medieval in date and related to the boundary ditches cutting through the area. The repeated recutting of the storm drain may suggest that the house was used over a fairly long period of time, but there is no evidence of the house itself being rebuilt over this time or of its size changing.

The exact position and thickness of the wall of Roundhouse C is difficult to establish. A wall with an external diameter of 10.4m could be accommodated within the storm gullies. A larger diameter is possible but only if the wall varied greatly in thickness around the circuit. An internal diameter of 8m encloses all the inner features, runs through the possible entrance posts, and gives a wall thickness of about 1.3m. The wall could have been slightly wider in later phases when the storm gully was recut to a slightly larger diameter, but some trace of the wall might be expected in the upper fills of the earliest ditches in this case, and this was not demonstrated. A band of rusty-brown very slightly silty clay (3743) lay between the inner drain and outer storm gullies. On excavation this was seen to be the altered surface

of the boulder clay rather than a discrete layer, but its orange colouration may have resulted from soil changes beneath the clay wall of the roundhouse.

Despite the lack of depth of stratigraphy there were some probable traces of the abandonment of the roundhouse. The upper fill of the inner drain may represent its abandonment. In several places this fill was seen to overflow the cut and extend beyond it downslope. Its somewhat humic appearance and stone-filled nature are suggestive of abandonment. The sealing of posthole 3766 by what appears to be overflow from the drain may indicate that this post too was no longer in position when the drain went out of use. The quantity of larger stones in these features, especially the amount of stone in the upper fill of the inner drain and in the fill of 3704 could indicate the use of stone in the structure of the house, which collapsed or was levelled into these features on abandonment. On the south-eastern side of a hollow or trackway (9083) to the west of Roundhouse C was a concentration of large stones (9012) in the silty fill. These seemed to have collapsed from a nearby structure, most probably the wall of the roundhouse. The quantity of stone in (9012) and features inside the roundhouse is suggestive of the use of stone in its construction. This is most likely to have been as a low wall foundation as found in structure 5 at Cefn Cwmwd, Rhostrehwfa, Anglesey, which had stone wall footings defined on the inner face by large rounded cobbles similar to those within 9012 (Roberts *et al.* forthcoming).

Some of the gullies to the south of the roundhouse were of a different character to the storm drains. Features 9475 and 9477 were shallow and irregular, although quite straight and deliberate. They were on the same alignment and had a gap of 1.7m between them. These features could represent a fence line defining a yard. If so it seems likely that Roundhouse C was contemporary with the structure to its west (Roundhouse D). The storm drains also seem to have been designed to direct water way from Roundhouse D, suggesting they were in use at the same time.

Another link between Roundhouses C and D was a broad hollow 9083 running south-west to north-east, from Roundhouse D, past C and on to Roundhouse H. This feature was more of a terrace than a hollow, and its flat base was covered by dense, even layers of stone, apparently deliberately laid down to create a rough trackway between the roundhouses.

There was another area of activity to the north of Roundhouse C, comprising an L-shaped gully (3952) and two pits (3737 and 3874), the latter stone-lined. The clay-rich fill of the pit suggests it held water, although this was not necessarily its original function, which may have been for storage. Gully 3952 extended across the proposed line of the roundhouse wall, suggesting that these features belong to a different and probably later phase of activity to the roundhouse. However, storage pits are typical of the Iron Age and relating this activity to the rest of the settlement makes more sense.

Roundhouse D (Fig. 27)

About 6m to the west of Roundhouse C was another semicircular gully 3757 measuring about 9m internal diameter, up to 1.45m wide and up to 0.43m deep. The gully appeared to have been recut, at least along part of the circuit, to a narrower width, but containing more stone including some flat slabs. This semicircular gully appeared to define another roundhouse (D) or similar structure. The presence of large slabs in the later phase of the gully is suggestive of an internal stone-capped drain, but there were no features identifiable as an eaves drip gully or outer storm gully.

The south-western arc of the gully continued downhill, apparently heading for a large area of stones (9176). The northern end of the arc may have joined a straight ditch 3992 running downhill to the west at a slight angle to the hill slope. The upper end of this ditch had two lobes on its southern side and contained sherds from the base of a Samian pot. The relationship between these features and another shallow gully (3929) had been lost to a post-medieval gully. Around the northern arc of the gully was a stony deposit (3756), many of the stones in which were fire-cracked. The spread of stones was very level

and resembled a cobbled surface. This formed the south-western end of the stone layer in the base of the broad hollow 9083, which continued north-east past Roundhouse C. Within (3756), close to the Roundhouse D ring-gully, was found a Roman coin (see below).

There were very few features inside the semicircular gully 3757. A line of narrow linear features (3960, 9027, and 9052) cut across the middle of the area. Nearby was a well-defined posthole 9034.

The features in this area failed to form the convincing remains of a roundhouse. The lack of storm gullies could have been due to the ditches around Roundhouse C providing adequate protection for both structures, but if some of the adjacent gullies (e.g. 3929 and 9477) were contemporary with the semicircular gully 3757 there would be no room for a broad clay wall. The cobbled surface 3756 would also have been hidden under a wall. Although the relationships in this area were difficult to establish it appeared that the cobbles stopped at the semicircular gully, and they may have provided a surface outside the structure, which would have left no space for a wall. The straight gully 3992 is not paralleled in the other houses in this settlement. It is probable that this collection of features represents not a roundhouse but a small enclosed area defined by a ditch, which was later superseded by a covered drain. Any structure within this area appears to have been very slight. The slots and posthole inside the enclosure do not suggest an obvious structural form, but could have been related to agricultural processing or storage. The enclosed area was approximately 9m in diameter, although constrained on the northern side by ditch 3992.

Roundhouse H (Fig. 28)

To the north-east of Roundhouses C and D was a circular gully (9163) with many of its capping stones still *in situ*, forming the best preserved inner drain of any of the roundhouses. This measured about 4.5m diameter internally and 5.5m diameter externally, and was 0.3m deep. It was cut through on the southern side by a nineteenth-century field boundary ditch. Although several of the capping-stones were *in situ* there were no side or basal slabs. The capping stones seemed to rest directly on the drain fill rather than being supported by the sides of the cut, but it is assumed that this is a post-depositional effect caused by soil processes and animal activity eroding back the sides of the cut. Despite the quality of preservation there was no evidence of the occupation layers being deposited over and around the capping stones of the inner drain. The impression was of the capping stones projecting above the contemporary ground level.

The circular gully emptied out downhill into a sinuous gully (9169). The nearly perfect circle of drain 9163 is unlike the others on site and its exit drain (9169) is also unusual, but these features can be paralleled on other roundhouse settlement sites. Structure 1 at Cefn Du had what appeared to be the start of a ring drain, the exit of which passed under the house wall (Cutler forthcoming, 8). Bush Farm house B had a better-preserved ring drain again exiting through the wall (Longley *et al.* 1998, 199). Neither had the long drainage gully leading away from the house that Roundhouse H possessed.

There were several features inside the circular gully. These included a central hearth of heat-reddened clay (9165) and an area of cobbling (9187), suggesting floor layers or a more complex hearth structure. A group of three flat slabs (9275), two pressed into the ground as if by some pressure, lay on the edge of (9187). These may have been a post-pad or support for a large pot or other domestic item. There was also a small round pit (9184), 0.27m deep and a narrow, rather irregular gully (9186), which ran in towards the centre from the circular gully. This seems to have continued for a short distance beyond the circular gully to the south-east, truncated by the nineteenth-century ditch. This gully might have been discounted as an animal burrow, but it contained numerous sherds of Black Burnished Ware. Many of these features were sealed by a thin layer of grey silt (9164), less than 0.1m thick, containing sherds of Romano-British pottery, and interpreted as the remains of an occupation deposit.

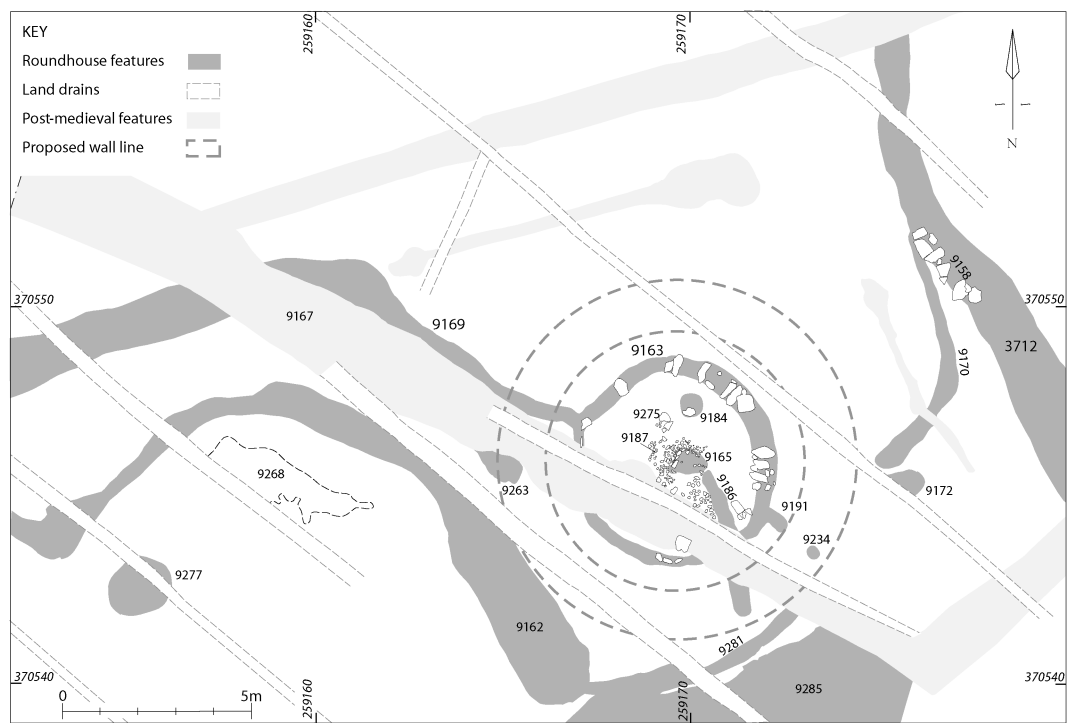


Fig. 28. Plan of Roundhouse H.

On the south-eastern side of the circular gully were two postholes (9191, 9234) which were respectively 0.5m and only 0.15m deep. There was no clear storm gully around the house. Two narrow curving gullies (9170 and 9281) might have performed this function, although 9281 was more concentric with the inner drain than 9170. The latter ran into the main enclosure ditch (3712) around the settlement. There was no evidence that the two gullies ever joined and this gap might indicate an entrance into the house. If this were so, postholes 9191 and 9234 might have been part of a porch, although the absence of matching pair of posts makes this interpretation problematic. An entrance on this side of the house would open uphill making the house vulnerable to flooding, but with the main enclosure ditch about 5m away this area may have been well drained.

Gully 9281 was immediately adjacent to a broad hollow (9285) filled with stones. The lower levels of stone resembled cobbling and this seems to have been the north-eastern end of the possible trackway (9083) that started at Roundhouse D.

The western end of gully 9281 appeared to be cut by the broad, rounded terminus of gully 9162. This gully curved to form an irregular semicircle, becoming narrower as it ran downhill. To the south there was a large, roughly circular pit (9277), 0.33m deep. Gully 9162 seemed to approximately match the curve of the exit drain 9169 and could be interpreted as drainage around another house. However, this gully did not protect the upslope arc of the area it defined, so this function seems unlikely. No trace of a structure was found inside this area except fragments of burnt clay (9268), possibly burnt daub, in the base of the ploughsoil. The large circular pit (9277) in this area could be a storage pit, although there was no firm evidence that it was contemporary with the other features.

A short line of flat slabs (9158) overlay the fill of the enclosure ditch (3712) just to the north-east. The line was 2.4m long and the slabs measured up to 0.6m in length, and it is assumed they were drain capping stones. The cut for this drain was not clearly visible in section, but considering that it had been cut into ditch fill this is to be expected. This potential capped drain seemed to follow the line of the earlier ditch and no evidence of it being part of the internal drain of the roundhouse was detected. Near the southern end of 9170 was a rather irregular pit (9172) and another small pit (9263) was present on the western side of the ring drain but it was confused by the nineteenth-century ditch and its function was not clear.

A structure with an external diameter of 9.4m would fit in amongst the features in this area, assuming they are mostly contemporary, but the lack of clear concentric gullies makes the position of the outer wall very uncertain. An internal diameter of about 7m might be proposed, but it could be considerably larger than this, or alternatively somewhat smaller. The dimensions proposed give a wall thickness of about 1.3m and comparison with other clay-walled roundhouses suggest the wall width is unlikely to be much less. The house appeared to be a single phase construction, but the artefactual evidence (discussed below) hints at later reuse.

Finds associated with the northern enclosure and Roundhouses C, D and H

The finds from Roundhouses C and D were sparse. Roundhouse C produced only two sherds of pottery, a sherd of Samian Ware dating to AD 70–110 from pit 3694 in the central complex and a flagon handle from the outer storm gully (Evans 2008). The water-cut channel to the south of the house (3687) produced the only medieval sherd from the site, but as the fill of the channel was mixed with ploughsoil, this cannot be used as dating evidence. A fragment of the lower stone of a saddle quern was found embedded in the boulder clay just inside the inner drain. Disturbance is evidenced by intrusive material such as the clay pipe bowl from the inner drain of the house. This disturbance was caused by the opening of a post-medieval droveway into the fields at this point. The patch of cobbling (3522) relating to this later activity contained parts of four horseshoes.

Roundhouse D was slightly more productive. The drain defining Roundhouse D contained two eroded Samian sherds dating to AD 70–110. The shallow gully 3929 on the north side of Roundhouse D contained sherds from three Black Burnished Ware jar rims of Hadrianic–Antonine date. The gully 3992 draining west from Roundhouse D produced sherds from the foot-ring base of a Samian vessel (Fig. 26, SF 717) and sherds of a Samian flagon both probably dating to the later first or early second century AD. The fill of the possible trackway 9083 included a body-sherd from a large oxidised jar and two sherds from the flanged rim of an Antonine Raetian-type mortarium (Fig. 26, SF 692). A large amphora body-sherd came from the stony soakaway area (9176) to the west of Roundhouse D (Evans 2008). The coin found within the cobbled surface (3756) was very corroded but was probably a first- to second-century AD *as* or *dupondius* (Besley 2008).

Evans (2008) considers that the absence of Black Burnished Ware from Roundhouse C may be significant, and could indicate that the use of this structure had ceased by the early second century AD. The one dateable sherd, dated to AD 70–110, would be consistent with this. The material from Roundhouse D fits within the date bracket AD 70–200. The coin found just outside Roundhouse D also supports a first- to second-century date. There is a risk that such a small assemblage is either intrusive or residual but it does hint at a phase of activity in the second century AD.

Very small amounts of magnetic slag were found across this area representing the general background level seen across the site. However, a slightly larger quantity (4g) of magnetic slag fragments including spheres along with 7g of non-magnetic fuel ash slag was found in 9052, one of the features inside Roundhouse D. This feature was assumed to be an animal burrow and also contained coal fragments, so the slag could have been brought down from later activity on the ground surface. The adjacent feature

3960 also contained small fragments of coal and coke, and coke was recovered from gully 3890 and central pit 3674 in Roundhouse C. There is evidence for the use of coal in Roman smithing sites (Crew 2008) and the coal deposits on Anglesey could have been the source. The use of Roundhouse D for smithing cannot be ruled out, although the evidence is slim.

Findings from Roundhouse H were also few but their distribution makes them less likely to be residual. The finds were concentrated in the middle of the house, and were found within features, the general occupation deposit (9164), and from within the inner drain, suggesting that this distribution was directly related to the use of the house. Most of the material, including 3 sherds of Samian Ware and 6 sherds of Black Burnished Ware, falls within the date bracket AD 70–200, but 4 sherds of Black Burnished Ware probably dating to the third to fourth century AD suggest that the activity extended into the third century AD (e.g. Fig. 26, SF 745,). The later sherds are all from layer 9164, apparently an occupation layer overlying the internal features of the roundhouse. The earlier sherds from these internal features and the inner drain suggest use of the house in the mid second century AD, but layer 9164 could represent a third-century re-occupation (Evans 2008).

The same area produced 5 sherds of Roman glass, one glass bead and a glass counter, mostly from the ring drain. A glass bead and a sherd of Roman glass, presumably all originating from Roundhouse H, were recovered from the post-medieval ditch that cut the house. The glass is of particular interest as it could represent the collection of waste glass as raw material for the manufacture of beads (Cool 2008). The six fragments of vessel glass were from a common type of square bottle, but two of the fragments had their edges ground to shape them into ideal raw material for bead making (Fig. 26, SF 749 and SF 755). Two beads (Fig. 26, SF 753 and SF 727) and a possible counter from Roundhouse H are of blue/green glass that could have been produced locally from this raw material. Unfortunately no manufacturing waste was found, so the exact location of the bead-making workshop is unknown.

Very few finds were recovered from the fill of the main enclosure ditch. The upper fill of the northern section of the ditch produced two sherds of Romano-British oxidised ware and a Samian body-herd possibly dating to AD120–200. The proximity of Roundhouse H and the fact that these were from the upper fill suggests that they originated in the roundhouse and were redeposited into the ditch. They cannot be used to prove the Romano-British date of the ditch, but a Roman rim-herd from the primary fill of the ditch a little further south is more indicative (Evans 2008).

As well as the coin from near Roundhouse D three other Roman coins were found on the site, all by metal detecting the ploughsoil in the trenches once the topsoil had been stripped. Two of these, a second-century *sestertius* (SF128) and a corroded coin likely to be Roman (SF160) came from trench 2. A silver *denarius* (SF366) dating to c. AD 161 was recovered from the upper fill of a land drain inside the northern enclosure of the roundhouse settlement (Besley 2008). Although it was from a disturbed context it presumably originated from the settlement and supports a second-century phase of activity.

Plant remains associated with the northern enclosure and Roundhouses C, D and H

Forty-nine soil samples were processed from Roundhouse C, some of which yielded large quantities of, mostly unidentifiable, wood charcoal (Schmidl, Carrott and Jaques 2008). Almost half of the samples contained modern contaminants, but there were a few charred cereal grains including barley, oats, emmer and spelt wheat. There was also a trace of chaff (a glume base) of emmer or spelt wheat. Together these probably represent food waste from hearth areas. There was only a little hazelnut shell and most of the identifiable charcoal fragments were of hazel, with small quantities of oak.

Very little came from the ten samples from Roundhouse D. These produced small amounts of unidentifiable wood charcoal and a few fragments of oak. The fourteen samples from Roundhouse H were little more productive, although they did contain some charred cereal grains. The cereal grains were

of wheat and there was also a little chaff indicating food waste. Remains of other food plants were similarly sparse, with just a little hazelnut shell. Most of the charcoal was unidentifiable but some larger fragments were of hazel and a little oak was also found (Schmidl, Carrott and Jaques 2008).

Boundary ditch and other features between the northern and southern enclosures

(Figs 16 and 18)

Between the northern and southern enclosures ran a narrow ditch (3421) apparently joining them. At its southern end this ditch started next to the gap through the southern enclosure. It ran parallel to these ditches for a short way. It then curved sharply north following the contours of the hill slope until it petered out just after being cut by the nineteenth-century ditch. At various places along its length there were indications of recutting. In most places the later ditch had removed the earlier one but where it did not perfectly follow the original line the earlier ditch was preserved. The ditch had a gentle rounded profile and was 0.32m deep. The relationship to the enclosure ditches suggests that this ditch was contemporary and the presence of a stone spindlewhorl (Fig. 26, SF 535) in the ditch fill supports this.

This boundary may have been continued after a gap of *c.* 9m by a slightly sinuous ditch with well-defined, rounded termini (3544). There was no proof that it was Romano-British in date, although its dark fill was noticeably different to the nineteenth-century ditches.

To the east and uphill from the roundhouse settlement was a band of stones (3025), which ran south-west to north-east along the contours of the slope for nearly 200m. These were poorly sorted angular to rounded stones, which ranged in size up to 0.25m. Many of the stones were embedded in the top of the boulder clay, but they were also within a layer of red-brown silty hillwash. These stones were most probably released, moved and concentrated by the action of ploughing. They probably collected at the lower edge of a field and essentially represented the base of a positive lynchet. No dating evidence was recovered from the stones, and the spread ran parallel to the eighteenth- and nineteenth-century field boundary, but it could equally have been aligned on the roundhouse settlement. It is possible, although not proven, that this deposit represented the edge of a field contemporary with the settlement.

Structures F and G between the southern and northern enclosures (Fig. 29)

To the west of the narrow boundary ditch between the two roundhouse enclosures was a complex of features (SH 59128 70468, 42m OD) consisting of a group of postholes (structure F) and a penannular gully with associated pits and postholes (structure G). There were also other pits and postholes less closely related to the main foci of activity. The area was partially enclosed on the south-eastern side by a series of ditches. These were cut through by a post-medieval ditch, which had expanded into an erosion channel. The boulder clay in this area was particularly intractable. The fills of genuine features were often difficult to identify and variations in the boulder clay resembled features until investigated in detail.

Structure F

In an area about 9m in diameter were a collection of postholes and small pits, unrelated to each other except by their proximity. On the eastern side of the group were two large multiple postholes 9006/9017/9126 and 9152/9202. Each would have held three posts, packed with stones. The former group formed a neat trefoil shape and were up to 0.5m deep. The two multiple postholes were about 1m apart. To the west of the multiple postholes were numerous postholes of various sizes and up to 0.43m deep. There were also some small pits, although the more irregular features were probably tree-root hollows.

The number of postholes in this area suggests a post-built structure but its shape and function are far from clear. It is possible to reconstruct the feature as a roundhouse with a central post-ring *c.* 5m in diameter of fairly substantial posts and a wall-line defined generally by slighter features (Fig. 29). A



Fig. 29. Plan of structures F and G.

difficulty with this interpretation is that the inner post-ring is not complete and the wall-line is very sketchily defined. An alternative interpretation would be to see this as a rectangular structure aligned east-south-east to west-north-west and measuring *c.* 6.5m by 3m. This would have had a substantial entrance feature at the eastern end defined by the two multiple postholes. The north and west walls are fairly well defined but the south wall has few clear postholes. Features were difficult to recognise in the boulder clay on this part of the site, and even though the area was repeatedly recleaned, it is possible that postholes were present but not recognised.

Whether the structure was circular or rectangular it had an impressive entrance created by the two large features both probably holding three posts. These entrance features are not easily intelligible as part of a roofed building but as freestanding posts they would have looked impressive. If the rest of the structure was roofed this would give a narrow, box-like building with impressive columns at the entrance, which would not resemble a domestic building and raises the possibility of a ritual function.

There were four pits to the north of the structure. Pits 9145 and 9399 were fairly small but 9434 and 9112 were larger, although shallow and contained burnt stone. They may have been related to the activity around structure G, which produced extensive spreads of burnt stone, but their proximity to structure F, suggests a connection to this. Pit 9205, further north, could have been related to either structure.

Structure G

To the north-east of structure F was a complicated area of activity focused on a penannular gully, but with features spreading to the north and south. It was associated with extensive spreads of burnt stone. The penannular gully (9352) was about 7m in internal diameter, about 0.6m wide and 0.3m deep. The lower fill of the gully had the feel of a water-laid deposit, but the upper part was filled with stones, some heat-fractured. In the top of the gully, cutting the stony deposit, was a small pit (9324), with a charcoal-rich fill.

Inside the penannular gully was an irregular hollow, probably of natural origin, filled by firm, orange-grey mottled clay (9322). This clay deposit spread beyond the edges of the hollow and overlapped the fill of the penannular gully.

Cutting at a tangent across the western part of the area within the penannular gully was a line of five postholes (9065, 9070, 9312, 9410 and 9460), up to 0.25m deep. The relationship of this line to the penannular gully 9352 was difficult to determine, but posthole 9410 was located in the gully, and was apparently contemporary with it. This would suggest the gully was not for drainage.

Near the middle of the area within the penannular gully were two small, circular pits (9246 and 9329), containing heat-fractured stone and cut by a well-defined and stone-packed posthole (9327). There were two larger pits, up to 0.42m deep (9307 and 9315), also filled with stone, some of which was heat-cracked. Both pits were sealed by thin spreads of heat-shattered stone, which extended over the penannular gully and to the south; the stony upper fill of the gully seemed to be part of this general spread. Within this southern area was a group of eight postholes or stakeholes up to 0.46m deep, with other postholes nearby that were possibly related. Some of the postholes seemed to be sealed by the stone spread, but it was difficult to identify packing stones from spread material. In places the stone spread resembled a surface, particularly where a small group of flat, burnt stones seemed to have been laid, perhaps as a hearth (9058). It is perhaps more likely that, rather than being a deliberate surface, ploughing has spread the stones into a thin, even layer and that they originally formed mounds or heaps, produced by activity related to the pits and gully. The presence of burnt stone in the ditches to the south suggests that the stone had been spread extensively by ploughing. The association of burnt stone with the pits is suggestive of burnt mounds, and use of a similar technology seems to be represented here. If the stone spreads are not interpreted as a deliberately laid cobbled surface it is possible to see most of the activity in this area as roughly contemporary.

There was also some activity to the north of the penannular gully represented by two pits, two postholes and a shallow curving gully (9316).

Structure G was initially assumed to be a roundhouse like those in the main settlement, but there are problems with this interpretation. The penannular gully 9352 was very similar in size to the inner drain of Roundhouse C, but had no evidence of capping stones. The gully curved round the downhill side of the enclosed area and could have been a less well-preserved ring gully like that in Roundhouse H, but it had no exit drain. Despite careful cleaning no continuation of the gully was found, and if it had been a complete circle the two large pits would have cut the line. There was also no trace of an outer storm gully. The penannular gully could have been an enclosing gully like that in Roundhouse D, but being on the downhill side it could not have protect the area from inundation.

The features inside the penannular gully were somewhat different to those within the other roundhouses. The central pits (9246 and 9329) and the posthole (9327) were reminiscent of the complex in the middle of Roundhouse C, but the line of postholes defining a tangent across the circle were specific to this feature. The clay deposit (9322) could have been a floor surface inside the penannular gully, surviving mainly where it levelled out a natural hollow. The two large pits (9307 and 9315) seemed to be deliberately positioned within the opening defined by the penannular gully, and so could be argued to be contemporary with the gully.

In conclusion, a structure is thought to be defined by the penannular gully, within and around which were a series of pits, some of which contained heat fractured stone. Whether the gully was a drain or the foundation of a structure has not been established. The complex of features is best interpreted, however, as an industrial or cooking area, perhaps sheltered by a windbreak or similar unroofed shelter.

Ditches to the south and east of structure F (Fig. 29)

To the south and east of structure F, on its upslope side, were a series of ditches. A curve in the length of several of these initially suggested that they were also intended to protect features associated with structure G. These ditches were intercutting so that a stratigraphic sequence could be established. Their south-western extension was cut through by a post-medieval ditch (3902), which had expanded into a broad erosion channel. There was evidence that a natural palaeochannel underlay this area and that it had probably always channelled water to some extent.

The first ditch in the sequence (9007) was up to 0.35m deep, possibly continuing to the south-west of the post-medieval ditch as ditch 9041. When ditch 9007 had silted up two other, narrower ditches (3920 and 3922) were dug along roughly the same line. Last in the sequence was a narrow curving gully (9222).

The proximity of these ditches to structures F and G meant that it was assumed during excavation that they were roughly contemporary, despite the absence of any dating evidence. They are described in this section because that interpretation remains possible. However, cartographic evidence raises the strong possibility that these ditches were nineteenth-century in date (see section below on the post-medieval field systems, which describes the field boundaries in this area). Of particular significance in this case is a curve and sharp angle in the western boundary of a field marked as number 1755 on the 1840 estate map (Fig. 33). These ditches were in the right location and had a distinctive curve and dog-leg which compares closely to the map.

Finds and plant remains associated with Structures F and G

Very little was found in this area. A microlith from a posthole south of structure G is presumed to be residual. The only other find was a minute black, opaque hexagonal glass bead (SF 1253) from an irregular feature on the south side of structure F. There is a slight possibility that this could be late Roman but it is so small that it could easily be intrusive and is likely to be late post-medieval or modern (Cool 2008).

The 43 soil samples from structure F produced relatively little ancient charred remains, most of what they did contain was unidentifiable wood charcoal. However, there was a grain of possibly emmer wheat and a glume base, and a single charred hazelnut shell. Some of the charcoal could be identified as hazel, and a little as oak. Almost all the plant remains from structure G were unidentifiable wood charcoal, despite 22 samples being studied. The small amount of identifiable charcoal was hazel (Schmidl, Carrott and Jaques 2008).

Bead cache pit 2104 towards the north-eastern corner of the site (Fig. 30)

Towards the north-eastern corner of the site (SH 59481 70620, 52.5m OD, see Fig. 3 for location) was found a small oval pit (2104) with quite steep sides, which had been significantly disturbed by animal burrowing. It measured 0.45m by 0.28m and was only 0.12m deep, although animal burrowing had made it much deeper in places. Throughout the fill of the pit and into the animal burrows in its base were distributed 230 blue annular glass beads and at least 16 red cylindrical glass beads. Some of these had been disturbed by ploughing and were found in the base of the ploughsoil around the pit. The fill also contained fragments of what appeared to be burnt daub mixed with lime plaster and possibly traces of pigment, and two tiny fragments of what appeared to be prehistoric pottery.

This pit had a larger pit (2091) 2m to the north and a burnt patch (2124) about 5m away but was otherwise completely isolated with the nearest significant features being about 80m away. These features were probably prehistoric and not related to the bead pit. The roundhouse settlement was over 300m to the south-west.

The pit 2091 contained no finds, although a flint flake was recovered about 4.5m west. The burnt patch (2124) also contained a flint flake. So there was no evidence that either feature was contemporary with pit 2104, and some suggestions that they were much earlier. The traces of plaster hint at the presence of a Roman-style building, but the scarcity of Roman artefacts on site suggests that there were none nearby.

Hilary Cool considers the whole assemblage in pit 2104 to be unusual (see below and Cool 2008). Glass beads are rarely hoarded but this group suggests that they were regarded as being of value and were deliberately deposited. Their deposition could have occurred when the Roman army was campaigning in north Wales culminating in the attack on Anglesey in AD 60 chronicled by Tacitus (Woodcock 1997). This bead cache indicates that this type of blue and white bead had a value to their owners that has not hitherto been suspected.

Finds associated with the bead cache pit (Fig. 30). By Hilary Cool¹⁰

The commonest type of bead in this pit were the 230 deep translucent cobalt-blue annular beads decorated by opaque white trails arranged in a wave pattern. Their diameters range from 17 to 21mm, with an average diameter of 18.5mm. The opaque white trailing is sometimes put on with one continuous trail and sometimes uses more than one trail. These beads tend towards two types; some are a very bright and very translucent blue and others are noticeably darker and less bright. The bright blue beads tend to have a blobby trailing, whilst the darker ones have a smoother, yellow spotted trailing. It would seem very probable that the blue and white beads represent at least two batches and given the different way in which the trailing is applied at least two bead makers.

The beads were made by trailing blue glass around a mandrel, which was then tooled into individual beads and trailed. The end result would have been a cylinder of beads joined by thin collars. When this cylinder had been removed from the mandrel and was cold they would have been snapped apart and any irregularities would have been ground away. This group gives every appearance of being very new, and probably unused before deposition. It is to be expected that if they had been much used the fresh

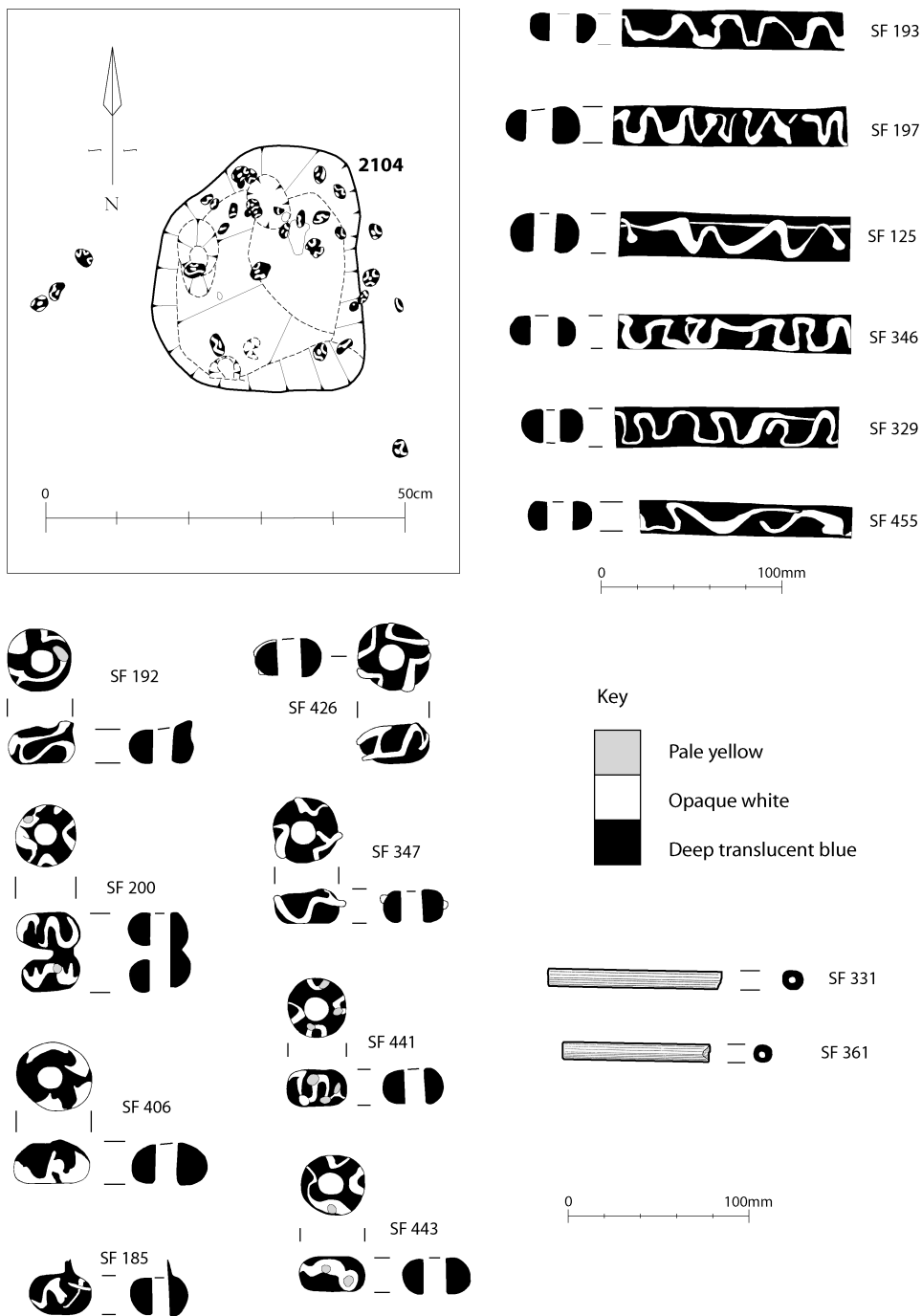


Fig. 30. Plan of pit 2104 and representative layer of beads *in situ*. Also illustrations of representative beads (SF 331 and 361 are red cylindrical beads, the rest are blue and white annular beads).

appearance of the chips around the perforations would have been dulled through wear. They were not, however, workshop waste or failed beads.

This type of bead is a relatively common one; Guido's Group 5A, dating from the fourth century BC to the seventh century AD, although early ones are not as strongly coloured as these (Guido 1978, 63–4). The total number of known beads of this type is less than seventy, so this find has tripled the number known. Other strongly-coloured blue beads found in dated contexts tend to concentrate in the middle to late first century AD. This may be the result of improved dating from associated Roman material, but the first century AD would seem to be the most likely period for the deposition of a freshly made group of these beads.

The other beads present in the pit were produced from a drawn cylinder of red glass. The diameter of these beads is 5 to 5.5mm, and the six complete examples measured in length from 40 to 49mm. Many of the beads were fragmentary but there probably were at least sixteen of these beads. Many of the fragments exhibit a fibrous quality probably due to devitrification along the lines of internal bubbles, which would have formed lines as the beads were drawn. The glass may also be very low in calcium and therefore unstable.

The form of the beads is unusual. Long cylindrical beads are not part of the late Iron Age bead-making tradition, and although they do occur in the Roman tradition they are generally less than 20mm in length. Red glass Roman beads are rare and usually very late, but the association here with the blue and white beads argues against a late date. Thus in colour, form and the type of glass used the red beads are very unusual and probably unparalleled. The long cylinders might have been intended as blanks to be cut down into shorted beads. This combined with the fresh nature of the blue and white beads suggests that the beads were recently manufactured and unused before being deposited. It makes most sense in this case that they were made nearby. Most of the finds from Roundhouse H indicate a second-century AD date but some activity in the first century is indicated and the radiocarbon dates are so general that they could easily accommodate this (see dating section below). The bead-making evidence associated with this roundhouse could, therefore, be contemporary with the cache. The material from Roundhouse H indicates beads made from blue/green bottle glass, while the cache demonstrates different colours and techniques. However, there is no obvious reason why they might not be made by the same workshop.

Radiocarbon dates of the late Iron Age and Romano-British roundhouse settlement

The choice of samples for radiocarbon dating from the roundhouse settlement was severely limited by a shortage of suitable material and secure contexts. Twenty-three samples were dated from the area of the settlement but four of these proved to be from later features and did not contribute to dating the settlement itself. There were no suitable samples at all from Roundhouses A, B and D, and the dating of the other structures was not as extensive as desirable to determine the full range of use of the settlement. See Appendix I for individual dates.

Five samples were submitted for dating from each of structures F and G. Those from F were all from postholes, and when modelled the dates showed good agreement with the assumption that all the samples come from a single phase of activity, which started around 470–110 cal. BC and ended about 10 cal. BC–cal. AD 380. The samples from structure G were from the central posthole, a central pit and a pit cutting the fill of the penannular ditch. The results of all of these were similarly consistent with a single phase of activity which started around 450–100 cal. BC and ended about 10 cal. BC–cal. AD 310 (Marshall 2008). The close similarity of these date ranges suggests that structures F and G were in use together.

The five samples from Roundhouse C were taken from the central complex of intercutting pits and deposits. These dates were consistent with the stratigraphy, and indicated a period of use of the house

from 280 cal. BC–cal. AD 210 to cal. AD 130–540 (Marshall 2008). The very general nature of these estimates is due to the small number of dates available and the particularly early date of 390–170 cal. BC (WK-20039) from pit 3325. This date could indicate activity in Roundhouse C at roughly the same time as the earliest activity in structures F and G, though it might be residual material.

Only two suitable samples could be submitted from inside Roundhouse H; these were from the fill of pit 9184 and they were not statistically consistent. Two samples were also submitted from the large pit 9277 to the south-west of the roundhouse and these produced statistically consistent dates very similar to those from inside the roundhouse. These provide a very general indication of activity in the area between 150 cal. BC–cal. AD 210 and cal. AD 130–450 (Marshall 2008).

The small number of suitable samples and the general lack of stratigraphy meant that the problems of the calibration curve for this period could not be overcome and the results are very generalised. It is probable that structures F and G pre-date houses C and H, possibly by a fairly considerable period. The only evidence for an early element in Roundhouses C and H is the earliest date from Roundhouse C. Although this structure clearly has several phases, as the storm gully was repeatedly recut, there is much less evidence for rebuilding and the coherence of the overall plan suggests that it was not in use over hundreds of years. Without other supporting evidence the early date cannot be used to argue for pre-Roman activity in the northern part of the settlement, but this remains a possibility.

While acknowledging the limitations of the dates they do suggest that the structures F and G in the central area represent the first activity in this area in the later Iron Age. The northern enclosure was probably not occupied until the first century AD, and both artefacts and radiocarbon dates are consistent with occupation continuing at least until the third century AD and possibly longer. The boundary ditch joining the two enclosures together implies that at least during part of their lives they were contemporary, so despite the absence of radiocarbon dates from Roundhouse A this might be assumed to be roughly the same date as the northern enclosure. The pottery supports this assumption. However, more dates would be necessary to be sure that all periods of use had been detected, so it cannot be proved that the settlement duration was restricted to the period indicated by the available dates and the pottery.

Discussion of the late Iron Age and Romano-British roundhouse settlement. By Jane Kenney and George Smith

The artefacts from the southern and northern enclosures suggest that they were in use at the same time for at least part of their history. The boundary ditch between the two enclosures is best explained as joining two contemporary ditched enclosures. The possible entrance through the southern end of the boundary is associated with a possible entrance into the southern enclosure, supporting the suggestion that they were contemporary. Without radiocarbon dates from the southern enclosure it is impossible to determine which was constructed first but it seems likely that at some point the two enclosures were in use together. The northern enclosure ditch seems to have more effectively enclosed its interior than the southern ditch. Both were probably principally for drainage but the northern enclosure could have been used to keep livestock in or to protect a garden area from livestock. The large area of the enclosure over which no features were identified would have provided sufficient area for either function.

The roundhouse settlement at Parc Bryn Cegin therefore seems to have begun small and unenclosed but developed into a larger aggregation of houses with two conjoined foci. The earliest activity seems to have been represented by a timber structure (F) built alongside an area of possible industrial activity (G) in the Late Iron Age. This was probably superseded by a small, enclosed or semi-enclosed, settlement of one or two clay-walled roundhouses (whether the north or south enclosure is unknown). As the occupying family needed to expand another enclosure was built nearby, joined to the original one by a ditch, possibly

marking the limit of the arable land up the hill from the meadow land lower down. How Roundhouse B fitted into this scheme is unclear, especially as it was not securely proved to be a roundhouse, but it might indicate small-scale activity beyond the main bounds of the settlement at any period. All the activity in this area was, of course, preceded by Roundhouse E further up the hill.

The approximated size of the Parc Bryn Cegin houses fits well within the range of clay-walled roundhouses from other excavated sites in Gwynedd, with the exception of Roundhouse D, which was probably not a house at all. In general the most common direction for the entrance of a roundhouse to face is east or south-east (Ghey *et al.* 2007). None of the houses at Parc Bryn Cegin have well-defined entrance structures but those that are proposed tend to be on the west or north-west sides. This makes practical sense as it would place the entrances on the downslope side and reduce the risk of flooding in the houses, however, it would reduce light penetrating the house, and the entrance would face into the prevailing winds.

Consideration of geological and later historical evidence can allow some assumptions to be made about the land use around the Parc Bryn Cegin settlement. The best quality land in this area in terms of modern agricultural potential is that on the low-lying coastal strip east of Llandygai and the slightly higher spur on either side of the Afon Ogwen including Talybont, Penrhyn Park and the areas of the Llandygai henges and Parc Bryn Cegin (MAFF 1988). Roundhouses E and B lie within this zone while the main roundhouse settlement lies just on its edge, the difference being that the former lie on the better-drained hill and slopes while the latter lies on the edge of the poorly drained more level area at the foot of the slope. The main roundhouse settlement therefore lies in a marginal area and the difference is illustrated by the names of fields of a later field system recorded on an eighteenth-century estate map (Fig. 32). The low-lying fields to the west of the settlement were called Cors y Rhos ('Marsh of the Moor'), and Cae Gwynion ('Stitched Field', probably meaning drained field). These are large fields of irregular outline and are unlikely to have been cultivated for arable. The fields on the hill however, were smaller, oriented along the contours and the field names indicate that they were arable fields.

These fields were obliterated by changes in the nineteenth century and are known only from the early estate map, and from ditches identified during the present excavation. The close relationship between the eighteenth-century field-boundary ditches and the line of the eastern side of the roundhouse settlement suggests the latter remained visible as an earthwork, and that this boundary marked the limits of the arable land. A long band of stones (3025) running along the contours of the hill to the east of the settlement may support this conclusion. These stones probably represented the remains of a positive lynchet collected at the lower edge of a field. Although the date of this field is unknown the stone spread does indicate that the site of the settlement was at the western limit of the ploughed land.

It is difficult to ascertain when the field system shown on the eighteenth-century map originated. Fields shown on the map to the south-west of Parc Bryn Cegin are considerably smaller and more irregular than the Parc Bryn Cegin fields, including a mix of fields of sub-rectangular and curvilinear outline. These are quite similar to a series of small irregular fields associated with a roundhouse settlement at Llanllechid (RCAHMW 1956, 140–1) and could represent a much earlier survival than the larger Parc Bryn Cegin fields.

Evidence from the pollen core at Llyn Cororion (Watkins 1990), only 2 kilometres to the south-east, indicates that there was no regeneration of the forest locally at the end of the Roman period, but that clearance and agricultural improvement continued to expand, with cereal farming reaching its peak between the seventh and tenth centuries AD. The continuity of arable cultivation could also indicate continuity of some of the field boundaries, though there is a lack of direct evidence between the Roman period and the eighteenth century to confirm this. However, a small-scale iron smithy that occupied the site of Roundhouse E in the period between the fifth to seventh centuries AD lay on the uphill side of one

of the presumed medieval contour boundaries, and this suggests that the boundary was already in existence by this date.

Direct evidence for arable agriculture came from the charred plant remains recovered from the Parc Bryn Cegin roundhouses. Most features contained only a low level of cereal remains, although barley, emmer wheat, spelt wheat, naked wheat and oats were all indicated. Small numbers of charred hazelnut shells may indicate that these were still being collected for food. The central feature in Roundhouse A, probably the disturbed remains of a hearth, produced a significant assemblage of cereal grains. In this assemblage spelt wheat was the most abundant crop plant, with other cereals such as emmer wheat, naked wheat and rye present in small numbers. This is consistent with other evidence from around the country that spelt wheat was the main cereal crop of the British Isles at this time (Greig 1991; Van der Veen and O'Connor 1998). The material was charred in high temperatures under oxygen-rich conditions most likely indicating the disposal of waste in a fire. The relatively high proportion of chaff in the assemblage from the gully fill appeared to be the by-product from a late stage of crop-processing (Schmidl, Carrott and Jaques 2008).

The Iron Age and Romano-British roundhouse settlement in its regional context. By George Smith Settlement of the later prehistoric and Romano-British periods in north-west Wales has an exceptionally well-preserved record, and almost a thousand examples are known. This is partly due to the amount of archaeological survey work that has taken place but mainly to the survival of sites on the large areas of upland. The distribution of known roundhouse settlements is uneven, with areas of good agricultural land, such as the lowland of Llŷn and Anglesey, having relatively few examples (Smith 1999a). This record is biased because of the poor survival of archaeological evidence in areas of intensive post-medieval agriculture. Aerial photography of cropmarks has achieved some correction of the bias (e.g. Ward and Smith 2001), and excavation in advance of development has added more new sites (Davidson, Hughes and Cuttler forthcoming). The excavations at Parc Bryn Cegin have identified another major prehistoric and Romano-British settlement in a lowland area of which there was no previous knowledge.

Evidence for settlement from the first millennium BC in north-west Wales is rare. Other scattered and isolated houses like Roundhouse E will only be discovered by chance but may be hidden beneath stone-walled houses, as for example at Erw Wen (Kelly 1988) and Crawcwellt (Crew 1998). Some hillfort sites, such as Castell Odo, Llŷn (Alcock 1960) and Bryn y Castell, Ffestiniog (Crew 1986), were first occupied during the first millennium BC, but the concentric enclosed settlements like Moel y Gerddi and Erw Wen form the classic examples of settlement of this period. There are 37 known examples of this settlement type in north-west Wales (Smith 1999b), and eleven similar sub-circular enclosures have been identified as cropmarks on aerial photographs in the Llŷn peninsula (Ward and Smith 2001; Driver 2006a). The evidence from Llandygai and Parc Bryn Cegin supports the impression that lowland north-west Wales was more extensively settled in the later first millennium BC than previously assumed.

Late Iron Age settlements are not easily identified without extensive radiocarbon dating but the Roman occupation caused more diagnostic artefacts to arrive on native settlement sites. Despite the disruption that might be expected, Roman products, particularly pottery, were being widely acquired by rural settlements on both Anglesey and the nearby mainland, as at Parc Bryn Cegin, soon after the invasion of AD 78 (Evans 2008). In addition, surprisingly, finds from one hillfort, the largest in the area, at Braich y Dinas, Penmaenmawr, indicate that it was still occupied during the first century AD (PRN 712; RCAHMW 1956, 85–6; Davies 2000, 88).

The Roman period is notable for the variety of settlement forms. These include open, unenclosed settlements; compact groups of unenclosed houses, often set within a series of yards or paddocks; settlements within curvilinear or rectilinear enclosures, and courtyard type settlements. Whether these

new types of settlement were the result of new ideas or new settlers is unknown but they were very different to the styles of settlement that began to appear in the lowland zone of southern Britain and so did not represent Romanisation as such.

The garrison at Segontium was drastically reduced about AD 120, along with other forts in Wales (Casey and Davies 1993, 12), which may have issued in a new political situation and changes in the economy. Many hillforts have evidence of occupation during the second and third centuries with pottery and coins showing continuing connection with the wider economy. There is no obvious, widespread evidence that the hillfort defences themselves were rebuilt or refurbished at this time although excavations at one fort, that of Tre'r Ceiri, Llŷn, have shown that the entrance was remodelled in the second century (Hopewell 1997). Whatever the political situation was after the reduction of the garrison at Segontium, it was evidently stable enough for rural settlements to develop and to acquire exotic goods.

There are 58 known examples of roundhouse settlements within 5 kilometres of Parc Bryn Cegin. Most of these are concentrated in the uplands or on marginal land to the east and only 9 are within the lowland, below 100m OD. There are three other known curvilinear enclosed settlements in the immediate area in the land below 100m OD. These are Tanyrallt, east of Talybont (PRN 2318), known only from cropmarks on an aerial photograph, Cororion (PRN 27), 2 kilometres to the south-east and Fodol Ganol (PRN 4; Kelly 1975), 4 kilometres to the south-west. The last two are well-preserved scheduled sites with visible houses but both settlements are rather different to Parc Bryn Cegin. Fodol Ganol has two houses, probably with clay walls and conjoined with the bank of a small sub-circular enclosure. Cororion has four houses, probably with clay walls and freestanding, set fairly symmetrically in the middle of a sub-circular enclosure quite similar in plan to the northern enclosure at Parc Bryn Cegin.

Overall the nucleated/enclosed settlements in the nearby area to Parc Bryn Cegin consist of groups of only two or three roundhouses and these might be termed individual 'homesteads' as opposed to 'villages'. The whole picture, although dominated by small homesteads, is not one of isolated settlement. Where there is particularly good preservation, as in Llanllechid (RCAHMW 1956, 140–1), a fully settled and farmed landscape can be seen with a scatter of farms, interconnected by a network of roads and tracks. The landscape can be considered as similar to that of the rural landscape that existed in the area prior to the industrialisation of the nineteenth century.

Settlement hierarchy is demonstrated by the existence of defended enclosures, and the distribution of these allows some understanding of the pattern of local tribal structure prior to the Roman conquest, with the provision that we do not know if all were occupied at the same time. In the vicinity of Parc Bryn Cegin the defended enclosures are situated on hilltops on the north-west margin of the uplands and thus overlooking the lowland that may have held their dependant population. Their territories probably included areas of both better quality lowland and upland pasture.

The defended enclosure closest to Parc Bryn Cegin is that of Pendinas, Tregarth (PRN 223, RCAHMW 1956, 107), 2.5 kilometres to the south-east, and this is likely to have been the centre of authority in the immediate area. Its defences consisted of a single wall and it stands in a strong defensive position on a spur that commands the approaches to the Ogwen valley and the lowlands below it, including the area around Parc Bryn Cegin and the sheltered harbour of Aber Ogwen. The fort of Dinas Dinorwic lies 6 kilometres to the south-west of Parc Bryn Cegin and has a commanding position over a much larger area than Pendinas, including the whole of north-west Arfon. Massive bivallate banks were added to this fort, possibly an indication that it supplanted Pendinas at some stage as a focus of authority.

Pendinas has had very limited excavation (White 1992), but charcoal from the timber superstructure of the rampart gave a calibrated radiocarbon date of 202 BC–AD 129 (HAR-1671). The material dated was probably a mature timber so the date of construction may be more recent, however, the lack of Roman period finds suggests that all the occupation preceded the conquest in AD 78. It seems unlikely,

although possible, that Pendinas was in existence at the time of Roundhouse E at Parc Bryn Cegin, and probably went out of use before the height of the main Parc Bryn Cegin settlement.

The main phase of occupation of the roundhouses at Parc Bryn Cegin was probably early in the Roman period and was in a landscape that was well settled and becoming quite prosperous, seemingly benefiting from the *pax Romana*, in which agriculture flourished, possibly entailing the introduction of new techniques, new crops and new breeds of stock and greater possibilities of trade, leading to the appropriation of coinage and of imported pottery. The development of the economy would have led to greater craft specialisation such as the exploitation of the Anglesey conglomerate for rotary querns, which must have been a specialist product (Hughes 1977, 47–8). Some existing settlements were modified by the addition of extra rooms, some rectangular, which suggest greater specialisation of functions for particular craft or agricultural uses. This may have been the case at Parc Bryn Cegin although difficult to prove from the excavated evidence. In most respects, although the settlement had a long period of occupation it remained much the same in style throughout, its layout evolving slowly with no evidence of abrupt changes in status or economy.

The late prehistoric settlement at Parc Bryn Cegin seems to have begun as a small, unenclosed outlier to the settlement focus in Henge A. After moving down the hill to a more sheltered location a new settlement area was established, to start with still small and unenclosed but later developing into a larger aggregation of houses with two conjoined foci.

The settlement in its earliest phase, represented by possibly two phases of Roundhouse E, around the middle of the first millennium BC, was probably subordinate to a major focus nearby that was situated within the surviving bank of Henge A at Llandygai (Lynch and Musson 2001). There was unfortunately a lack of dating evidence, except that the absence of associated Romano-British material indicates that it was pre-Roman. The large roundhouse inside a circular enclosure bears a close resemblance to a small group of concentric circular enclosures, exemplified by the settlements of Moel y Gerddi and Erw Wen, both near Harlech, Meirionnydd, where excavation showed origins around the middle of the first millennium BC (Kelly 1988). The correlation between these settlements, Llandygai and Parc Bryn Cegin house E is supported by the similarity of construction of all the roundhouses using ring-groove walls.

There is a strong suggestion that there was continuity of settlement at Parc Bryn Cegin over a very long timespan, since the radiocarbon dates combined with the pottery evidence show the presence of settlement from the middle of the first millennium BC through to at least the early third century AD. The dates from Roundhouses C and H suggest a start date close to the advent of Roman control in AD 78 and the pottery evidence shows that all four roundhouses were then occupied during the subsequent fifty years and this seems to be the high point of the settlement. The evidence is not conclusive but the common assumption that roundhouses with Roman material actually had earlier origins may not be true in this case although the settlement itself had earlier origins. The settlement was occupied throughout the second century AD and the types of pottery being acquired during this period show relatively high status for a rural settlement. Only Roundhouse H, and possibly A, produced pottery of probable third- or fourth-century date, indicating occupation of a smaller settlement in the late Roman period (Evans 2008).

The types of clay-walled roundhouses here are paralleled at several other settlements in the area occupied during the Roman period, including Bush Farm, Caernarfon (PRN 3463, Longley *et al.* 1998) and Bryn Eryr (PRN 401, Longley *et al.* 1998), Cefn Cwmwd, Cefn Du and Melin y Plas, all on Anglesey (Davidson, Hughes and Cutler (eds) forthcoming), although the overall forms of the settlements all differed. All of these settlements had quite substantial amounts of Roman pottery indicating comparative affluence and participation in a market economy with pottery use peaking in the second century. Parc Bryn Cegin is slightly different from these in that its peak of Roman pottery use was in the Flavian–Trajanic period, before AD 120 and this early peak was interpreted as indicating close contact

with the military or with a military *vicus* in this period (Evans 2008). The fort of Segontium at Caernarfon, the largest Flavian fort in north Wales, was established between AD 78–84 (Casey and Davies 1993, 10) and the area was clearly then under the close control of a strong military force. Parc Bryn Cegin evidently survived successfully under this regime and may have been influenced by its proximity to the Roman road between Canovium (Caerhun) and Segontium, which crossed the river Ogwen only about 500m to the south. The find of a Roman seal box may prove some association with this road, as it clearly had no normal connection with a native settlement.

There was evidence of other settlement close to Parc Bryn Cegin during this period. This was found in the upper part of the fill of the ditch of Henge A at Llandygai, where traces of a timber structure were found. This was associated with pottery of late first- to early second-century AD date, spindlewhorls, whetstones, a coin, a bronze brooch and a glass bead. It was suggested that the types of pottery indicated a military connection (Davies and Lynch 2000, 105) but this was a domestic assemblage so does not have a direct military association, such as might derive from the presence of a watchtower close by.

There seems to have been a change of emphasis on some of the rural sites after the reduction of the garrison at Segontium *c.* AD 120. The pottery assemblages prior to AD 120 at Cefn Cwmwd and Cefn Du on Anglesey and at Graeanog and Parc Bryn Cegin on the mainland are notable for their high proportion of fine tablewares, but in the second century the pottery there and at Bush Farm, near to Segontium became more utilitarian, for example with an increased number of cooking pots. The exception was Bryn Eryr, which received high status pottery throughout the first, second and third centuries (Evans 1998, 216–7). The pottery assemblage of the earlier period at Parc Bryn Cegin can be compared to Bryn Eryr and Cefn Cwmwd in respect of the presence of high status items. However, this does not infer that their inhabitants were particularly wealthy or of high status. The amounts of pottery were actually quite low compared to rural settlements in the lowland zone of southern Britain. At Bryn Eryr the estimated number of vessels indicated acquisition of only ‘a dozen or so new vessels per generation’ (Longley *et al.* 1998, 244). The emphasis was on acquisition of a few special vessels for display and the favourite Central Gaulish Samian item was form 37, a bowl, probably used for communal drinking (King 1998, 212–3). The settlements at Cefn Cwmwd and Cefn Du, Anglesey, were flourishing during the second century AD and seem to have been prosperous farms, probably somewhat more so than Parc Bryn Cegin. At Cefn Du there were settings of posts interpreted as granaries and there were other ancillary buildings, neither of which features were identified at Parc Bryn Cegin (Cutler forthcoming).

Bryn Eryr, Cefn Cwmwd and Parc Bryn Cegin were simple farming settlements in terms of their layout and type and size of houses so their access to imported goods must have derived from their ability to produce a surplus that could be traded probably via the *vicus* at Segontium. Their pottery assemblages show similar sources of supply to that at Segontium (Evans 1998, 210), the entry point for trading vessels and probably the only militarily secure anchorage. The access to imported pottery must have been accompanied by other goods. For instance a few pieces of oil amphora occur at both Parc Bryn Cegin and Bryn Eryr, wine amphora at Bush Farm and a shale armlet at Cefn Du. There was also access to specialist products made more locally, in the form of querns quarried and probably manufactured at Tynyngogl, Anglesey where the orthoquartzite was especially suitable (Hughes 1977), as used for the quern fragments at Parc Bryn Cegin. In most respects these settlements continued to be self-sufficient, but the evidence for bead making from Parc Bryn Cegin could suggest that the local people were making some items specifically for sale to the Roman soldiers.

The overall interpretation of the everyday life and economy of the Parc Bryn Cegin settlement is obscured by the rather small artefactual assemblage compared to some of the other excavated sites, although this is more an effect of poor survival, due to erosion, than a genuine indication of the settlement’s status. The great value of the work at Parc Bryn Cegin lies in the extensive area excavated

and the careful sampling and radiocarbon dating that provide an exceptional picture of the gradual development of a settlement over several centuries. There was settlement here from about the middle of the first millennium BC. Pottery evidence indicates that it came to an end in the early third century AD. The settlement throughout its life maintained a native Late Iron Age style with no appearance of new types of building. Clay-walled roundhouses would not have had a very long life, possibly no more than 150 years, so long-term continuation of a settlement meant repeated rebuilding, changing layout and even, at times, location.

Although the cultivation of the area probably continued the settlement focus must have shifted in the third century AD. It is not yet known where the settlement moved to but recent aerial photographic evidence for enclosed settlements in Penrhyn Park (NPRN 403359, 403397; Driver 2005) make this drier area on top of the ridge a promising place to look.

EARLY MEDIEVAL SMITHING SITE

Description of the early medieval smithing site (Fig. 21)

Over and around the remains of the early Iron Age Roundhouse E were several features distinguished by their high charcoal content and other evidence of burning. To the west of the roundhouse entrance was a charcoal-rich deposit (4250) containing occasional small burnt stones, and industrial residue including iron slag and fragments of furnace lining. The southern arc of the roundhouse wall gully was truncated by a roughly rectangular hollow (4283). Its base had been coloured by direct heating, and within the cut were large rounded stones packed closely together, and sealed by a charcoal-rich deposit.

The rough line of postholes to the west and south-west of the roundhouse, described above, may have belonged to this phase of activity. There is reason to believe that a possible hearth in this area (4310), was at least contemporary with the later activity.

Finds associated with the early medieval smithing site. By Peter Crew¹¹

Quantities of metalworking debris were recovered from some of these features, mostly by wet sieving. A total of 410g of slag, both magnetic and non-magnetic came from a single deposit (4250), the dump of charcoal to the west of the roundhouse. The magnetic slag included small amorphous prills and spheres and the non-magnetic slag included vesicular glassy low-density slag. Although not particularly diagnostic, it was considered that the slag probably represented smithing. This was confirmed when the largest piece from deposit 4250 was examined microscopically, and was shown to be rich in wüstite (iron oxide) and typical of smithing. In addition there was a piece of heavily vitrified clay with a dark glassy cooling surface. This would have formed in the high temperature zone of a smithing hearth, near the blowing hole. This suggests metalworking in the immediate area and the presence of 5g of magnetic slag from the base of the hearth 4283 helps to identify this as the probable smithing hearth.

Plant remains associated with the early medieval smithing site

The charcoal-rich deposits associated with this phase of activity produced a significant assemblage of charred cereal remains, although most of these were so poorly preserved that they could not be identified to species. Their condition was probably due to them having been used as fuel on a fire, meaning that they charred at a high temperature in an oxygen rich atmosphere (Schmidl, Carrott and Jaques 2008).

The assemblages of barley, oat, naked wheat and a little rye are consistent with the Welsh early medieval period. Barley was common and oats were becoming an important crop plant (Greig 1991). A similar grain assemblage, containing oat, rye and bread wheat, was recovered from another early

medieval site at Rhuddlan, in north Wales (Williams 1985). The charred seeds of weeds of cultivated ground were also present, and had presumably been harvested with the crop. The scarcity of cereal chaff suggests that the later stages of crop-processing or carefully cleaned stores of cereals are represented (Schmidl, Carrott and Jaques 2008).

There was a small quantity of charred hazelnut shells and hazel was the most frequently recorded charcoal species, followed by oak and ash. Some of the material came from hearth 4310, and the similarity of this assemblage to those from the contexts associated with the metalworking suggests that 4310 was contemporary and was probably a subsidiary hearth. Its location may indicate the adjacent postholes also belonged to the metalworking activity.

Radiocarbon dating of the early medieval smithing site

Two samples from the charcoal deposit 4250 and two from the fill of hearth 4283 were submitted for dating. All four dates were statistically consistent, indicating contemporary activity but this activity dated not to the Iron Age but to the early medieval period between cal. AD 480–650 and 600–760 (Appendix I). Modelling the dates gives a duration of use of 10–80 years, although probably less than 40 years (Marshall 2008). Considering the limitations of radiocarbon dating in identifying short time spans this is likely to suggest a short, single phase of activity.

Discussion of the early medieval smithing site

The metalworking debris, including fragments of the lining of a smithing hearth, from deposit 4250 demonstrates that smithing had taken place in this area. The radiocarbon dates place this activity in the early medieval period. Feature 4283, with the stones placed in its base, was probably the smithing hearth itself.

It is possible that some of the postholes in the area were associated with this activity. The group of postholes south-west of Roundhouse E might make most sense in relation to this later activity. They could have represented three pairs of posts 1.5–1.7m apart. The presence of a small hearth in this area apparently related to the smithing activity may support the association. It would be unusual for smithing to take place on an exposed hillside with no protection, so some shelter might be expected. The postholes seem to have been too far from the hearth to be very useful as a windbreak, although they were on the side of the prevailing westerly winds. The spread of stone (4196) covering much of this area was similar to other deposits across the site that appeared to be related to ploughing and colluvation. However, the proximity of the stones to the archaeological features may not be coincidental. There was no evidence that these rounded, disorganised stones had formed a wall, but it may be possible that there was a bank providing some shelter to the working area. In this case it might be significant that the waste deposit 4250 was dumped downhill of the stones, presumably beyond the limits of the working area.

Until the dates were received from the metalworking deposits in this area there was no trace of early medieval activity at Parc Bryn Cegin. This was unexpected as the early medieval cemetery at Llandygai (Longley 2001) lies only about 350m from the boundary of the current site. The dates, therefore, allowed a significant gap in the chronology of the site to be filled. The activity represented is, however, very small-scale and isolated, so its significance is difficult to determine. With a start date of cal. AD 480–650 and an end date of cal. AD 600–760 this activity may have started before the cemetery was established but it possibly overlapped with its use. The extent of this overlap is impossible to establish because of the lack of dates from the cemetery. Why a small smithing site should have been established on a windy slope at Parc Bryn Cegin is unclear. The site of any settlement in this period is unknown but might be expected to be closer to the river Ogwen, perhaps not far from the present village of Llandygai. There is certainly no trace of contemporary settlement close to the smithing site, although it is not known what lies beyond

the trench edge 50m to the south. The smithing site was nearly 300m north of Cefn y Coed, where a farmhouse is shown on the 1768 Penrhyn Estate Map. Whether occupation goes back in this area to the early medieval period would require considerably more evidence to demonstrate, but a smithy might be expected to be on the outskirts of a settlement rather than isolated in the middle of the fields. It is possible that the smithy might have been positioned close to a copse to provide wood for charcoal, but it seems unlikely that woodland was a limiting factor in that period.

It is difficult to imagine in what way the former roundhouse could have influenced the position of the smithy. As there was probably no clay wall no upstanding remains are likely to have been visible. It must be concluded that the physical relationship between the roundhouse and the smithy was purely coincidental.

MEDIEVAL CORN DRYING KILNS

Description of the medieval corn drying kilns (Fig. 31)

To the north of Roundhouse A one of the ditches (3506) defining the enclosure was cut by a linear feature (3671) with a bulbous southern end and a narrow tail running north (Fig. 25). This feature measured 5.4m in length overall and the narrow part was 0.34m wide and less than 0.1m deep. The bulbous end was 0.85m long and up to 0.5m deep. The fills contained frequent charcoal, lumps of burnt clay and occasional large stones, and the upper sides of the bulbous end were extensively burnt. Just west of ditch 3504 were other features, which seemed to be related to 3671 because they also contained evidence of burning. A linear deposit 0.12m thick consisting of burnt clay and charcoal (3540) sealed two postholes, the largest of which (3717) was 0.38m deep, with post packing stones, the other posthole (3715) was shallower at 0.14m in depth with no packing stones.

The fills of feature 3671 contained considerable quantities of charred grain, predominantly oats, as well as a little chaff and numerous weed seeds, particularly corn marigold. The charcoal spread 3540 was even richer in charred oat grains and corn marigold seeds but also had a few charred hazelnut shells. The fill of posthole 3717 had oat grains, though fewer in number and also corn marigold seeds (Schmidl, Carrott and Jaques 2008).

Another isolated feature found further up the hill (feature 1850) is also considered here because of some similarities to feature 3671 (Fig. 31). This was also subjected to *in situ* heating but the fill lacked burnt stones, making it unlikely to be related to the burnt mounds or the earth ovens. It was found on the fairly gradual slope just inside the northern corner of trench 4 (Fig. 3; SH 59308 70480, 53.5m OD). Feature 1850 had an oval cut with a shallow extension to the north and measured 1.6m in total length and 0.8m wide and 0.16m deep. Much of the base and sides of the cut were reddened by *in situ* burning. The fill contained little charcoal but there were thin lenses of charcoal in the base of the cut. The shallow extension may have acted as a short flue and it could have functioned as a small pit corn drier.

Feature 1850 produced no finds or datable charred remains but two charred oat grains from the fill of feature 3671 were submitted for dating and these produced statistically consistent dates. Another charred oat grain and a hazelnut shell were dated from nearby posthole 3717 and these two dates were statistically consistent with those from 3671. When modelled these dates suggest activity starting cal. AD 880–1160 and ending cal. AD 1040–1350, the duration of the activity being estimated at 0–160 years (95% probability), however, the small number of dates available means that the estimate may be much too long (Appendix I, Marshall 2008). These dates are of considerable importance as they represent the only full medieval activity on the site.

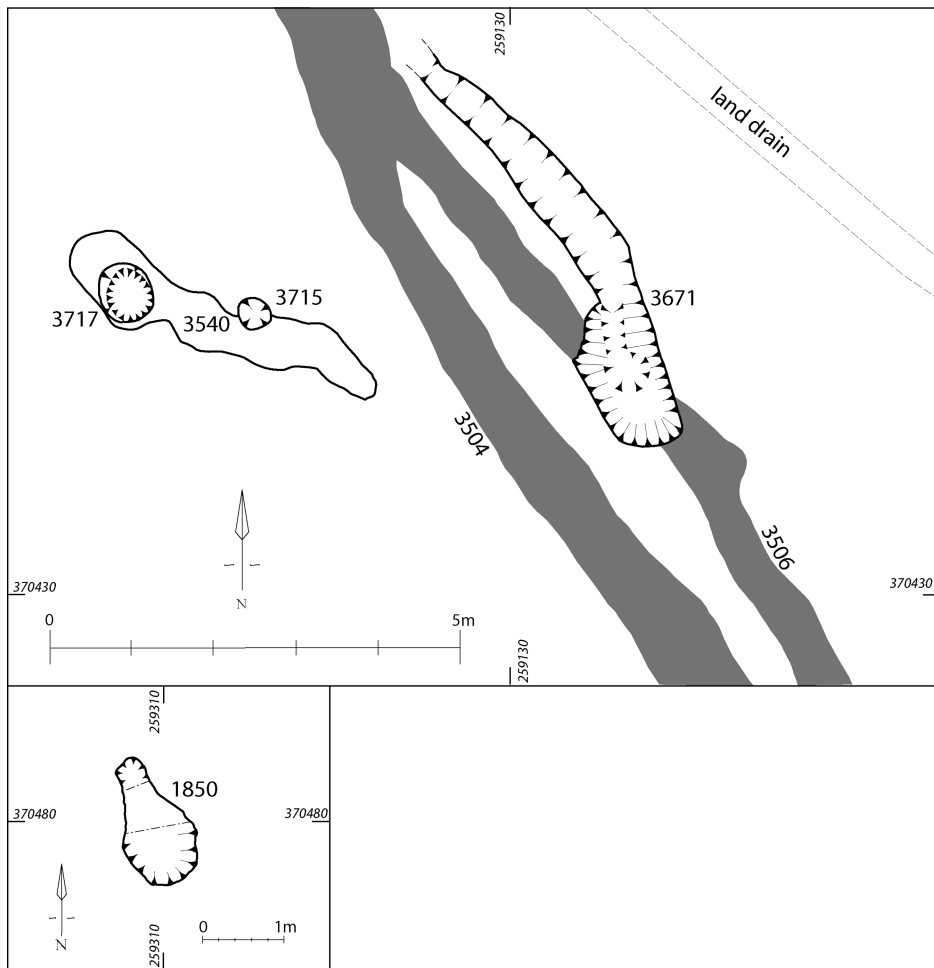


Fig. 31. Medieval corn driers and related features.

Discussion of the medieval corn drying kilns. By Jane Kenney and George Smith

The *in situ* burning in the end of feature 3671 suggests that it was a corn drier with a particularly long flue. One with a similarly long flue was found at Graeanog, Clynnog (Fasham *et al.* 1998, 132), although that one was stone-lined. O’Sullivan and Downey (2005, 33) describing Irish corn driers state that even the longest flues were rarely more than 2.5 times the length of the bowl but Scott (1951, 203) records open pit corn driers being used in Wales that had very long flues. This was due to the fuel used being straw or gorse, which produced sparks that would have set fire to the grain if the flue had been shorter. It seems that the present feature is an early example of one of these simple corn driers.

The quantity of charred grain from feature 3671 strongly supports its interpretation as a corn drier. Although there was some barley, naked wheat and rye present most of the charred cereal assemblage from feature 3671 was dominated by oats (Schmidl, Carrott and Jaques 2008). Evidence from elsewhere in Wales suggests that oats were the main cereal of the medieval period, and remains of this crop has been found in other medieval corn driers, as for example at Collfryn, Llansantffraid Deuddwr, Powys (Jones

and Milles 1984). There were also quantities of seeds from common weeds of cereal fields, which must have been harvested together with the crop. The most numerous were of corn marigold (*Chrysanthemum segetum* L.) and brome (*Bromus*), amongst other species apparently indicating fields on acid and sandy soils. While the soil was likely to be quite acid it could never have been sandy (Schmidl, Carrott and Jaques 2008). However, the weeds may indicate that the crops were grown on the higher, better drained areas, as is supported by the map evidence.

The corn drier at Graeanog, Clynnog provides a particularly good comparison as the dates are very similar to those from 3671. One of the four dates (CAR-1156, cal. AD 210–550) was much earlier than the other three and was presumably on residual material. The other dates range from cal. AD 880–1160 (CAR-934) to cal. AD 1040–1280 (CAR-932) (Kelly 1998, 132), which are remarkably similar to the dates from 3671. The Graeanog example was stone-lined, but if the stones were removed it would quite closely resemble 3671. There were occasional sub-rounded stones in the fill of 3671 and it is possible that this was also originally lined but that the lining had been removed or severely disturbed.

The Graeanog drier was closely associated with the reuse of an Iron Age/Romano-British roundhouse settlement, the drier being located immediately outside the enclosure wall. This raises the possibility that feature 3671 might indicate a later reuse of the southern enclosure. At Graeanog the houses were built of stone with substantial walls that were worth rebuilding after a considerable period of abandonment. Roundhouse A would quickly have been reduced to a circular mound of clay which would have been useful perhaps for temporary shelter but little more. No other medieval evidence was found in this area, or elsewhere on the rest of the site, with the exception of the early medieval smithing on the site of Roundhouse E. The trench dug to evaluate the area west of trench 3 revealed features consistent with an extension of the roundhouse settlement but nothing explicitly medieval. Feature 3671 was close to an important boundary used in both the eighteenth and nineteenth centuries and possibly marking the western limit of the arable land when the roundhouse settlement was in use. Despite the lack of other evidence it is possible that more medieval activity might be found under the baulk to the west of trench 3, raising the archaeological potential of this area even further.

Feature 1850 lacked the charred remains of 3671 and did not have a long flue but there is a strong possibility that it was a small, pit corn drier. It is impossible to know whether feature 1850 was of the same date as 3671, but it seems probable. This feature seems to have been completely isolated, with no other features of any sort near by. Although not far from a nineteenth-century field boundary it was within the middle of the eighteenth-century field called ‘Cae’r Drws’¹² (Fig. 32). Ethnographic parallels were usually enclosed but there are descriptions of unenclosed driers from Wales, where the grain was laid on a floor over a pit dug into a bank or hillock (Scott 1951, 203–4).

The only other mid or later medieval evidence found on the site was a silver penny of Edward I, which had been heavily worn, clipped and holed. This was found near the northern enclosure of the roundhouse settlement, but its worn state indicates that it could have been lost in the fifteenth or even early sixteenth century (Besley 2008), and accidental loss by someone working in the fields must be assumed.

The large majority of the field boundary ditches found could be identified with those on either the eighteenth- or nineteenth-century maps, but a small number of ditches in trench 1 could not be so identified (see below). These may have been the remains of pre-eighteenth-century fields. However, it is probable that the eighteenth-century field system preserved traces of the earlier layout. As discussed above in relation to the roundhouse settlement the corn drier 3671 probably lay on the boundary between the arable and pasture. The fields to the east consisted of what is likely to have been originally two long, broad, parallel-sided fields curving around the contour and it can be seen that these long fields were later subdivided by boundaries oriented up and down the slope (Fig. 32). Such long curving fields are typical of medieval agriculture where the use of ox-teams made long fields most efficient. Such fields were

POST-MEDIEVAL ACTIVITY

Running across the whole site were traces of different phases of post-medieval field systems, in particular boundary ditches and drainage features. Survival of the features was variable. Many of those towards the top of the ridge were very shallow and discontinuous having particularly suffered from truncation.

The excavated area formed part of the Penrhyn Estate and its development can be followed through the estate maps. The earliest relevant map in the Penrhyn Collection dates from 1768¹³ (Fig. 32). This shows an enclosed landscape with fairly small fields. In 1840 a map was made of the estate (Fig. 33)¹⁴ which was used in 1841 as the base for the tithe map.¹⁵ This shows the field layout changed and the fields grouped into farms. The development area falls mostly within the farm of Rhos Issa (Isaf), with some fields belonging to Cefn y Coed. Although the field pattern was different the boundaries of the farms essentially continued with little change from the eighteenth century. The field layout was redesigned again during the nineteenth century and the first Ordnance Survey County Series map (1889, surveyed 1887) shows a very regular plan of large fields with small triangular copses. A plan of a proposed railway to the Penrhyn quarries shows that the reorganisation had been completed by 1873.¹⁶

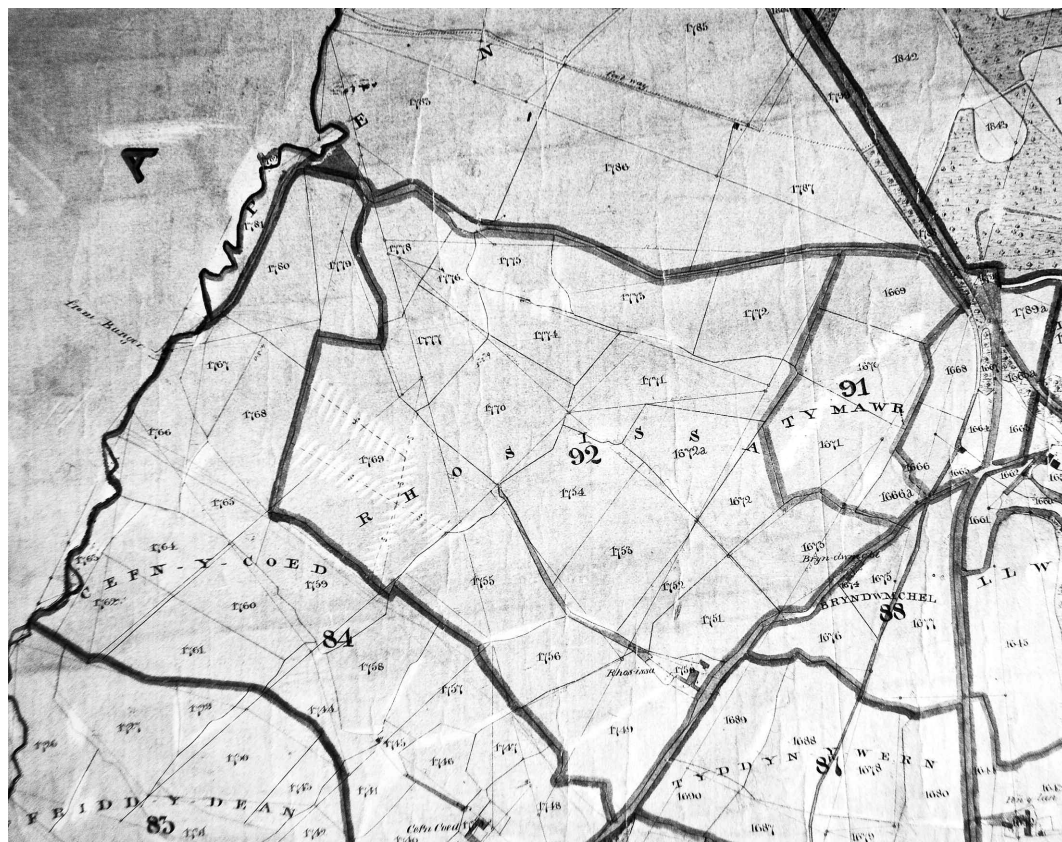


Fig. 33. 1840 map (Penrhyn MS S2214). Published with permission of Archives Department, Bangor University, Penrhyn Castle MSS.

The field system in place by the early nineteenth century used several of the mid eighteenth-century boundaries, but the later nineteenth-century field system was almost entirely different. From at least the late eighteenth-century a road followed roughly the line of the present A5122. The lane now forming the northern boundary of the site was part of the later nineteenth-century reorganisation, although it ran to an old ford over the Afon Cegin.

Several of the maps are sufficiently detailed to allow the identification of many of the ditches exposed during the excavation. Some could be identified as eighteenth century, although inaccuracies in the 1768 map made identifications difficult. At the western end of the site was a field named on the 1768 map as Cae Ysgubor ('Barn Field'). The map marks a building with a chimney, but the lack of windows and a door (marked on all other buildings) as well as the field name suggests that this was a barn and not a dwelling. A confusion of ditches were found in this area, some of which may have formed a yard around the barn, and stone and slates in these features almost certainly came from the barn's demolition, but no clear foundation plan was recovered.

The house of Rhos Isaf did not exist in 1768, but had been built by 1840, when there was a house and barn in the same position as the buildings today. The track from Rhos Isaf into the fields was well-preserved. It started next to the house with a funnel-shaped entrance to guide livestock into the track, indicating that it was mainly designed as a droveway.

Subtleties in the shapes of the boundaries on the 1840 map allowed the identification of ditches cutting through the roundhouse settlement as nineteenth century. This includes a distinctive dog-leg in the boundary near the site of the Iron Age structures F and G, strongly suggesting that the ditches in this area were nineteenth-century and not Iron Age despite the lack of artefactual dating evidence as discussed above.

All the surviving oak trees on the site were of a similar age and could be allocated to early nineteenth-century field boundaries or boundaries reused at this time. They were probably planted as timber trees in the hedges. The 1889 map shows all the existing trees and a few more that have been lost since that date.

Considerable work was put into reordering the field system in the late nineteenth century. It was laid out with precision and new hawthorn hedges were planted, but the timber trees were retained isolated within the new fields. Some of the original slate fences from this period still survived on the southern boundary of the site. Perhaps most impressive were the miles of ceramic land drains laid across the site. These were densest towards the lower, western end of the site, in places only 3.5m apart. A fine slate-lined culvert ran across the eastern side of the site. This was still functioning when exposed in the excavations.

There seems to have been a deliberate attempt to remove some of the larger boulders from the level of the plough. One of these boulders was blasted into pieces before these were buried. This blasting suggests a nineteenth-century date for this activity and that it was related to land improvement by the Penrhyn Estate in the late nineteenth century. The estate, which also owned the Bethesda slate quarry, would have had easy access to gunpowder and men with the expertise to use it.

Of the finds recovered from the field boundary ditches the most interesting were two George III pennies, one dated 1797, and the other possibly a 1806–07 issue, and a copper token halfpenny from the Parys Mines Company, Anglesey, dated to 1788 (Besley 2008). One of the eighteenth-century ditches contained a sherd of a Cistercian Ware cup made between the late fifteenth to the early seventeenth century (Goodwin 2008), perhaps supporting its existence from at least the early eighteenth century if not the seventeenth.

THE EVOLUTION OF THE PARC BRYN CEGIN LANDSCAPE

The radiocarbon chronology has converted the isolated features of Parc Bryn Cegin into a series of successive landscapes. This section provides a site-wide summary of the archaeology, and tries to identify the changes which took place, and the defining characteristics of each phase.

The Mesolithic presence on site was slight and fleeting. The small, widely dispersed scatter of Mesolithic artefacts indicates little beyond hunters occasionally crossing the site. The pollen core at Llyn Cororion indicated a temporary forest clearance event involving fire showing that Mesolithic people were already altering the forests (Watkins 1990). However, their settlements in the area have not yet been identified and the two Llandygai excavations can only demonstrate an ephemeral presence at this period.

In the Early Neolithic a rectangular timber building was used between 3760–3700 cal. BC and 3670–3620 cal. BC. A similar building lay 500m to the north, though we do not know if it was exactly contemporary. Probably during the life of the Parc Bryn Cegin timber building an earth oven (6033) was used 430m away on the lower part of the site. This was situated on a low, dry knoll in a sheltered location not far from the river, representing an ideal site for occupation. Further up slope was another earth oven (3133), possibly contemporary with the building or used slightly later. There may also have been activity up on the ridge top, or just over the eastern side, where it would be more sheltered. Similar, temporary occupation continued after the timber building went out of use, with an earth oven (1259) less than 100m to the south-east of the building and a small pit (3146) on the slope to the west.

It has been argued above that the earth ovens can be tentatively taken as indicators of settlement and represent occupation sites of a different nature to the timber building and perhaps representing ephemeral sites with slight structures, whose remains no longer survive. Their continuation after the timber building went out of use suggests they were not necessarily satellite sites to the building, but functioned independently of it. Three ovens and a pit do not make a settlement system, but they hint at a range of short-term settlement activity scattered around the landscape in suitable, habitable corners, both contemporary with and continuing later than the impressive timber building up on the ridge.

The Mid Neolithic Peterborough Ware pit groups are also indicators of settlement in the general locality but their proximity to any contemporary settlement is unknown, whether on the hillslope overlooking the contemporary henges or further away. Apparently contemporary with the Peterborough Ware pits was burnt mound 6094. This appeared no different to later examples and was located on low ground 370m from Henge B and only 30m from two Peterborough Ware pits (6034 and 6072). The dates from pit 6072 are very similar to those from mound 6094, but the large calibration errors mean that it is impossible to say whether these features were exactly contemporary. The dry knoll used by the earlier earth oven was reoccupied and focus on this site continued into the later Neolithic with the Grooved Ware pits in pit group VI. The other Grooved Ware pits (pit group VIII) reused the site of the Early Neolithic timber building, perhaps indicating a remembrance of its location.

Although there is a significant chronological gap between the first burnt mound and the rest, this gap is largely filled by the Grooved Ware pits, so activity on the site was in a general sense continuous. The pit digging activity, however, could represent one or two days in a period of over 200 years. The burnt mound tradition at Parc Bryn Cegin seems to have flowered at the end of the Neolithic. Mounds 7035 and 6010 at the western end of the site, mound 4199 in the middle and the largest mound on site, 2176 at the eastern end, all date from the end of the Neolithic period. The eastern group of mounds show a succession from this period through into the mid Bronze Age. As the latest dates from mounds on the site are unreliable there is no significant evidence for burnt mound activity later than the twelfth century BC.

It seems that there were still earth ovens in use in the Bronze Age. Although the disparate dates for feature 3314 make its dating difficult, the best preserved of these features (1072) was Bronze Age in date.

These may indicate temporary settlement fairly close to the burnt mounds, most clearly demonstrated by the postholes and pits near the fire pit or earth oven 1230. Although no clear plan could be recognised in the scatter of postholes there was some type of small structure here, but whether this was a domestic settlement or a specific activity site is unclear.

Feature 7055, in the lower lying western end of the site, also dates to this period. It clearly involved hot stone technology but the stakeholes round the base of the pit suggest a different function to the majority of the burnt mounds. Activity in the Bronze Age was therefore extensive across the site, and not restricted to classic burnt mounds. Some temporary settlement is likely and the range of activities was much wider than just cooking in boiling water. In fact the activities may have extended to the funerary if the barbed and tanged arrowhead found in trench 4 did indicate the site of a former cremation burial and cairn (4112).

There was then a hiatus in activity on the site, although continued agricultural use of the land would seem probable. The site was occupied again in the Mid Iron Age when the ring-groove Roundhouse E was built. The location of this was similar to that of the Early Neolithic building; on the north-west facing slope not far from the top of the ridge, in quite an exposed position and not particularly close to water. Had the possible cairn less than 20m up the slope influenced its location or was it important to be close to the better land towards the top of the ridge? The later settlement adopted a more sheltered position further down the slope. This settlement seems to have been preceded by activity possibly in the first century BC involving a timber structure and possible industrial activity. The principal phase of activity at this settlement is unlikely to have taken place before the first century AD, though earlier activity at Roundhouse A is a possibility, as it was not radiocarbon dated.

The settlement was certainly occupied in the first and second centuries AD and perhaps into the third century. Contact with the wider Roman world is evidenced by the presence of Roman pottery and the seal box. There was also glass bead making taking place somewhere on site, probably for trade.

After the third century AD the settlement declined, either reflecting a reduction in population levels or a shift in the settlement pattern. The early medieval cemetery at Llandygai (Longley 2001) and another found recently by aerial photography (see below) suggest there may have been a movement closer to the present location of Llandygai village. The site, however, was not totally abandoned, as in the sixth or seventh century AD smithing took place on what was the site of Roundhouse E. This seems to have been an isolated site dedicated to metalworking. Why it was here and whether it hints at settlement in the vicinity is not clear.

It is probable that the site continued to be farmed throughout the medieval period, although no clear medieval field system was found. A small number of ditches seem to pre-date the eighteenth-century map, and boundaries on this map hint at the presence of earlier field systems. It does seem very likely that the upper part of the site was arable land in the twelfth century as a corn drier of this date was found. The eighteenth-century field system almost certainly retained traces of the medieval fields, which in turn may have incorporated at least the eroded remains of the roundhouse settlement as a boundary marker between the arable and pastureland. The continuity and consistency of agricultural use may have been considerable, broken only when the whole area was converted to improved grassland in the later nineteenth century.

The land between the rivers (Fig. 34)

Parc Bryn Cegin is large enough to reveal something of the prehistoric landscape within its boundaries but it can be more clearly understood when compared to the topography and archaeological evidence of the surrounding area. The site is located in the parish of Llandygai, which lies between the rivers Ogwen and Cegin. Along with the parish of Llanllechid, which runs up to the mountain summits on the eastern

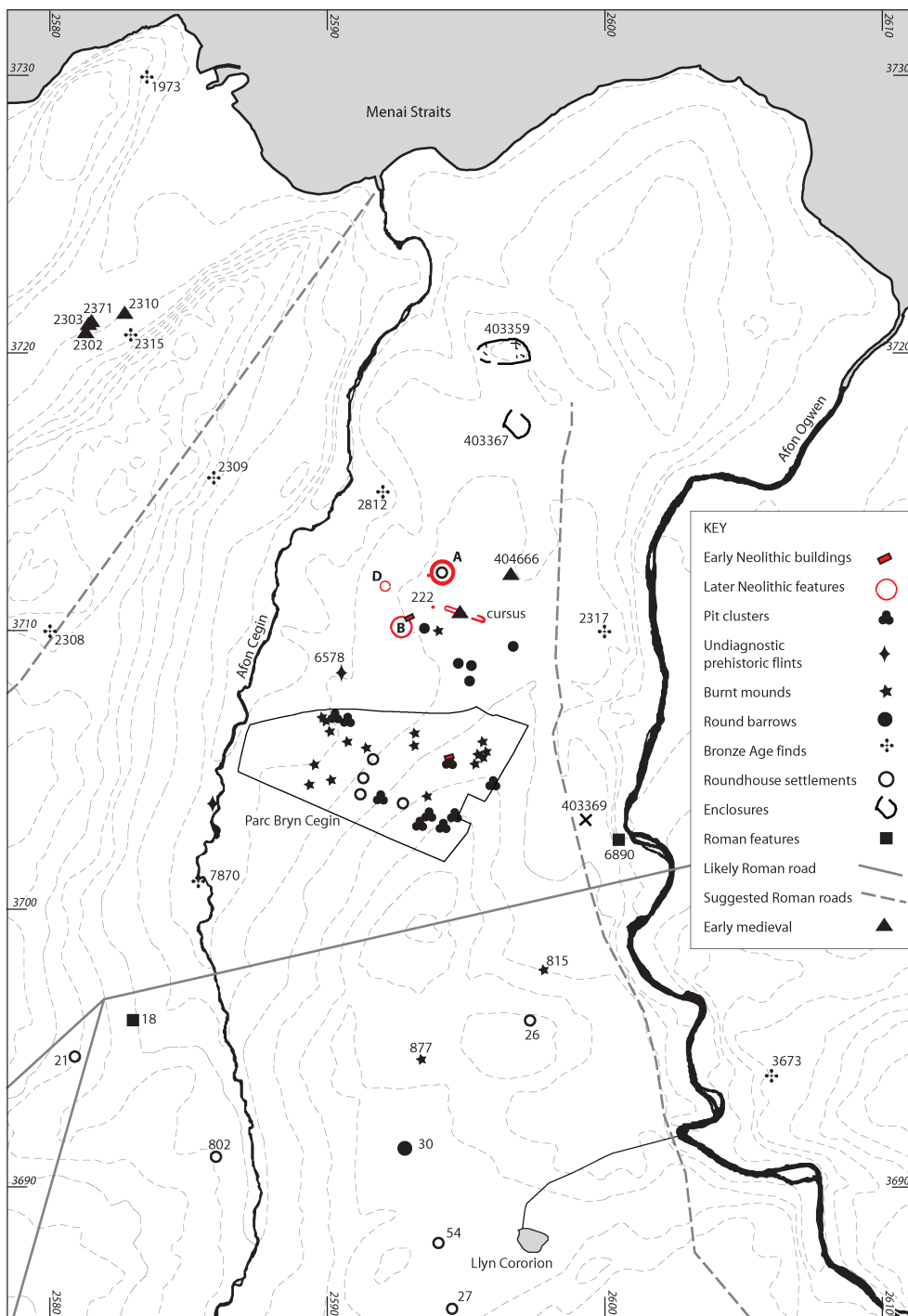


Fig. 34. Distribution of sites around Parc Bryn Cegin (see Table 2 for identification of sites).
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Table 2: Sites shown in Figure 34

PRN*	Site type	Site name/location
18*	Roman milestone	Tŷ Coch, Pentir
21*	Hut and field system	SW of Tŷ Coch
26*	Earthwork enclosure	Siambra-Gwynion
27*	Hut circle settlement	Cororion Rough, Glasinfryn
30*	Cairn with Food Vessels	Carnedd Howel
54*	Hut circles	NW of Cororion
222*	Henges, cursus and Neolithic settlement	Llandygai Industrial Estate
802*	Rectangular platform\enclosure	N of Glasinfryn
815*	Burnt mound	Rhos Uchaf
877*	Burnt mound	Wet Covert
1973*	Early Bronze Age Collared Urn (findspot)	Upper Garth Road
2302*	Saxon Coins (findspot)	Bangor Cathedral
2303*	Medieval chapel	Capel Gorfyw, Bangor Cathedral
2308*	Stone hammers (findspot)	Bangor
2309*	Palstave (findspot)	Maesgeirchen
2310*	tenth-century coin hoard	Bangor High Street
2315*	Stone maul (findspot)	Bangor Mountain
2317*	Bronze palstave (findspot)	Llandygai
2371*	Early medieval cemetery	Deiniol Shopping Precinct
2812*	Bronze palstave (findspot)	Maesgeirchen
3673*	Pebble macehead (findspot)	Llandygai
6578*	Prehistoric flints (findspot)	Llandygai
6890*	Roman coin (findspot)	Llandygai
7870*	Flint knife (findspot)	SE of Minffordd
403359**	Oval ditched enclosure (AP)	Penrhyn Park enclosure I
404666**	Square barrows (AP)	Penrhyn Park
403367**	D-shaped enclosure, possibly a defended enclosure (AP)	Penrhyn Park enclosure II
403369**	Settlement cropmarks (AP)	Pen Lan

* PRN as listed in the Regional Historic Environment Record maintained by Gwynedd Archaeological Trust or NPRN as listed in the National Monuments Record maintained by RCAHMW

side of the Ogwen, this makes an obvious geographical and economic unit. The boundaries are defined by rivers and watersheds and include coastal, lowland and upland zones. This area might, therefore, have been perceived as a unit over a very long period of time.

The township of Cororion (Creuwriion) on which the parish of Llandygai was based (Carr 1977) is mentioned in the Mabinogion (Jones and Jones 1949, 58), and its western boundary was also the cantref boundary (RCAHMW 1956). This boundary runs along the summits of the north-south ridge to the west of Nant Ffrancon. The ridge, reaching over 900m in altitude, presents a prominent division in the landscape with a major pass through the mountains on its eastern side formed by the valleys of the Ogwen and the Llugwy. The forested landscape of prehistory will have done little to reduce the impact of the mountains and the rivers would have been even more important to guide the traveller through the trees.

It is therefore not unreasonable to speculate that this may have been seen as a significant boundary from antiquity.

Travel north to south would have been restricted by the mountains, through which Nant Ffrancon provided a pass. This route was chosen by Telford for his London to Holyhead road, but had probably been used since at least the medieval period, and possibly by the Romans (Trinder 2003; Williams-Jones 1977; Waddelove 1999; Hopewell 2005, 19). There is no evidence for an even earlier routeway, such as the standing stones that mark the Bwlch y Ddeufaen route further east, but a prehistoric route down Nant Ffrancon seems likely.

This narrow strip of land between a major natural boundary and a significant routeway may have had importance from the Neolithic period onwards. The only Neolithic tombs identified in this part of Arfon lie between the two rivers. Unfortunately both are uncertain sites. The supposed tomb at Sling is about 3.5 kilometres to the south of the site. It is now largely collapsed and consists of what is interpreted as a large capstone propped on a single stone. Lynch (1969, 148) was unable to classify it and the large slab looks as if it was abandoned in the process of removal from the bedrock rather than part of a finished but dilapidated tomb. About 3 kilometres to the north of the Parc Bryn Cegin a tomb apparently once existed near the mouth of the Afon Ogwen on Traeth Lafan, described as follows by William Williams in 1806: 'At the entrance to the first weir in the sands which belongs to the proprietors of Penrhyn, there was formerly a large cromlech' (Jones 1975, 206). This was still there, although collapsed, in 1805. The stones were limestone, which is not common on the southern side of the Straits, but does exist in places. If this was a genuine tomb it may still exist buried under the sands.

With so little firm information about other aspects of Early Neolithic life it is difficult to place the two timber buildings within a meaningful context. Parc Bryn Cegin has produced evidence hinting at other, more transitory settlement in the Early Neolithic but there is not yet sufficient evidence to identify the extent or distribution of this activity. A number of polished stone axes have been recovered from the coastal lowlands, but these could belong to the later Neolithic. Did the two impressive timber structures mark the land between the rivers out as special or were they part of the ordinary range of settlements to be found across the Arfon plain and beyond? A great deal more work is necessary before we can answer these questions.

It is even harder to establish whether the presence of the buildings influenced the location of the henge complex. Henges elsewhere were built over earlier monuments (Barclay 2005, 93), but these were usually large monuments such as cursuses (Gibson 1999b, 135). The natural features of the landscape would have been reason enough for the location of the complex, even if the existence of the earlier buildings had been completely forgotten. The henge complex was on a meeting of natural routeways, east-west along the Straits and the coastal plain and north-south through Nant Ffrancon. Several authors have linked henges elsewhere with routeways (e.g. Harding 2003, 90–7; Loveday 1998), and it may have been these routes that were the greatest influence on the location of the henges at Llandygai.

Both henges and cursuses are often in close proximity to water and in low-lying locations (Gibson 1999b, 132; Harding 2003, 54). Cursuses are closely related to topography and tend to lie on the gravel terraces of major rivers with one end terminating close to the river or a tributary (Harding and Barclay 1999, 5). At Llandygai the cursus, although on fairly flat land, is not on a river terrace and is some distance from the rivers, but, unlike the alignments of the other monuments, it seems to be as close to perpendicular as possible to the line of the ridge between the two rivers. The position of a contemporary large circular feature (site D, Lynch 2001, 81) emphasised this line across the ridge, which perhaps referenced the two rivers.

In general it seems that contemporary settlement avoided both henges and cursuses (Harding 1999, 32; 2003, 61). Around Woodhenge and Durrington Walls the density of flint scatters increased at about 1.6

kilometres from the monuments, suggesting most settlement was restricted to this zone. However, there were dense scatters no more than *c.* 0.5 kilometre from the Thornborough henges (Harding 2003), so the 'excluded space' (*ibid.*, 61) around these monuments seems to have been variable. If the pit groups in Parc Bryn Cegin represent settlement they were at about the same distance from the henges (between 460–700m from the nearest henge) as the settlement at Thornborough. The exception is pit group VI, which at *c.* 370m from Henge B, might be considered a little close. Assuming an unwooded landscape the intervisibility of the pit groups and the henges may indicate a link between them, perhaps representing private ritual associated with the public ritual in the henges. From the present evidence it might be suggested that mid and late Neolithic settlement, or at least more pit groups, might be successfully sought to the north within Parc Penrhyn about 500m or more from Henge A.

The ceremonial complex retained its importance into the Bronze Age, as a round barrow of this date was excavated near Henge B. Some activity may have continued within Henge B and a cremation burial in Henge A dates to the Bronze Age. Circular features identified in the adjacent field to the east are also likely to be round barrows (Lynch 2001), and others may have existed that have been levelled by agriculture. As discussed above there may have been a Bronze Age funerary cairn on Parc Bryn Cegin, almost completely obliterated by agricultural improvements. Carnedd Howel (PRN 30), a particularly large cairn about 1 kilometre to the south of the site, is located on the top of the ridge and its size could mark the continued importance of the land between the rivers. Other large cairns sit on the hill and mountain summits marking the watersheds later used to define the parishes of Llandygai and Llanllechid.

Bronze Age settlements are very rare in north-west Wales, and the Parc Bryn Cegin excavations have not identified a clearly defined settlement. A scatter of finds, including bronze axes and moulds, on the lowlands near the site implies activity here, possibly workshops in the valley bottoms, close to water (Lynch 1990; 1992; 1994). The number of burnt mounds on the present site suggests that they may have been very common within this area and indicate considerable activity, possibly including slight temporary settlements. More settled occupation might have occurred on the drier, flatter ridge top not investigated by the present project. It could be postulated that the presence of Carnedd Howel and the barrows close to the henge complex indicate that the land between the rivers remained a special zone and settlements may have lain beyond this area, with only temporary aggregation sites and their associated burnt mounds within it.

Settlements from the Early or Mid Iron Age are rare but the ring-grooved roundhouse at Parc Bryn Cegin helps to fill this gap. It is probable that the settlement in Llandygai Henge A formed a focus for unenclosed, scattered settlements, one of which was Roundhouse E. By the later Iron Age the landscape was extensively occupied. Parc Bryn Cegin demonstrates that, whilst the majority of known sites are found on marginal land, settlements also existed in lowland areas, though the visible evidence has been largely removed by ploughing. Recent aerial photographs by RCAHMW have revealed the presence of other probable enclosed settlements in Penrhyn Park (NPRN 403359, 403397; Driver 2005).

Many of the roundhouse settlements, including that at Parc Bryn Cegin, continued into the Roman period. The site lies close to various possible routes of Roman roads (Hopewell 2005). The road along the coast to Segontium (Caernarfon) was probably located about 250m to the south of the site. The northern end of a route proposed by Waddelove (1999, 87–8) through Nant Ffrancon follows the old A5 near Llandygai and then on the line of a terrace into Penrhyn Park. He suggests that this road was heading for a fort defending a port at the mouth of the Ogwen or Cegin. A Roman fort in Penrhyn Park has been suggested by others because of its intermediary position between Caerhun and Caernarfon (Lynch 1994, 9). Waddelove (1999, 101) notes the well-defended position of the promontory between the rivers with two good harbours, and in a good position to control crossings to Anglesey. A cropmark initially identified as a fort is most probably a natural feature (PRN 2370), and no other evidence has yet been

found for it, although the likely location for a fort would mean that much of it might be obscured by Penrhyn Castle. The work at Parc Bryn Cegin may provide some support for the possibility of a fort as the Roman pottery assemblage and the seal box suggest a closer association with a military establishment than the proximity to the road can explain.

The presence of a Roman fort may have influenced settlement in the medieval period. Settlement of this period was notable by its absence from Parc Bryn Cegin but there was clearly an early medieval presence in the area because of the cemetery on Houlder's site. This has been consolidated by recent aerial photographs of a square-barrow cemetery (NPRN 404666; Driver 2006b) just over 200m from the excavated one. Square-barrow cemeteries may in some places have developed from Roman cemeteries, as for example at Poundbury, Dorset (Farwell and Molleson 1993) and Lankhills, Hampshire (Clarke 1979, 183), and a still functioning Roman road might have encouraged medieval settlement along its line. Aerial photographs of a platform house and ridge and furrow near the village of Llandygai and the fourteenth-century church indicate a later medieval village here. Whether the early medieval village was in the same location is not known but the cemeteries suggest that it was not far away. The early medieval smithing site found on Parc Bryn Cegin was also unlikely to be far from the settlement focus.

In the adjacent valley the monastery of Saint Deiniol was founded in the sixth century AD and by the tenth century there was a settlement of importance which developed into a cathedral city in the twelfth century (Longley 1994). However, the focus of earlier settlement in the area may have been not far from Llandygai on the land between the rivers, which had been of importance for millennia.

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APPENDIX I: THE RADIOCARBON DATES

By Peter Marshall and Jane Kenney

Introduction

116 radiocarbon determinations have been obtained on samples of carbonised wood, charred plant remains and a residue from a pottery sherd from Parc Bryn Cegin. As well as a catalogue of information on each sample dated (Table 1) this appendix provides a summary of the methodology, particularly the Bayesian analysis. A detailed discussion of the results and their reliability is given in Marshall 2008. The samples were all dated by accelerator mass spectrometry (AMS) at the following three laboratories: Leibniz Labor für Altersbestimmung und Isopenforschung, Christian-Albrechts-Universität, Kiel, Germany; the Rafter Radiocarbon Laboratory, Institute of Geological and Nuclear Sciences, New Zealand; and the University of Waikato Radiocarbon Dating Laboratory, New Zealand.

Calibration and Bayesian analysis

The raw assays have been calibrated using the calibration curve of Reimer *et al.* (2004) and the computer program OxCal v3.10 (Bronk Ramsey 1995; 1998; 2001). The calibrated date ranges cited in the text are those for 95% confidence. Ranges for posterior density estimates are also quoted for many dates, also at 95% confidence. These are derived from mathematical modelling using a Bayesian approach (Buck *et al.* 1996).

Although the simple calibrated dates are accurate estimates of the dates of the samples, this is usually not what archaeologists really wish to know. It is the dates of the archaeological events, which are represented by those samples, which are of interest. In the case of Parc Bryn Cegin, it is the chronology of the use of the early Neolithic building, burnt mounds, etc. that is under consideration, not the calibrated dates of the individual samples (Bayliss *et al.* 2007). The dates of this activity can be estimated not only using the absolute dating information from the radiocarbon measurements on the samples, but also by using the stratigraphic relationships between samples.

Methodology is now available which allows the combination of these different types of information explicitly, to produce realistic estimates of the dates of archaeological interest. It should be emphasised that the *posterior density estimates* produced by this modelling are not absolute. They are interpretative *estimates*, which can and will change as further data become available and as other researchers choose to model the existing data from different perspectives.

The technique used is a form of Markov Chain Monte Carlo sampling, and has been applied using the program OxCal v3.10 (<http://www.rlaha.ox.ac.uk/>), which uses a mixture of the Metropolis-Hastings algorithm and the more specific Gibbs sampler (Gilks *et al.* 1996; Gelfand and Smith 1990).

The statistical models used to process the final dates incorporated archaeological evidence and Marshall 2008 explains the reasoning behind the specific interpretative choices made in producing the models presented.

Objectives and sampling strategy

The radiocarbon programme was designed to achieve the following objectives: a precise date for the early Neolithic building; a precise date for the nationally important assemblage of ceramics contained within the later Neolithic pit groups; chronological differences between the groups of burnt mounds; a precise date for the earth ovens; a precise date for the use of the ring-grooved Roundhouse E and the overlying metalworking activity; understanding the chronological relationship of structures F and G and the clay-walled roundhouse settlement; and to date and therefore phase isolated features.

In order to implement a Bayesian approach a rigorous procedure for extracting the necessary information to build chronological models from archaeological sites has been developed (Bayliss and Ramsey, 2004). This procedure was used to underpin all stages of the radiocarbon dating programme for Parc Bryn Cegin.

The first stage in sample selection was to identify short-lived material, which was demonstrably not residual in the context from which it was recovered. The taphonomic relationship between a sample and its context is the most hazardous link in this process, since the mechanisms by which a sample came to be in its context are a matter of interpretative decision rather than certain knowledge. All samples consisted of single entities (Ashmore 1999). Material was selected only where there was evidence that a sample had been put fresh into its context. The main category of material, which met these taphonomic criteria was charcoal from short-lived taxa, or of charred, short-lived plant macrofossils (seeds or nutshell), from contexts in which it seemed to have been freshly deposited, e.g. hearths, ovens, industrial features. A particularly reliable sample was taken from charred residue adhering to the inside of ceramic sherd. The sherd selected was large and unabraded suggesting that the residue/sherd had not been exposed to weathering for a long period of time.

Other samples with a less certain taphonomic origin submitted included charcoal from the fill of postholes, interpreted as relating to the use of structures rather than its construction, as suggested by experimental archaeology (Reynolds 1995), and from the primary fill of pits. Where possible duplicate samples from these contexts were submitted to test the assumption that the material was of the same actual age.

Once suitable samples had been identified models were devised to try and answer the objectives outlined above, which incorporated the archaeological information along with simulated radiocarbon results. The radiocarbon results were simulated using the `R_Simulate` function in OxCal, with errors based on the material to be analysed and the type of measurement required (e.g. single run AMS). This was used to determine the number of samples that should be submitted in the dating programme.

CATALOGUE OF RADIOCARBON DATES FROM PARC BRYN CEGIN

EARLY NEOLITHIC BUILDING AND PIT

*Posterior Density Estimate: 3950–3795 cal. BC***KIA-30432**

Context: 1486: upper fill of E gable-end posthole 1483. Possibly deposited after the post was removed

Material: Charred hazelnut shell

Radiocarbon age: 4903 ± 42 BP

Calibrated date: 3780–3630 cal. BC

Posterior Density Estimate: 3740–3640 cal. BC

KIA-30433

Context: 1522: fill of post-pipe in one of the central postholes, 1532

Material: Charred hazelnut shell

Radiocarbon age: 4899 ± 29 BP

Calibrated date: 3710–3640 cal. BC

Posterior Density Estimate: 3710–3640 cal. BC

KIA-30434

Context: 1522: fill of post-pipe in one of the central postholes, 1532

Material: Charred emmer wheat grain

Radiocarbon age: 4924 ± 30 BP

Calibrated date: 3780–3640 cal. BC

Posterior Density Estimate: 3740–3640 cal. BC

KIA-30435

Context: 1571: secondary fill of posthole on S wall, 1572

Material: Charred hazelnut shell

Radiocarbon age: 4958 ± 30 BP

Calibrated date: 3800–3650 cal. BC

Posterior Density Estimate: 3760–3650 cal. BC

KIA-30436a

Context: 1614: fill of post-pipe in posthole on S wall, 1613

Material: Oak charcoal (alkali residue)

Radiocarbon age: 5071 ± 29 BP

Weighted mean: 5060 ± 22 BP ($T' = 0.3$; $T' (5\%) = 3.8$; $= 1$; Ward and Wilson 1978)

Calibrated date: 3955–3785 cal. BC

KIA-30436b

Context: 1614: fill of post-pipe in posthole on S wall, 1613

Material: Oak charcoal (humic acids)

Radiocarbon age: 5045 ± 35 BP

Combined with KIA-30436a to give weighted mean given above from which calibrated date is calculated

KIA-30437

Context: 1709: material deposited into top of W end gable posthole after post removed, 1691

Material: Oak charcoal

Radiocarbon age: 4908 ± 30 BP

Calibrated date: 3760–3640 cal. BC

Posterior Density Estimate: 3720–3640 cal. BC

KIA-31080

Context: 1290: fill of small internal posthole 1291

Material: Charred hazelnut shell

Radiocarbon age: 4832 ± 32 BP

Calibrated date: 3660–3530 cal. BC

Posterior Density Estimate: 3700–3630 cal. BC

KIA-31081

Context: 1340: fill of small internal pit 1339

Material: Charred hazelnut shell

Radiocarbon age: 4952 ± 29 BP

Calibrated date: 3800–3650 cal. BC

Posterior Density Estimate: 3760–3650 cal. BC

KIA-31082

Context: 1340: fill of small internal pit 1339

Material: Charred hazelnut shell

Radiocarbon age: 4871 ± 30 BP

Calibrated date: 3710–3630 cal. BC

Posterior Density Estimate: 3710–3640 cal. BC

KIA-31083

Context: 1369: upper fill of small internal posthole 1370

Material: Charred hazelnut shell
Radiocarbon age: 4993 ± 29 BP
Calibrated date: 3940–3700 cal. BC
Posterior Density Estimate: 3770–3660 cal. BC

KIA-31084

Context: 1389: post-packing deposit in one of the central postholes 1406

Material: Charred hazelnut shell
Radiocarbon age: 4899 ± 29 BP
Calibrated date: 3710–3640 cal. BC
Posterior Density Estimate: 3710–3640 cal. BC

KIA-31085

Context: 1405: fill of post-pipe in one of the central postholes 1406

Material: Charred hazelnut shell
Radiocarbon age: 4989 ± 26 BP
Calibrated date: 3910–3700 cal. BC
Posterior Density Estimate: 3770–3660 cal. BC

KIA-31086

Context: 1445: charcoal-rich fill in post trench 1404

Material: Charred wheat grain
Radiocarbon age: 4912 ± 29 BP
Calibrated date: 3760–3640 cal. BC
Posterior Density Estimate: 3720–3640 cal. BC

KIA-31087

Context: 1723: post-packing deposit in W gable-end posthole, 1691

Material: Charred cereal grain
Radiocarbon age: 4905 ± 34 BP
Calibrated date: 3780–3630 cal. BC
Posterior Density Estimate: 3720–3640 cal. BC

KIA-31088

Context: 1631: charcoal-rich fill within large pit, contained broken stone axe, 1619

Material: Charred hazelnut shell
Radiocarbon age: 4630 ± 31 BP
Calibrated date: 3520–3350 cal. BC

KIA-31089

Context: 1631: charcoal-rich fill within large pit,

contained broken stone axe, 1619
Material: Charred hazelnut shell
Radiocarbon age: 4946 ± 34 BP
Calibrated date: 3800–3650 cal. BC

MID AND LATER NEOLITHIC PIT GROUPS

NZA-26671

Context: Pit group I: 1051, fill of small pit with Mortlake Ware, 1052

Material: Charred hazelnut shell
Radiocarbon age: 4504 ± 30 BP
Calibrated date: 3360–3090 cal. BC

NZA-26672

Context: Pit group I: 1051, fill of small pit with Mortlake Ware, 1052

Material: Charred hazelnut shell
Radiocarbon age: 4437 ± 30 BP
Calibrated date: 3330–2920 cal. BC

NZA-26679

Context: Pit group V: 4149, charcoal-rich fill towards base of pit with Fengate Ware, 4133

Material: Residue from pot sherd in SF 569 (vessel V.A)
Radiocarbon age: 4479 ± 30 BP
Calibrated date: 3350–3020 cal. BC

NZA-26680

Context: Pit group VI: 6005, fill of pit with Grooved Ware, 6041

Material: Charred hazelnut shell
Radiocarbon age: 4567 ± 30 BP
Calibrated date: 3490–3120 cal. BC

NZA-26681

Context: Pit group VI: 6005, fill of pit with Grooved Ware, 6041

Material: Charred hazelnut shell
Radiocarbon age: 3976 ± 30 BP
Calibrated date: 2580–2460 cal. BC

NZA-26687

Context: Pit group VI: 6066, upper fill of pit with

Fengate Ware, 6072

Material: Charred hazelnut shell

Radiocarbon age: 4467 ± 30 BP

Calibrated date: 3340–3020 cal. BC

NZA-26688

Context: Pit group VI: 6073, lower fill of pit with Fengate Ware, 6072

Material: Charred hazelnut shell

Radiocarbon age: 4517 ± 30 BP

Calibrated date: 3360–3090 cal. BC

KIA-30440

Context: Pit group VII: 3144, upper fill of pit, 3146

Material: Wood charcoal, <10 years, species not identifiable

Radiocarbon age: 4724 ± 44 BP

Calibrated date: 3640–3370 cal. BC

KIA-30441

Context: Pit group VII: 3154, fill of pit, 3155

Material: Charred hazelnut shell

Radiocarbon age: 3476 ± 28 BP

Calibrated date: 1890–1690 cal. BC

KIA-30442

Context: Pit group VII: 3154, fill of pit, 3155

Material: Charred hazelnut shell

Radiocarbon age: 3388 ± 29 BP

Calibrated date: 1750–1610 cal. BC

NZA-26682

Context: Pit group VII: 3137, upper fill of pit, 3139

Material: Charred barley grain

Radiocarbon age: 3474 ± 30 BP

Calibrated date: 1890–1690 cal. BC

NZA-26689

Context: Pit group VII: 3145, lower fill of pit with Early Neolithic pot, 3146

Material: Hazelnut charcoal

Radiocarbon age: 4797 ± 30 BP

Calibrated date: 3650–3520 cal. BC

NZA-26690

Context: Pit group VII: 3137, upper fill of pit, 3139

Material: Charred hazelnut shell

Radiocarbon age: 3552 ± 30 BP

Calibrated date: 1980–1770 cal. BC

NZA-26691

Context: Pit group VIII: 1308, primary fill of pit, 1309

Material: Charred hazelnut shell

Radiocarbon age: 4178 ± 30 BP

Calibrated date: 2890–2630 cal. BC

NZA-26692

Context: Pit group VIII: 1308, primary fill of pit, 1309

Material: Charred hazelnut shell

Radiocarbon age: 4139 ± 30 BP

Calibrated date: 2880–2580 cal. BC

NZA-26693

Context: Pit group VIII: 1554, main fill of pit with Grooved Ware, 1553

Material: Charred hazelnut shell

Radiocarbon age: 4201 ± 30 BP

Calibrated date: 2900–2670 cal. BC

NZA-26694

Context: Pit group VIII: 1554, main fill of pit with Grooved Ware, 1553

Material: Charred hazelnut shell

Radiocarbon age: 4192 ± 30 BP

Calibrated date: 2890–2670 cal. BC

BURNT MOUNDS

KIA-30443

Context: Burnt mound 1097: 1158, primary fill of trough, 1154

Material: Charred hazelnut shell

Radiocarbon age: 4034 ± 31 BP

Calibrated date: 2830–2470 cal. BC

KIA-30444

Context: Burnt mound 1097: 1158, primary fill of trough, 1154

Material: Charred hazelnut wood

Radiocarbon age: 3216 ± 26 BP

Calibrated date: 1530–1420 cal. BC

NZA-26765

Context: Burnt mound 1097: 1158, fill of trough, 1154

Material: Hazel charcoal

Radiocarbon age: 3270 ± 35 BP

Calibrated date: 1630–1450 cal. BC

NZA-26766

Context: Burnt mound 2031: 2145, fill of trough, 2149

Material: Hazel charcoal

Radiocarbon age: 3716 ± 40 BP

Calibrated date: 2280–1970 cal. BC

NZA-26767

Context: Burnt mound 2031: 2145, fill of trough, 2149

Material: Hazel charcoal

Radiocarbon age: 3575 ± 40 BP

Calibrated date: 2030–1770 cal. BC

NZA-26768

Context: Burnt mound 2167: 2173, fill of pit, 2175

Material: Hazel charcoal

Radiocarbon age: 2998 ± 35 BP

Calibrated date: 1390–1120 cal. BC

NZA-26769

Context: Burnt mound 2167: 2173, fill of pit, 2175

Material: Hazel charcoal

Radiocarbon age: 3064 ± 35 BP

Calibrated date: 1420–1210 cal. BC

KIA-30447

Context: Burnt mound 2176: 2200, main fill of trough, 2197

Material: Possibly hazel charcoal, indeterminate age

Radiocarbon age: 3904 ± 30 BP

Calibrated date: 2480–2290 cal. BC

Posterior Density Estimate: 2460–2290 cal. BC

KIA-30448

Context: Burnt mound 2176: 2200, main fill of trough, 2197

Material: Charred grain, species unidentified

Radiocarbon age: 3636 ± 30 BP

Calibrated date: 2130–1910 cal. BC

NZA-26770

Context: Burnt mound 2176: 2193, fill of trough, 2186

Material: Hazel charcoal

Radiocarbon age: 3899 ± 35 BP

Calibrated date: 2480–2230 cal. BC

Posterior Density Estimate: 2470–2230 cal. BC

NZA-26771

Context: Burnt mound 2176: 2196, fill of trough, 2186

Material: Hazel charcoal

Radiocarbon age: 3886 ± 40 BP

Calibrated date: 2480–2200 cal. BC

Posterior Density Estimate: 2470–2230 cal. BC

NZA-26772

Context: Burnt mound 2176: 2208, fill of trough, 2197

Material: Hazel charcoal

Radiocarbon age: 3878 ± 40 BP

Calibrated date: 2480–2200 cal. BC

Posterior Density Estimate: 2470–2230 cal. BC

NZA-26773

Context: Burnt mound 2176: 2203, fill of trough, 2202

Material: Hazel charcoal

Radiocarbon age: 3839 ± 40 BP

Calibrated date: 2470–2140 cal. BC

Posterior Density Estimate: 2450–2200 cal. BC

NZA-26774

Context: Burnt mound 2176: 2203, fill of trough, 2202

Material: Hazel charcoal
Radiocarbon age: 3738 ± 40 BP
Calibrated date: 2290–2020 cal. BC
Posterior Density Estimate: 2430–2110 cal. BC

NZA-26775

Context: Burnt mound 2176: 2209, fill of hearth 2212
Material: Hazel charcoal
Radiocarbon age: 3869 ± 40 BP
Calibrated date: 2470–2200 cal. BC
Posterior Density Estimate: 2460–2210 cal. BC

NZA-26776

Context: Burnt mound 2176: 2209, fill of hearth 2212
Material: Hazel charcoal
Radiocarbon age: 3879 ± 40 BP
Calibrated date: 2470–2200 cal. BC
Posterior Density Estimate: 2470–2210 cal. BC

NZA-26777

Context: Burnt mound 2287: 2289, fill of trough, 2288
Material: Hazel charcoal
Radiocarbon age: 2960 ± 35 BP
Calibrated date: 1310–1040 cal. BC

NZA-26818

Context: Burnt mound 2287: 2289, fill of trough, 2288
Material: Hazel charcoal
Radiocarbon age: 3003 ± 35 BP
Calibrated date: 1390–1120 cal. BC

NZA-26819

Context: Burnt mound 4199: 4222, fill of trough, 4208
Material: Hazel charcoal
Radiocarbon age: 3904 ± 35 BP
Calibrated date: 2480–2280 cal. BC

NZA-26820

Context: Burnt mound 4199: 4222, fill of trough, 4208
Material: Hazel charcoal

Radiocarbon age: 3903 ± 35 BP
Calibrated date: 2480–2280 cal. BC

NZA-26821

Context: Burnt mound 6016: 6037, fill of pit, 6018
Material: Hazel charcoal
Radiocarbon age: 3863 ± 40 BP
Calibrated date: 2470–2200 cal. BC

NZA-26823

Context: Burnt mound 6016: 6037, fill of pit, 6018
Material: Hazel charcoal
Radiocarbon age: 3903 ± 40 BP
Calibrated date: 2480–2210 cal. BC

NZA-26824

Context: Burnt mound 6019: 6020, fill of pit, 6023
Material: Hazel charcoal
Radiocarbon age: 3913 ± 35 BP
Calibrated date: 2490–2290 cal. BC

NZA-26825

Context: Burnt mound 6019: 6020, fill of pit, 6023
Material: Hazel charcoal
Radiocarbon age: 2872 ± 35 BP
Calibrated date: 1190–920 cal. BC

KIA-30449

Context: Burnt mound 6094: 6057, fill of trough, 6058
Material: Charred hazelnut shell
Radiocarbon age: 4572 ± 32 BP
Calibrated date: 3490–3120 cal. BC

KIA-30450

Context: Burnt mound 6094: 6057, fill of trough, 6058
Material: Charred hazelnut shell
Radiocarbon age: 4467 ± 29 BP
Calibrated date: 3340–3020 cal. BC

KIA-30445

Context: Burnt mound 7035: 7049, upper fill of pit, 7045

Material: Possibly oak charcoal, indeterminate age

Radiocarbon age: 3811 ± 28 BP

Calibrated date: 2350–2140 cal. BC

KIA-30446

Context: Burnt mound 7035: 7048, middle fill of pit, 7045

Material: Possibly oak charcoal, indeterminate age

Radiocarbon age: 3612 ± 68 BP

Calibrated date: 2200–1760 cal. BC

NZA-26822

Context: Burnt mound 7039: 7044, fill of pit, 7043

Material: Hazel charcoal

Radiocarbon age: 3898 ± 40 BP

Calibrated date: 2480–2210 cal. BC

NZA-26828

Context: Burnt mound 7039: 7044, fill of pit, 7043

Material: Hazel charcoal

Radiocarbon age: 2829 ± 35 BP

Calibrated date: 1120–900 cal. BC

NZA-26762

Context: Feature 7955: 7050, charcoal layer in base of 7055

Material: Hazel charcoal

Radiocarbon age: 3132 ± 35 BP

Calibrated date: 1500–1310 cal. BC

NZA-26763

Context: Feature 7955: 7051, main fill of 7055

Material: Unidentifiable cereal grain

Radiocarbon age: 1980 ± 35 BP

Calibrated date: 50 cal. BC–cal. AD 90

NZA-26764

Context: Feature 7955: 7059, fill of stakehole in base of 7055

Material: Charcoal, probably hazel

Radiocarbon age: 3087 ± 35 BP

Calibrated date: 1440–1260 cal. BC

EARTH OVENS

NZA-26988

Context: Pit 1072: 1087, main burnt stone fill of 1072

Material: Barley grain

Radiocarbon age: 3276 ± 45 BP

Calibrated date: 1680–1440 cal. BC

NZA-26829

Context: Pit 1072: 1087, main burnt stone fill of 1072

Material: Hazelnut shell

Radiocarbon age: 3271 ± 35 BP

Calibrated date: 1630–1450 cal. BC

NZA-26830

Context: Pit 1230: 1231, main burnt stone fill of 1230

Material: Charcoal, probably hazel

Radiocarbon age: 3062 ± 35 BP

Calibrated date: 1420–1210 cal. BC

NZA-26831

Context: Pit 1230: 1232, main burnt stone fill of 1230

Material: Hazel charcoal

Radiocarbon age: 3127 ± 35 BP

Calibrated date: 1490–1310 cal. BC

NZA-26839

Context: Pit 1259: 1260, main burnt stone fill of 1259

Material: Hazelnut shell

Radiocarbon age: 5639 ± 40 BP

Calibrated date: 4550–4360 cal. BC

NZA-26832

Context: Pit 1259: 1261, main burnt stone fill of 1259

Material: Hazelnut shell

Radiocarbon age: 4732 ± 40 BP
Calibrated date: 3640–3370 cal. BC

Wk-20060

Context: Pit 1390 and neighbouring charcoal spread: 1263, charcoal spread over postholes
Material: Hazelnut shell
Radiocarbon age: 3066 ± 35 BP
Calibrated date: 1420–1210 cal. BC

Wk-20061

Context: Pit 1390 and neighbouring charcoal spread: 1391, primary fill of deep pit 1390
Material: Probably hazel charcoal
Radiocarbon age: 3098 ± 36 BP
Calibrated date: 1440–1260 cal. BC

Wk-20062

Context: Pit 1390 and neighbouring charcoal spread: 1391, primary fill of deep pit 1390
Material: Probably hazel charcoal
Radiocarbon age: 3078 ± 35 BP
Calibrated date: 1430–1260 cal. BC

NZA-26833

Context: Pit 1510: 1511, main burnt stone fill of 1510
Material: Hazel charcoal
Radiocarbon age: 2791 ± 35 BP
Calibrated date: 1020–830 cal. BC

NZA-26834

Context: Pit 1510: 1589, part of pit lining of 1510
Material: Hazel charcoal
Radiocarbon age: 2766 ± 35 BP
Calibrated date: 1010–820 cal. BC

NZA-26989

Context: Pit 3133: 3131, main burnt stone fill of 3133
Material: Hazelnut shell
Radiocarbon age: 4772 ± 40 BP
Calibrated date: 3650–3380 cal. BC

NZA-26835

Context: Pit 3133: 3132, primary fill of 3133

Material: Hazel charcoal
Radiocarbon age: 4870 ± 40 BP
Calibrated date: 3710–3530 cal. BC

NZA-26836

Context: Pit 3314: 3315, main burnt stone fill of 3314
Material: Hazel charcoal
Radiocarbon age: 3313 ± 35 BP
Calibrated date: 1690–1500 cal. BC

NZA-26840

Context: Pit 3314: 3315, main burnt stone fill of 3314
Material: Hazel charcoal
Radiocarbon age: 3647 ± 95 BP (Note the large error reflects a high degree of variability in the C14/13 ratio)
Calibrated date: 2290–1740 cal. BC

NZA-26837

Context: Pit 6033: 6051, main burnt stone fill of 6033
Material: Hazel charcoal
Radiocarbon age: 4949 ± 40 BP
Calibrated date: 3900–3640 cal. BC

NZA-26838

Context: Pit 6033: 6052, lower fill, possible erosion deposit of 6033
Material: Hazel charcoal
Radiocarbon age: 4985 ± 40 BP
Calibrated date: 3940–3650 cal. BC

EARLY IRON AGE ROUNDHOUSE E

KIA-30438

Context: 4197: stony, charcoal-rich deposit sealing the 4 postholes in the middle of RHE
Material: Charred barley grain
Radiocarbon age: 2383 ± 26 BP
Calibrated date: 520–390 cal. BC

KIA-30439

Context: 4253: fill of one of the 4 large postholes

(4252) in the middle of RHE

Material: Charred twig fragment, species unidentified

Radiocarbon age: 2483 ± 33 BP

Calibrated date: 780–410 cal. BC

Wk-20048

Context: 4276: fill of posthole 4277

Material: Barley grain

Radiocarbon age: 2313 ± 38 BP

Calibrated date: 410–250 cal. BC

Wk-20049

Context: 4276: fill of posthole 4277

Material: Probably naked wheat grain

Radiocarbon age: 2289 ± 38 BP

Calibrated date: 410–220 cal. BC

LATE IRON AGE AND ROMANO-BRITISH ROUNDHOUSE SETTLEMENT

Wk-20039

Context: Roundhouse C: 3584, fill of pit 3325

Material: Hazel charcoal

Radiocarbon age: 2211 ± 39 BP

Calibrated date: 390–170 cal. BC

Wk-20040

Context: Roundhouse C: 3648, deposit overlying pit complex

Material: Hazel charcoal

Radiocarbon age: 1924 ± 38 BP

Calibrated date: cal. AD 1–140

Wk-20041

Context: Roundhouse C: 3672, deposit overlying pit complex

Material: Emmer/spelt grain

Radiocarbon age: 1883 ± 39 BP

Calibrated date: cal. AD 20–240

Wk-20042

Context: Roundhouse C: 3672, deposit overlying pit complex

Material: unidentifiable cereal grain

Radiocarbon age: 1835 ± 39 BP

Calibrated date: cal. AD 70–320

Wk-20043

Context: Roundhouse C: 3681, fill of pit 3724

Material: Hazelnut shell

Radiocarbon age: 1769 ± 38 BP

Calibrated date: cal. AD 130–390

KIA-30451

Context: Structure F: 9004, main fill of posthole 9006

Material: Charred grain, species unidentified (humic acids)

Radiocarbon age: 2002 ± 34 BP

Calibrated date: 90 cal. BC–cal. AD 80

Wk-20050

Context: Structure F: 9091, fill of posthole 9092

Material: Roundwood twig

Radiocarbon age: 1914 ± 38 BP

Calibrated date: cal. AD 1–210

Wk-20051

Context: Structure F: 9091, fill of posthole 9092

Material: Roundwood twig

Radiocarbon age: 2061 ± 33 BP

Calibrated date: 180 cal. BC–cal. AD 20

Wk-20052

Context: Structure F: 9120, fill of posthole 9121

Material: Wheat grain

Radiocarbon age: 2121 ± 33 BP

Calibrated date: 350–40 cal. BC

Wk-20053

Context: Structure F: 9120, fill of posthole 9121

Material: Roundwood twig

Radiocarbon age: 2155 ± 34 BP

Calibrated date: 360–90 cal. BC

KIA-30452

Context: Structure G: 9323, fill of pit (9324) cut into fill of penannular gully

Material: Charred twig, species unidentified, <20 years old

Radiocarbon age: 2086 ± 25 BP

Calibrated date: 190–40 cal. BC

KIA-30453a

Context: Structure G: 9326, fill of posthole (9327) in centre of structure

Material: Charred twig, species unidentified, 8–10 years (alkali residue)

Radiocarbon age: 2011 ± 27 BP

Weighted mean: 1975 ± 20 BP (T' = 4.0; T' (5%) = 3.8; = 1; Ward and Wilson 1978)

Calibrated date: 40 cal. BC–cal. AD 75

KIA-30453b

Context: Structure G: 9326, fill of posthole (9327) in centre of structure

Material: Charred twig, species unidentified, 8–10 years (humic acids)

Radiocarbon age: 1930 ± 30 BP

Combined with KIA-30453a to give weighted mean above, used to calculate the calibrated date

KIA-30454

Context: Structure G: 9326, fill of posthole (9327) in centre of structure

Material: Charred hazelnut shell

Radiocarbon age: 2034 ± 26 BP

Calibrated date: 110 cal. BC–cal. AD 30

Wk-20054

Context: Structure G: 9061, fill of pit 9246

Material: Hazel charcoal

Radiocarbon age: 2174 ± 34 BP

Calibrated date: 370–110 cal. BC

Wk-20055

Context: Structure G: 9061, fill of pit 9246

Material: Hazel charcoal

Radiocarbon age: 2109 ± 34 BP

Calibrated date: 350–40 cal. BC

Wk-20056

Context: Roundhouse H: 9185, fill of pit 9184

Material: Hazel charcoal

Radiocarbon age: 1899 ± 33 BP

Calibrated date: cal. AD 20–220

Wk-20057

Context: Roundhouse H: 9185, fill of pit 9184

Material: Hazel charcoal

Radiocarbon age: 1791 ± 33 BP

Calibrated date: cal. AD 130–340

Wk-20058

Context: Roundhouse H: 9276, fill of pit 9277

Material: Unidentifiable cereal grain

Radiocarbon age: 1909 ± 33 BP

Calibrated date: cal. AD 20–210

Wk-20059

Context: Roundhouse H: 9276, fill of pit 9277

Material: Unidentifiable cereal grain

Radiocarbon age: 1828 ± 33 BP

Calibrated date: cal. AD 80–320

EARLY MEDIEVAL SMITHING SITE

Wk-20044

Context: 4250: Deposit with metalworking debris

Material: Barley grain

Radiocarbon age: 1466 ± 37 BP

Calibrated date: cal. AD 530–660

Posterior Density Estimate: cal. AD 570–660

Wk-20045

Context: 4250: Deposit with metalworking debris

Material: Naked wheat grain

Radiocarbon age: 1417 ± 37 BP

Calibrated date: cal. AD 570–670

Posterior Density Estimate: cal. AD 580–660

Wk-20046

Context: 4179: fill of hearth (4283) with metalworking debris

Material: Barley grain

Radiocarbon age: 1411 ± 37 BP

Calibrated date: cal. AD 580–670

Posterior Density Estimate: cal. AD 590–670

Wk-20047

Context: 4179: fill of hearth (4283) with metalworking debris

Material: Naked wheat grain
Radiocarbon age: 1412 ± 37 BP
Calibrated date: cal. AD 570–670
Posterior Density Estimate: cal. AD 590–670

Material: Oat grain
Radiocarbon age: 917 ± 36 BP
Calibrated date: cal. AD 1020–1220
Posterior Density Estimate: cal. AD 1030–1190

CORN DRIER NEAR ROUNDHOUSE A AND RELATED
 FEATURES

Wk-20035

Context: 3669: fill of corn drier 3671
Material: Oat grain
Radiocarbon age: 867 ± 39 BP
Calibrated date: cal. AD 1040–1260
Posterior Density Estimate: cal. AD 1040–1220

Wk-20036

Context: 3670: fill of corn drier 3671

Wk-20037

Context: 3718: fill of posthole 3717
Material: Oat grain
Radiocarbon age: 912 ± 36 BP
Calibrated date: cal. AD 1020–1220
Posterior Density Estimate: cal. AD 1030–1190

Wk-20038

Context: 3718: fill of posthole 3717
Material: Hazelnut shell
Radiocarbon age: 966 ± 36 BP
Calibrated date: cal. AD 990–1160
Posterior Density Estimate: cal. AD 1020–1160

NOTES

1. In the past the site has been known as Llandegai, but it is more correctly spelt with a 'y'. Most modern Ordnance Survey maps use the 'y' spelling, though they are not entirely consistent, as do the road signs. Despite the use of the 'e' spelling in past archaeological literature the more correct 'y' spelling has been used throughout this report. It is most probable that the saint or personage remembered was actually called Cai, not Tegai as is often suggested. The 'te' element is a common honorific seen in many Welsh 'llan' place names (David Longley, pers. com.). Richards (1969), who was attempting to standardise and correct the spelling of Welsh place names, uses 'Llandygái'.
2. See Lynch 2008 for a full catalogue and report.
3. See Smith 2008 for a full catalogue and report.
4. See Schmidl, Carrott and Jaques 2008 for a full catalogue and report.
5. See Lynch 2008 for a full catalogue and report.
6. See Smith 2008 for a full catalogue and report.
7. See Williams 2008 for a full catalogue and report.
8. See Schmidl, Carrott and Jaques 2008 for a full catalogue and report.
9. See Schmidl, Carrott and Jaques 2008 for a full catalogue and report.
10. See Cool 2008 for a full catalogue and report.
11. See Crew 2008 for a full catalogue and report.
12. University of Wales Bangor, Archives (UWBA), Penrhyn Papers MS S2205, Map of lower part of the parish of Llandegai, dated 1768.
13. Ibid.
14. UWBA, Penrhyn MS S2214, Map of the lower part of Llandegai parish, surveyed by John Jones, dated 1840.

15. UWBA, Penrhyn MS S2215, Tith map of the parish of Llandegai, dated 1841, and Penrhyn MS 230, Copy of the tith map of the parish of Llandegai, dated 1841.
16. UWBA, Penrhyn MS 263, Penrhyn railway plan and section of the line from Port Penrhyn and Bangor to Penrhyn Quarries and Bethesda, dated 1873.

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A small Late Bronze Age ribbed socketed axe from Bryn Pydew, Sir Conwy

By J. LL. WILLIAMS

This small axe was discovered in Bryn Pydew, Sir Conwy (SH 808 794). The date and circumstances of its initial discovery are not known but the object was said to have been retrieved from a wall under circumstances that were not recorded. The axe was subsequently bequeathed to the Great Orme Bronze Age Mine at Llandudno and is displayed as part of its collection of prehistoric metal artefacts.

The axe (Figs 1–2) is a very small, complete example of a Late Bronze Age socketed axe with well defined ribs represented on both body faces. The object has a roughly rectangular body with an expanded blade characterised by a shallow convex cutting edge and terminating in well-developed blade tips. The socket end has a substantial everted collar below which is a marked horizontal moulding. The body has well defined face edges that outline the ribbed decoration on the body. Roughly parallel sided ribs develop from below the horizontal moulding and extend the length of the body to a point above the blade; three complete ribs are represented on one face, whilst on the other, one rib is ill defined and fails to extend to the full extent of the other three. The aperture to the socket is circular but the collar rim is ovoid and thickens markedly above the sides. Internal haft ribs are not observed and all signs of casting runnels have been removed. The side casting seams on the body have not, however, been obliterated. All traces of a clay core within the socket have been removed. A single loop is attached below the collar and proportionately its robustness is in marked contrast to the small size of the axe. The object is well preserved with relatively smooth, green and brown patinated surfaces and it has been carefully cast and finished, although the poorly defined ribs on one face prove the exception. The axe has the following dimensions: length, 60mm; mouth, 22 × 16mm; cutting edge, 39mm; weight, 102g.

The axe conforms in most of its details with Yorkshire group axes as defined by Schmidt and Burgess (1981, 223), but deviates from the norm by having four ribs on one face instead of the three normally associated with the type. The small size of the object also places it within an atypical category, a feature that will be further discussed below. The centre of distribution of Yorkshire axes is in south east Yorkshire and Lincolnshire and extends southwards to East Anglia (Schmidt and Burgess *ibid.*, pl. 130). The type is comparatively rare in western Britain and only a small number are recorded from Wales (Savory 1958, fig. 17, map 11). In northern Wales variant forms of the Yorkshire type are more common in the north east, but westwards the distribution thins out and the present axe, along with examples from Ysbyty Ifan (Williams 2003), Bodwrog in Anglesey, Chwilog in Llŷn and Llanegryn in Meirionnydd (Lynch 1991, 336–8.), may be considered as representative of the type. In southern Wales, Yorkshire type and variant axes are present in the Llangwm, Monmouthshire and Llantwit Major hoards (Appendix, Ribbed Socketed Axes) but are otherwise very rare in this region. Yorkshire type axes belong to the Ewart Park metalworking phase corresponding to Needham's (1996) Period 4 phase of the Late Bronze Age dated to between *c.* 950–750 BC.

Discussion

Small socketed axes form an uncommon category amongst British Late Bronze Age metal types. The present discussion will focus on representative examples in the two ribbed groups of Yorkshire and South Wales, with additional reference to Dowris bag-shaped and diminutive forms from south central England.

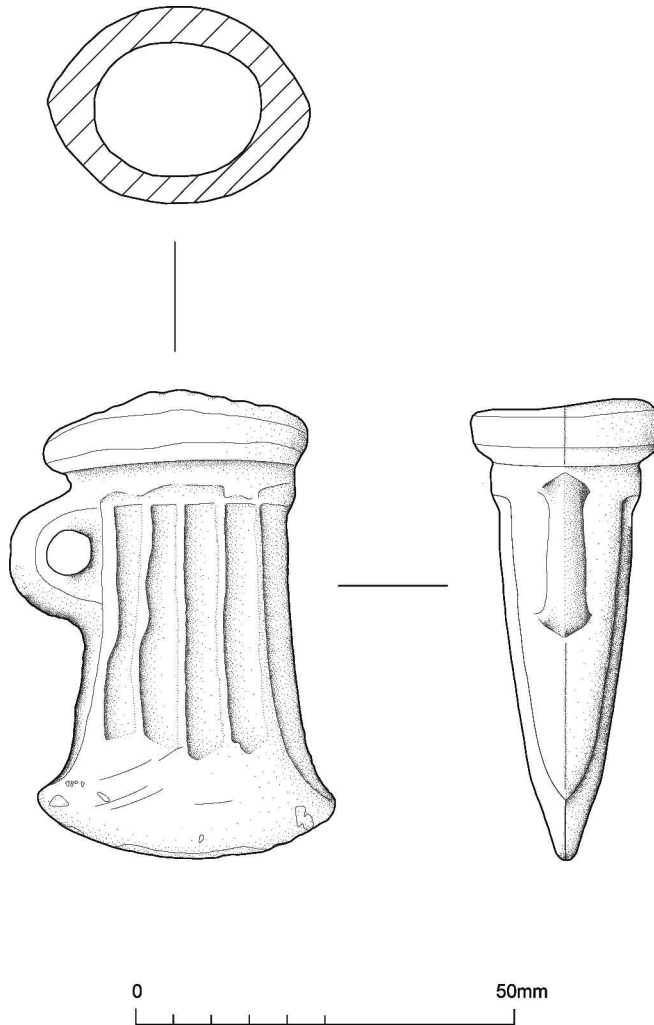


Fig. 1. The Bryn Pydew axe.

Representative examples belonging to the two ribbed groups and the Dowris group are noted in the preliminary schedule (Appendix). It is, however, not easy to fix a specific size by which a small axe can be distinguished apart from the general mass of socketed axes. In this context the length of the object may be considered as the most significant index, but when the length index is applied to the individual socketed axe groups above, a decisive cut off point cannot be established between 55 and 70mm (Fig. 3 a–d). The diminutive axe group from south central England (Fig. 3a) may form an exception and will be discussed first. This small group, with a bias to Wiltshire in its distribution, has been described by Robinson (1995). They are characterised not only by their small size but also by their material composition and chronological context. The axes are poorly cast, are generally wedge shaped with straight edged blades ending in rounded tips and lack collars or mouldings on the socket end. The socket itself is often a small rounded hole which does not penetrate the length of the object and they are very



Fig. 2. Two lifesize views of the Bryn Pydew axe. *Photograph: Tanya Berks.*

poorly finished. They have proved difficult to date and whilst they undoubtedly emulate the concept of the Bronze Age socketed form, and may even be associated with Bronze Age midden sites such as Potterne in Wiltshire, they are also present on Roman sites. Robinson has argued (*ibid.*, 61) that such axes may have been used as good luck amulets or votive objects since, size and technological details rule out any form of utilitarian utilisation.

Robinson (*ibid.*, 60) formally referred to these axes as ‘miniature’, a taxonomic identity that must henceforth be respected, although it might have been more appropriate to call axes below 45mm ‘diminutive’, reserving ‘miniature’ for axes under 65mm, such as the Bryn Pydew example, and designating axes between 65–90mm as ‘standard’ and axes above 90mm as ‘large’. The very small non functional axes from Wiltshire must not therefore be mistaken with the axes that form the subject of the present discourse to which Robinson (*ibid.*, 60) applied the rather nebulous term ‘model’ axes. All such axes conform in every detail of manufacture, finish, and form to the norm that distinguishes the typological group to which they may belong.

Small axes of the Bryn Pydew type, although rare, are perhaps more common than had hitherto been anticipated in axes belonging to the two ribbed groups. They are, accordingly, widely distributed throughout the country and have no apparent single area of concentration. They are represented singly and form part of hoards. Associations in hoards include utilitarian objects, such as tanged sickles, gouges, palstaves and various other types of socketed axes, and weapons that include spearheads, swords and a rapier. A rare association includes cauldron staples and a ring (Kilkerran, Ayrshire). Small axes are particularly well represented with the ‘bag shaped’ Dowris and Dowris axes (Fig. 3b) a group that is distinguished by squat forms where the largest specimens rarely exceed 80mm in length and where the length/width ratio is approximately 2:1. The bag shape is further accentuated by the roundness of the body and the splaying of the blade. In the present sample of 70 axes, examples below 70mm in length account for 41% of the total.

How does one attempt to interpret these small axes? And for what purpose were such ‘useless’ objects (for non-comprehending twenty-first-century eyes) made in the first place? First, one must establish that small axes are not slipshod versions of their larger kindred, for as the data in Figure 3 illustrate they form an integral part of the socketed axe series. Second, whichever interpretation may be presented, it will be

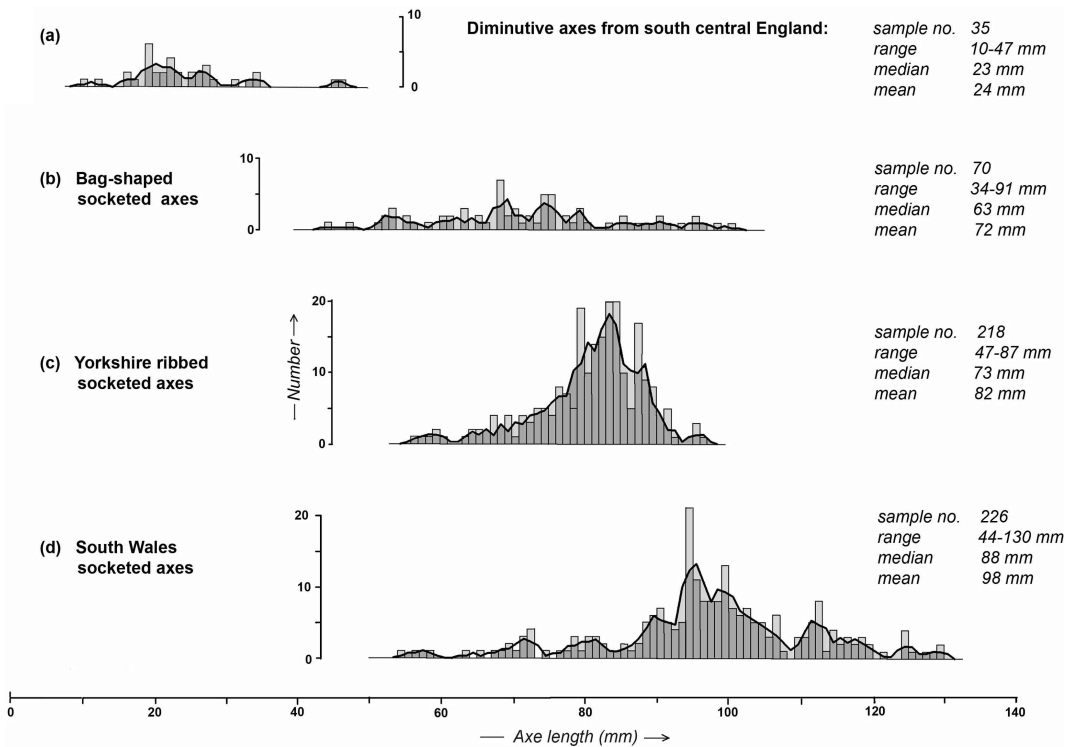


Fig. 3. Histogram of actual numbers and running averages based on length index of four groups of socketed axes: **a** – diminutive axes from south central England (based on Robinson 1988); **b** – bag shaped socketed axes (based on Schmidt and Burgess 1981; Pearce 1983); **c** – Yorkshire ribbed socketed axes (based on Schmidt and Burgess 1981; Pearce 1983; Savory 1980; Davey 1973); **d** – South Wales ribbed socketed axes (based on Schmidt and Burgess 1981; Pearce 1983; McNeil, 1973; Briggs and Williams, 1995; Savory 1980; National Museum Wales, Portable Antiquities Scheme archive).

thwarted by the fact that the true function of socketed axes remains as unknown and untested today as it was to Sir Arthur Evans approximately 125 years ago (Evans 1881). Of all metal types in the Late Bronze Age repertoire, socketed axes are the most abundantly represented object accounting, for example, for approximately one half of the Late Bronze Age collection in the Amgueddfa Cymru – National Museum Wales (Savory 1980) or for 41% of the Late Bronze Age metalwork from south-western Britain (Pearce 1983). They are considered to be versatile, multi-purpose, utilitarian tools—axes, adzes, wedges, mauls, or even ard tips or mattocks—but the specific practical function attributable to each type cannot be established.

Size cannot be used as an index of function. It could be suggested that a small axe might have been made for a child, as a token to identify a particular role, or to establish a special custom or occasion, or indeed to be valued as a treasured toy. Yet, it is remarkable that an extended assemblage of juvenile objects cannot be recognised alongside the small axes in the Late Bronze Age repertoire. However, at an earlier stage in the Bronze Age, objects that may have been made specifically for a child are purported to have existed in the archaeological record. The objects in question relate to a series of diminutive stone battle axes that are known mainly from Scotland and Wales. Such axes have been catalogued, discussed

and interpreted by McLaren (2004) with particular reference to the battle axe discovered with two accompanying Food Vessel urns and the inhumed remains of a five to eight year old child in a short stone cist at Doune, Perth and Kinross in Scotland. A similar association of a slightly larger battle axe with the cremated remains of a nine year old child formed the primary burial in the Foel Cairn at Garthbeibio, Powys (Wheeler 1923). A third child burial with a diminutive axe and a collared urn may have been present in a stone lined pit at Kirkcolm, Dumfries and Galloway, although the association of the assemblage can not be fully authenticated because of the disturbed nature of the find. All other axes are found as single un-associated examples to which must now be added a small battle axe from Bwlchderwin, Pantglas, Gwynedd (Williams 1992). McLaren (*op. cit.*, 301) in her discussion of these objects concludes that they probably served a symbolic function in a burial which ‘seems to reflect the adult world but in miniature’. It is unlikely that a funerary function, particularly with reference to a child, can be referred to the small bronze axes discussed in this note since in the Late Bronze Age any form of burial rite is practically unknown. However, the notion that the axe may be viewed as a symbol of reverence can be further examined below.

It has been established in the survey of length (Fig. 3b–d) that small axes represent the lower end of a gradational scale within which they do not form a separate entity. The results, however, raise interesting questions relating to the preferred lengths of axes in the various groups referred to in the survey. Each of the three groups referred to have a core block. Thus, Yorkshire type axes have a preferred length index of between 70 and 90mm with priority to examples at 80 to 85mm (Fig. 3c); axes below 70mm account for 6% of the sample totalling 218 examples. In contrast South Welsh/ Stogursey axes have a much greater length span ranging from 55 to 130 mm with the preferred index between 90 to 105mm (Fig. 3d); only 3.5% of the sample of 226 axes fall below 70mm in length. In Dowris type bag shaped axes (Fig. 3b) the core lies between 65 to 80mm but with a significant number below 65mm, although the preferred length of the group lies between 65 to 80mm (Fig. 3d). It is not the intention of this article to enquire further into the reasons that may cause these apparent regional and/or typological variations, other than to comment that they may reflect in part the unidentified utilitarian function of the socketed axe as a tool or implement. The tight grouping of the Yorkshire axes might suggest a more specific utilitarian function which may also apply to the Dowris group, whilst a much broader and less specific function could be attributed to the South Welsh group. But practical function may not be the only reason to influence length variation. It has become apparent that some of the larger axes in the South Wales/Stogursey group, particularly those associated with hoards from south-eastern Wales, contain such a high percentage of lead as to render them too soft for utilitarian use (Lodwick, pers. com.). The supposition is therefore that the symbolic value of the axe was far greater than its utilitarian worth, an interpretation that could be equally applied to the small axes under review at the other end of the length index scale. In the particular case of the Bryn Pydew axe it is more likely that it fulfilled a practical purpose in keeping with the more utilitarian function of Yorkshire group axes in general.

Conclusion

The present discussion has drawn attention to a group of Late Bronze Age socketed axes of small size of which the Bryn Pydew axe is a fine representative example. Such axes have been described in the context of Late Bronze Age metallurgy with particular reference to the closer definition of the type on the basis of their length index. It is concluded that small axes do not represent a distinct entity but represent the lower bracket within a progressive series that identify most types of socketed axes by their length index.

In attempting to interpret the function of such small axes their utilisation as practical utilitarian tools cannot be dismissed, particularly with reference to the Yorkshire and Dowris axes, although identifying to each a specific function remains highly hypothetical. It is also possible that small axes may have been

made as juvenile play objects, although there is little evidence to support this notion in the context of the Late Bronze Age in Britain. Finally, the possible symbolic function of the small axe is entertained although, as in the speculations above, there is no explicit archaeological evidence to support such a hypothesis. The case for the use of small axes in a ritual or symbolic context rests on the knowledge that a number of large axes of South Wales/Stogursey type were non functional since they have been alloyed with such high levels of lead as to render them too soft for practical use. One can therefore speculate that such axes were produced for possible ritual use, a hypothesis that might also be applied to the small axes under review. The power of the axe is indeed a potent symbol in British prehistory with its earliest manifestation in the burial and/or ritual destruction of stone axes in the Neolithic, its association in the guise of stone battle axes with Early Bronze Age cist burials as documented above, and its persistence into the early Roman period in the form of miniature votive axes as cited in the foregoing discussion. Whilst not discounting the use of small axes as utilitarian tools it is equally possible that such examples, including the object from Bryn Pydew, could also be referred to as objects of ritual and reverence.

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APPENDIX PRELIMINARY SCHEDULE OF MINIATURE AXES

Note that the absence of axes from certain areas may signify incomplete acquaintance with the material culture rather than a genuine regional absence.

RIBBED SOCKETED AXES

Byn Pydew (Sir Conwy)

Type: Yorkshire

Associations: single find

Size: length 60mm; mouth 22 × 16mm; blade width 39mm; weight 102g

Reference: present article

Kilkerran Dailley (Ayrshire)

Type: Yorkshire

Associations: hoard – 9 socketed axes, 2 cauldron staples and ring, sword

Size: length 59mm; mouth 24 × 36mm; blade width 43mm

Reference: Schmidt and Burgess 1981, nos 1365/1383

Llantwit Major (Vale of Glamorgan)

Type: Yorkshire?

Associations: hoard – 1 palstave, 8 socketed axes, 2 spearheads, 1 tanged sickle

Size: length 63; mouth 29 × 34mm

Reference: Savory 1980, no. 281 (7)

Thornton le Dale (Yorkshire)

Type: Yorkshire

Associations: single find

Size: length 58mm; mouth 23 × 23mm; blade width 43mm

Reference: Schmidt and Burgess 1981, no. 1489

Sproatley (E.R. Yorkshire)*Type:* Yorkshire*Associations:* hoard – 12 socketed axes, 1 late palstave*Size:* length 61mm; mouth *c.* 26mm; blade width 40mm*Reference:* Schmidt and Burgess 1981, no. 1517**Ulverston** (Lancashire)*Type:* Yorkshire*Associations:* single find*Size:* length 66mm; mouth 23 × 25mm; blade width 44mm*Reference:* Schmidt and Burgess 1981, no. 1571**Horsehope Manor** (Peeblesshire)*Type:* Yorkshire*Associations:* hoard – 1 socketed axe, mountings for harness/vehicle*Size:* length 64mm; mouth *c.* 23mm; blade width 43mm*Reference:* Schmidt and Burgess 1981, no. 1364**Eigg** (Invernesshire)*Type:* Yorkshire*Associations:* single find*Size:* length 68mm; mouth 27 × 27mm; blade width 40mm*Reference:* Schmidt and Burgess 1981, no. 1368**Winmarleigh** (Lancashire)*Type:* Yorkshire*Associations:* hoard – 5 socketed axes of Yorkshire type, 1 socketed axe of Gillespie type, 2 spearheads, 1 tanged knife, found in oak box*Size:* length 68mm; mouth 26 × 28mm*Reference:* Schmidt and Burgess 1981, no. 1404**Leppington** (Yorkshire)*Type:* Yorkshire*Associations:* hoard – 5 socketed axes of Yorkshire type*Size:* length 65mm; mouth 28 × 28mm*Reference:* Schmidt and Burgess 1981, no. 1421**Westow** (Yorkshire)*Type:* Yorkshire*Associations:* hoard – 10 socketed axes of Yorkshire type*Size:* length 65mm; mouth 23 × 25mm; blade width 42mm*Reference:* Schmidt and Burgess 1981, no. 1448**North Tyne Area?** (Northumberland)*Type:* Yorkshire*Associations:* single find*Size:* length 68mm; mouth 24 × 28mm; blade width 37mm*Reference:* Schmidt and Burgess 1981, no. 1495**Warter** (Yorkshire)*Type:* Yorkshire*Associations:* single find*Size:* length 65mm; mouth 25 × 27mm; blade width 48mm*Reference:* Schmidt and Burgess 1981, no. 1562**Roxby** (Lincolnshire)*Associations:* hoard*Size:* length *c.* 57 mm*Reference:* Davey 1973, no. 312**Caythorpe** (Lincolnshire)*Associations:* hoard*Size:* length *c.* 60mm*Reference:* Davey 1973, no. 366**Wick Park, Stogursey** (Somerset)*Type:* Yorkshire – 2 axes*Associations:* hoard – 20 socketed axes, 40 socketed frags, 2 palstaves, 3 socketed gouges, 3 socketed knives, 1 chape, sword hilt and frags, 8 spearheads, ingots/casting jets/bronze cake*Size:* i) length 58mm; ii) length 64mm*Reference:* Pearce 1983, vol. 2, no. 746b

Kincardineshire*Type:* South Wales*Associations:* single find*Size:* length 55mm; mouth 25 × 29mm*Reference:* Schmidt and Burgess 1981, no. 1572**Somerset***Type:* South Wales*Associations:* single find*Size:* length 66mm*Reference:* Pearce 1983 (ii), no. 835**Rudry, Caerphilly** (Caerphilly County Borough)*Type:* South Wales*Associations:* single find*Size:* length 57.4mm*Reference:* National Museum Wales/Portable Antiquities Scheme, B596C4**Marshfield, Newport** (Newport City Council)*Type:* South Wales*Associations:* single find*Size:* length 59.5mm*Reference:* National Museum Wales/Portable Antiquities Scheme, E 97AE5**Penwyllt, Ystradgynlais** (Powys)*Type:* South Wales*Associations:* hoard – 5 South Wales socketed axes*Size:* length 68mm*Reference:* Savory 1980, no. 284**Allt Gelli Felen, Myddfai** (Carmarthenshire)*Type:* South Wales*Associations:* hoard – 6 South Wales socketed axes, 1 socketed axe*Size:* length 69mm*Reference:* Briggs and Williams 1995

DOWRIS AND DOWRIS-TYPE AXES

Ballimore, Kilfinan (Argyllshire)*Associations:* hoard – 7 socketed axes, 7 spearheads, 2 swords, 1 tubular object*Size:* length 55mm; mouth 26 × 29mm; blade width 43mm*Reference:* Schmidt and Burgess 1981, no. 1165/1149A**West of Scotland***Associations:* single find*Size:* length 53 mm; mouth c. 28mm; blade width 33mm*Reference:* Schmidt and Burgess 1981, no. 1166**Douglas Burn, Yarrow** (Selkirkshire)*Associations:* single find*Size:* length 55mm; mouth 26 × 27mm; blade width 38mm*Reference:* Schmidt and Burgess 1981, no. 1167**Scotland ?***Associations:* single find*Size:* length 47mm; mouth 18 × 25mm; blade width 37mm*Reference:* Schmidt and Burgess 1981, no. 1169**Holytown ?** (Lanarkshire)*Type:* Variant Newton*Associations:* single find*Size:* length 58mm; mouth 23 × 26mm; blade width 39mm*Reference:* Schmidt and Burgess 1981, no. 1170**Scotland***Type:* Variant Newton*Associations:* single find*Size:* length 53mm; mouth 21 × 32mm; blade width 43mm*Reference:* Schmidt and Burgess 1981, no. 1172

Aberdeenshire*Type:* Variant Newton*Associations:* single find*Size:* length 52mm; mouth 29 × 33mm; blade width 42mm*Reference:* Schmidt and Burgess 1981, no. 1173**Scotland***Type:* Variant Kilkerran*Associations:* single find*Size:* length 51mm; mouth 23 × 33mm; blade width 47mm*Reference:* Schmidt and Burgess 1981, no. 1184**Bonar-Bridge** (Sutherland)*Associations:* single find*Size:* length 52mm; mouth 22 × 26mm; blade width 38 mm*Reference:* Schmidt and Burgess 1981, no. 1185**Doone, Kilmadock** (Perthshire)*Associations:* single find*Size:* length 44mm; mouth 20 × 22mm; blade width 36mm*Reference:* Schmidt and Burgess 1981, no. 1186**Scotland ?***Associations:* single find*Size:* length 60mm; mouth 26 × 26mm; blade width 44mm*Reference:* Schmidt and Burgess 1981, no. 1187**Whitby** (N. R. Yorkshire)*Associations:* single find*Size:* length 53mm; mouth 22 × 27mm; blade width 47mm*Reference:* Schmidt and Burgess 1981, no. 1188**Cornwall***Associations:* single find*Size:* length 60mm, blade width 48mm

Pearce 1983 (ii), no. 182

East Hemsworth Wichampton (Dorset)*Associations:* single find*Size:* length 63mm, blade width c. 50mm*Reference:* Pearce 1983, vol. 2, no. 516**Somerset***Associations:* single find*Size:* length 61mm, blade width 55mm*Reference:* Pearce 1983, vol. 2, no. 833

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