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GRAEME KIRKHAM AND PETER ROSE

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# Contents

**Excavations at Tolgarrick Farm, Truro, Cornwall** 1
SIMON HUGHES and ALEX FARNELL

**Excavations at Glasney College, Penryn** 65
DICK COLE

**A tomb for the living: Grumbla cromlech, the Giant's Chair, Sancreed** 119
PETER HERRING

**A Middle Neolithic structure and Iron Age pits at Manor Tannery, Grampound, Cornwall** 135
ANNA LAWSON-JONES and ANDY M JONES

**Mountain Barrows, Pelynt: a south-eastern Cornish barrow group in its local context** 149
CATHERINE J FRIEMAN and JAMES LEWIS

**Excavation of a Porthcressa-type cist grave at Churchtown Farm, St Martin's, Isles of Scilly, 2013** 163
CHARLES JOHNS and SEAN R TAYLOR

**A second inscribed stone from Lanivet church** 181
CHARLES THOMAS †

**Inscribed and decorated stones at Lanivet: exploring the context** 185
GRAEME KIRKHAM

**The late medieval tile pavement in the chapel of Cotehele** 203
JOHN ALLAN, RACHEL HUNT, LAURENCE KEEN and ROGER T TAYLOR

**The changing landscape of the Lizard: analysing a pollen archive from the edge of Goonhilly Downs** 217
G G GARBETT, J D SCOURSE and C TURNER

**A Bronze Age pit and amber bead from Trevassack Hill, Hayle, Cornwall** 231
ABIGAIL BROWN, HENRIETTA QUINNELL and PAUL RAINBIRD

**A Mesolithic pit at Penans Farm, Grampound, Cornwall** 241
ANDY M JONES

**A second Romano-British salt production site near Coverack, St Keverne** 249
MARGARET HUNT †

**Recent work in Cornwall** 255

**Reviews** 267

Dan J Charman, Charles Johns, Kevin Camidge, Peter Marshall, Steve Mills, Jacqui Mulville, Helen M Roberts and Todd Stevens, *The Lyonesse Project: a study of the historic coastal and maritime environment of the Isles of Scilly*, by Paul Rainbird; Peter Herring, Nicholas Johnson, Andy M Jones, Jacqueline A Nowakowski, Adam Sharpe, and Andrew Young, A*rchaeology and landscape at the Land's End, Cornwall – The West Penwith surveys 1980-2010*, by Tom Greeves; Jacqueline Nowakowski and Charles Johns, *Bypassing Indian Queens. Archaeological excavations 1992–1994: investigating prehistoric and Romano-British settlement and landscapes in Cornwall*, by Peter Rose; Todd Gray, *A gazetteer of ancient bench ends in Cornwall's parish churches*, by Jon Cannon; Phil Newman, ed, *The tinworking landscape of Dartmoor in a European context: papers presented at a conference in Tavistock, Devon, 6–11 May 2016*, by Adam Sharpe.

**Obituary**
Geoffrey John Wainwright, by Tim Darvill 279
Geoff Wainwright, CAS President 1980–84, by Henrietta Quinnell 281

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# Editorial

This volume includes a paper by the late Charles Thomas on a recently-discovered early Christian inscribed stone at Lanivet. This was Charles' last contribution to *Cornish Archaeology*, the journal he launched for the newly founded Cornwall Archaeological Society in 1962. By a fortuitous coincidence, the first Annual General Meeting of the Society, held in July 1962 just as the first volume was being readied for the printers, took place in Lanivet.

The volume also includes papers which may serve as timely memorials to three other well-known members of the Society whose deaths have taken place recently. Margaret Hunt of Higher Polcoverack, St Keverne, was involved with archaeology on the Lizard over a long period, in a variety of roles. Her note on some small exploratory trenches she undertook at Ebber Rocks, St Keverne, in 2000, confirms that the site there was comparable with a salt-making site along the coast at Trebarveth. She took part in David Peacock's excavations there in 1969 (Charles Johns, pers comm).

Peter Nicholas played an important role in many archaeological projects across Cornwall in recent years, not least through the many geophysical surveys he undertook. Among these were a number for the South-East Kernow Archaeological Survey, the first of which, at the Mountain Barrows, Pelynt, is also reported in this volume. The authors have dedicated publication of this paper to his memory.

Dr James Whetter, who has also died recently, played a key role in bringing about the 2003 excavations at Glasney College, Penryn. The report on the work in this volume is dedicated to his memory.

*Cornish Archaeology* 55, 2016, 1–63

# Excavations at Tolgarrick Farm, Truro, Cornwall

SIMON HUGHES AND ALEX FARNELL

with contributions from WENDY J CARRUTHERS, DANA CHALLINOR, CHARLOTTE COLES, CYNTHIA POOLE, HENRIETTA QUINNELL, ROGER T TAYLOR and TIM YOUNG

*Archaeological investigations by AC archaeology during spring 2015, ahead of a residential development, identified evidence for occupation that mainly dated to the Middle Bronze Age and Middle to Late Iron Age periods. Middle Bronze Age activity was represented by two roundhouses, a group of pits and a range of artefacts and deposits representing probable industrial activity, possibly associated with the processing of tin ore. During the Iron Age, evidence for iron production was recorded as well as a roundhouse, which was overlain by a field system of Iron Age and later date. Further structural remains, although undated, were considered to represent additional prehistoric buildings. The remains of a corn-drying oven were exposed, which was considered to be of probable post-Roman date.*

Excavations at Tolgarrick Farm, Truro (SW 81991 43993), in advance of a residential development, were carried out by AC archaeology between March and May 2015 on behalf of Persimmon Homes Ltd. Four adjacent excavation areas covering an area of approximately 3.6 ha were investigated and recorded. This report presents the results of the excavations, along with a discussion on the finds and specialist analyses of the prehistoric pottery, worked stone, fired clay objects, archaeometallurgical residues and palaeoenvironmental evidence. Radiocarbon dates are cited at the 95 per cent confidence level.

The site was located on the south-west side of Truro, bounded to the north east by Green Lane (the current A390) and by Arch Hill (the A39) to the south east. It formed part of a wider proposed residential development that covered seven fields south west of Tolgarrick Farmhouse (Fig 1). The archaeological investigations were on parts of three of these fields, which, prior to commencement, were under pasture. The fields, around 65m above Ordnance Datum, sloped gradually to the south west above a break of slope that dropped moderately steeply to the west and south into a valley occupied by the Calenick stream. The underlying solid geology comprised Portscatho Formation of interbedded sandstone and argillaceous rocks (British Geological Survey Online Viewer).

The land at Tolgarrick Farm had been the subject of a previous desk-based assessment (EDP 2012), a geophysical survey (GSB Prospection 2008) and an archaeological evaluation (Oxford Archaeology 2013). The assessment established that there were no previously identified archaeological sites within the proposed development area. Tolgarrick Farm, which lies to the east of the areas investigated, was thought to date from the thirteenth century based on documentary evidence, although no medieval fabric is evident within the existing farm buildings.

However, the geophysical survey carried out in 2008 showed that there was considerable archaeological potential. The methodology

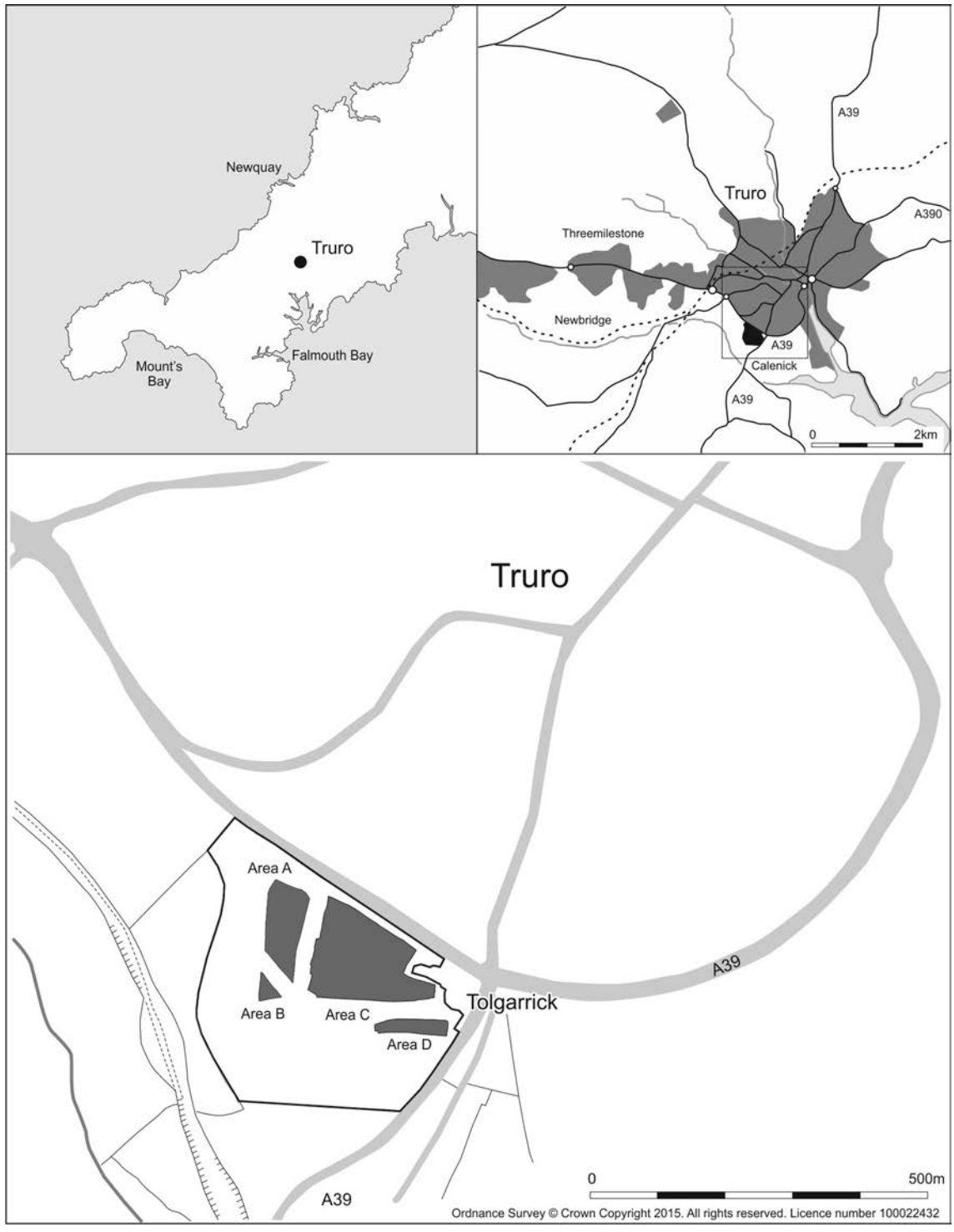


*Fig 1 Location of site.*

*Fig 2 General view of excavation area C, with work in progress, looking south east.*

followed the 'scan and sample' approach: the entire site was scanned for areas of higher archaeological potential, and then selected areas were surveyed in detail. The interpreted results from these surveyed blocks depicted a series of linear anomalies on various alignments and a small number of discrete anomalies, the majority of which were concentrated towards the east of the site. The interpreted anomalies, as well as areas of negative results or where no survey had taken place, were investigated by the subsequent trial trench evaluation in 2013.

The evaluation recorded that the majority of the targeted geophysical anomalies were of archaeological origin. The bulk of the features consisted of poorly dated ditches, with only one containing a possible furnace-lining fragment of prehistoric or Romano-British date. A small number of ditch features were also dated to the post-medieval period and were considered to have represented the remains of post-medieval field boundaries. In addition to the ditches, two clusters of undated postholes were considered to represent probable structural remains of possible prehistoric origin (Oxford Archaeology 2013).

## Excavation results

Four excavation areas (A, B, C and D on Fig 1) were targeted on areas of interest that had been interpreted from the previous archaeological work. These were machine-stripped onto the natural subsoil, which varied between a light greyish-yellow to light reddish-brown silty clay with sandstone and slate gravels, while in places the weathered bedrock was revealed. The natural subsoil was exposed at a depth of between 0.3m and 0.55m beneath an agricultural subsoil and topsoil. A plan summarising the results from excavation areas A to D is included as Figures 3–5. The archaeological remains exposed consisted of Bronze Age structures and pits, an Iron Age furnace and roundhouse overlain by a Late Iron Age field system and a probable post-Roman corn-drying oven. A number of other features – including three undated posthole structures of probable prehistoric date – were exposed, while a total of 66 undated largely discrete features comprising pits and incidental postholes could not be assigned to a period with any certainty. Later activity on the site consisted of three pairs of ditches (features F1022/F1026, F2067/F2827 and F2191/F2193), which were likely to have represented the remains of hedgebank field boundaries of post-medieval date.

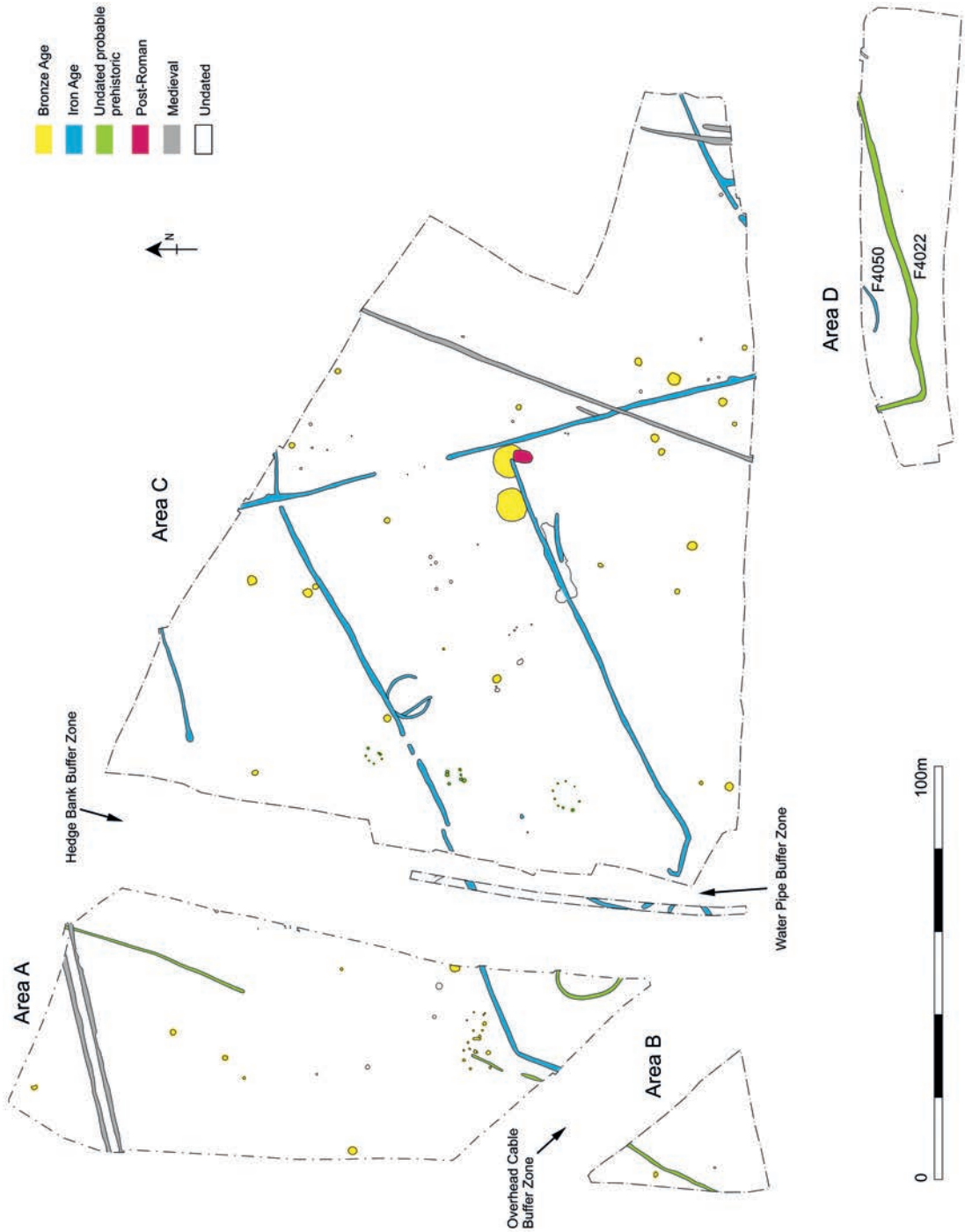


*Fig 3 Plan of excavation areas.*

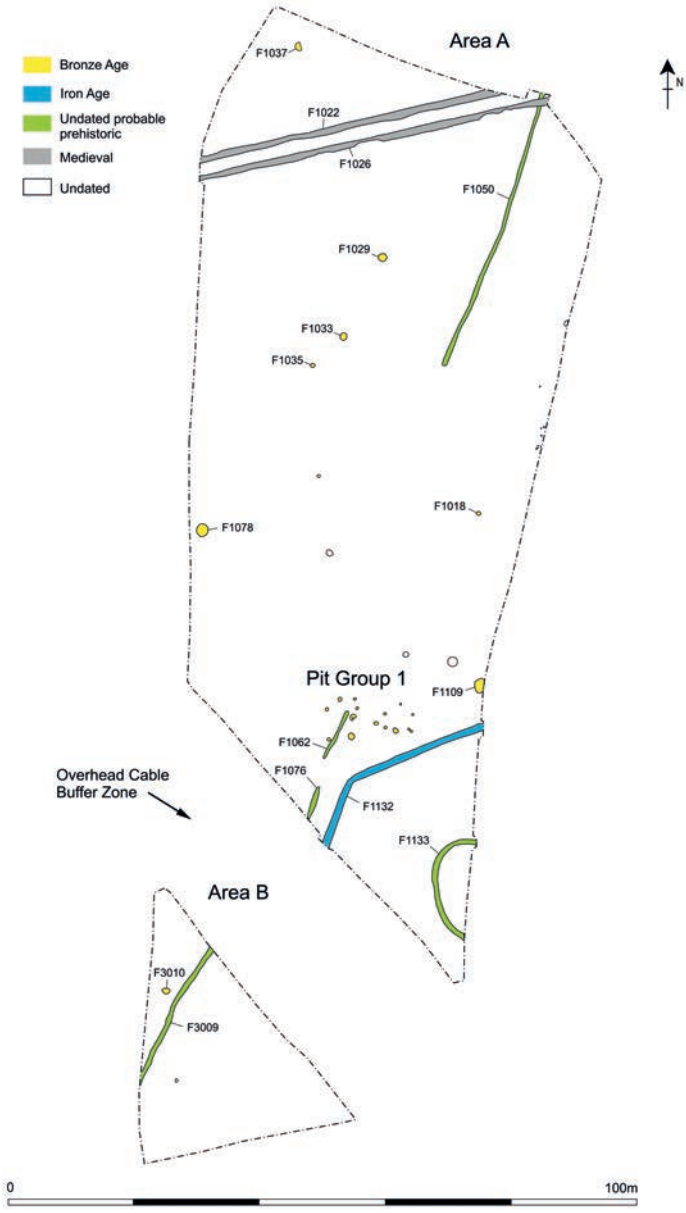


*Fig 4 Excavation areas A and B, phased excavation plan.*

The following conventions are used in the report: an F prefix for cut features, round brackets for layers and deposits and no brackets for structures.

## Bronze Age features

With the exception of a single pit dated to the Early Bronze Age, all other activity from this period fell within the Middle Bronze Age. This activity primarily consisted of two roundhouses (structures 1 and 2 in area C), a pit cluster exposed in area A (pit group 1), and a small number of other pits in areas A and C.

### *Early Bronze Age*

PIT F2343

This pit in the south-west corner of area C measured 0.97m across and 0.34m deep, with

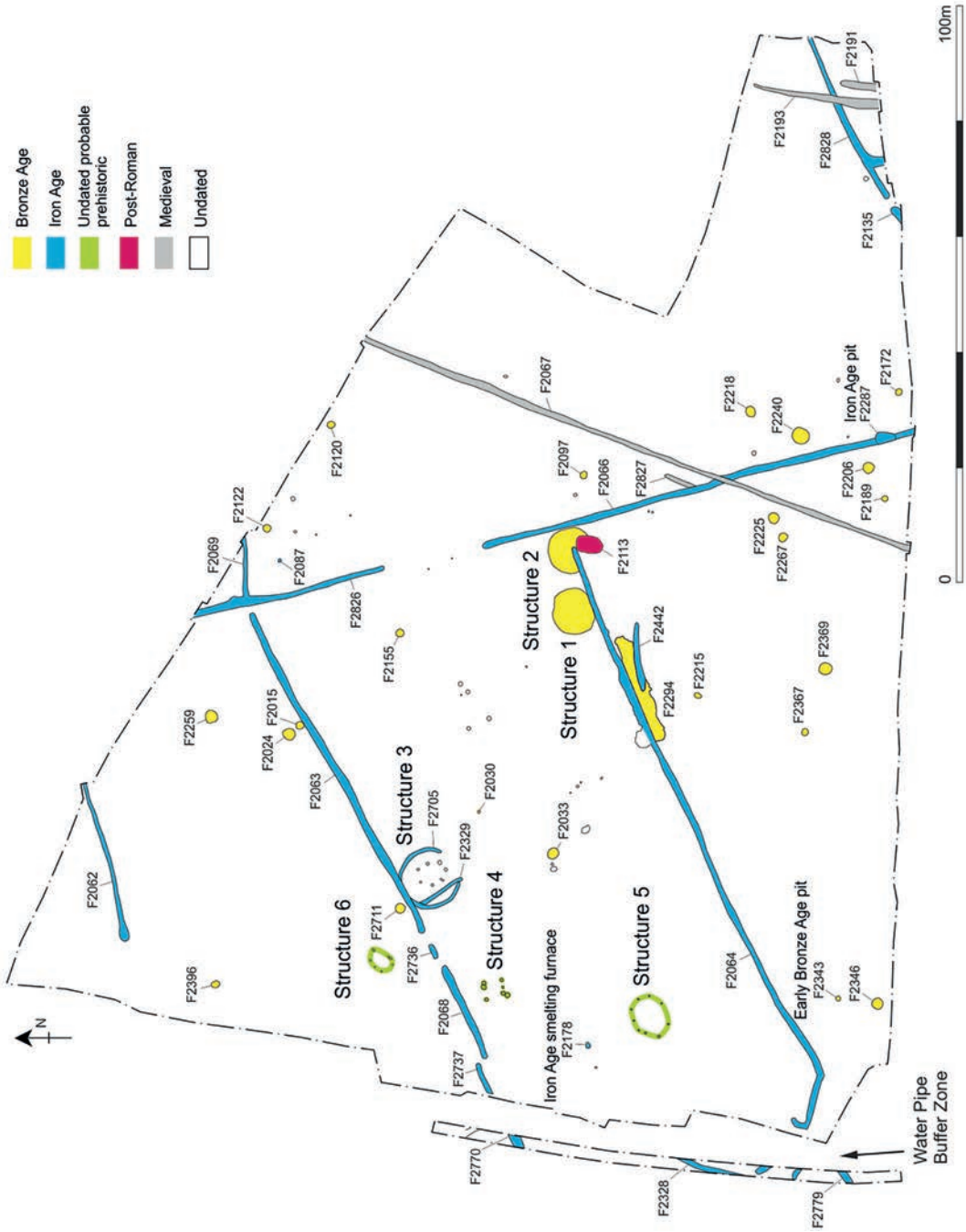


*Fig 5 Excavation area C, phased excavation plan.*

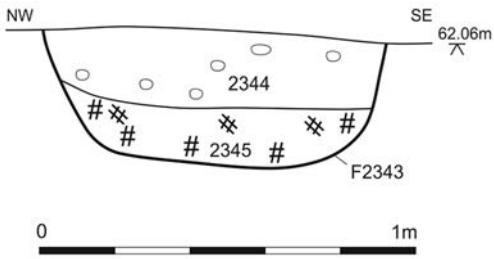


*Fig 6 Section of Early Bronze Age pit F2343. Sherds of an Enlarged Food Vessel (**P1**) were found in (2345), and charred plant remains in (2345) included hazelnut shells and cereals.*

steeply-sloping sides and a concave base (Fig 6). The natural subsoil at its base was slightly heat affected and was overlain by a basal deposit of charcoal (2345), which was, in turn, sealed by a mid-yellowish-brown silty-loam backfilled deposit (2344). The charcoal was predominantly oak, with some hazel and hawthorn. There were also charred plant remains, including fragments of hazelnut shell and grains of barley. Twelve sherds of Early Bronze Age pottery were recovered from fill (2345), including Enlarged Food Vessel **P1** (Fig 33).

*Middle Bronze Age*

STRUCTURE 1 (Figs 7 and 8)

Structure 1 was the western of the two adjacent structures exposed towards the centre of area C. Three phases of activity relating to its construction and primary use, secondary use and abandonment were recorded. The finds, particularly common in the infill deposits, included 85 sherds of Middle Bronze Age pottery (including **P2**–**P9**), many stone objects (mostly fragments of saddle querns and mullers), and fired clay objects such as oven furniture. Cassiterite pebbles were found in two postholes. Environmental sampling recovered only limited charred plant remains, including common weed seeds, a barley grain and another indeterminate cereal grain, and fragments of bracken.

**Phase 1 – construction and primary use**

The structure took the form of a broadly level circular terrace (F2081), which was cut into the natural subsoil of the south facing slope (Fig 9). It measured 8.26m across and 0.49m deep on its upslope side. A total of 123 features were exposed within the terrace: 94 stakeholes, 11 probable structural postholes and post-pits, nine other postholes, five possible pits, and four shallow hollows.

*Structural postholes* (sections Figs 10–11)

Seven postholes (F2451, F2449, F2286, F2468, F2504, F2501 and F2572) and two elongated oval post-pits (F2507 and F2599) formed an approximate ring of probable structural posts set within the terrace. In addition, two further possible postholes (F2530 and F2532) were positioned to the south of the main post ring and may have formed part of a porch structure.

Postholes F2449, F2451, F2501 and F2572 were positioned on opposing sides of the terrace. All were circular and of very similar dimensions of around 0.5m wide, with depths between 0.39m and 0.58m. With the exception of F2501, each contained a single fill composed of dark grey or mid-yellowish-brown silty clay. Posthole F2501 contained two fills comprising a mid-reddish-brown silty clay representing a possible post-pipe (2503) and a mid-greyish-yellow silty clay backfilled deposit (2502). A single sherd of Middle Bronze Age pottery was recovered from posthole fill (2502).

Postholes F2286, F2468 and F2504 were positioned around the northern edge of the terrace. F2286 was circular in plan and measured 0.56m wide and 0.52m deep (Fig 12). It contained a sequence of five fills (2298), (2297), (2285), (2284) and (2283), which are considered to largely relate to a secondary use of the feature (see Phase 2, below).

Posthole F2468 was slightly irregular in plan and measured 0.78m long, 0.62m wide and 0.52m deep. It contained three fills. The main fill (2469) was a light yellowish-brown silty clay, backfilled against a charcoal-rich deposit representing the possible remains of a burnt post (2471) (Challinor, below). These deposits were sealed by an accumulation of mid reddish-grey clayey-silt loam (2488). A fragment from a fired clay object was recovered from burnt fill (2471).

Posthole F2504 was oval in plan and measured 0.8m long, 0.5m wide and 0.32m deep with steeply-sloping sides and a concave base. It contained a sequence of two fills, (2504) and (2506), which may represent a Phase 2 reuse of the posthole.

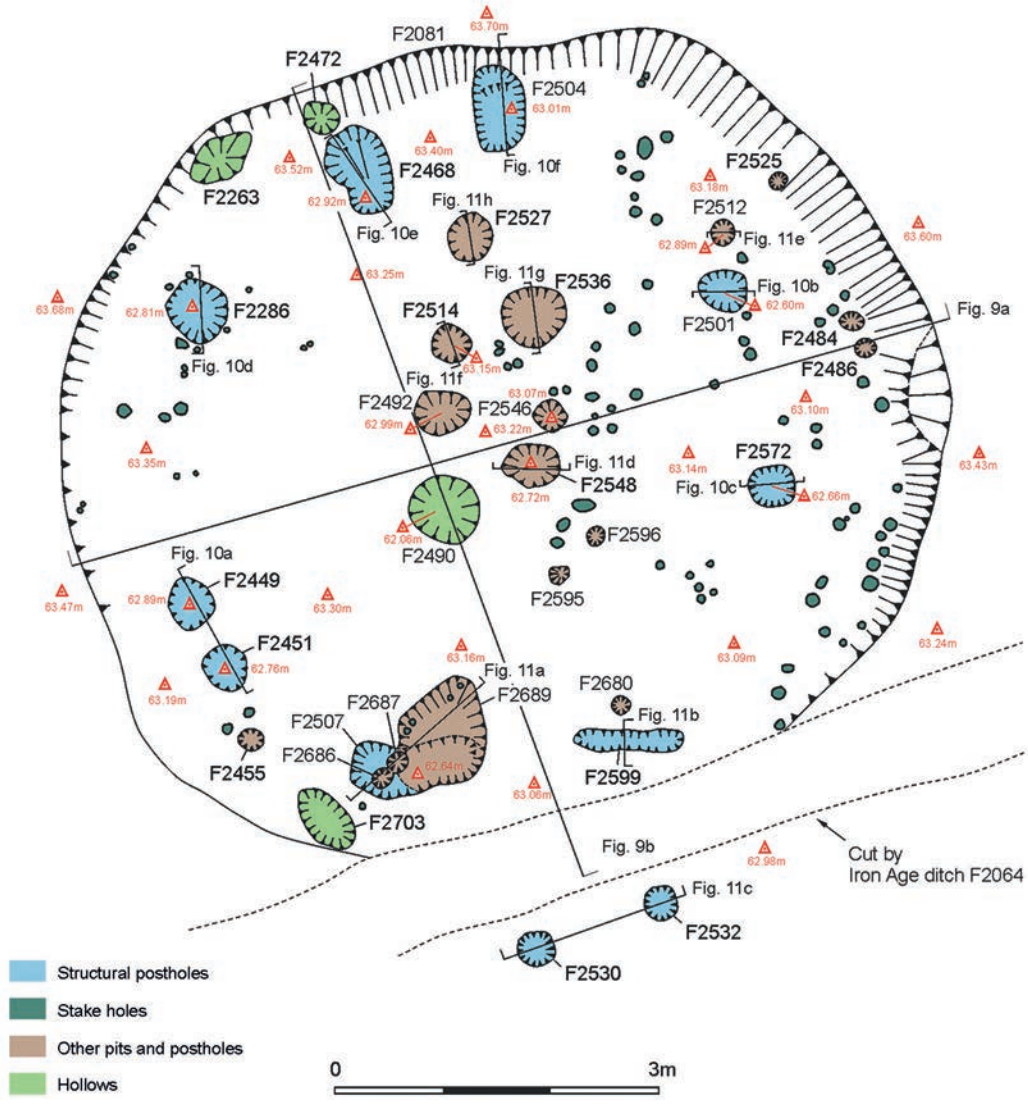


*Fig 7 Plan of structure 1, Middle Bronze Age roundhouse. Finds, mainly from infill deposits, included 85 sherds of Middle Bronze Age pottery, fired clay objects and many stone objects. The lower part of a pot (**P2**) had been placed in pit F2286. Cassiterite pebbles were found in F2286 and pit F2687.*

Probable post-pit F2507 located on the south side of the structure measured 1.36m long, 0.42m wide and 0.44m deep with steep to vertical sides and a flat base. It was cut to the east by a shallow pit (F2689), as well as into its top by two pits (F2686 and F2687) assigned to the Phase 2 activity. Post-pit F2507 contained a single mid-yellowish-grey silty clay fill (2508), from which a single sherd of Middle Bronze Age pottery was recovered.

Possible post-pit F2599 measured 1m long, 0.33m wide and 0.26m deep with steeply-sloping sides and an undulating, concave base, which represented the positions of two or possibly three post settings. It contained a dark greyish-brown, charcoal-rich silty-clay fill (2600).

Posthole pair F2530 and F2532 were located to the south of post-pits F2507 and F2599 and measured 0.34m and 0.3m across respectively.

*Fig 8 Structure 1, looking north (2m scales).*

Posthole F2530 was 0.12m deep with steep sides and a concave base. It contained a single fill (2531) that included a large probable packing stone. Posthole F2532 was 0.2m deep with steep sides and a concave base. It contained two fills representing backfill (2533) around the remains of a possible post-pipe (2534).

Of nine other postholes or large stakeholes within the structure, the largest was a centrally located pit or posthole, F2548. This measured 0.4m in diameter and 0.45m deep with steeply-sloping sides and a concave base. It contained a single fill composed of greyish-brown clayey silt loam (2549).

The remaining postholes in this group included three (F2455, F2512 and F2680) that were possibly associated with the structural posthole ring and five (F2484, F2486, F2525, F2595 and F2596) more closely associated with two alignments of stakeholes (see below). These features ranged from 0.17m to 0.22m in diameter and between 0.14 and 0.31m deep. Each contained similar fills of mid-

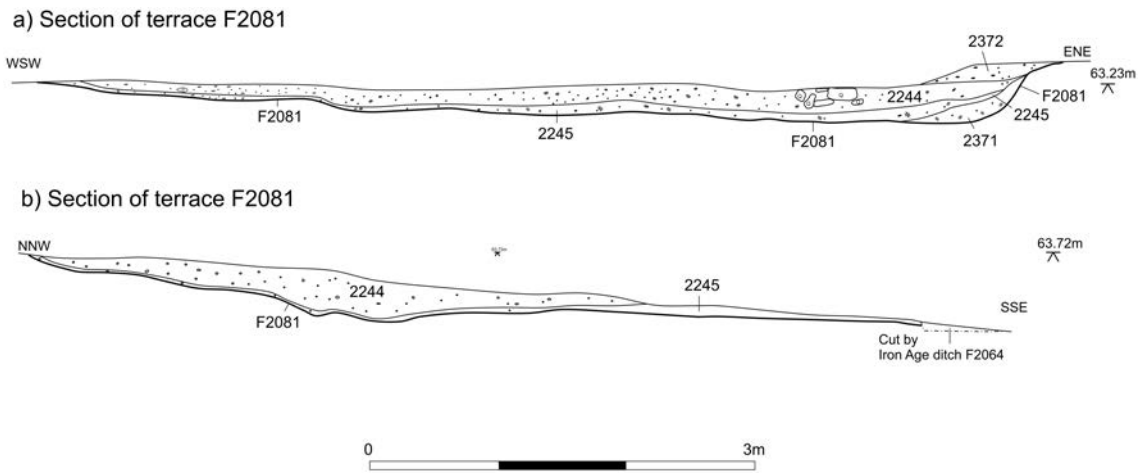


*Fig 9 Structure 1, sections of terrace F2081; section locations a and b are marked on Figure 7.*

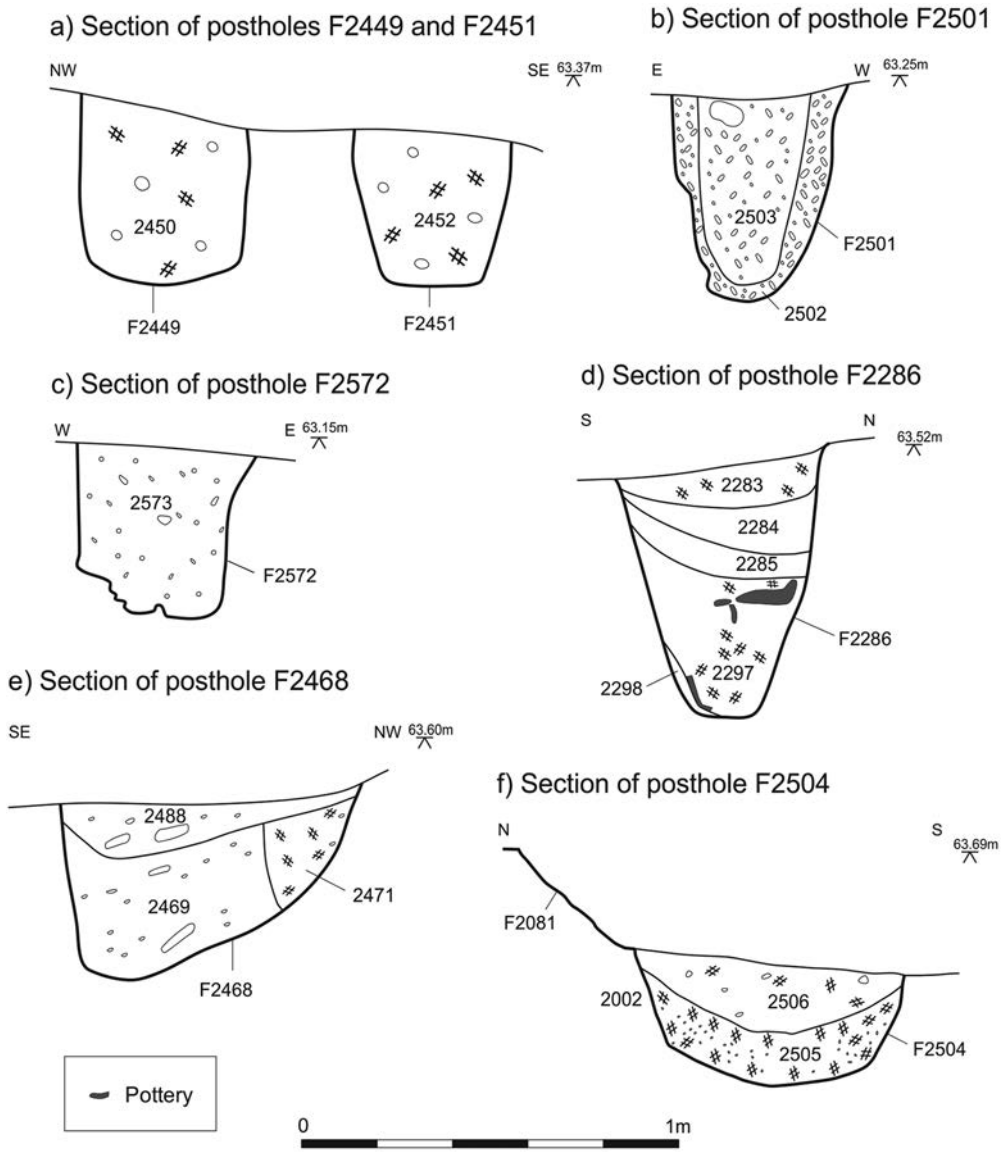


*Fig 10 Structure 1, sections of structural and internal postholes; section locations are marked on Figure 7.*

brown silty clays. A stone muller (**S1**) reused as packing material was recovered from fill (2513) of posthole F2512.

*Stakeholes*

The 94 stakeholes exposed within terrace F2081 ranged in size from 0.1m to 0.16m across and between 0.1m and 0.29m deep. Most of these (67) were concentrated on the eastern side of the circular terrace. Within this concentration, 49 were arranged in two broad linear bands; one followed the inside edge of the circular terrace and the other bisected the terraced area on a north–south alignment, just to the east of the terrace centre. Four stakeholes associated with the alignment that bisected the internal area of the structure were

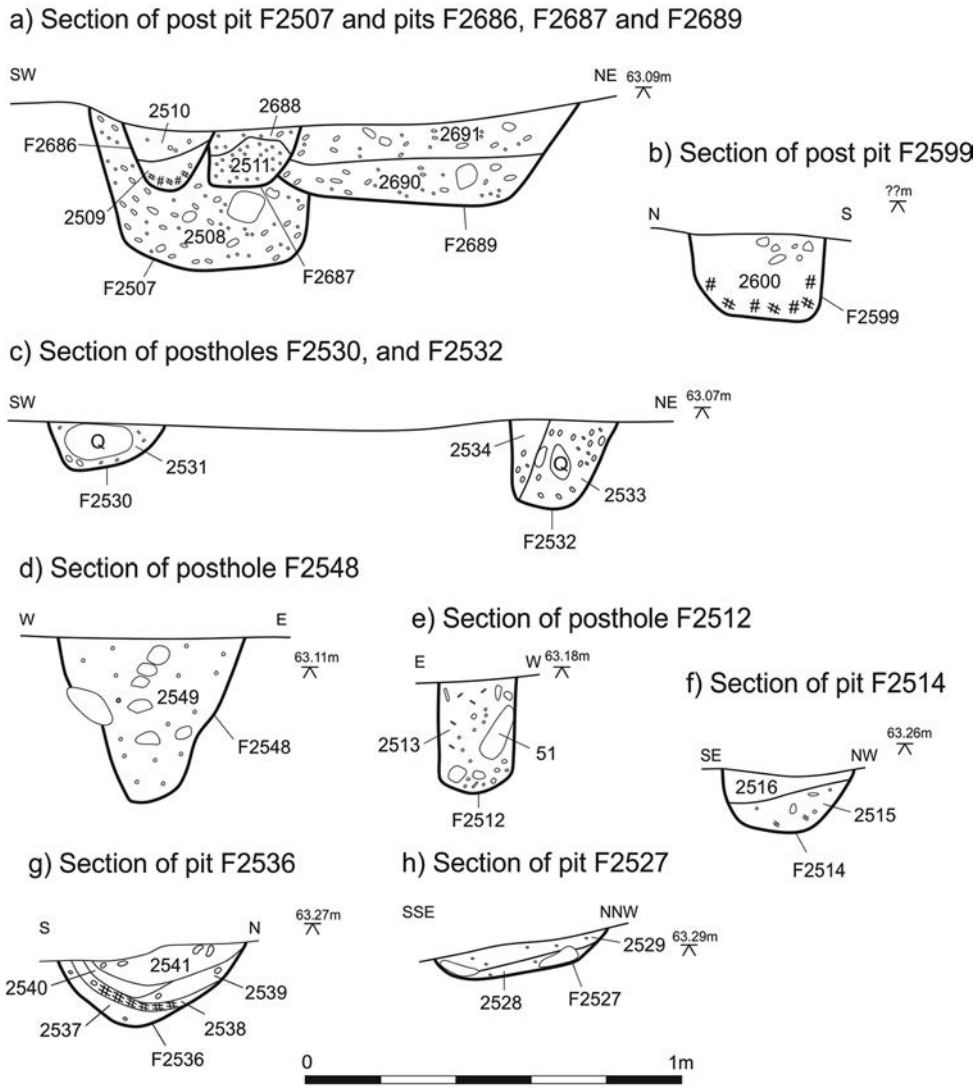


*Fig 11 Structure 1, sections of structural and internal postholes and pits; section locations are marked on Figure 7.*

truncated by a pit (F2689), which formed part of the Phase 2 activity.

*Pits*

A cluster of five probable pits (F2514, F2527, F2536, F2492 and F2546) were positioned towards the centre of the terrace. F2536 was possibly a heath.

Pit F2514 was circular and measured 0.36m across and 0.18m deep with a steeply-sloping concave profile. It contained two fills. The lower fill (2515), a redeposited natural subsoil, was overlain by (2516), a mid-reddish-brown clayey loam that was heat affected. Eleven sherds of Middle Bronze Age Trevisker pottery, including **P3**, were recovered from the lower fill (2515).

Pit F2536 measured 0.6m across and 0.4m deep with moderately steep concave sides and concave base. This was interpreted as a possible hearth and contained a sequence of five fills. Lower fill (2537) was a redeposited natural subsoil that had

been heat affected *in situ* and was then overlain by a charcoal deposit (2538). The upper three fills (2539), (2540) and (2541) comprised a series of mid-yellowish-brown and brown sandy loam and sandy-clay accumulations. Sixteen sherds of Middle Bronze Age pottery and a worked stone object were recovered from basal fill (2537).

Pit F2527 measured 0.48m across and 0.08m deep. It contained two redeposited natural subsoil fills (2528) and (2529), of which the upper deposit was heat affected.

Adjacent pits F2546 and F2492 were oval, measured 0.34m and 0.45m across and 0.11m and 0.21m deep respectively with moderately-steep concave profiles. They contained similar dark yellowish-brown sandy-loam fills.

*Hollows*

Four shallow features were exposed within the terrace (F2263, F2472, F2490 and F2703). These varied in size between 0.34m and 0.6m across and between 0.06m and 0.13m deep. Each contained a single fill composed of dark greyish-brown silty or sandy clay-loam similar in composition to the layer (2245) overlying them. A rubbing stone (**S4**) and three sherds of Middle Bronze Age pottery were recovered from hollow F2263.

**Phase 2 – secondary use**

Five features have been identified as representing subsequent modification or reuse of the structure. These included postholes F2286 and F2504, while post-pit F2507 was cut by an intercutting sequence of three pits F2686, F2687 and F2689.

Postholes F2286 and F2504, which formed part of the structural posthole arrangement, had been reused for the deposition of material including a pottery vessel and worked stone object (F2286), and dumps of charred material (F2504). The basal fill of F2286, (2298), was a dark brown silty clay

*Fig 12 Structure 1, pottery vessel **P2** and worked stone object on base of posthole F2286 (scale 0.25m).*

with abundant charcoal flecking. The lower part of a Middle Bronze Age pottery vessel (**P2**; Fig 12) and a worked stone cobble (**S5**) had been placed on this deposit. A pebble rich in cassiterite (tin ore) was also recovered from this context. These finds were overlain by (2297), a similar deposit to the underlying (2298). The overlying two fills (2285) and (2284) were composed of redeposited natural subsoil, while the latter had evidence for having been scorched *in situ*. The final fill (2283) was composed of a yellowish-brown silty sand with large charcoal fragments throughout.

In posthole F2504 the lower fill (2505) was composed of dumped lenses of charcoal and ash. Upper fill (2506) was a yellowish-brown silty clay with occasional charcoal flecks. Two pieces of worked stone and a probable residual sherd of Early Bronze Age pottery were recovered from the fills.

Pit F2689, which cut through the east side of Phase 1 post-pit F2504 as well as truncating four stakeholes, measured 0.68m wide and 0.24m deep with steeply-sloping sides and a flat base. It contained two fills of mid-yellowish-grey silty clay and a light reddish-brown silty clay (2690) and (2691). Ten sherds of Middle Bronze Age pottery were recovered from upper fill (2691), including vessel **P10** (of which a joining sherd was found in upper fill (2109) of structure 2).

Pit F2687 was cut into the south-west side of pit F2686. It measured 0.36m wide and 0.16m deep with vertical sides and a flat base. It contained three fills, (2511), (2688) and (2692). Lower fill (2511) comprised a deposit of cassiterite gravels. This was overlain by fill (2688), which was a mid-yellowish-brown silty clay and was, in turn, sealed by (2692) (not illustrated), a further deposit of cassiterite fragments in a silty-sand matrix.

Pit F2686 measured 0.34m wide and 0.19m deep with steeply-sloping sides and a concave base that cut through pit F2687. It contained two fills. Lower fill (2509) consisted of a heat affected mid-reddish-brown silty clay with frequent charcoal flecking and was overlain by (2510), a dark brown silty-clay accumulation.

**Phase 3 – abandonment and destruction**

The natural subsoil across the terrace had been inconsistently heat affected with a pattern of scorching affecting its upper edge as well as the north-west portion of its base. Evidence of heating included the scorching of the upper fills of small pits F2527 and F2514. On the east side of the terrace was a localised accumulation of heat-affected dark brown silty clay (2371). This was overlain throughout the terrace by a mixed dark grey silty-clay deposit that included charcoal and heat-affected clay flecking (2245). The upper deposits consisted of a broad accumulation of mid- yellowish-brown silty clay (2244) and a dump of redeposited natural subsoil (2372), which extended over the eastern portion of terrace. Thirty-two sherds of Middle Bronze Age pottery representing at least five different vessels (**P4**–**P8**) were recovered from layer (2245), as well as 21 fragments of worked stone and 22 fragments of fired clay. The fired clay objects included fragments of two possible tuyères. Upper layer (2244) produced 20 sherds of Middle Bronze Age pottery (including **P9**), six worked stone fragments and 20 fragments of fired clay, including fragments of up to eight further possible tuyères.

STRUCTURE 2 (Figs 13 and 14)

**Phase 1 – construction and use**

Structure 2 consisted of a similar terrace to that of adjacent structure 1, being a circular platform (F2082) cut into the south facing slope (Fig 15a). This measured 8.04m across and up to 0.29m deep on its upslope side. A total of 32 features were exposed within the terrace. Twenty-two of these were stakeholes with the remaining 10 comprising postholes, pits and an irregular hollow.

Five probable postholes (F2230, F2375, F2388, F2459 and F2461) were associated with the terrace but formed no clear pattern (Fig 15b–e). They were circular or oval in plan, measuring between 0.16m and 0.55m across and 0.15m and 0.38m deep with generally steep-sided profiles.

Postholes F2230, F2388 and F2459 each contained a single fill, (2231), (2389), and (2460), composed of mid-reddish-brown silty or sandy clay. F2375 contained fill (2376), a dark brown silty clay with abundant charcoal and heat-affected gravel inclusions. F2461 contained two fills. The first fill (2463) represented a possible post-pipe composed of reddish-brown clay loam with occasional charcoal flecks. This was abutted by (2462), a backfill composed of light greyish-brown silty clay. A worked stone muller (**S2**), possibly a packing stone, was recovered from posthole F2230, fill (2231).

Three pits (F2272, F2265 and F2279) were exposed within the terrace, with pit F2272 the

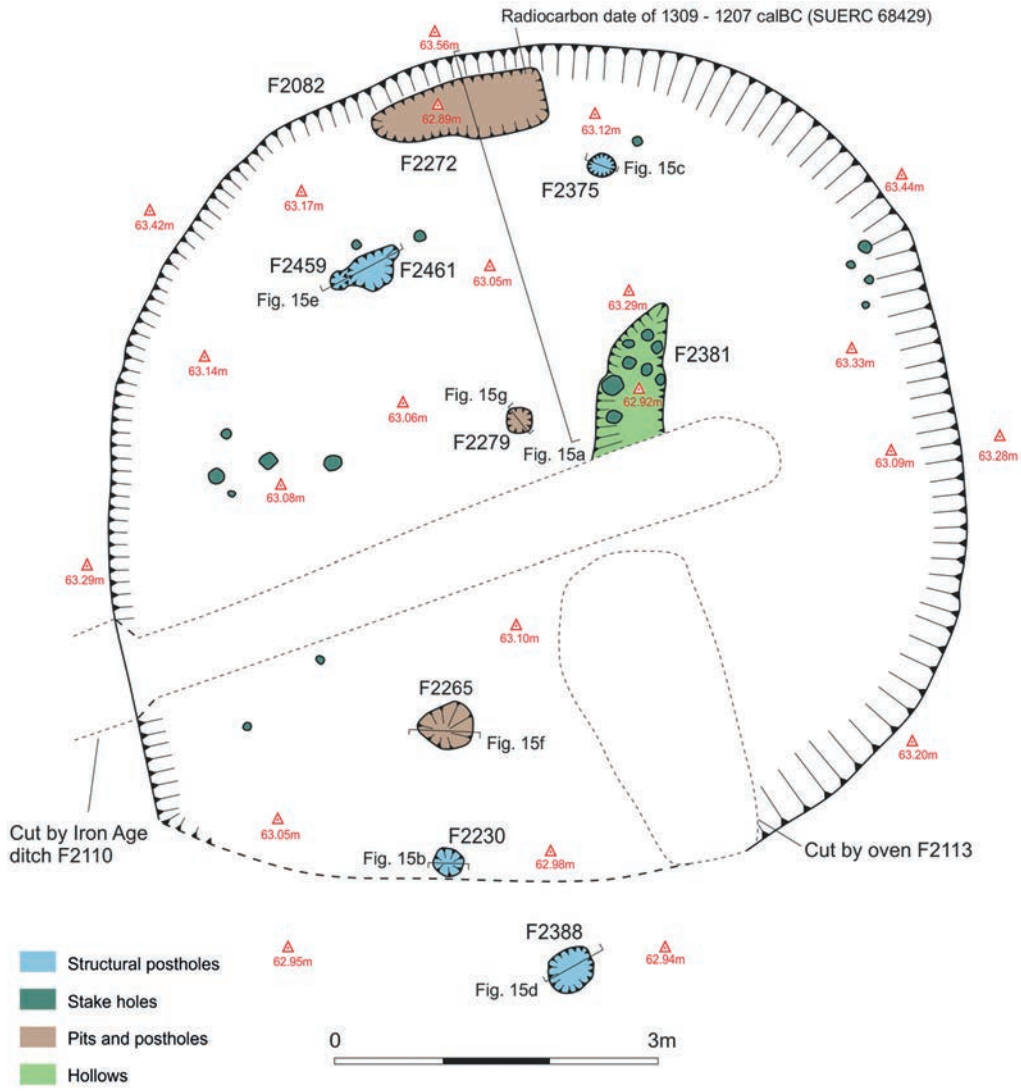


*Fig 13 Plan of structure 2. The 48 sherds of Middle Bronze Age pottery (including **P10**) were all from the infill layers, which also contained 80 fragments of worked stone and a few fragments of fired clay. Stone rubble in the perimeter of the lower fill might derive from collapsed walling.*

largest (Fig 15a and 15f–h). This was sub-oval in plan and cut into the base of the northern edge of the terrace cut. It measured 1.63m long, 0.56m wide and 0.28m deep, with steep to vertical sides and sharp break of slope onto a flattish base. Natural subsoil had been heat affected around the upper part of the cut. Effects of heating extended to the top of the terrace cut on the north side and across the base of the terrace to the south. It contained two fills. Lower fill (2273) was a thin lens of redeposited natural subsoil. Upper fill (2274) was a reddish-brown silty clay with abundant charcoal inclusions. A radiocarbon date of 1395–1207 cal BC (SUERC-68429) was obtained from a barley grain recovered from fill (2274). Other charred plant remains from this pit included a fragment of emmer, two cultivated flax seeds, fragments of bracken, common weeds and grassland herbs.

*Fig 14 Structure 2, with structure 1 to rear, looking south east (2m scales).*

Pits F2265 and F2279 measured between 0.28m and 0.49m across and around 0.1m deep with shallow concave profiles. Each contained similar mid reddish-brown silty or sandy-clay fills. No finds were recovered from these features.

Irregular hollow F2381 was cut to the south by later ditch F2064. It measured 0.6m wide and 0.13m deep with steep irregular sides and flattish base. A total of eight stakeholes had been inserted into its base.

A further 14 stakeholes were located roughly towards the perimeter of the circular terrace, positioned both in isolation and in small clusters, but with no clear pattern.

**Phase 2 – abandonment and infilling**

Layer (2229) overlay the natural subsoil in an irregular arc that extended around the periphery of the terrace cut and sealed features F2459, F2461, F2381 and F2272. It was largely composed of mid-greyish-brown clayey silt with large charcoal inclusions and occasional fragments of charred timber, possibly the remains of a structural timber (Challinor, below). Extending around the perimeter of the terrace and with a greater concentration on its south-east side, deposit (2229) also contained dumps of mixed stone rubble. These comprised shale and quartz pieces with dimensions up to 0.33m across and potentially represented a collapsed structural element.

Twenty-two sherds of Middle Bronze Age pottery, 27 fragments of worked stone and four fragments from a fired clay object were recovered from layer (2229).

A subsequent mid-yellowish-brown silty-clay accumulation layer (2109) infilled the terrace and sealed layer (2229). A total of 15 sherds of Middle Bronze Age pottery, 53 fragments of worked stone and a fragment from a fired clay object were recovered from this layer. The sherds included **P10**, which was also represented in structure 1 (Phase 2 pit F2689).

PIT GROUP 1

*F1094, F1113, F1086, F1104, F1106, F1116, F1120, F1082, F1100, F1102, F1118, F1122, F1124, F1126, F1128 and F1130* (Fig 16)

Pit group 1 comprised a cluster of 16 features over about 16m by 8m located towards the south of area A. Two stone-lined pits (F1094 and F1113) had very similar fill sequences and deliberately placed artefacts; five pits (F1086, F1104, F1106, F1116 and F1120) produced pottery sherds, fired clay and/or worked stone artefacts; and a further nine small pits (F1082, F1100, F1102, F1118, F1122, F1124, F1126, F1128 and F1130) were spatially associated but produced no finds.

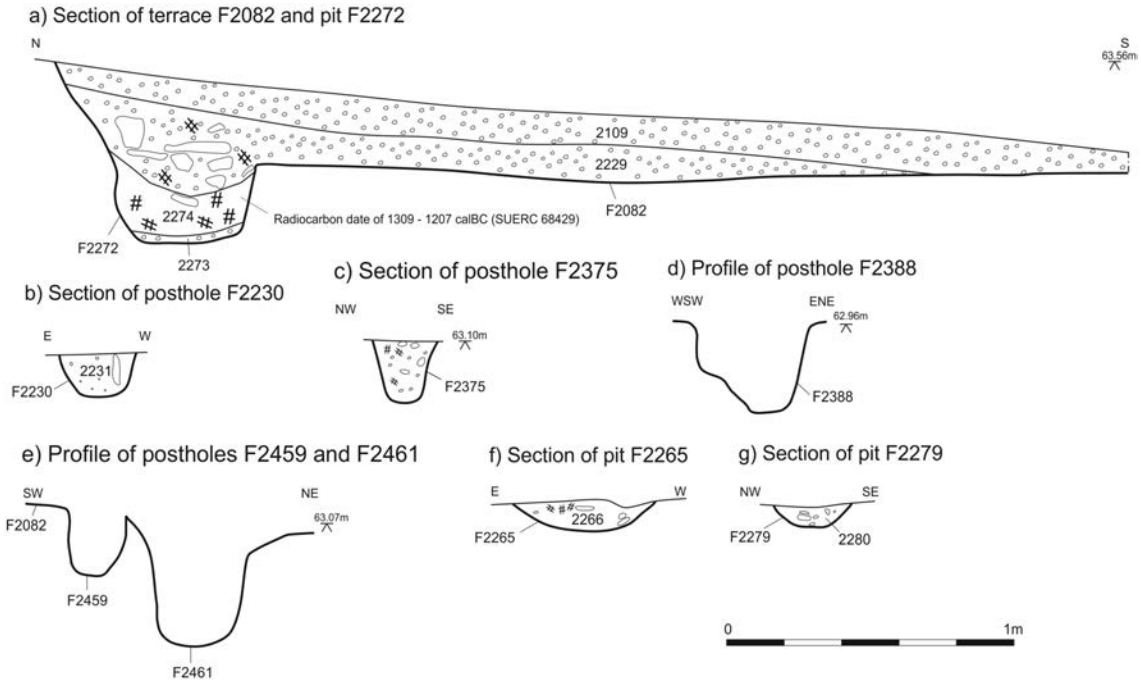


*Fig 15 Structure 2, sections of terrace F2082, postholes and pits; section locations marked on Figure 13.*

Pit F1094 was stone lined and circular, 0.51m across and 0.25m deep, with steeply-sloping straight sides and a flat base (Figs 17 and 18a–b). The lining on the pit base and sides, (1108), was composed of flat/tabular shale pieces up to 200mm. The main fill (1095) was a dark reddish-brown, clayey loam from which seven fired clay objects were recovered, including a near complete pyramidal perforated block (**SF54**), and pieces of at least two others. There was also a worked stone cobble was also recovered. Charcoal samples from (1095) were found to be oak.

Pit F1113 was also stone lined and circular (Fig 18c–d). It measured 0.6m across and 0.35m deep with steep straight sides and a flat base. The lining on the pit base and sides (1114) was composed of flat/tabular shale pieces up to 200mm across. The main fill (1115) was a mid-reddish-brown clayey loam from which a worked elongated cobble (**S7**) was recovered. Charred wood from (1115) was probably a plank (Challinor, below).

Pit F1086, the largest of the group, was sub-circular, measuring 1.04m across and 0.34m deep with steep slightly concave sides and a flattish base (Fig 18e). It contained a sequence of five fills, (1087), (1088), (1089), (1090) and (1091), composed of dark to mid-reddish-brown silty clay and silty clay-loams. Third fill (1089) contained occasional charcoal flecking. Fills (1088), (1089) and (1090) contained a dump of over 13.5kg of fired clay objects, predominantly oven and oven furniture fragments recovered from fills (1088), (1089) and (1090). Three sherds of Middle Bronze Age pottery were also recovered from this pit. Charcoal from (1089) was predominantly oak.

Pits F1104, F1106, F1116 and F1120 were circular in plan measuring 0.5m to 0.75m across and 0.17m to 0.29m deep with steep concave sides and flat to concave bases (Figs 18f-i). Each contained a single fill, (1105), (1107), (1117) and (1121), composed of similar dark brown silty clays. Thirty sherds of Middle Bronze Age pottery from the pits (Table 4) included **P11** from F1104 and **P12** from F1116, which are thought to be late in the sequence of Trevisker pottery, probably eleventh or tenth centuries BC (Quinnell, below). There were also 99 worked stone objects and a small quantity of undiagnostic fired clay fragments. Charcoal from F1104 was predominantly oak.

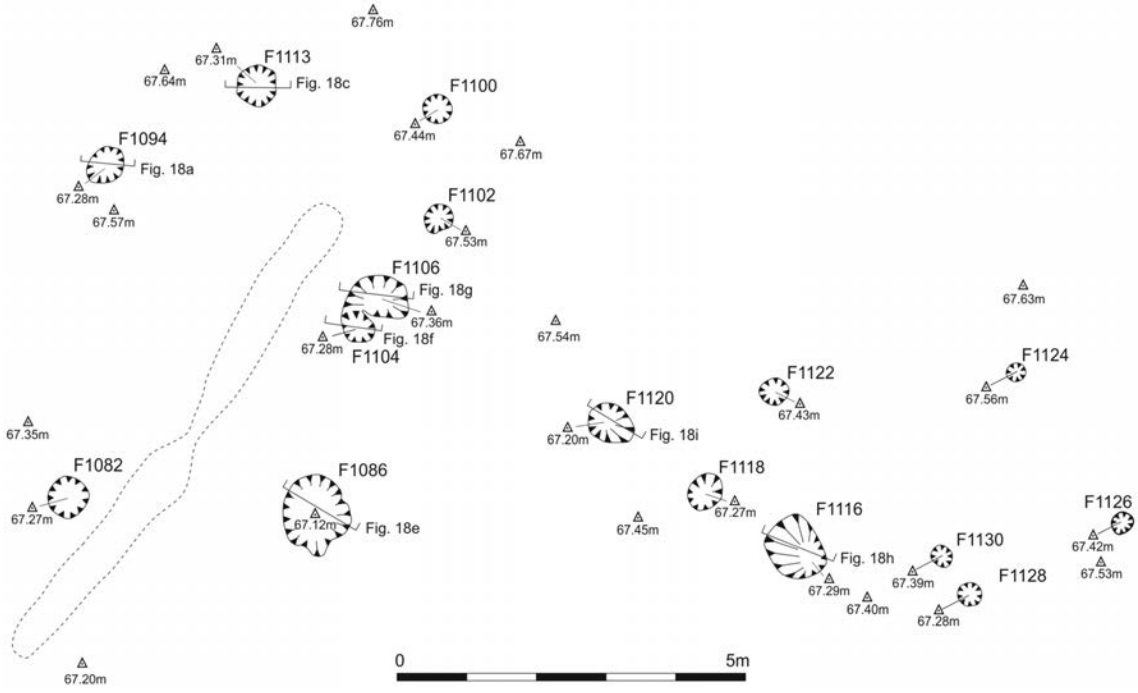


*Fig 16 Middle Bronze Age pit group 1. Pits F1094 and F1113 had stone linings. Finds included Middle Bronze Age pottery (including **P11** and **P12** from pits F1104 and F1116), worked stones and fired clay objects, with a concentration of oven fragments in pit F1086 and a pyramidal block in pit F1094 (Fig 17).*

*Fig 17 Pit group 1, pit F1094 with stone lining and in situ pyramidal perforated block SF54 (scale 0.25m)*

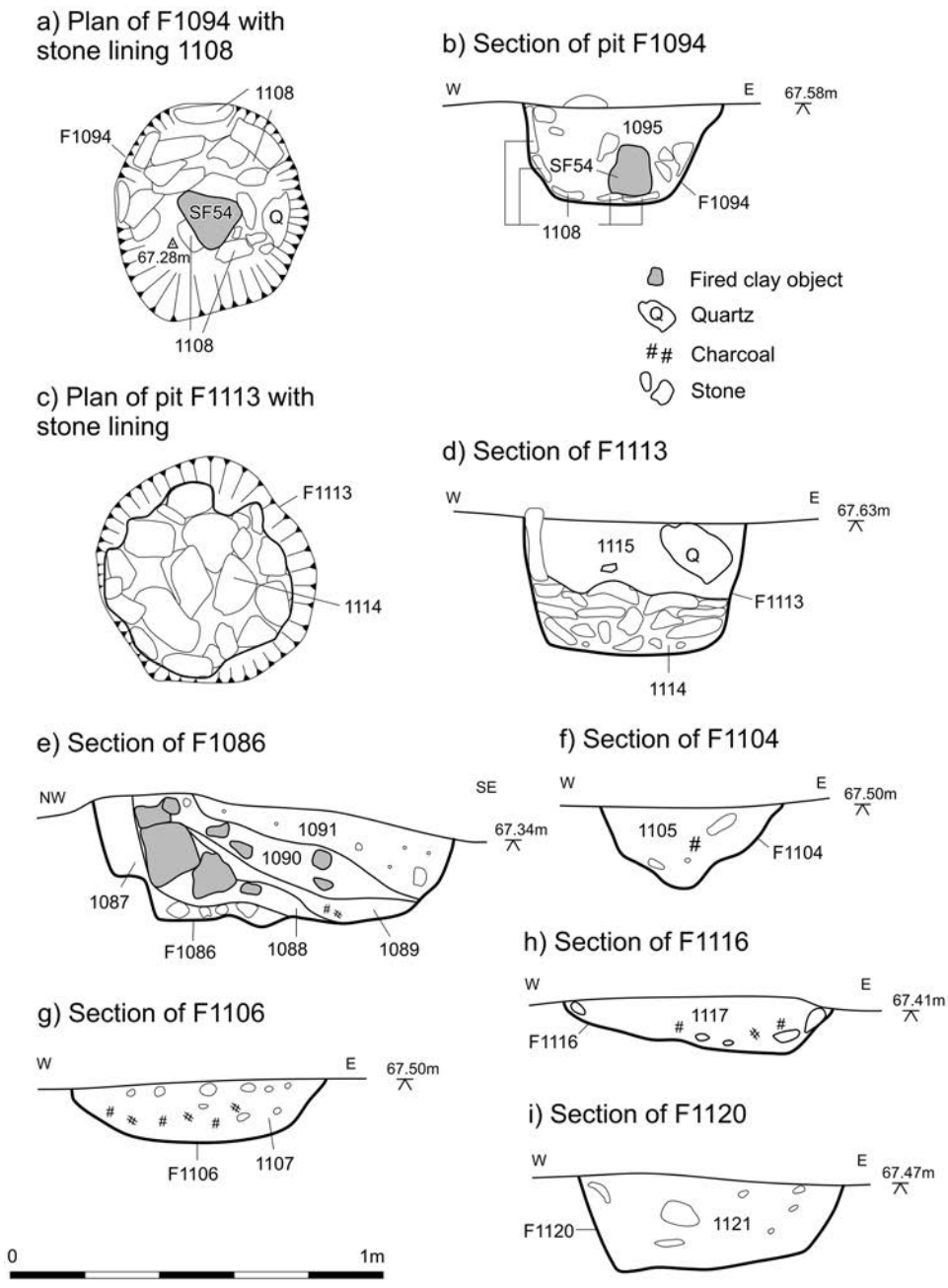


*Fig 18 Pit group 1, plans and sections; section locations marked on Figure 16.*

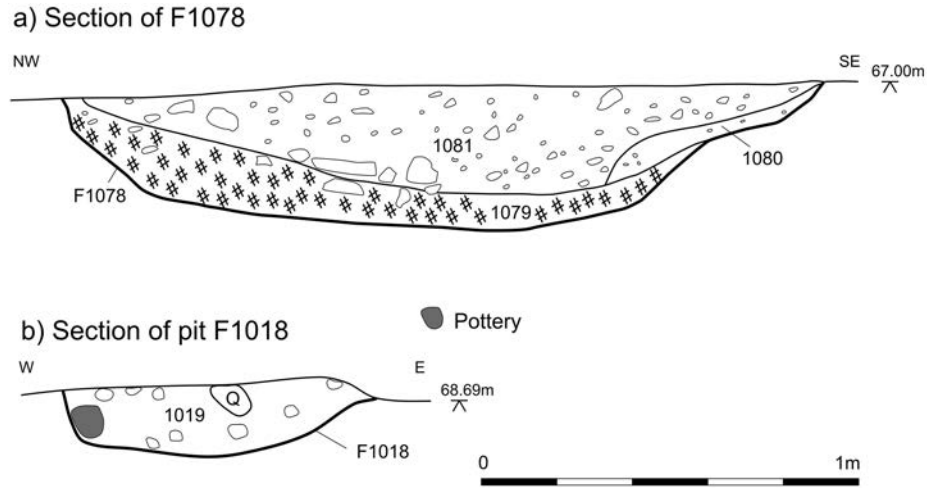


*Fig 19 Excavation area A, sections of burnt pit F1078 and pit F1018, which contained Trevisker ware rim **P13**.*

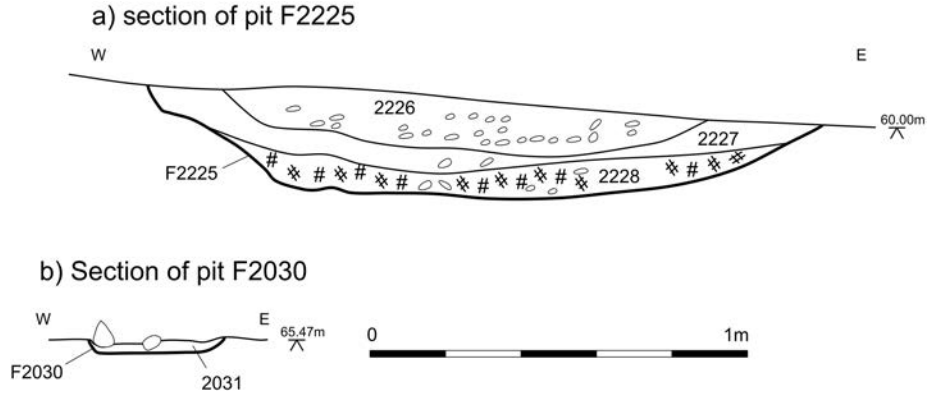


*Fig 20 Section of burnt pit F2225, and pit F2030 which contained vessel base **P14**.*

The other small pits in pit group 1 (F1082, F1100, F1102, F1118, F1122, F1124, F1126, F1128 and F1130) were circular or sub-circular in plan measuring 0.23m to 0.45m wide and between 0.07m to 0.23m deep with shallow concave profiles. Each contained similar dark brown silty clay fills.

PIT F1018

F1018, to the north of pit group 1, was a shallow sub-circular pit measuring 0.9m across and 0.18m deep, with moderately-steep concave sides and a flattish base (Fig 19b). The single fill, (1019), was a mid-brown silty clay with frequent gravel and pebbles and occasional quartz pebble inclusions. Two sherds of Middle Bronze Age pottery were recovered from its fill, including **P13**.

PIT F2030

Pit F2030 was located to towards the centre of Area C. It measured 0.44m across and 0.04m deep with moderately-steep sloping sides and a flat base (Fig 20b). Although heavily truncated, the lower portion of an *in situ* Middle Bronze Age pottery vessel, **P14**, was present on the base of the pit. This was overlain by a mid-brown silty-sand fill, with occasional charcoal fleck inclusions (2031).

HOLLOW F2294

Hollow F2294 measured 19.5m long and 3.75m wide and was located south west of structure 1 in Area C. Cut by Iron Age ditches F2064 and F2442, the probably natural feature contained a 0.07m deep mid-reddish-brown silty-clay deposit (2295) from which one sherd of Middle Bronze Age pottery was recovered.

**Iron Age features**

Features dated to the Iron Age comprised a structure within a penannular gully (structure 3) and a large iron smelting furnace (F2178), both recorded in area C. A rectilinear field boundary system, which was also dated to the Iron Age and overlay structure 3, extended across areas A and C. A small number of other features were also exposed consisting of a pit (F2287) and a posthole (F2087) in area C and a short curving ditch in area D (F4050).

*Structure 3* (Figs 21 and 22)

Structure 3 was located towards the middle of Area C. It consisted of a penannular ring gully (F2705),

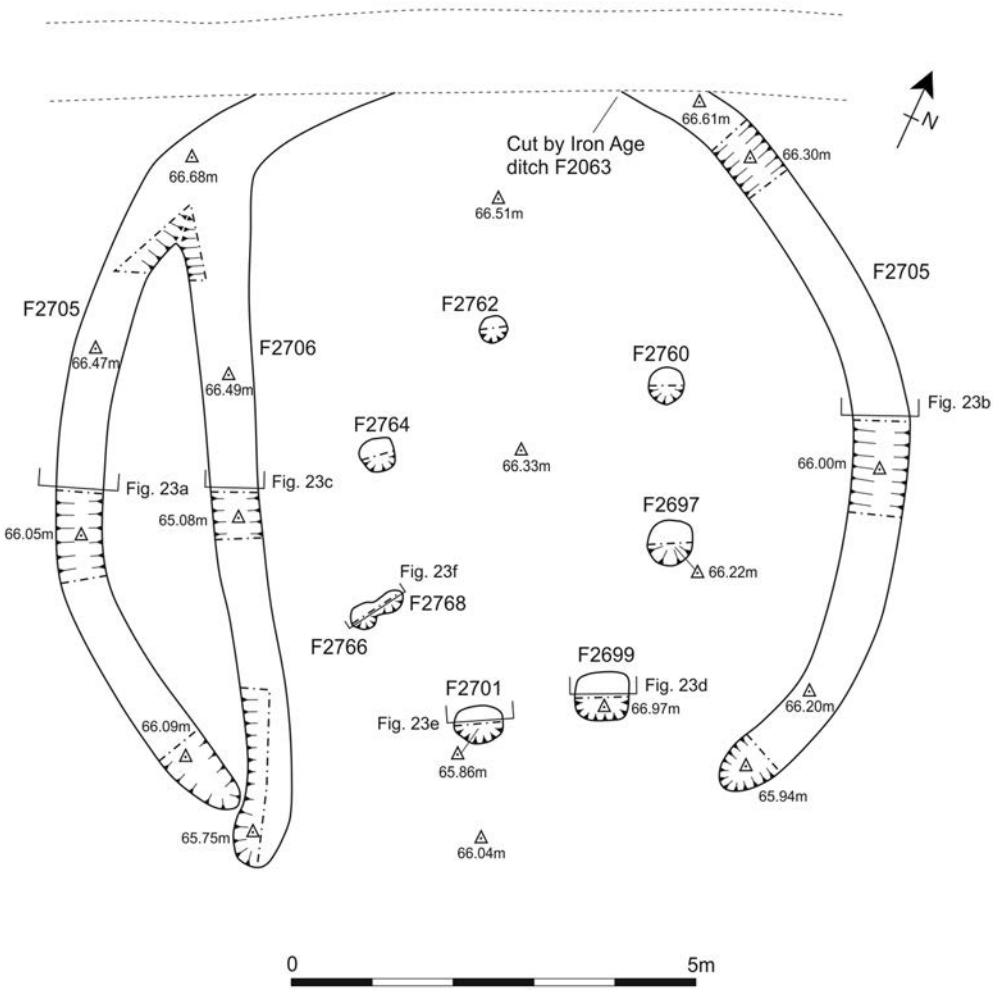


*Fig 21 Plan of structure 3, Iron Age roundhouse. The few finds included five Iron Age sherds. **P18**, a Type O Cordoned ware from ditch F2705, is potentially first century or early second century AD. Iron slag was found in ditches F2705 and F2706 and in posthole F2701.*

with an entrance gap to the south east, which contained an arrangement of eight postholes and a contemporary straight section of ditch (F2706). The north-west extent of the gully was cut by an Iron Age boundary ditch (F2063).

Ring gully F2705 had rounded terminals and enclosed an area with an internal diameter of 9.25m. The gully measured approximately 0.55m wide and 0.2m deep with steeply-sloping concave sides and a concave base (Fig 23a–b). It

*Fig 22 Structure 3, looking north west (2m scales).*

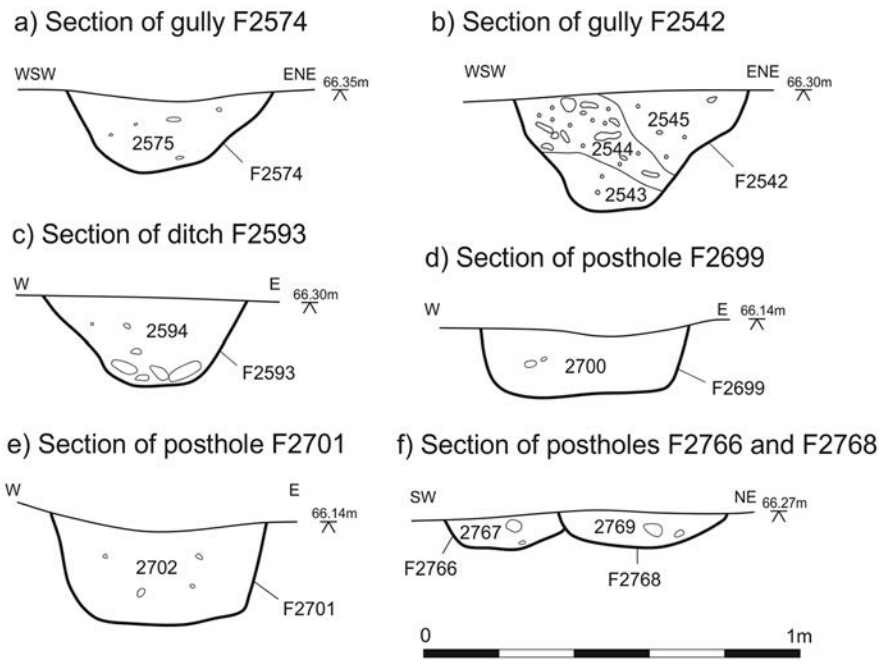


*Fig 23 Structure 3, sections of ring gully F2705, ditch F2706 and postholes; section locations are marked on Figure 21.*

contained up to three fills composed of mid-dark brown clayey loams. Two sherds of Late Iron Age/ Romano-British pottery (**P18**) and a sample of iron smelting slag weighing 10kg were recovered.

Internal straight ditch F2706 was aligned north-west to south-east and was found to be contemporary with gully F2705, with which it had comparable dimensions (Fig 23c). The ditch contained a single fill of mid-brown silty clay and produced three sherds of Late Iron Age pottery and 10.7kg of iron smelting slag.

Postholes F2697, F2699, F2701, F2760, F2762, F2764 and posthole pair F2766 and F2768 made up an approximately oval arrangement, which had an internal dimension of 3m by 4.5m and was positioned slightly off centre within the ring gully. The two postholes nearest the entrance gap (F2699 and F2701) were the largest of the group, measuring around 0.75m wide and 0.29m deep with steep straight sides and flat bases (Fig 23d–e). The remainder were approximately 0.45m in diameter and shallow with concave profiles. Postholes F2766 and F2768 were an intercutting pair and most likely represent a repair to the structure or repositioning of a post (Fig 23f). Each posthole contained a single fill composed of mid-brown silty clay. A fragment of iron slag was recovered from the fill of posthole F2701.

*Iron smelting furnace F2178* (Figs 24–25)

Located 35m to the south west of structure 3, this was a sub-oval pit measuring 1m long by 0.8m wide and 0.2m deep with moderately-steep sloping concave sides and a flattish base. The pit contained a sequence of six fills, of which the initial deposits consisted of a fired clay lining around its western perimeter (2179) and a very thin lens of charcoal lining its base (2196). These were overlain by a slag cake (2180), which was positioned on the western side of the pit against clay lining (2179). This is described in detail by Young (below). An *in situ* slag flow extended to the east of (2180) and was abutted and overlain by three layers of charcoal-rich material (2181), (2182) and (2183) resulting from the collapse of the feature. A radiocarbon date of 361–162 cal BC (SUERC-67876) was obtained from charcoal recovered from deposit (2182).

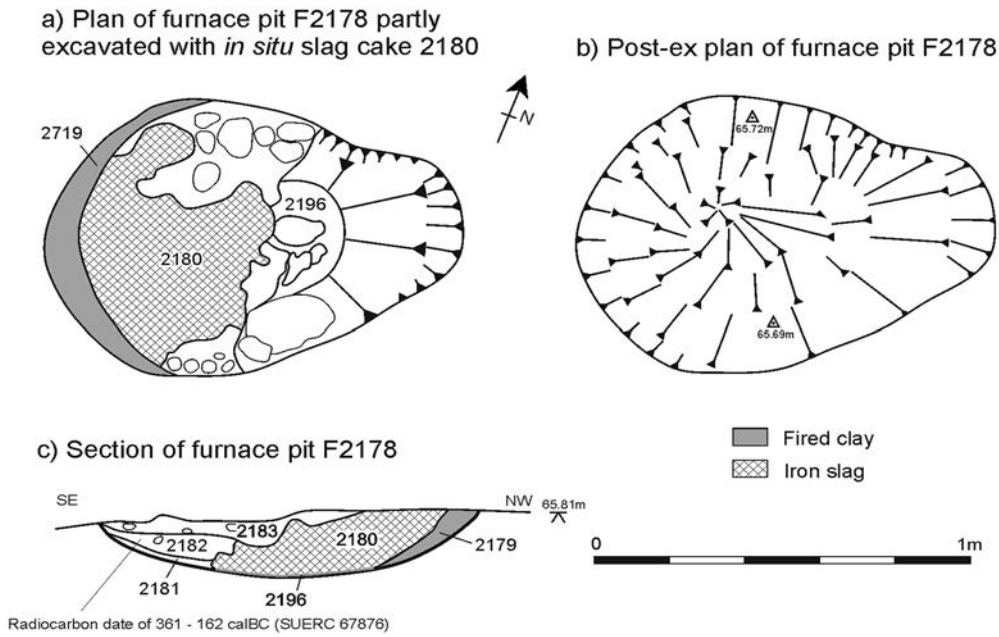


*Fig 24 Iron furnace F2178, plans and section.*

*Fig 25 Iron furnace F2178, looking north east.*

*Pit F2287*

Pit F2287 was located close to the southern edge of area C and was cut into ditch F2066. It measured 3.5m long and 2.1m wide with steeply-sloping sides and a flattish base. The pit contained a dark brown clayey-silt loam fill (2288) that included three sherds of Iron Age pottery, and a dump of furnace lining and crushed fired clay fragments which included a possible piece of superstructure.

*Posthole F2087*

This ephemeral truncated posthole was located in the north portion of area C and close to the junction of ditches F2069 and F2826. It measured 0.34m across and yielded three sherds of Iron Age pottery.

*Field system ditches*

*F1132, F2062, F2063, F2064, F2066, F2068, F2069, F2135, F2290, F2442, F2316, F2328, F2736, F2737, F2770, F2774, F2776, F2779, F2826 and F2828*

This group of features is likely to have made up an arrangement of north-west to south-east and north-east to south-west aligned boundaries representing a probable field system. This extended throughout area C and into area A as ditch F1132. A number of probable entrance gaps were evident within the arrangement, including: a segmented arrangement comprising ditches F2063, F2736, F2068 and F2737; a flared terminal at the south-west end of F2064; a broad gap between F2066 and F2826; and, a narrow causeway between the terminals of F2135 and F2828. The ditches measured between 1m and 1.7m wide and between 0.45m and 0.9m deep. Each had broadly consistent moderately-steep sloping sides and concave bases, while in places the profiles stepped down to more steeply-sloping sides for the lower section (Fig 26). Each contained a series of accumulation fills, while ditch F2063 in the vicinity of where it cut through structure 3 contained a concentration of iron slag, of which a sample was retained that included part of a furnace base. A total of 37 sherds of Iron Age pottery was recovered from the ditch system, including **P15**, **P16** and **P17**.

Ditch F1132 extended across area A with a kinked alignment and represented a likely continuation of a ditch exposed in area C (F2740

and F2737). It measured between 1m and 1.4m wide and 0.5m to 0.7m deep with moderately-steep sloping sides and a concave base. The ditch contained two silty-clay loam accumulation fills from which only one piece of iron slag, a fragment of fired clay and a residual piece of Middle Bronze Age pottery was recovered.

Curvilinear ditch F4050 (Area D) was approximately east–west aligned, with a rounded terminal at each end. It measured 10m long by 0.75m wide and up to 0.35m deep, with steeply-sloping straight sides and a flat base. The ditch contained a consistent fill comprising a mid-greyish-brown silty clay with rare charcoal fleck inclusions (4043), from which 10 sherds of Late Iron Age pottery were recovered.

## Undated probable prehistoric features

Undated but probable prehistoric features included a number of burnt pits that were distributed throughout areas A, B and C. In addition, three structures (4, 5 and 6) in area C, a small partially exposed probable enclosure in area A and further field boundary ditches (in areas A, B and D) fall within the undated category.

### *Burnt pits*

*Areas A and B: F1029, F1033, F1035, F1037, F1078, F1109, F3010*

*Area C: F2015, F2024, F2033, F2097, F2120, F2122, F2155, F2172, F2189, F2206, F2215, F2218, F2225, F2240, F2259, F2267, F2346, F2367, F2369, F2396 and F2711*

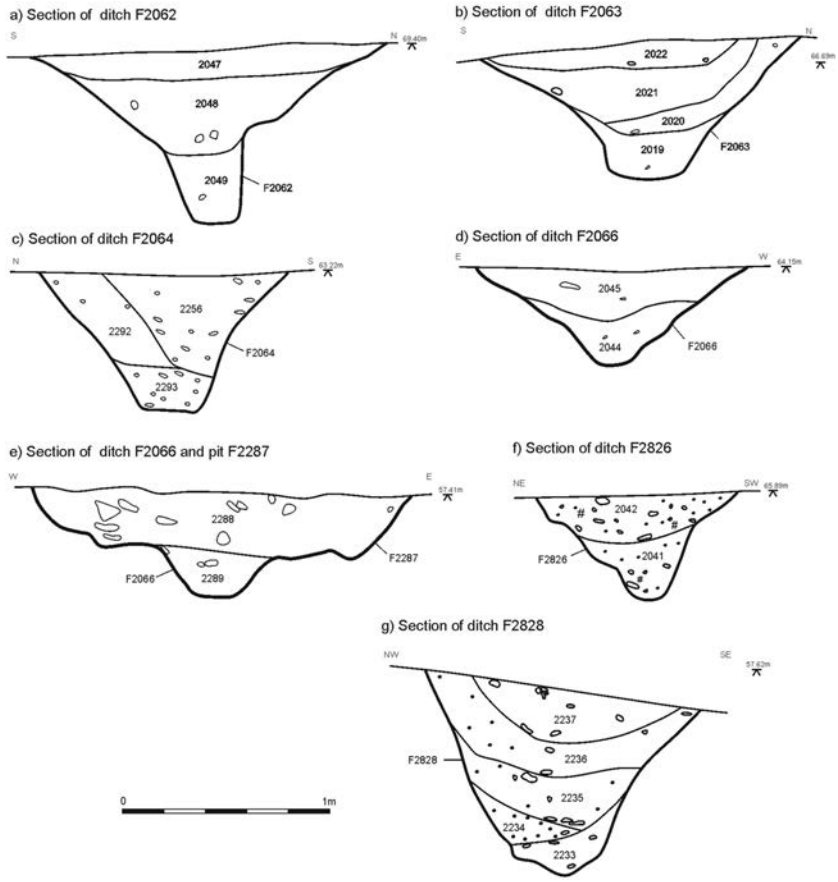


*Fig 26 Sections of Iron Age field system ditches F2062, F2063, F2064, F2066, F2826, F2828 and pit F2287. Pit 2287, which cut ditch F2066, contained Iron Age pottery and fragments of furnace lining.*

*Fig 27 Excavation area C, burnt pit F2225, looking north (scale 1m).*

A widespread scatter of 27 pits of very similar character was found across areas A, B and C. All were circular or sub-circular in plan, with variable dimensions due, in places, to the level of plough-truncation. In area A the largest of the six pits was F1078 which measured 2.2m across and 0.4m deep and the smallest, F1035, was 0.71m across and 0.06m deep. The 21 burnt pits in area C were generally around 2m wide, but with a range that extended between 1.03m (F2367) and 2.92m across (F2240) and between 0.05m and 0.45m deep.

In profile, each had shallow concave sides and a wide flattish base (Fig 19a). Where there was greater preservation, the sides of the pit became steeper towards the top. Each displayed signs of heating across the base and sides and contained a charcoal-rich first fill composed of very dark greyish-brown silty clay or silty clay-loam. The initial charcoal fill was sealed by up to three additional fills of accumulated material composed of yellowish or greyish-brown silty clays.

Pit F2225 yielded the only finds recovered from this feature type: two sherds of Middle Bronze age pottery recovered from its charcoal basal fill (2226) and a worked flint recovered from overlying deposit (2227) (Figs 20a and 27). On the basis of this association the pits have been indicated as potentially Bronze Age features on Figures 3 to 5, but they would also fit well in an Iron Age context, and without further dating evidence are best regarded as undated.

*Structure 4* (Fig 28)

Structure 4 was located in the western portion of area C, approximately 20m west of Iron Age structure 3. It was formed of four postholes (F2782, F2790, F2811 and F2818) in a square arrangement approximately 2.6m across. These were associated with two curving shallow gullies (F2785 and F2814) that linked pairs of postholes. Gully F2814 was cut by posthole F2818 and gully F2785 cut through a shallow hollow (F2788) of unclear function.

Postholes F2782, F2811 and F2818 were of a similar character, with these measuring 0.56m to 0.59m across and between 0.25m and 0.33m deep with steep to vertical sides and concave or flattish bases. Each contained two fills (2783–2784, 2812–2813 and 2819–2820 respectively) composed of mid-yellowish-grey clayey-loams, while F2818 also contained some stone packing. Posthole F2790 was smaller, measuring 0.31m across and 0.14m deep with vertical sides and a flat base. It contained a single fill consisting of a mid-greyish-brown silty loam (2791).

Gullies F2785 and F2814 measured 2.5m long, 0.34m wide and up to 0.08m deep. Each contained fills of mid-yellowish-brown sandy clay.

*Structure 5* (Figs 29 and 30)

Structure 5, about 30m south of structure 4, was made up of nine postholes (F2399, F2401, F2403, F2405, F2407, F2409, F2411, F2413 and F2415)

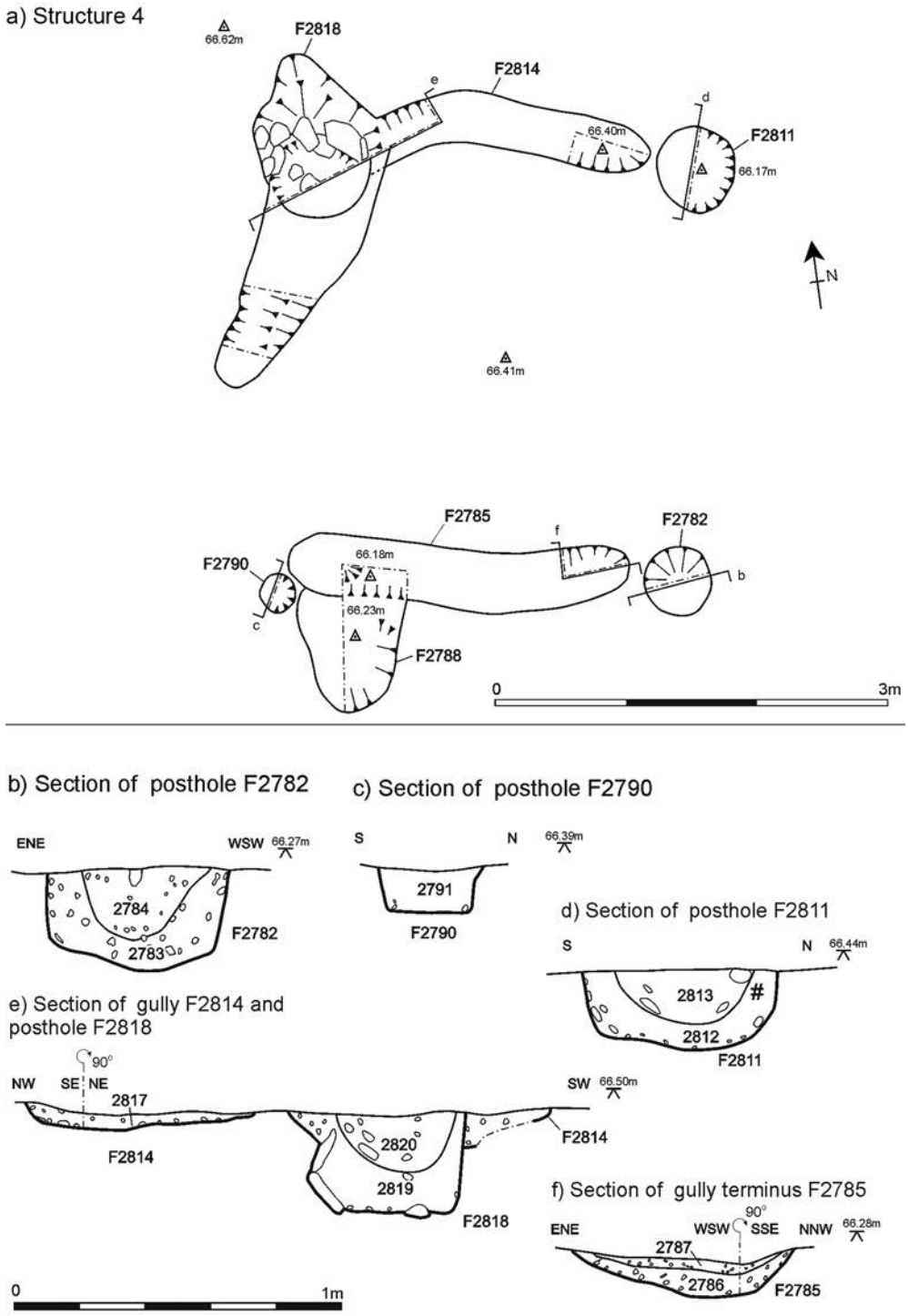


*Fig 28 Structure 4, plan and sections.*

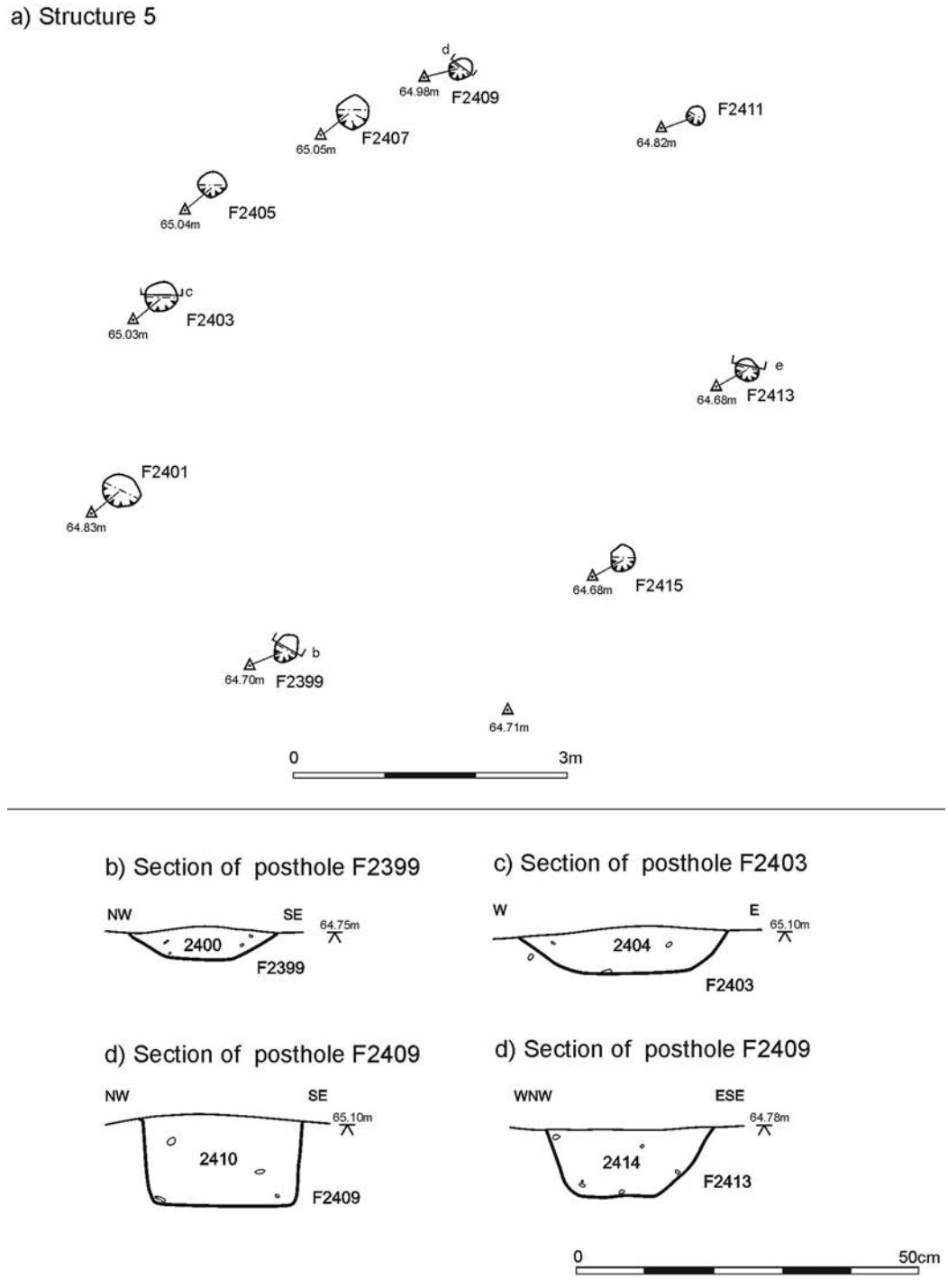


*Fig 29 Structure 5, plan and sections.*

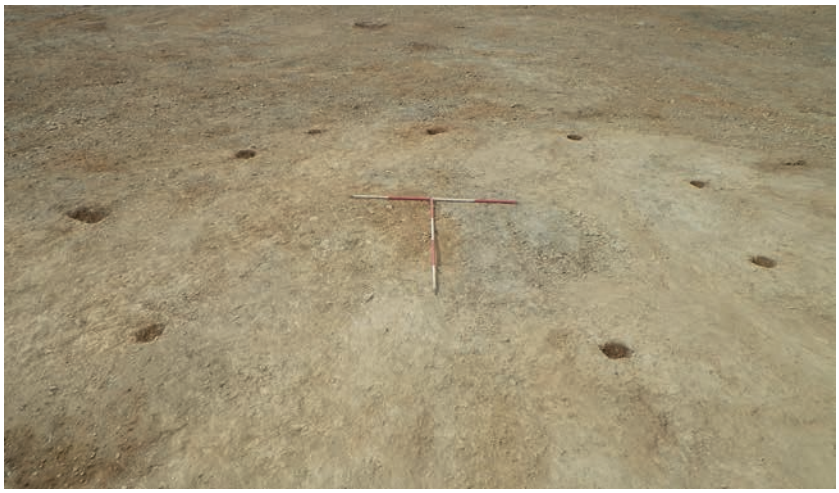

*Fig 30 Structure 5, looking north west (2m scales)*

positioned in an oval arrangement approximately 8m long by 6.5m wide. The postholes ranged in size between 0.2m and 0.47m across and 0.04m to 0.14m deep. Each contained a similar mid-brown silty-clay fill.

*Structure 6* (Fig 31)

Structure 6 comprised a ring of postholes located to the north of structure 4 and about 12m north west of Iron Age structure 3. It was made up of seven postholes (F2795, F2797, F2799, F2801, F2803, F2805 and F2807), which formed an oval arrangement measuring 3.5m long by 2.5m wide. The postholes measured between 0.2m and 0.41m across and 0.07m and 0.22m deep with steeply-sloping sides and flat to concave bases. Each contained a similar mid to dark yellowish-brown silty-clay fill.

*Undated ditches / field system*

A curvilinear ditch (F1133) in area A measured up to 1m wide and 0.32m deep with steeply-sloping concave sides and concave base. It contained a single fill composed of mid-yellowish-brown sandy loam. The full course of the ditch was not established as it was at the edge of the excavation, but it may have formed a small enclosure, approximately 13m across.

Two lengths of ditches, though undated, may well be part of the Iron Age field system as they broadly share its alignments. A shallow ditch alignment made up of four plough-truncated segments (F1050, F1062, F1076 and F3009) extended north-north-east to south-south-west across areas A and B. It measured a maximum of 0.82m wide and 0.17m deep with a shallow concave profile and contained a broadly consistent silty-clay fill.

The second ditch, F4022, extended west-south-west across area D into a return before continuing north-north-west up to the northern limit of excavation. It measured up to 1.32m wide and 0.8m deep with a profile that was of variable steepness. It contained a sequence of up to four greyish-brown clay and clayey-loam fills comprising primary weathering and gradual secondary accumulation. A single worked stone muller was recovered from the ditch.

**A possible post-Roman corn-drying oven**

This feature (F2113) was located in the middle of area C, adjacent to the junction of Iron Age ditches F2064 and F2066 and was cut into Bronze Age structure 2. It consisted of a sub-rectangular pit measuring 3.2m long, 1.4m wide and a maximum of 0.61m deep, with an undulating base that formed two parts at either end (Fig 32).

The smaller part to the south measured 1.1m by 0.9m and 0.35m deep with a stepped profile and sloping base. The larger part to the north was 2.1m long, 1.4m wide and 0.61m deep with steeply-sloping straight sides and a flat base. Throughout the base of the feature the natural subsoil had been heat affected by *in situ* burning. It contained three fills. Fills (2164) and (2114) were spread across

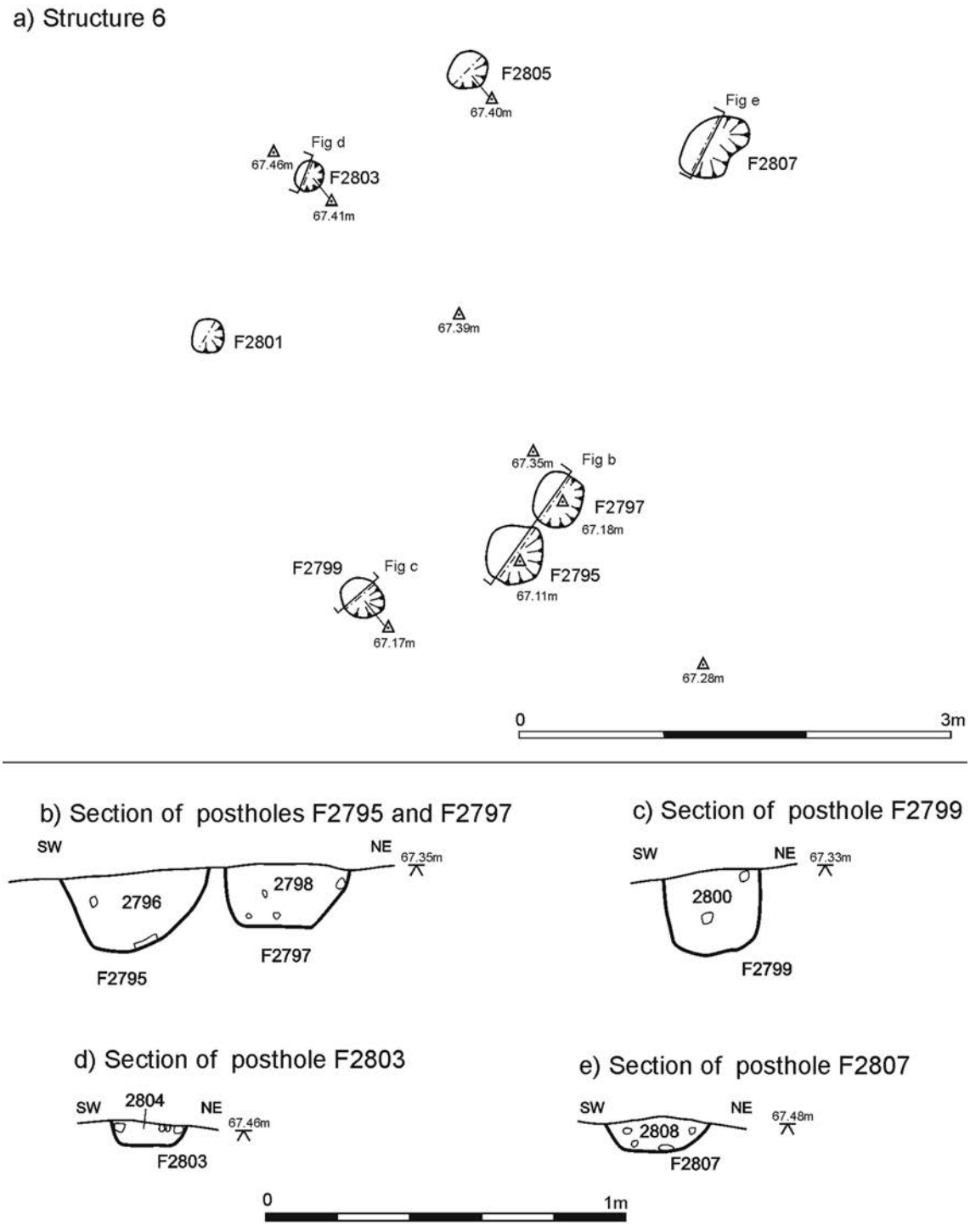


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*Fig 31 Structure 6, plan and sections*

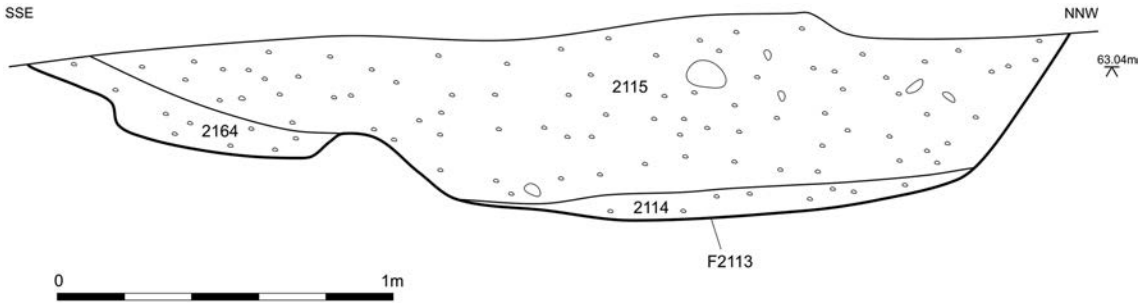


*Fig 32 Section of corn drying oven F2113.*

the bases of the southern and northern elements respectively. These consisted of dark brown clayey-silt loams with abundant charcoal inclusions. Both these deposits were overlain by an upper accumulation fill (2115), composed of dark brown silty loam with occasional charcoal flecks. Residual Bronze Age finds comprising a single sherd of pottery and a worked flint were recovered from upper fill (2115). Although undated, the results from the charred plant macrofossils suggested that the feature was post-Roman, based on the species profile of grains represented: predominantly oats and barley (Carruthers, below).

## Radiocarbon dates

Two samples were submitted to Scottish Universities Environmental Research Centre (SUERC) for Accelerator Mass Spectrometry (AMS) dating; these are presented in Table 1. Further radiocarbon dates would have been desirable to enhance the chronological precision relating to use of the site, but prioritising of the post-excavation budget towards the extensive specialist analyses (see below) meant that use of the radiocarbon method was highly selective. The assayed dates were derived from samples recovered from two key features, a pit (F2272) associated with structure 2 and the Iron Age furnace (F2178), both in area C.

## The finds

### Prehistoric pottery

*Henrietta Quinnell, with petrographic comment by Roger Taylor*

The assemblage of prehistoric pottery consists of 255 sherds (5401g). Of these, 13 sherds (335g) are Early Bronze Age, 182 sherds (4388g) are Middle Bronze Age and 60 sherds (678g) are Iron Age, mostly from the later centuries of this period.

*Early Bronze Age*

**P1** (Fig 33) context (2345), fill of pit F2343, 12 sherds (253g), gabbroic: examination by Roger Taylor confirms the fabric is gabbroic but identifies micaceous slate inclusions which indicate that the vessel had been potted away from the gabbroic area and possibly in the vicinity of the site. Sherds from upper part of vessel of large diameter, about 400mm across girth, with at least two horizontal cordons with lines of stamped impressions above and below each. The form of the stamp used, of which an enlarged impression is shown in Figure

**Table 1** Results of radiocarbon dating

| *Sample number* | *Lab No.* | *Context* | *Description* | *Uncalibrated date in years BP* | *Calibrated date 95.4% probability* |
|---|---|---|---|---|---|
| 22 | SUERC-67876 | (2182) | Fill of furnace F2178 | 2174±30 | 361–162 cal BC |
| 33 | SUERC-68429 | (2274) | Fill of structure 2 pit F2272 | 3030±29 | 1395–1207 cal BC |

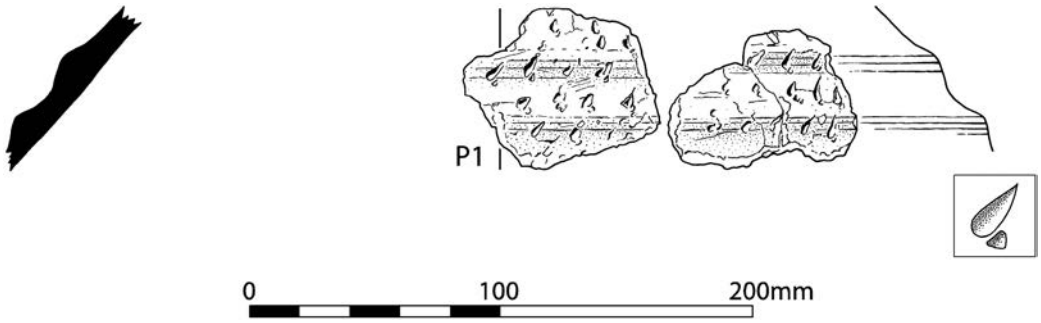


*Fig 33* ***P1*** *Food Vessel sherds from (2345) fill of pit F2343. Scale 1:3, inset 1:1. (Drawing: Sean Goddard.)*

33, is uncertain: superficially the decoration appeared as 'stab and drag' but the better-preserved impressions indicate an unusual stamp, perhaps from the end of a small mammal or bird bone (*cf* Liddell 1929).

**P1** belongs in the Food Vessel class, of which about 20 examples are known from Cornwall (Quinnell 2004a; Patchett 1944; 1950). However, its size indicates that it is best described as an Enlarged Food Vessel (Gibson and Woods 1997, 148) and the sherds from the Watch Hill barrow, St Stephen-in-Brannel, probably provide the closest comparandum from Cornwall (Miles 1975, fig 8). The Watch Hill sherds formed a deliberate deposit in ditch infill and had no direct connection with burials (this was associated with WK-12936 1920–1680 cal BC). A good contextual parallel is also provided by the sherd from a smaller Food Vessel from Metha, St Newlyn East (Quinnell 2004a, fig 30) as this also, like **P1**, was found deposited in a pit without sepulchral associations. This had a very early date for a Food Vessel, Wk12674, 3984 ±56 BP (2700–2300 cal BC), earlier than most accepted dates for Food Vessels in southern Britain (Jones and Taylor 2004, 90–1).

While gabbroic clays were commonly used for all types of vessel in Early Bronze Age Cornwall, an instance of evidence for clay being moved away from its source on the Lizard and being potted elsewhere, possibly close to the site, is unusual for this period, as opposed to the subsequent Middle Bronze Age where this practise has been recognised on several sites (Quinnell 2012, 163).

**(2506)** fill of posthole F2504, structure 1, 1s 82g. Sherd of probably similar fabric to **P1**.

*Middle Bronze Age Trevisker*

All separate vessels which are suggested by form or decoration have been enumerated but only the more complete or complex illustrated. Where appropriate, styles following Parker Pearson (1995) are provided.

STRUCTURE 1

**P2** (Fig 34) (2297), pot placed in posthole F2286. Gabbroic admixture, base of Style 2 vessel about 150mm across found intact but cracked into sherds which were extremely fragile. Part of vessel wall survives up to decorated zone above girth, diameter approximately 200mm, with chevron of complex impressed lines above a row of wide spaced single finger nail impressions. The only surviving section of girth with decoration is illustrated. While the impressed cord chevron and row of finger nail impressions are frequent motifs on Trevisker vessels, no exact parallel to this decoration is known: the comparatively large assemblages from Trethellan Farm, Newquay (Woodward and Cane 1991), the eponymous settlement at Trevisker, St Eval (ApSimon and Greenfield 1972), and those at Tremough, Penryn (Quinnell 2007, 2014) and Scarcewater, St Stephen-in-Brannel (Quinnell 2010), have been carefully checked.

**P3** (not illus) (2515), fill pit F2514. Gabbroic admixture, expanded Trevisker rim with two rows of horizontal cord impression surviving beneath. Broadly Style 2.

**P4** (Fig 34) (2245), lower fill of terrace F2081. Gabbroic admixture, out-turned rim diameter 190mm with internal bevel and impressed chevron of narrow complex strands of parallel twist cord. Broadly Style 2.

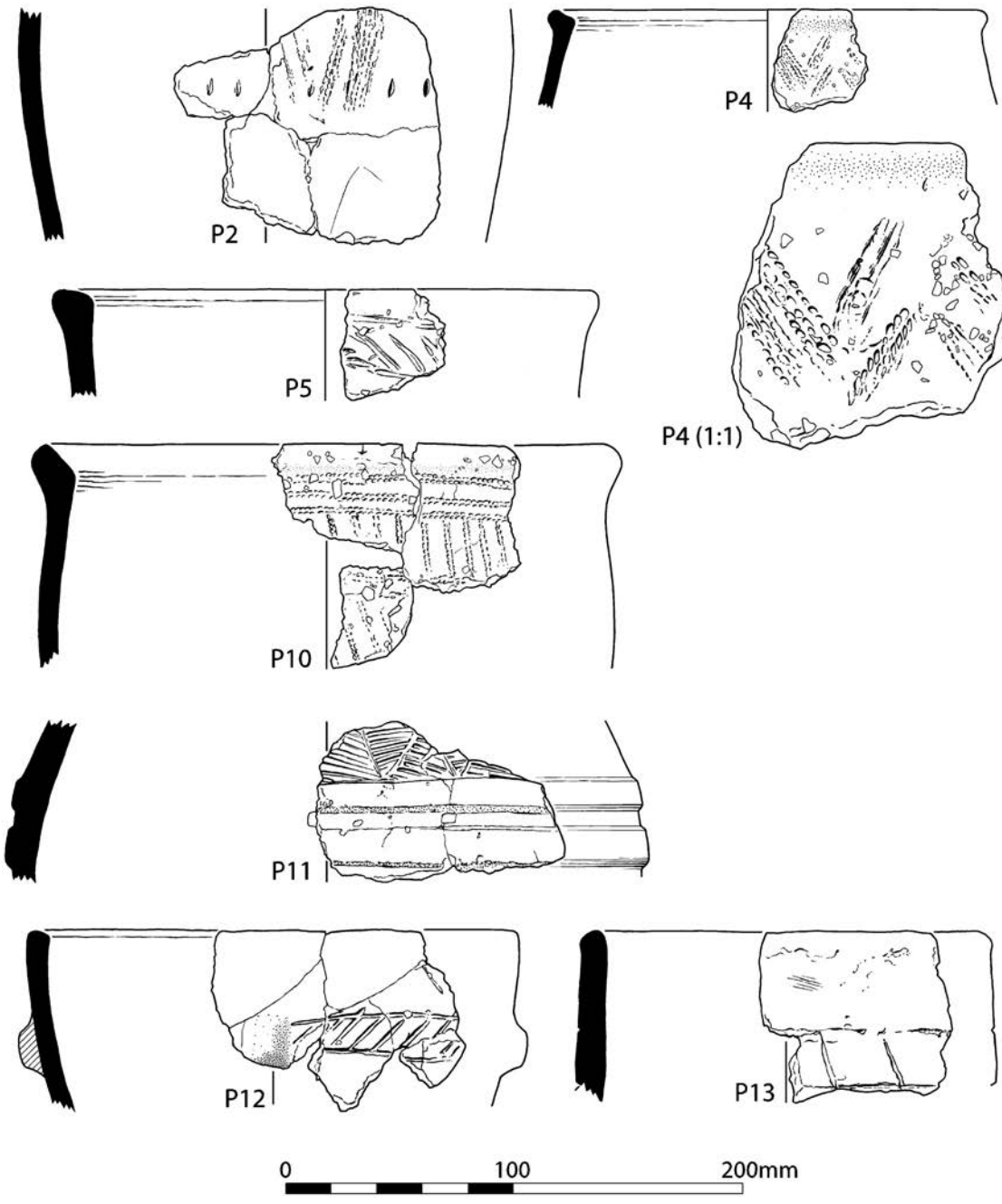


*Fig 34 Trevisker vessels. **P2–5** from structure 1; **P10** from structure 2; **P11–12** from contexts in pit group 1; **P13** from pit F1018. Scale 1:3. (Drawing: Sean Goddard.)*

**Table 2** Details of Middle Bronze Age pottery from structure 1 by sherd number and weight

| *w* | *Details* | *Gabbroic* | | *Gabbroic admixture* | | *Totals* | |
|---|---|---|---|---|---|---|---|
| (2264) | Fill hollow F2263 | 3 | 36 | | | 3 | 36 |
| (2297) | Fill posthole F2286 | | | 1 **P2** | 975 | 1 | 975 |
| (2502) | Fill posthole F2501 | | | 1 | 8 | 1 | 8 |
| (2508) | Fill post pit F2507 | 1 | 3 | | | 1 | 3 |
| (2515) | Fill pit F2514 | 11 | 20 P3 | | | 11 | 20 |
| (2537) | Fill pit F2536 | | | 16 | 77 | 16 | 77 |
| (2691) | Fill pit F2689 | | | 10 **P10** | 263 | 10 | 263 |
| (2245) | Lower fill of terrace F2081 | | | 32 **P4–P8** | 407 | 32 | 407 |
| (2244) | Upper fill terrace F2081 | | | 20 P9 | 372 | 20 | 372 |
| **Totals** | | 15 | 59 | 80 | 2102 | 85 | 1898 |

**Table 3** Details of Middle Bronze Age pottery from structure 2 by sherd number and weight

| *Context* | *Details* | *Gabbroic admixture* | | *Totals* | |
|---|---|---|---|---|---|
| (2229) | Lower fill of terrace F2082 | 22 | 171 | 22 | 172 |
| (2109) | Upper fill of terrace F2082 | 15 part P10 | 91 | 15 | 91 |
| **Totals** | | 47 | 526 | 48 | 527 |

**P5** (Fig 34) (2245), lower fill of terrace F2081. Gabbroic admixture, out-turned rim diameter 220mm of an apparent bowl shape, band of untidy incised decoration beneath. This kind of decoration may belong to a late phase of Trevisker ceramics, see **P12** below.
**P6** (not illus) (2245) lower fill of terrace F2081. Gabbroic admixture, two girth sherds with zigzags of complex parallel twist cord above row of finger nail impressions. Broadly Style 2.
**P7** (not illus) (2245), lower fill of terrace F2081. Gabbroic admixture, girth sherd from large vessel, lines of impressed cord zig zags above horizontal band of complex multiple parallel twist cord. Style 2.
**P8** (not illus) (2245), lower fill of terrace F2081. Gabbroic admixture, part of horizontally perforated lug, not from other enumerated vessels.
**P9** (not illus) (2244), upper fill of terrace F2081. Gabbroic admixture, heavy expanded rim about 35mm across (*cf* Trethellan fig 42, No 15), sherds all abraded including another expanded rim. Both rims from Style 2 type vessels.

STRUCTURE 2
**P10** (Fig 34) (2691), fill of pit F2689 (structure 1, Phase 2) and joining sherd from (2109) (structure 2). Gabbroic admixture, slightly out-turned bevelled rim 220mm diameter: design of impressed double parallel twist cord lines, three horizontal lines below rim with evenly spaced slanting lines below crossed by a single horizontal line. Style 2 but with unusual variation of design.

PIT GROUP 1
**P11** (Fig 34) (1105), fill of pit F1104. Two joining sherds, gabbroic admixture, with two parallel flat cordons around girth diameter 360mm, area of infilled incised triangles above. Flat cordons are very typical of the Trevisker style, at Trethellan Farm, Newquay, for example (Woodward and Cane 1991, fig 46, no 37), but close-spaced incised lines infilling the design are unusual, with the only other examples known from a house at Tremough, Penryn and a pit at Trevassack Farm, Hayle (Quinnell 2016). The Tremough example is associated with Late Bronze Age Plain Wares overlying the infill of a sunken-floored, presumptively Middle Bronze Age house (Quinnell 2014, fig 3.3, 69) and was broadly associated with SUERC-47299 1053–901 cal BC (OxCal 4.1). The Trevassack Farm example came from a structured deposit in a pit associated with SUERC-67231 calibrating to 1110–1012 BC

**Table 4** Details of Middle Bronze Age pottery from contexts in pit group 1 by sherd number and weight

| *Context* | *Details* | *Gabbroic* | | *Gabbroic admixture* | | *Totals* | |
|---|---|---|---|---|---|---|---|
| (1088) | Fill of pit F1086 | 1 | 27 | | | 1 | 27 |
| (1090) | Fill of pit F1086 | | | 2 | 30 | 2 | 30 |
| (1105) | Fill of pit F1104 | | | 2 **P11** | 47 | 2 | 47 |
| (1107) | Fill of pit F1106 | 1 | 23 | | | 1 | 23 |
| (1117) | Fill of pit F1116 | 12 **P12** | 242 | | | 12 | 242 |
| (1121) | Fill of pit F1120 | 15 | 262 | | | 15 | 262 |
| Totals | | 29 | 554 | 4 | 77 | 33 | 631 |

(68.2 per cent) or a series of dates within the range 1191–940 BC (95.4 per cent) (Quinnell 2016). There are thus reasonable grounds for considering this version of Trevisker decoration late within the ceramic series.

**P12** (Fig 34) (1117), fill of pit F1116. Gabbroic, bowl with simple flat-topped rim 220mm in diameter, one surviving small square lug, narrow band of untidy incised decoration. Possibly late Trevisker in style, see below.

### Other Middle Bronze Age contexts and residual finds from later contexts

**P13** (Fig 34) (1019), fill of pit F1018 Upper part of vessel, gabbroic, simple rounded rim 190mm diameter, irregular horizontal incised line above sparsely set slanting incised lines: the break may lie along a second horizontal incised line, making the decoration similar to that on **P12**. Possibly late Trevisker in style, see below.

**P14** (not illus) (2031), vessel base in pit F2030. Gabbroic, whole base approximately 250mm

**Table 5** Details of Middle Bronze Age pottery from other contexts by sherd number and weight. Small gabbroic sherds are included in this table even if they are not definitely Bronze Age.

| *Context* | *Details* | *Gabbroic* | | *Gabbroic admixture* | | *Totals* | |
|---|---|---|---|---|---|---|---|
| (1019) | Fill pit F1018 | 2 **P13** | 117 | | | 2 | 117 |
| (2031) | Fill of pit F2030 | 1 **P14** | 1077 | | | 1 | 1077 |
| (2226) | Fill of pit F2225 | | | 2 | 19 | 2 | 19 |
| (2115) | Fill oven F2113 (residual find) | 1 | 1 | | | 1 | 1 |
| (2102) | Fill ditch F2069 (residual find) | 1 | 37 | | | 1 | 37 |
| (2118) | Fill of ditch F2066 (residual find) | | | 2 | 12 | 2 | 12 |
| (2295) | Fill of natural hollow F2294 | | | 1 | 5 | 1 | 5 |
| (1053) | Fill of ditch F1132 (residual find) | 1 | 4 | | | 1 | 4 |
| (2709) | Fill of ditch F2063 (residual finds) | 2 | 9 | | | 2 | 9 |
| (2719) | Fill of ditch F2736 (residual find) | 1 | 1 | | | 1 | 1 |
| (2236) | Fill of ditch F2828 (residual finds) | | | 3 | 51 | 3 | 51 |
| **Totals** | | 9 | 1246 | 8 | 87 | 16 | 1332 |

diameter present but virtually no vessel wall, which is approximately 15mm thick. Top of some sherds worn as though the base had been used on its own for a while after breakage. Note that this need not be Trevisker.

### Comment on the Trevisker assemblage

The sole use of gabbroic fabrics is usual in Cornish Trevisker assemblages, as is a proportion of the vessels being made in gabbroic admixture: gabbroic clays from the Lizard to which non-gabbroic inclusions have been added. The gabbroic fabric, 53 sherds (1859g), form 42 per cent and the gabbroic admixture, 129 sherds (2529g), form 58 per cent of the assemblage. It is unusual for these two fabrics to be so clearly distinguished (see Woodward and Cane 1991, 104).

All the gabbroic admixture fabrics appear to have the same added material. Examination by Roger Taylor of a sherd from **P2** confirms the clay as gabbroic but identifies the addition as angular to sub-angular fine-grained feldspar/amphibole metabasic fragments: such metabasic rocks do not occur within around 8 km of the site but have a wide range of possible origins in west Cornwall.

The great variety in Trevisker decoration and the difficulty in finding exact parallels have been noted for other sites (Quinnell 2014, 67). In other words, the range of decorative motifs and mediums allowed an almost infinitely variable range of patterns. The general style of the decoration of **P2–10** (with the exception of **P5**) finds parallels in the assemblages from Trethellan Farm, Trevisker, Tremough and Scarcewater referenced above. All these sites have sunken-floored Middle Bronze Age houses with the majority of the finds coming from the floor fill, with suggestions of deliberation in their deposition. The main floruit of these houses appears to have been from the fourteenth to the twelfth centuries cal BC (Quinnell 2012, table 3). The radiocarbon date from fill 2274 of pit F2272 in structure 2, 1395–1207 BC, is consistent with this floruit and appropriate for the ceramics. All the vessels from the sunken-floored structures at Tolgarrick Farm are large and of Parker Pearson's Style 2, the common storage and cooking vessels of this period. The quantity of the vessels represented is not large but again this is a feature of many of these houses such as those at Scarcewater (Quinnell 2010).

**P5** from structure 1 is an apparent bowl form which, with its untidy decoration, does not fall within Parker Pearson's classification of Styles. It may belong in a late phase of Trevisker ceramics which overlaps with Late Bronze Age Plain Ware in the eleventh and tenth centuries BC. The possibility of a late Trevisker incised style was hinted at by Woodward and Cane (1991, 123) and has recently received support from the material from pits at Porthleven and from the last significant prehistoric occupation at Gwithian, Phase 5 (Quinnell 2012, table 4 and references). The small sherd **P5** may either be intrusive in structure 1 infill or could indicate a generally late date for the remainder of the Trevisker assemblage from this structure.

If the features in pit group 1 are all contemporary, then they may belong to the late Trevisker eleventh to tenth century phase. The reasons for a late date for **P11** are given above. **P12** has parallels with a bowl from one of the pits at Porthleven associated with SUERC-30658 calibrating to 1120–910 BC (Quinnell in Morris, forthcoming). **P13** from pit F1018 to the north of pit group 1 may also belong in this phase.

## *Iron Age*

The fabrics are all gabbroic and divide into well-made gabbroic and Standard gabbroic, following the usage in the report on Trevelgue Head near Newquay (Quinnell 2011a). Well-made gabbroic, generally burnished, was in use to some extent during the end of the Early Iron Age and was the principal fabric of South Western Decorated ware in the Middle Iron Age and of Cordoned ware in the Late Iron Age, but hardly continues into the Roman period. Standard gabbroic is present in small quantities throughout the Later Iron Age and becomes the main Roman-period fabric.

### Possible Early Iron Age

**P15** (not illus) (2045), fill of field ditch F2066. Well-made gabbroic, part of rim and shoulder of vessel with slight neck, probably from the Early Iron Age Plain Jar Group *c* 600–300 BC (Quinnell 2011a, 158–163; 2011b, fig 3, no 3). There is also the possibility that the vessel is an undecorated understated version of the common Middle Iron Age jar Type BD6.1 as defined at Trevelgue Head (Quinnell 2011b, fig 4).

### Middle Iron Age and Late Iron Age

Formal and decorative features are the only way of distinguishing between Middle and Late Iron Age

**Table 6** Details of Iron Age pottery by sherd number and weight

| *Context* | *Details* | *Well-made gabbroic* | | *Standard gabbroic* | | *Totals* | |
|---|---|---|---|---|---|---|---|
| (2042) | Fill of ditch F2826 | | | 8 | 26 | 8 | 26 |
| (2045) | Fill of ditch F2066 | 2 **P15** | 37 | | | 2 | 37 |
| (2085) | Fill of ditch F2826 | 2 | 4 | 9 | 33 | 11 | 37 |
| (2088) | Fill of posthole F2087 | 3 | 10 | | | 3 | 10 |
| (2250) | Fill of ditch F2828 | | | 1 | 14 | 1 | 14 |
| (2288) | Fill of pit F2287 | 5 **P16** | 90 | | | 5 | 90 |
| (2289) | Fill of ditch F2066 | 7 **P16** | 215 | | | 7 | 215 |
| (2256) | Fill of ditch F2064 | 8 **P17** | 115 | | | 8 | 115 |
| (2340) | Structure 3 ditch F2706 | 3 | 48 | | | 3 | 48 |
| (2575) | Structure 3 gully F2705 | 2 **P18** | 19 | | | 2 | 19 |
| (4043) | Fill of ditch F4050 | 10 | 67 | | | 10 | 67 |
| **Totals** | | 42 | 605 | 18 | 73 | 60 | 678 |

pieces. Contexts for which no comment is made below may belong to either period. The general classification and chronology of Middle Iron Age South Western Decorated ware is discussed in the report on Trevelgue Head (Quinnell 2011a). For Late Iron Age Cordoned ware, Threipland's (1956) alphabetic typology still applies, with modern dating summarised by Quinnell (2011b).

**P16** (not illus) (2289), fill of field ditch F2066 and joining sherds from (2288), fill of pit F2287. Well-made gabbroic, girth from large version of South Western Decorated jar with cordon below neck and finely incised curvilinear design, infilled with sparse rouletting, sherds much abraded. The large size of the vessel is unusual but not unknown in this ceramic style (Quinnell 2011a, 183 and table 7.3). The presence of a cordon on decorated vessels is not unknown (*ibid*, 180). This suggests a fusion between incoming Late Iron Age Cordoned ware, present from the late second century BC, and South Western Decorated styles. All the examples known, such as that Killibury hillfort, Egloshayle (Miles 1977, fig 41, 17), come from sites which also have Cordoned ware.

**(2085)**, fill of ditch F2826 Contains some small well-made gabbroic sherds with rouletted impressions, South Western Decorated.

**(2340)**, fill of structure 3 ditch F2706 contains sherd with an abraded South Western Decorated incised design.

**(2088)**, fill of posthole F2087 contains a sherd with an abraded South Western Decorated incised design.

**(2250)**, fill of ditch F2828 contains a sherd with a cordon.

**P17** (not illus) (2256), fill of field ditch F2064. Well-made gabbroic sherds all from a Cordoned ware Type D vessel. This is the principal cooking pot form in Cordoned ware, appears at some date in the 1st century BC and in this fabric may occur until the early second century AD: in the subsequent period they are replaced by Type 4 cooking jars in standard gabbroic fabric (Quinnell in Gossip forthcoming; Quinnell 2014, 114).

**P18** (not illus) (2575), fill of structure 3 gully F2705. Well-made gabbroic, Type O with cordon on girth, first century or early second century AD (Threipland 1956, fig 26).

**(4043)**, fill of ditch F4050. Well-made body sherds of Cordoned ware storage jar Types H/J, from late second century BC to early second century AD (Threipland 1956; Quinnell 2004b, 118).

### Comment on the Iron Age assemblage

The assemblage could extend from the sixth century BC through to the second century AD. In the most compressed timing it could all belong to the first centuries BC and AD, and any variation within this range is possible. It should be emphasised that although the possible range extends into the Roman period, no material need post-date the Iron Age. The radiocarbon date from (2082), fill of iron furnace F2178, of 361–162 cal BC, probably relates to activity contemporary with the use of South Western Decorated ware on the site.

## Worked flint

*Henrietta Quinnell*

A small assemblage of seven items was recovered, with the majority of these residual in later features or from overlying soil layers. The group consists of: two flint blades both with heavy usewear; two flint flakes one with possible serration; a large Greensand chert flake with nodular cortex; a burnt fragment of Portland chert; and, one unused gun flint. The small assemblage combines material of different periods; the blades are likely to considerably predate the main Middle Bronze Age activity and are therefore residual. The Greensand piece was recovered from a stakehole in structure 2 and is significant because it appears to derive from East Devon, while the Portland chert fragment, which was recovered from the subsoil layer in area D, comes almost certainly from Dorset.

## Worked stone

*Henrietta Quinnell, with petrographic comment by Roger Taylor*

Some 264 items weighing 92,393g were recovered from the excavations. A large number came from contexts associated with the two Middle Bronze Age structures (structures 1 and 2) and were broken fragments, some very small, from a limited number of saddle querns and mullers. Pit group 1, dated to the Middle Bronze Age, also produced 101 pieces. Some of the fragments had been burnt before breakage, and most gave the impression of deliberate damage.

### *Sourcing*

The items individually described below were either of Gramscatho sandstone / siltstone, and came from very local stream valleys, or were of elvan likely to have come from the Twelveheads area to the east of Carnmennellis, about 7 km west of the site. **S8**, of micaceous sandstone, is also likely to have come from this area, as is the granite and elvan of the saddle quern and muller fragments not individually described below.

### *Saddle querns*

About 25 fragments with surviving surfaces definitely came from saddle querns. A large number of smaller fragments may be from the body of such querns. These represent at least three saddle querns, two of granite and at least one of elvan.

### *Mullers*

Two mullers, **S2** and **S3**, with a single working face survived more or less intact although deliberate damage had been caused to both. One muller, **S1**, had two intersecting faces giving a 'cheese slice' cross-section, and this had also been damaged. All three had been worn smooth. These examples all have elongated triangular cross sections, a type well known from Cornish Middle Bronze Age houses, for example at Scarcewater, St Stephen-in-Brannel (Quinnell 2010).

There were at least 46 damaged pieces from mullers which ranged from one with a fracture across one end to small pieces which may have come from either one- or two-sided mullers. The lithologies appeared similar to those of the saddle querns. In addition, there were a large number of fragments which may have come from the body of either querns or mullers.

**S1** (Fig 35) (2513), fill of posthole F2512, structure 1. 180+ by 125+ by 37mm, 1224g. Two intersecting faces, both much worn, on piece from boulder. The edge of the working faces has been knocked off. Fine-grained elvan with quartz phenocrysts <4mm, hard, relatively fresh and unweathered.

**S2** (Fig 36) (2231), fill of posthole F2230, structure 2. 210 by 180 by 62mm, 1836g. One face much worn but with some striations, on piece from boulder. Two distinct damage facets. Of elvan similar to that of **S1**.

**S3** (not illus) (1028), area A subsoil. 150 by 120 by 42mm, 1043g. Single face, much worn, on chunk struck from boulder; several distinctive damage facets. Made of hard fresh elvan similar to that of **S1** and **S2** but lacking the quartz phenocrysts.

### *Other tools*

There are five broken stone tools, which have been used for rubbing, sharpening and abrasion, in various combinations. There are five unworked pieces, either local slate or sandstone cobbles, of appropriate size for use as these or similar tools, and these also have been damaged.

**S4** (not illus) (2264) fill of hollow F2263, structure 1. Flat tabular cobble, 93+ by 68+ by 20mm, one side used as rubbing stone, with a whetstone facet

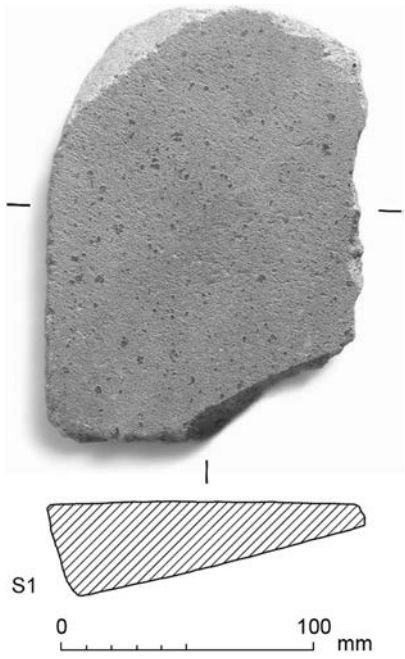


*Fig 35* ***S1*** *muller with edge fractures, posthole F2512 of structure 1. Scale 1:3. (Photograph: Gary Young.)*

along one edge, broken. A tabular river cobble of fine grained local Gramscatho sandstone.

**S5** (not illus) (2298), fill of posthole F2286, structure 1, associated with pottery vessel **P2**. Flat tabular cobble, possibly burnt, 88+ by 78 by 19mm, heavy use as rubbing stone on both sides, whetstone facet along one edge, broken and also burnt causing spalling on one surface. Fine grained local Gramscatho silty sandstone.

**S6** (not illus) (2326), fill of ditch F2328 (probably residual). Flat tabular cobble, 132 by 86 by 23mm, with one face slightly worn as rubbing stone, but with large damage facet with a distinct impact mark. Damage may indicate this belongs with the Bronze Age assemblage and therefore probably residual in an Iron Age feature. Coarser version of sandstone as **S4**/**5**.

**S7** (not illus) (1115), fill of pit F1113 in pit group 1. Oval-sectioned elongated cobble, 98+ by 46 by 32mm, both surfaces used to produce a polished effect in places, small abraded patch on surviving end, broken. Fine grained sandstone as **S4**/**5**.

**S8** (not illus) (2102), fill of ditch F2069 (residual). Flat cobble, 139+ by 51 by 20mm, patches of abrasion on surviving end, group of short grooves probably from the sharpening of points, broken. Damage may indicate this belongs with the Bronze Age assemblage. Fine grained micaceous sandstone, contact metamorphosed so not immediately local.

*Comment on the worked stone*

The deposition of such a large number of mainly small, deliberately broken, saddle quern and muller fragments in contexts connected with sunken-floored Middle Bronze Age roundhouses and their infill has not been previously found. However, there is a great deal of data on deliberate deposition of artefactual material, some of it broken, in the infill of such houses (Nowakowski 2011a), and Tolgarrick Farm provides an extreme example of this. The range of tools represented, given the number of fragments, is limited compared to those at other sunken-floored roundhouses, for example Scarcewater (Quinnell 2010) or Trethellan, Newquay (Nowakowski 1991). This limited range may relate to the nature of the structured deposition on the site. However, multi-use stone tools of Middle Bronze Age date are frequent in Cornwall.

## Fired clay

*Cynthia Poole*

An assemblage of fired clay, amounting to 392 fragments weighing 18,608g, was recovered from a variety of Bronze Age contexts. This was concentrated in two groups: one in area A where the fired clay had been deposited in a number of pits in pit group 1 (F1086, F1094, F1104, F1106 and F1116), whilst a second group was recovered from structures 1 and 2. In structure 1 the fragments were in posthole F2468 and infill layers (2244) and (2245), and in structure 2 in infill layer (2229). The assemblage consists of both portable items and structural material from burnt structures (for example, ovens, hearths, kilns or furnaces).

The assemblage has been recorded in respect of quantity, fabrics, forms, size, organic impressions, condition and a general description on a computerised spreadsheet, which forms part of the archive. Fabrics were examined and characterised on macroscopic features and with the aid of a ×20 hand lens.

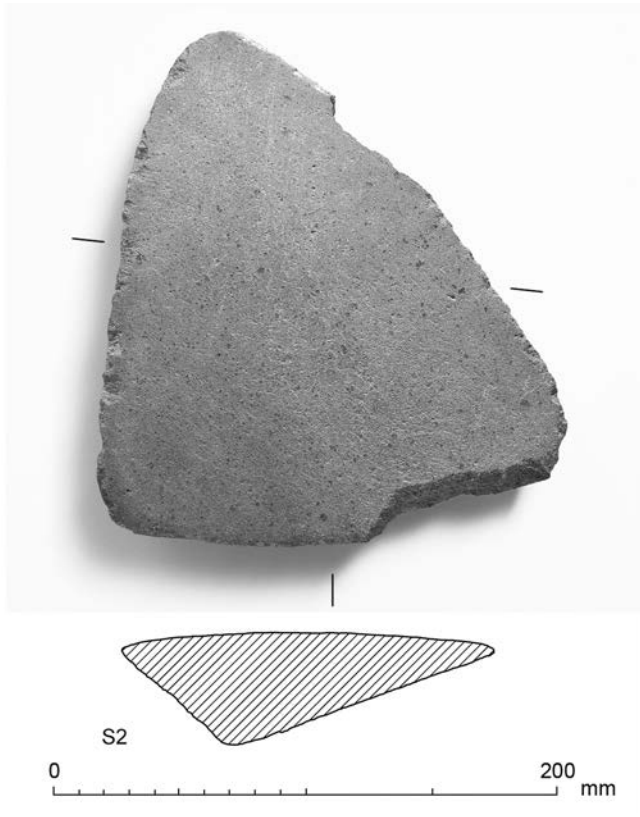


*Fig 36* ***S2*** *muller with edge fractures, posthole F2230 of structure 2. Scale 1:3. (Photograph: Gary Young.)*

*Fabrics*

The majority of the assemblage can be assigned to one fabric group, which was subdivided into three sub-types (A–C) based on the density and size of inclusions. Fabric A was a very fine sandy or silty clay generally buff, light yellowish-brown or occasionally red with mid-light grey core. In general inclusions were sparse or absent, but some diffuse pieces of unwedged clay lumps were visible, and inclusions of angular-subangular quartz or quartzite up to 3mm in size. Fabric B was identified in only three pieces from two contexts. It was purplish/pinkish or brownish-red and contained a high density of angular-subangular coarse sand and small grits including quartzite and black grits, possibly derived from igneous/metamorphic rocks, mostly 0.5–4mm, but occasionally up to 13mm and occasional greenish schistose/slaty grits 3mm or less in size. Fabric C was made in the same clay matrix as Fabric A, but contained, generally in low-moderate density, coarse-sand and grits, mainly of angular or subangular quartz or quartzite, 1–5mm in size but occasionally as coarse as 25mm.

*Portable furniture and accessories*

PYRAMIDAL PERFORATED BLOCKS

These were all made in Fabric A and all occurred in area A apart from a single example from structure 2. A near complete example (**SF54**) was found in pit group 1, in fill (1095) of pit F1094, together with fragments of one or two others. Fragments were also found in the subsoil of area A (1028). The complete example (**SF54**) was pyramidal/sub-conical in form with a flat base, sub-square with rounded corners, measured 136 by 136mm wide,

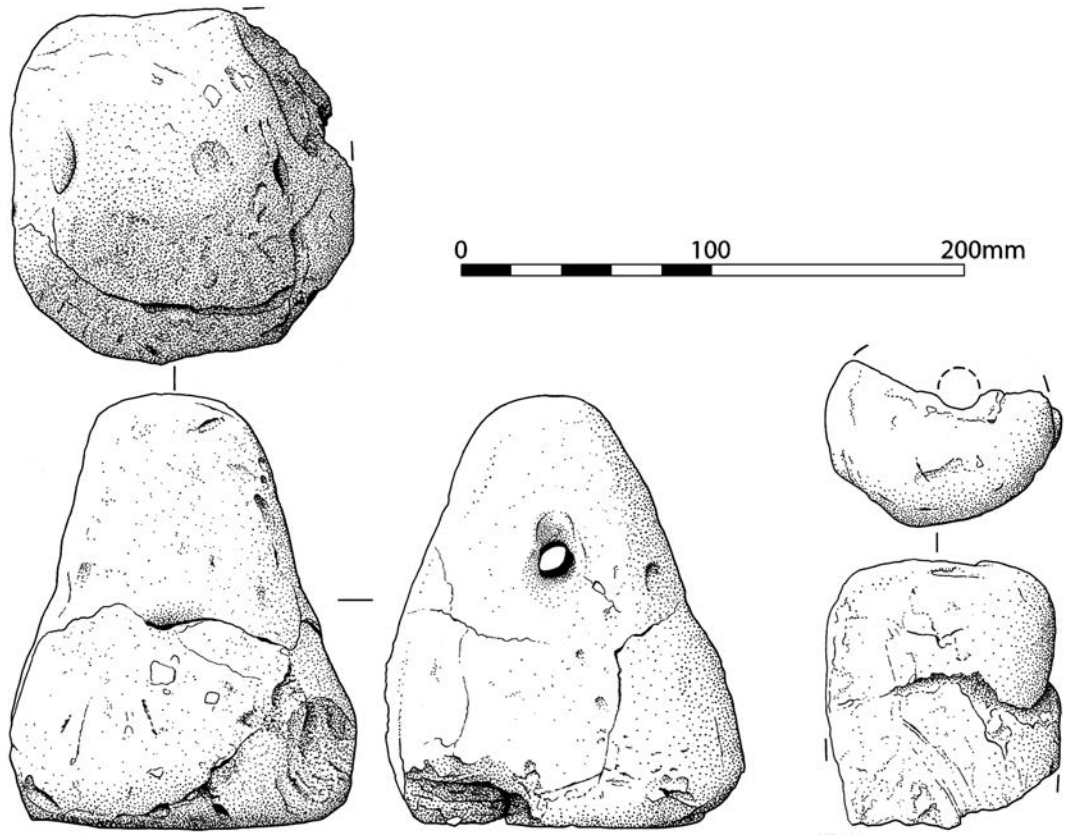


*Fig 37 Fired clay objects. Left,* ***SF54****, pyramidal perforated block from stone-lined pit F1094, pit group 1. Right, cylindrical perforated block from infill layer of structure 1. (Drawing: Jane Read.)*

narrowing to 53 by 40mm at the top and 170mm high, and weighed 2419g (Fig 37, left). The four flattened faces were hand moulded and smoothed, joined by rounded angles and with a well-rounded apex. The block is pierced by a single horizontal perforation 15–17mm diameter widening to a more oval shape 23mm long at the surface and centred 75mm from the apex. This, in common with all examples, appeared to be moderately fired and additionally the surface had been burnt grey around the upper half on one side.

### Cylindrical perforated blocks (tuyères?)

Most examples of this form were found in the fill of structure 1, with a single example from pit group 1, pit F1116, in area A, where it was associated with Middle Bronze Age Trevisker ware. No complete examples were found, but a large group representing up to eight individual objects occurred in layer (2244) with a further two in layer (2245) of structure 1. These formed cylindrical or barrel shaped blocks with flattened slightly convex ends pierced by a perforation ranging in size from 13 to 17mm diameter (Fig 37, right). Sizes range from 70mm to 105mm diameter with the maximum surviving length of 107mm. The perforations are not necessarily symmetrically placed and may occur off-centre, reflected in the variation of wall thickness, which ranged from 30 to 50mm, but in some individual examples varied from 23 to 38mm and from 35 to 41mm. It is clear from one example where the clay has sheared at an internal interface (creating the superficial impression of a much larger perforation of 50–70mm) that the objects were formed by wrapping a slab of clay around

an object, probably a stick or reed. Almost all examples were heavily fired with a large number exhibiting evidence of vitrification on the surface.

### Other furniture

A roughly-formed pedestal or support was associated with structural material from pit group 1, pit F1086 fill (1088). This piece was crudely moulded, semi-circular with a rough flat back that had probably been luted to the oven wall. The walls splayed out slightly at the base to form an expanded foot. The top had been crudely shaped with a deep fingertip depression and a rectangular recess formed where another object had been pressed into the top surface. This was not a standardised form, but created to serve the immediate needs of the moment. It was made in Fabric C and measured 75–85mm in breadth, 60mm wide and 58–71mm high.

A second small conical object with roughly moulded surface was incomplete but may have been some sort of small prop or support or possibly luting to secure an object. It measured about 60mm across and 35mm high.

The fragment of fired clay found in Structure 1 posthole F2468 had two flat moulded surfaces at right angles and is likely to part of a portable item though its form and function is uncertain: a rectangular pedestal or block is a possibility. Part of one face was heavily fired black. The surviving incomplete length and width was 50mm. It was made in the grittier Fabric B.

### Oven/kiln/furnace structure

A total of 98 fragments (11427g) were identified as oven structure, almost all of which were concentrated in pit F1086 (pit group 1) apart from a small quantity in nearby pit F1104. This includes material that can be identified as oven wall, and possibly suspended floor and dome.

The walling consists of large blocks of varying shapes and sizes. The exposed face is hand moulded with finger marks and undulations from smoothing with generally quite a crude finish. The back is undulating and irregular, probably pressed against an outer structure or the side of the subsurface feature cut. The edges of the blocks often look like interfaces within the structure, where lumps of clay have been pressed and luted together. A few wedge-shaped pieces with finger marks resulted from areas where the clay was smoothed across an already standing section of structure. One typical piece increased in thickness from 10 to 55mm; other pieces of wall structure ranged from 30 to 70mm thick.

Three fragments of thinner slabs may be from the dome or upper superstructure. One piece from (1105), pit F1104, has the form of a thin flat slab with undulating hand moulded surfaces joined by a straight edge with rounded profile. It measures 15–27mm thick and over 80mm long. Two similar pieces occurred in (1090), pit F1086.

Some of the most substantial and distinctive structural pieces take the form of a thick flat slab with two flat moulded surfaces roughly parallel: one is usually fairly flat, undulating and finger smoothed; the opposite face may be similar, but in some cases was rougher and more irregular. All pieces were characterised by a straight edge with concave profile, which may represent the positions of poles that formed an initial support for the construction. The curvature of the edges suggests that the poles ranged in diameter from 40 to 90mm, though on one piece the projected diameter would be 140mm. This piece also had evidence of a flat timber or slab pressed into the upper surface resulting in a projecting nib of clay delineating the impression. These blocks measure between 40 and 105mm thick; one was 75mm wide and the maximum surviving length was 190mm, though none are complete. A possible interpretation of these pieces is that they formed a suspended floor formed by laying large poles parallel with a gap between infilled with clay: in firing the structure the timbers were burnt out leaving in place the fired clay forming in effect a series of firebars.

### *Discussion*

*Cynthia Poole, with a note by Tim Young*

This is an exceptional group of fired clay for this period comprising well preserved examples of oven structure and furniture or accessories. Fired clay from Middle to Late Bronze Age sites is normally confined to standard items of portable furniture in the form of cylindrical or cubic perforated blocks, which have generally been interpreted as loomweights such as those from Black Patch, East Sussex (Drewett 1982).

All the fired clay from Tolgarrick is best interpreted as material associated with ovens or hearths, in preference to alternative functions that could be proposed such as weights for the perforated portable objects and building daub for

the structural fired clay. The assemblage can be divided into two groups on spatial distribution, which each comprise largely different types of object. Group 1 was deposited in a cluster in pit group 1 and comprised oven structure and pyramidal perforated blocks. Group 2 occurred in structures 1 and 2 in the layers infilling their terraces and consisted mainly of cylindrical perforated blocks, which may be tuyères together with a little structural fired clay. A fragment of perforated block (?tuyère) also occurred in Group 1 and a pyramidal block fragment in Group 2 suggesting both groups are broadly contemporaneous. However, the pottery evidence (Quinnell, above) indicates that Group 2 dates from the fourteenth to the twelfth centuries cal BC and Group 1 from the eleventh to tenth centuries BC.

The bulk of Group 1 was deposited in two pits: F1086 contained the structural oven fragments and F1094 the pyramidal blocks, while a small quantity of structural material of the same character to that in F1086 was found in nearby pits F1104 and F1106. The pieces of cylindrical perforated block were found in F1116. While all the Group 1 material was moderately to well fired, there is no evidence of intense high temperature firing that could indicate industrial activity and it is possible that the fired clay represents domestic functions. However, the evidence for the oven structure suggests something more elaborate than a single chamber oven for baking had been constructed, while the large pyramidal blocks are unique with no parallels known to the author and so possibly were made for a specialised activity. The pyramidal or oblong 'weights' or blocks commonly found on Late Bronze Age sites and well documented from Willington, Derbyshire (Elsdon, 1979) and Bestwall Quarry, Dorset (Woodward 2009) are smaller and not directly comparable to those found at Tolgarrick, which are much larger.

The interpretation of the oven remains suggest the structure was dual chamber, with the walls constructed of lumps of clay pressed together, but in places with clay smeared out and thinning across the surface, possibly to ensure blocks were firmly luted together. Evidence for a suspended floor is provided by the slabs with large pole impressions forming their edges: the poles appear to have been laid horizontally with a gap between, which was filled with clay that was roughly smoothed top and bottom to create a flat plate. In firing the structure, the poles would have been burnt out to leave gaps between the sections of clay in effect creating a grill of firebars. Whether the upper chamber of the structure was fully enclosed or only partially is uncertain, although the few pieces of thin slabs may indicate some sort of dome or covering was in use, though perhaps not a permanent structure. Without any evidence from *in situ* structures or even the hint of an *in situ* oven base, such an interpretation of the fired clay must be treated with caution. At this early period, evidence of elaborate structures for specialised activities is lacking: while pottery kilns commonly have two chambers, the evidence from Tinney's Lane, Sherborne, Dorset indicates pottery was still being fired in bonfire firings in the Late Bronze Age (Best and Woodward 2012). It is possible the structure was an elaborate hearth: the suspended floor in fact serving as a grate on which the fire was laid. The large pyramidal blocks may have served as pedestals around the edge of the structure, supporting cooking vessels over the fire. Ethnographic research records pyramidal or triangular blocks being used in Serbia in groups of three as tripods to support large ceramic pots used to bake bread over a hearth (Djordjevic 2005, 64–6).

Despite this, in this area close to tin sources, an industrial activity cannot be ruled out: tin melts at 232ºC and could be melted in a domestic hearth (Dungworth 2012) – though in combination with copper much higher temperatures and some form of furnace would be required. Evidence for possible industrial activity comes in the form of the heavily fired cylindrical perforated blocks with vitrified surface which form the bulk of the Group 2 fired clay.

The examples from Tolgarrick are similar in form to the perforated cylindrical blocks found on Middle and Late Bronze Age sites elsewhere and traditionally designated as loomweights. More recently, excavations at Tinney's Lane, Sherborne, Dorset have produced evidence for the Late Bronze Age of their use in association with pottery production (Best and Woodward 2012) suggesting an interpretation as oven or hearth furniture is generally more appropriate. The Tolgarrick examples are closest in form to Middle Bronze Age types, which are differentiated by more convex ends compared to the flatter end of the Late Bronze Age. However, none of the Tolgarrick examples are complete and though the diameters are comparable to examples from elsewhere, the overall lengths remain uncertain. It is possible

that the Tolgarrick examples were longer than the norm. They also differ from standard examples in their more heavily fired and vitrified character, which may indicate that they functioned as tuyères at Tolgarrick. Their form, character and method of production are similar to tuyères from later periods, such as the block tuyères from Mucking (Dungworth and Bayley 1999).

Tim Young has commented that the blocks are of a massive construction for such a small bore compared to tuyères employed in blacksmithing and very much smaller than those used in prehistoric copper smelting and iron smelting. He also noted that firing appears to be least at the ends and more intense on the sides and observed droplets of fuel ash slag within the perforation on two examples. A series of analyses were taken by handheld pXRF of representative areas of vitrification and other heat alteration. In no case was the peak for tin present at above more than trace, background levels. However, there was some variation, with analysis of one example showing considerably more tin and arsenic than the other samples, albeit still at very low levels. Although the vitrification was not sufficiently intense to indicate use associated with metalworking, these are more heavily fired than is normally found in Middle and Late Bronze Age perforated blocks suggesting their use in higher temperature activity than that associated with standard domestic ovens or hearths.

In conclusion, both the structural fired clay and portable items suggest some form of specialised activity was undertaken on the site. While the evidence could be interpreted as domestic, the unusual character of the assemblage suggests some more specialised activity is represented. The possibility of tin working has been considered, but the metallurgical evidence does not back this up. Direct evidence for Bronze Age tin working is sparse, amounting to prehistoric finds in later tin working areas and the find of tin slag in a burial at Caerloggas (Salter 1997).

## Metalworking residues and furnace lining

*Tim Young*

Archaeological investigations at Tolgarrick Farm produced possible evidence relating to two different periods of metal extraction: tin extraction in the Bronze Age and iron extraction in the Iron Age. All materials were examined visually with a low-powered binocular microscope where required. The possible tuyère specimens were analysed on a qualitative basis using a Bruker Tracer III-SD portable ×-Ray fluorescence spectrometer (instrument belonging to the Department of Archaeology, Cardiff University, and the National Museum Wales). The instrument was operated with the Bruker 'yellow' filter (300μm Al + 25μm Ti), at 40kV and 9.60 μA, with a filament current of 189 μA, for 100s. The instrument was controlled by a PC running Bruker's S1PXRF software.

### *Description of residues*

A total of approximately 163kg of materials was examined. Most of these were from iron smelting with 108kg retrieved from Iron Age furnace F2178 and a further 39kg from a variety of other features. Some 3kg of material containing a high proportion of cassiterite was recovered from three Bronze Age features. The collection also contained almost 13kg of fired clay, much in the form of perforated blocks that were probably related to the larger collection of fired clay objects described by Poole (above). It should also be noted that the assemblage assessed as fired-clay objects by Poole contained several items (Group 2) that she suggested might be tuyères. These have not been described again here, but limited analysis is presented.

#### Cassiterite

Two contexts, (2511) and (2692), comprising the fills of pit F2687 in structure 1, produced a significant combined assemblage of cassiterite-bearing materials suggestive of partly-crushed caches of tin ore. A further context, (2297), fill of posthole F2286, also in structure 1, produced a single cassiterite-rich pebble.

The two large assemblages bear pebbles extending up to 63mm maximum dimension and 88g weight (2511) and 26mm and 18g weight (2092). The larger pebbles in all three cassiterite-bearing assemblages were rounded.

In both cases the assemblages contained a proportion of angular rather than rounded material. Such angularity might reflect the immaturity of the sediment (although the larger clasts are dominantly moderately well-rounded), perhaps with such textural immaturity being more obvious in smaller fragments more strongly influenced by internal foliations. Angularity may also be due to natural breakage of the clasts (or even breakage during

recovery). Thus, even in the absence of deliberate crushing, some of the material might be expected to be classifiable as angular under the methodology employed here. The most likely source of much of the breakage, however, is deliberate crushing of the originally more rounded clasts. In an attempt to reduce the number of naturally angular fragments, they have not been recorded as 'angular' if their surfaces show polishing, a separate indicator of textural maturity.

For the assemblage from context (2692), only a relatively small proportion of the material was potentially crushed (some 13 per cent by weight of the ore), with most of the crushed material being in the 2–5.6mm size fraction. For the material from context (2511) there was some broken material up to a grain size of 30mm, but again, the majority of the potentially crushed material was in the 2–5.6mm size fraction – but here comprising 47 per cent of the overall ore assemblage by weight.

Context (2297) produced a single rough irregular pebble, measuring 40x20x17mm. It was formed mainly of a pale crystalline material, probably quartz, but had a variable texture with fine zones of darker colour. This was a cassiterite-bearing vein fragment, but of a somewhat different texture to those in the main two cassiterite-bearing assemblages.

### In situ iron-smelting residues

The most significant occurrence of iron-smelting residues was within furnace F2178. Furnace F2178 (dated to 361–162 cal BC (SUERC-67876)) produced an assemblage of approximately 109kg of residues, 80kg of which were lifted as a relatively complete 'furnace bottom' – context (2180). Of the recovered residues that were not attached to this block, approximately 20.6kg were probably originally contiguous sections of the furnace bottom, suggesting that it had an original overall weight of approximately 100kg.

The furnace was constructed over a cut, 1.15m in length and 0.80m wide, pear-shaped in plan, with the deepest section (approximately 0.21m surviving depth) towards the wider end. Although the cut was heavily truncated, the furnace bottom it contained survived to almost 300mm maximum thickness. The furnace bottom was approximately 700mm wide and (on its upper surface) 320mm front to back, and a maximum of 550mm deep (Figs 38–39). The main body of the cake was plano-convex, with a lower bowl filled by apparently flow lobed material, overlain by a layer of rusty slag with abundant fine charcoal. There was a marked lobate lip along the contact between the wall and the top of the lobed slag fill. The upper section of the furnace bottom showed overhanging furnace ceramic to a line approximately 50mm inward of the maximum rearward extent of the lobes. The upper surface of the cake was planar centrally, but to either side it showed a substantial upward extension of dense slag against the lateral walls. These dense slag masses were approximately 100mm thick, this leaving a central gap down to the planar surface of approximately 400mm width.

The rear (i.e., south-western) and lateral faces of the slag bowl (below the lobed lip) show contact with shillet, fragments of which form an indurated coating to this side of the bowl. At the front (north east) the base of the furnace bottom, as well as the base of many of the detached fragments, was formed of flow lobed slags, with a very shiny non-wetted surface. A large detached block weighing 5.5kg shows the flow-lobed slag formed a build-up 50mm thick in the base of the pit overlain by at least 110mm of massive, or at least not certainly flow-lobed, slag. The base of the furnace bottom shows a neatly rounded form beneath the lobate lip, but probably vertical sides above the lip.

The frontal face of the slag cake shows the open moulds of large wood fragments, with a maximum observed size of 80mm by 50mm by 35mm. Similar moulds occur in the detached material and presumably continue within the furnace bottom. Detached fragments of the furnace bottom show imprints of wood of at least 140mm in length. In the front region the lowest slags show lobate lower surfaces and thus do not show any interaction with the shillet substrate.

The surviving fragments of ceramic hearth lining are strongly foliated, perhaps because of the influence of phyllitic debris. The surviving layer is typically less than 25mm thick. A substantial piece of lining with a much more oxidised colour suggests the location of the blowhole, making it reasonably certain, from both the bilateral symmetry of the hearth bottom and location of the reddening that the furnace was blown from a single direction (the south west), with the slag flowing towards the narrow end of the 'pear'-shaped plan.

Images and drawings of the furnace during excavation show that some of the large detached blocks of slag were originally close to the wall at both sides of the front face of the furnace bottom,


*Fig 38 Top view of 'furnace bottom' (2180) from furnace F2178. Letters a–d refer to viewpoints in Figure 39.*

with no significant slag blocks found across the arc of the pit between them. This would support the suggestion that the narrow end of the 'pear'-shape formed a gap in the curving wall line and was probably either a simple arch, or probably more likely an extension to the furnace.

Context (2180) yielded two small fragments of slag film suggestive of being pieces from a slag film formed on the tip of a tool. Such films are common finds in smithing assemblages, where they form on the tips of the smith's tongs and poker – but in this instance they have a shape suggestive of formation on the tip of a 42mm wide prise bar.

### Ex situ iron-smelting residues

There were some 31.9kg of iron-smelting slag and 7.2kg of furnace ceramic recovered from other features. This collection adds little to the understanding of smelting on the site, for they closely resemble the equivalent *in situ* materials; including evidence for very thick furnace bottom slag. One important piece is a fragment of furnace ceramic from context (2288), fill of pit F2287, which may be from the base of the 'bottle-neck': the junction of the dome and chimney sections of the furnace superstructure.

## *Discussion*

### Cassiterite

The Tolgarrick cache of cassiterite parallels similar finds at both Higher Besore, Kenwyn (Young 2008) and on excavations for the Truro Eastern District Centre at Tregurra (Young 2014). The existence

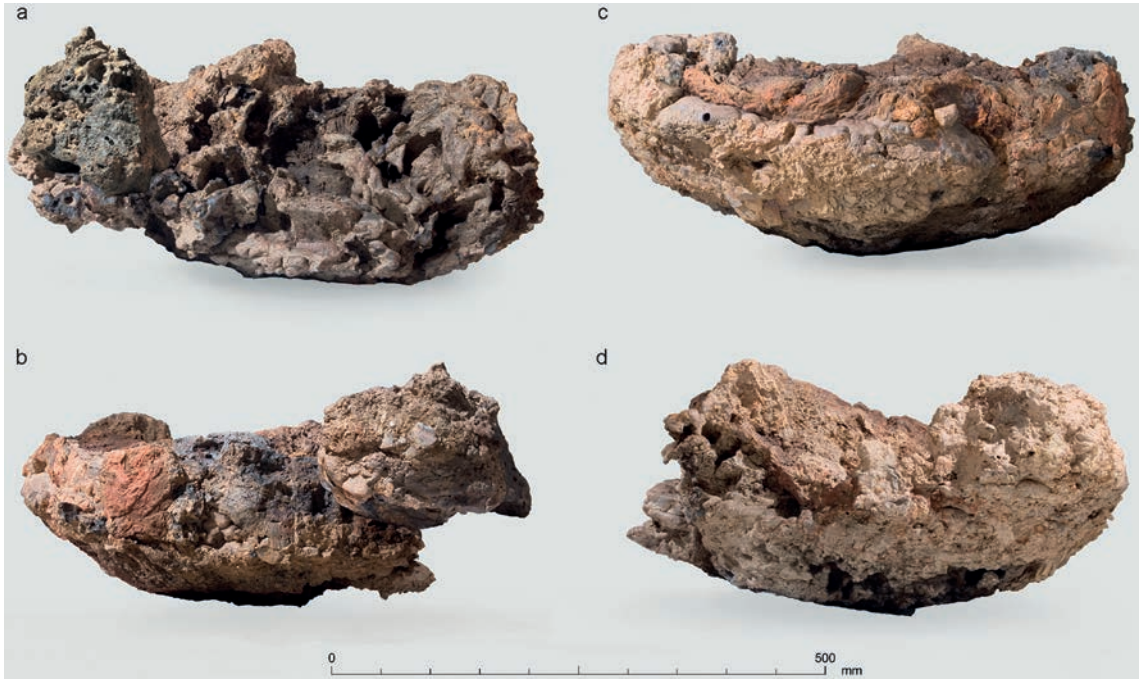


*Fig 39 Views of 'furnace bottom' (2180) from furnace F2178.*

of this cluster of sites, documenting the industry through the deposition of raw ore on higher ground adjacent to the mineral rich or placer-containing valleys, is thus particularly telling.

Evidence for tin working in the Bronze Age has been rare, despite the probable large volume of extraction. The subsequent reworking of the tin stream deposits, particularly in medieval and post-medieval times, has left little possibility for evidence to survive within the areas that would have provided the tin ores in the Bronze Age. Alluvial placer deposits (i.e., stream bed deposits) are known to have been worked from the Carnon Valley 5 km south west of the site (Cornwall and Isles of Scilly Historic Environment Record, no. 38231), and similar sediments may have occurred in the valley of the Calenick stream, immediately south of the site.

There is no certain evidence for tin smelting on site. However, the circumstantial evidence of the close association with burnt deposits and with the possible tuyères is certainly suggestive. There were no finds of tin slag, but in the current lack of understanding of Bronze Age tin production, smelting in a shallow hearth with a low-slag process is not inconceivable, although no evidence for this was found on the site.

### Iron smelting

Furnace F2178 provides a very important insight into Middle Iron Age smelting in south-west Britain. Unfortunately, the date from the furnace covers a wide period of the Iron Age radiocarbon 'plateau', 361–162 cal BC (SUERC-67876). Very few sites of the Middle Iron Age are known in the south west: a smelting furnace in the Tregurra Valley, Truro (Young 2014), 2.5 km north east of Tolgarrick is more firmly dated to the fourth century BC (410–290 cal BC; SUERC-64586) and the smelting at Trevelgue Head, Newquay (18 km north of Tolgarrick Farm) is also of the fourth- to second-century BC period (Dungworth 2011). Slags of similar appearance (Young 2008) to the present material on the Richard Lander School site, Kenwyn (3 km west-north-west of Tolgarrick Farm) were in contexts apparently of Late Iron Age date.

The character of furnace pit F2178 as a pear-shaped pit with a gently sloping extension to the north east, strongly suggests that the furnace opened on that side. Such an opening would permit

both removal and slag clearance.

For early (i.e. Iron Age and Roman) furnaces, the only large diameter examples are those with a domed (or bottle-shaped) superstructure, in which the lower section, the furnace chamber, is wider than an upper shaft (or chimney) section. It is also a characteristic of both Iron Age and Roman examples of these in Britain to have a very wide furnace arch. For the Tolgarrick example, both the diameter of the furnace chamber and the potential width of the opening would be exceptionally large for a typical simple shaft furnace. Despite the lack of surviving walls, some interpretation may be made of its likely superstructure, with the pear-shaped plan strongly reminiscent of that of Iron Age 'domed' furnaces.

The best-known examples of this general type in Britain are the very large Roman furnaces at Laxton, Northamptonshire (Crew 1998). These had furnace chambers up to 1.5m in diameter with arches 0.8m wide. Similar but slightly smaller furnaces are now also known from the Weald, with examples at Little Furnace Wood (Young 2011) and Bexley (work in progress), both of which had internal diameters of 0.7m–0.8m and arches of almost a similar width. Domed furnaces are also becoming increasingly recognised in the Iron Age of the south east of England such as at Sindlesham (Lewis *et al* 2013) and Wokingham (author's work in progress). The Tolgarrick furnace therefore provides strong evidence to extend the known distribution of dome furnaces.

For the Tolgarrick furnace, a diameter of 0.8m is just too great for any meaningful ventilation from a single point in a shaft configuration. It is thus likely that this example is a domed furnace with multiple blowholes. The furnace bottom shows raised areas of lining-influenced slag on either side, a central slag mass that only extended 75 per cent of the way across the pit from the rear wall, and a zone of intense slag/wall interaction along the rear wall. Thus, it is clear that the rear of the furnace was very hot. Lateral tuyères alone can leave the back face of the furnace relatively cold, but it remains uncertain whether the furnace was blown with multiple tuyères to rear and side, or solely from the rear.

## Animal bone

*Charlotte Coles*

A single fragment of animal bone (0.2g) was recovered from context (1105), fill of pit F1104 in Bronze Age pit group 1. This is a piece of mammal bone, but due to its size it cannot be identified to species or element.

## The charred plant remains

*Wendy J Carruthers*

Thirty soil samples were taken during the excavations in order to obtain environmental information. Samples were processed using standard floatation methods. A Siraf-type tank was used with the flot being retained on a 250-micron mesh sieve and residues being washed through 5.6mm, 2mm and 500 micron sieves. The coarse residues were sorted for artefacts and ecofacts using an illuminated hand lens. Following an initial assessment, 11 samples were selected for full analysis.

Prior to sorting under an Olympus SZX7 stereoscopic microscope, each sample was dry-sieved so as to maximise efficiency, using a stack of 3mm, 1mm and 250-micron sieves. This also enabled the larger (>3mm), identifiable charcoal to be extracted for analysis.

The results of the analysis are presented in Table 7. Zohary and Hopf (2000) have been used for the cereal nomenclature and Stace (2010) was used for the remaining species. Habitat and ecological information were taken from Stace (*ibid*), as well as Hill *et al* (1999) and Ellenberg (1988).

### *Bronze Age structures*

STRUCTURE 1

*Posthole F2286, contexts (2297), sample 35, and (2298), sample 36, associated with the deposition of a pottery vessel* – The sample from the fill of the pot (sample 35) only produced two charred common weed seeds; an embryo of black bindweed (*Fallopia convolvulus*) and a common chickweed seed (*Stellaria media*). The sample from the deposit (2298) beneath the pot contained another charred common weed seed (a Chenopodiaceae embryo) and a few very small charred fragments of bracken pinnule (*Pteridium aquilinum*). It is possible that bracken had been used as tinder or fuel, but the weeds were probably accidental contaminants of whatever had been burnt.

*Pit F2686, context (2509), sample 45* – This small soil sample produced a poorly-preserved barley grain, an indeterminate cereal grain fragment and a black bindweed seed. The assemblage

**Table 7 Charred plant remains**

| *Feature* | *Post-Roman oven* | *Struc 2 base fill* | *Struc 2 pit* | *Struc 1 posthole* | *Struc 1 posthole* | *EBA pit* | *Struc 1 pit* | *Pit group 1* | *Pit group 1* |
|---|---|---|---|---|---|---|---|---|---|
| *Sample no.* | *14* | *29* | *33* | *35* | *36* | *38* | *45* | *49* | *54* |
| *Context no.* | *(2114)* | *(2229)* | *(2274)* | *(2297)* | *(2298)* | *(2345)* | *(2509)* | *(1089)* | *(1095)* |
| *Feature no.* | *F2113* | *F2082* | *F2272* | *F2286* | *F2286* | *F2343* | *F2686* | *F1086* | *F1094* |
| CEREALS | | | | | | | | | |
| Triticum aestivum/turgidum (free-threshing wheat grain) | 2 | | | | | | | | |
| Triticum sp./Secale cereale (wheat/rye grain) | 1 | | | | | | | | |
| Hordeum vulgare L.emend. (hulled barley grain) | 26 | | 1 | | | | | | |
| Hordeum sp. (barley grain) | 87 | | | | | 10 | 1 | | |
| Secale cereale L. (rye grain) | 6 | | | | | | | | |
| Avena sativa-type grain (cf. common oat grain) | 51 | | | | | | | | |
| Avena sp.(wild/cultivated oat grain) | 251 | | | | | | | | |
| Indeterminate cereals | 83 | | | | | 20 | 1 | | |
| CHAFF | | | | | | | | | |
| Triticum dicoccum (emmer glume base) | | | cf.1 | | | | | | |
| Avena sativa/strigosa (cultivated oat floret base) | 2 | | | | | | | | |
| Avena sp. (oat awn frag.) | ++ | | | | | | | | + |
| WEEDS, ETC. | | | | | | | | | |
| Pteridium aquilinum (L.)Kuhn (bracken pinnule frag.) EGWa | | | 6 | | 3 | | | | |
| Crataegus monogyna Jacq. (hawthorn fruit stone) HSW | | cf.2 | | | | | | | |
| Corylus avellana L. (hazelnut shell frag.) HSW | | | | | | 42 | | | |
| Persicaria maculosa/lapathifolia (redshank/pale persicaria achene) Co | 5 | 1 | | | | | | | |
| Fallopia convolvulus (L.) A.Love (black bindweed achene) CD | | | | 1e | | | 1 | 1e | |
| Rumex acetosella L. (sheep's sorrel achene) EGCao | 1 | | | | | | | | |
| Stellaria media(L.) Vill. (common chickweed seed) Cno | | | 2 | 1 | | | | | |
| Chenopodium album L. (fat hen seed) CDn | 51 | | | | | | | | |
| Chenopodiaceae embryo CD | 9 | | 2 | | 1 | | | | |
| Montia fontana ssp. chondrosperma (Fenzl.) Walters (blinks seed) Gw | | | 1 | | | | | | |
| Galium palustre L. (common marsh-bedstraw nutlet) GwPMF | | | 1 | | | | | | |
| Galium aparine L. (cleavers nutlet) CDSH | | | cf.1f | | | 1f | | | |
| Linum usitatissimum L. (cultivated flax seed) | | | 2 | | | | | | |

**Table 7 cont.**

| *Feature* | *Post-Roman oven* | *Struc 2 base fill* | *Struc 2 pit* | *Struc 1 posthole* | *Struc 1 posthole* | *EBA pit* | *Struc 1 pit* | *Pit group 1* | *Pit group 1* |
|---|---|---|---|---|---|---|---|---|---|
| *Sample no.* | *14* | *29* | *33* | *35* | *36* | *38* | *45* | *49* | *54* |
| *Context no.* | *(2114)* | *(2229)* | *(2274)* | *(2297)* | *(2298)* | *(2345)* | *(2509)* | *(1089)* | *(1095)* |
| *Feature no.* | *F2113* | *F2082* | *F2272* | *F2286* | *F2286* | *F2343* | *F2686* | *F1086* | *F1094* |
| Linum usitatissimum L. (cultivated flax capsule valve) | | | | | | | | 1 | |
| Plantago laceolata L.(ribwort plantain seed) Go | 2 | | | | | | | | |
| Lapsana communis L. (nipplewort achene) DHWo | 1 | | | | | | | | |
| Chrysanthemum segetum L. (corn marigold achene) AD | 271 | | | | | | | | |
| Bromus sect. Bromus (brome grass caryopsis) AD | 12 | | | | | | | | 1 |
| Avena/Bromus sp. (oat/brome grain) | 233 | | | | | | | | |
| Arrhenatherum elatius var. bulbosum (Willd.) St-Amans (onion couch tuber) ACG | | | | | | | | | 1f |
| Danthonia decumbens (L.) DC (heath-grass caryopsis) EGa | | 1 | | | | | | | |
| Poaceae (grass caryopsis) CDG | 6 | | 3 | | | | | | |
| Indeterminate possible charred berry fragment | | | | | | | | 1 | |
| Total charred plant remains | 1100 | 4 | 20 | 2 | 4 | 73 | 3 | 3 | 2 |
| Volume of soil processed (litres) | 5 | 10 | 5 | 1 | 5 | 10 | 1.5 | 5 | 10 |
| Charred frags per litre | 220 | 0.4 | 4 | 2 | 0.8 | 7.3 | 2 | 0.6 | 0.2 |

Table 7: Key to habitat preferences.
A = arable; C = cultivated; D = disturbed; E = heathland, moors; F = fens; G = grassland H = hedgerows; M = marsh, bog; P = ponds, ditches, rivers; S = scrub; W = woods; a = acidic soils; n = nutrient-rich soils; o = open ground; s = sandy soils; w = wet / damp soils.

probably represents burnt domestic waste that has been deposited during use of the structure.

### Structure 2

*Charcoal-rich basal fill of building terrace F2082, context (2229), sample 29* – Traces of hawthorn stone (*Crataegus monogyna*), redshank/pale persicaria (*Persicaria maculosa/lapathifolia*) and a heath-grass seed (*Danthonia decumbens*) were present in this sample, representing scrub/hedgerow fruits, a common weed of disturbed/cultivated places and an acidic grassland plant, sometimes found as an arable weed. These items probably represent low-level background burnt waste from hearths, possibly including burnt domestic waste, bedding and fuel.

*Pit F2272, context (2274), sample 33* – A single well-preserved hulled, twisted barley grain (*Hordeum vulgare*) was submitted for radiocarbon dating. A Middle Bronze Age date of 1395–1207 cal BC at 95.4 per cent probability (SUERC-68429; 3030±29) was returned. A possible emmer glume base was too heavily encrusted with silt to be sure of the identification (*Triticum* cf. *dicoccum*). Two poorly preserved seeds of cultivated flax (but with some areas of seed coat with which to confirm the identification), *Linum usitatissimum*, were recovered, providing evidence for its cultivation for oil and/or fibre. Weed seeds that probably were present as crop contaminants included common chickweed, Chenopdiaceae (fat hen etc. seed embryo) and cleavers (cf. *Galium aparine*). Several small fragments of bracken pinnule may represent material gathered for bedding or fuel/tinder. Together with sample 29 this small amount of charred material provides some information about the activities taking place on the building terrace, including day-to-day de-husking and cleaning of cf. emmer and barley and possibly the extraction of oil from flax seeds using heat. In addition to three small grass seeds, another grassland herb that could have been brought in amongst hay from

damp meadows was a blinks seed (*Montia fontana* subsp. *chondrosperma*). Hay may have served as bedding, flooring or fodder for livestock.

### *Other Bronze Age features*

*Pit F1086, context (1089), sample 49; pit group 1* – This sample came from a charcoal-rich fill of a feature containing dumped fired clay. The only charred plant remains present were an embryo of black bindweed and a flax capsule valve (*Linum usitatissimum*).

*Pit F1094, context (1095), sample 54; pit group 1* – This pit contained structured deposits and fired clay objects. However, the charred plant assemblage was very small, consisting of an oat awn fragment (possibly intrusive as charred oat awns break into very small fragments and can be washed down the soil profile), a brome grass caryopsis and a fragment of onion couch tuber (*Arrhenatherum elatius* var. *bulbosum*).

*Pit 2343, context (2345), sample 38* – This pit contained sherds of an Early Bronze Age Food Vessel. The sample produced the second largest concentration of charred plant remains, consisting of fragments of hazelnut shell and poorly preserved (eroded), small barley grains. Although only 10 cereal grains were positively confirmed as being barley (*Hordeum* sp.) the remaining 20 unidentified grains were probably also from this cereal but were too eroded to be certain. Unfortunately, it was not possible to say whether the barley was hulled or naked because of the poor state of preservation. The 42 fragments of hazelnut shell probably only represents a couple of whole nuts, according to a conversion factor calculated experimentally as part of a study of a Mesolithic hazelnut processing feature on Colonsay, Southern Hebrides (Carruthers 2000). The only other plant macrofossil present was a fragment of cleavers seed (*Galium aparine*), a common weed of cultivated, disturbed and scrubby places as well as hedgerows. The assemblage as a whole is typical of Bronze Age waste deposits in southern England, as described below.

### *Possible post-Roman oven*

*Pit F2113, context (2114), sample 14* – A grain-rich assemblage of primarily oats and barley was recovered from fill 2114 of oven F2113, which produced the only rich sample from the site. Oat grains were dominant (*Avena* sp.) with some of the grains and two floret bases possessing characteristics that indicated that common oat (*Avena sativa*) was probably the dominant or only species of cultivated oat present. Although the smaller-grained bristle oat (*A. strigosa*) is sometimes found on the poor, acidic soils of south-west England, Wales and Scotland, the low occurrence of awn fragments (bristle oat is heavily awned) and general appearance of the small oat grains suggested that it probably was not present in this deposit. However, this could not be confirmed due to the scarcity of chaff fragments. The small oat grains that were frequent in the deposit had the appearance of either grains from secondary florets of *A. sativa* or wild oats (*A. fatua/sterilis*). There were also frequent small grains that could not be told apart from brome grass (*Bromus* sect. *Bromus*) because the caryopsis surfaces were too eroded or silt-encrusted.

The second most frequent cereal was barley, with hulled six-row barley (*Hordeum vulgare*) being confirmed due to the presence of some well-preserved twisted grains. It is possible that some two-row barley was present but this was not confirmed. The ratio of oats to barley was roughly 2:1 suggesting that the deposit probably consisted of the mixed crop 'dredge'. Small numbers of rye grains (*Secale cereale*) and free-threshing wheat grains (*Triticum aestivum/turgidum*) probably represent volunteer plants from previous crops grown on the same land. The most abundant weed taxon was corn marigold (*Chrysanthemum segetum*), a weed of arable crops growing on nutrient-rich acidic soils according to Ellenberg (1988). Another nitrophilous weed, fat hen (*Chenopodium album*) was also frequent. Since the local soils are nutrient-poor, this suggests that manuring was taking place in order to obtain a reasonable yield.

### *Discussion*

The samples from Tolgarrick were fairly unproductive, apart from sample 14 (oven F2113) which was almost certainly post-Roman in date and is discussed below. Most sites dated to the Bronze Age produce low concentrations of charred plant remains as cereal production was at a fairly low level at this time, so these results are to be expected where small soil samples have been examined (see the base of Table 7 for sample sizes).

Concentrations (charred fragments per litre of soil processed) for the Bronze Age and probable Bronze Age samples varied from 7.3 fragments per litre (fpl) to 0.2 fpl. Crop plants represented included hulled six-row barley (three samples with *Hordeum* sp. grains), probable emmer wheat (one sample with a single cf. *Triticum dicoccum* glume base) and cultivated flax (one sample with two seeds and one with a capsule valve of *Linum usitatissimum*). Gathered foods were represented by 42 fragments of hazelnut shell in one sample (*Corylus avellana*) and two probable fragments of hawthorn stone in another (cf. *Crataegus monogyna*). The overall character of the Bronze Age assemblages was that of background levels of charred domestic waste that had been blown, trampled or spilt around the site. The occurrence of cereal processing waste was very low, amounting to a single probable emmer glume base and a few seeds from weeds of cultivated or disturbed soils. Some of the weeds provided little information about the crop ecology and crop husbandry because they were common weeds of a wide range of disturbed and cultivated soils. These include black bindweed, brome grass and cleavers. Cleavers is said to be an indicator or autumn-sown crops (Reynolds 1981), but in mixed domestic waste it is not always certain that the weedy species were growing as crop weeds, so it is not wise to put too much emphasis on the presence of one or two seeds. Other taxa are indicators of nutrient-enriched soils, including fat hen, redshank/pale persicaria and common chickweed. A further group of species are indicative of poor, acidic, often sandy soils; bracken, sheep's sorrel (*Rumex acetosella*) and heath-grass. This group is likely to have been growing locally on the acid loams. Sheep's sorrel and heath-grass may have been growing as crop weeds at this time, or alternatively all three species may have been gathered and burnt as waste bedding, fodder or tinder.

Either of the above explanations could also apply to the grass seeds and onion couch tuber found in samples 33 and 54, although there may be other reasons why the onion couch tuber fragment was present in pit F1094 as it contained structured deposits. Since onion couch is frequently found in Bronze Age cremation deposits (see Robinson 1988) the tuber could indicate that the feature was associated with this type of ritual function, although there was no further evidence to support this.

The results of the analysis from oven F2113 suggest that this feature was almost certainly post-Roman in date for the following reasons: no hulled wheat remains were recovered from the sample, free-threshing wheat grains were present in addition to cultivated oats, rye grains and the weed, nipplewort (*Lapsana communis*). This mixed cultivation or dredge was possibly an important crop in the post-Roman and medieval period, particularly in the south west of England and Wales (Straker 2008, 164). In Van der Veen's review of Roman corn dryers (1989) no examples of corn dryers containing dredge were listed and in no cases were oats listed as a crop plant. In fact, the status of oats in the Roman period is uncertain as oat grains are almost always recovered in small numbers from deposits of this date. A similar uncertainty lies with the status of rye and free-threshing wheat as crops cultivated in the British Isles in the Roman period.

The deposit of grain in oven F2113 consisted of oats and hulled barley at a ratio of roughly 2 to 1 oats to barley. The oats appear to have been common oat (*Avena sativa*) as the better-preserved grains were of this form and two floret bases from this species were present. The assemblage as a whole could represent an accidentally burnt crop which became charred while being dried in an oven or over a hearth, or a deliberately burnt crop if it was infested or was part of a structured deposit.

The occasional free-threshing wheat and rye grains are likely to be volunteer plants from previous crops. Very few chaff fragments were present (only two floret bases and a few oat awn fragments) so it is clear that the crop had been fully processed. However, arable weed seeds were frequent, in particular corn marigold achenes. These small, light seeds would have passed through a fine-meshed sieve used to remove small contaminants unless they were still held in a seed head at the time. Using the ecological preferences of the weed taxa it can be suggested that the crop was grown on acid, sandy soils, hence the abundance of corn marigold, and that manuring was almost certainly taking place since these soils tend to be nutrient-poor but nitrophilous weeds such as fat hen, corn marigold, redshank/pale persicaria and nipplewort were present.

### Wood charcoal

*Dana Challinor*

Charcoal from a range of Bronze Age features was examined, including samples associated with

structures 1 and 2 and a series of pits. There were also three contexts producing possible *in situ* burnt wood, which were studied for woodworking evidence. Finally, there were two features of later date; an iron-smelting furnace and a corn dryer, thought to be Iron Age and post-Roman respectively.

### *Methodology*

Charcoal >2mm in transverse section was considered for identification, up to 30 fragments (of variable size) randomly selected for identification from each sample. The fragment count was low as the samples exhibited low diversity and a scan of the remaining sample was sufficient to determine the dominance of a single taxon. The charcoal was fractured and sorted into groups based on the anatomical features observed in transverse section at ×7 to ×45 magnification. Representative fragments from each group were then selected for further examination using a Meiji incident-light microscope at up to ×400 magnification. Identifications were made with reference to Schweingruber (1990), Hather (2000) and modern reference material. Classification and nomenclature follow Stace (1997). Identifications are provided to the highest taxonomic level possible according to the native British flora, i.e. where there is only a single native species, this is named, but where there are several native species, the genus or subfamily is given. Observations on maturity and character of the wood were recorded where visible.

### *Results*

From the 240 fragments examined, four taxa were positively identified (Table 8): *Quercus* sp. (oak), *Betula* sp. (birch), *Corylus avellana* (hazel) and Maloideae (hawthorn group, includes apple, service, pear etc). The single undifferentiated fragment of *Alnus/Corylus* is likely to be *Corylus*. Most of the charcoal was in a fair condition, but much was highly comminuted; reflecting the characteristic of oak to fragment along its large rays, producing thin slivers of material. Some charcoal was highly vitrified and clinkery in texture, which probably relates to the condition of the wood when burned, although it is not as straightforward as resulting from high moisture content (Marguerie and Hunot 2007). Insect tunnels were recorded in a number of the oak fragments in samples 29 and 38, and some hazel charcoal in sample 14. The tunnels in 29 were round(ish) in shape which would be consistent with the Anobidae (wood-boring beetles) which tend to inhabit structural

**Table 8** Results of the charcoal analysis (by fragment count)

| **Feature type** | | *Structure 2 terrace* | *Structure 1 postholes* | | *Burnt pit* | *EBA pit* | *Pit group 1* | | | *Oven* | *Furnace* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Feature number** | | *F2082* | *F2286* | | *F2507* | *F2225* | *F2343* | *F1104* | *F1086* | *F1094* | *F2113* | *F2178* |
| **Sample number** | | *29* | *35* | *36* | *45* | *28* | *38* | *52* | *49* | *54* | *14* | *22* |
| **Context number** | | *(2229)* | *(2297)* | *(2298)* | *(2508)* | *(2228)* | *(2345)* | *(1105)* | *(1089)* | *(1095)* | *(2114)* | *(2182)* |
| *Quercus* sp. (oak) | h-w | 12 | | 6 | | 15 | 2 | 1 | 2 | | 2 | 1 |
| | s-w | | | | 7 | 2 | 6 | 8 | 5 | 9 | 5 | |
| | r-w | | | | | | 5 | 3 | | | 7 | |
| | indet. | 8 | 22 | 14 | 13 | 3 | 13 | 7 | 12 | 11 | 11 | 4 |
| *Betula* sp. (birch) | indet. | | | | | | | 1 | 1 | | | |
| *Corylus avellana* (hazel) | r-w | | | | | | 2 | | | | 5 | |
| *Alnus/Corylus* (alder/hazel) | r-w | | 1 | | | | | | | | | |
| *Maloideae* (hawthorn grp) | indet. | | | | | | 2 | | | | | |
| **Total** | | **20** | **23** | **20** | **20** | **20** | **30** | **20** | **20** | **20** | **30** | **5** |

h-w=heartwood; s-w=sapwood; r-w=roundwood; indet.=indeterminate maturity

wood, whereas the tunnels in sample 14 were strongly oval in shape, characteristic of the Cerambycidae (long-horned beetles), which attack dead wood with bark attached, rather than cut, structural timbers (Mark Robinson, pers comm). It was possible to differentiate some of the oak into heartwood and sapwood, but most of the material was too comminuted to provide a reliable distinction. Equally, evidence for roundwood was rare, with few pieces showing moderate or strong ring curvature, indicating that the majority of the charcoal derived from trunkwood or large branchwood.

### Charred wood samples

The three samples of possible charred worked wood were all identified as *Quercus* sp. (oak) (Table 9). The material was heavily fragmented but was recorded *in situ* as: a possible plank in pit group 1, pit F1113, a burnt post in structure 1, posthole F2468, and a cut timber in structure 2, fill (2229). A number of fragments from these objects were checked to ensure that only a single species was represented. The charcoal from pit F1113 and F2468 both derived from sapwood, which is appropriate for the post-pipe (F2468), if the outer rings of the post had been lightly charred prior to use to inhibit decay. In contrast, the charcoal from the basal fill of F2082 included both slow-grown heartwood of >40 years growth and a single small roundwood stem of 9 years. This material was comparable in character to the oak identified from sample 29 from the same context (Table 8) and does not indicate a single timber, although a possible cut surface was observed on one fragment. Generally, there was no compelling evidence for woodworking, and the fragmentation of the oak into thin (albeit long) slivers is typical of the other assemblages at the site.

### *Discussion*

The charcoal assemblage from the Bronze Age features is overwhelmingly dominated by oak, which represents more than 96 per cent of the assemblage. Other taxa were rare, including hazel, despite the prevalence of oak-hazel woodland in the area in this period (Wilkinson and Straker 2008). Both taxa are commonly recovered from fuel residues of this period in the area. The charcoal assemblages from Middle Bronze Age structures at Penhale Moor (St Enoder), for instance, produced a significant component of hazel (and more than a trace of other taxa), in addition to plentiful oak (Challinor 2015). Interestingly, at Penhale Round (St Enoder) it was possible to distinguish between structural remains which were all oak and domestic fuel waste which were more taxonomically diverse (*ibid*).

Although there was no conclusive evidence for woodworking on the charred wood samples, it is likely that some of the material from Tolgarrick derived from structural or timber remains. The evidence for insect tunnels in the charcoal from context 2229 may indicate structural remains where wood-boring beetles had inhabited the timber. Conversely, the distinctive oval-shaped insect tunnels from the other samples (14 and 38) suggest that the wood had been seasoned prior to use as fuel. It is clear that oak was widely exploited in this period for fuel and timber purposes, and the presence of heartwood indicates that some mature wood was used.

Oak was also the most frequent taxon in the samples from the later phases. The Iron Age

**Table 9** Charred wood samples

| *Feature type* | *Sample number* | *Context number* | *Charcoal identifications* | *Notes* |
|---|---|---|---|---|
| Structure 2 terrace F2082 | 31 | (2229) | *Quercus* hw, rw | hw rings indistinct – some rings v slow – 40+ yrs, rad 15mm. Length 50mm. Poss cut surface but not conclusive. Rw 1 whole stem, 9 yrs, with p+b. dia 18mm |
| Pit F1113 | 55 | (1115) | *Quercus* sw | Looks like all oak, highly vitrified, highly comminuted, unusually large slivers 40mm in length. No ring curvature. No tyloses visible – looks like sw. Freq radial crax . No evid for working, looks as tho' exploded along rays. |
| Structure 1 posthole F2468 | 58 | (2471) | *Quercus* sw | Looks like all oak, highly vitrified, highly comminuted, unusually large slivers. No ring curvature. No tyloses visible – looks like sw |

furnace would have had a more dedicated fuel supply, usually requiring charcoal to achieve the high temperatures necessary (Goffer 2007, 174). The quantities of charcoal in the furnace were too low to offer any definitive conclusions on fuel use; however, the use of oak charcoal for smelting in this period is typical. Iron working assemblages from the Romano-British period are commonly dominated by mature oak, such as at Calstock (Challinor 2014). Corn dryer F2113 was dominated by oak, with some hazel, and offers no particular insight into the dating, except to record that oak-hazel woodland was clearly available at the time of use, since such features were usually fuelled by the most easily available source.

## Discussion

The excavations at Tolgarrick, covering 2.6 ha, proved to be on a large enough scale to give insights into activities here over a long period. Although not as extensive as excavations such as Higher Besore, Kenwyn (17 ha) or Scarcewater, St Stephen-in-Brannel (30 ha) (Gossip, forthcoming; Jones and Taylor 2013), Tolgarrick produced a similar range of features to those typically encountered on other large-scale excavations in Cornwall, including Middle Bronze Age roundhouses, an Iron Age roundhouse and field system, and scattered pits probably of many periods. Each excavation extends our understanding of the different types of site and shines light into new corners; in the case of Tolgarrick, key aspects were the evidence for industrial activity in the Middle Bronze Age, and the discovery of an Iron Age iron-smelting furnace.

### Early Bronze Age

Early Bronze Age activity was limited to pit F2343, which included a dump of pottery and charred remains, including barley grains and hazelnut shell fragments. The pit is dated to the Early Bronze Age by the Enlarged Food Vessel, **P1**. Only two Food Vessels in Cornwall are associated with radiocarbon dates, though one, from a pit at Metha, St Newlyn East, 2700–2300 cal BC, seems a little early, while the other, associated with an Enlarged Food Vessel from the ditch of a barrow at Watch Hill, St Stephen-in-Brannel, is relatively late at 1920–1680 cal BC (Quinnell, above). Petrographic analysis suggests that **P1** was made locally, mixing gabbroic clay from the Lizard with material from the general vicinity.

Small pits, found individually or in groups, containing charcoal and sometimes artefacts, are a common feature in Cornwall through the Neolithic and the Bronze Age; in many cases the deposits appear to be structured or 'special' and some have been interpreted as the result of ritualised clearing, following on from communal consumption of food (Jones and Quinnell 2011a, 201–2, 205, 208, 217, 224; Jones and Quinnell 2014, 127–34). Although the pits contain charcoal there are usually no signs of burning *in situ*. Pit F2343, on the contrary, had evidence for being heat-affected at its base; the deposit is likely to represent domestic waste within a feature that may have functioned as some form of oven. The grains of barley may suggest that there was cultivation somewhere nearby, particularly as there was also a fragment of cleavers, suggesting cultivated or disturbed ground. The discovery of a residual sherd of probable Early Bronze Age pot in structure 1 is another indication of general activity in the area at this time.

### Middle Bronze Age

It is during the Middle Bronze Age that the main density of Bronze Age activity is represented. Two main categories of feature were exposed, the two roundhouses (structures 1 and 2), and pits containing evidence for probable structured deposition (pit group 1, pit F1018 and pit F2030); the 27 burnt pits recorded across areas A, B and C are possibly also of this period.

The roundhouses and pits may be an example of the zoning of activities in the Bronze Age landscape, noted for example at Scarcewater (Jones and Taylor 2013). However, although the roundhouses and pit group 1 are broadly contemporary, in as much they are Middle Bronze Age, it is possible that the roundhouses are a little earlier than the pits. Dating is based on one radiocarbon date, from structure 2, and on the characteristic pottery style – Trevisker ware. The radiocarbon date of 1395–1207 cal BC from phase 1 of structure 2 (pit F2272) is consistent with the style of the pottery from both roundhouses, and with the typical fourteenth- to twelfth-century cal BC date range for this type of house (Quinnell, above). On the other hand, pottery from pit group 1 (**P11** and **P12**) is thought to be late in the Trevisker sequence and, by analogy with examples elsewhere

with radiocarbon dates, may belong to the twelfth or eleventh centuries. Some overlap, however, is suggested by the presence of distinctive fired clay objects in both pit group 1 and the infill layers of the roundhouses. Furthermore, at least one sherd from the fill of structure 1, **P5**, may also be late Trevisker, like **P11** and **P12**.

*Structures 1 and 2*

Both structures were set in terraces of a similar character and dimension at just over 8m in diameter and approximately 0.4m deep on their upslope side. They can be dated to the Middle Bronze Age on the basis of the Trevisker ware found in both structures and the radiocarbon date of 1395–1207 cal BC on a grain recovered from structure 2, pit F2272. The style of construction and other characteristics exhibited are comparable with the distinctive form of Middle Bronze Age sunken-floored roundhouses found in lowland Cornwall, with a size range from 6m to 15m in diameter, taking the form of circular, purpose-dug hollows that sometimes have evidence for stone lining around the perimeter and generally have a post-ring set within the interior (Jones and Quinnell 2011a, 217–9, fig 11). The structures are similar, for example, to the Middle Bronze Age roundhouses recorded at Trethellan Farm, Newquay (Nowakowski 1991), which measured between 8.25m and 10m in diameter and were terraced into the hillslope by up to 0.5m. More recently, excavations at Tremough, Penryn (Jones *et al* 2015) and Scarcewater Tip, St Stephen-in-Brannel (Jones and Taylor 2013) have exposed a series of six comparable hollow-set Middle Bronze Age roundhouses that measured between 5m and 12m across.

As with these examples, the siting of the two structures at Tolgarrick Farm within hollowed platforms or terraces afforded the relatively good preservation of features and deposits and presented a contrast to the truncation that was evident on their immediate downslope sides. As a result of this preservation, the levels of the floor in the two structures were broadly intact, with these both generally smooth and sloping slightly to the south, although no formal flooring or occupation layer forming a floor was present.

Despite the clear similarities in the nature of the two terraces, the structures presented very different internal arrangements. Structure 1 consisted of a moderately clear layout of likely structural postholes and a probable porch arrangement that opened to the south-south-east; a preference for the southern part of the horizon is consistent with a roundhouse of this period (see Jones and Quinnell 2011b, 119 and references therein). The house has a single ring of posts and like many examples (including for example most of those at Trethellan; Nowkowski 1991), the posts were set only a short distance in from edge of the hollow, which presumably marked the position of the house wall. There is no evidence in structure 1 that the hollow was stone lined, as was the case with a number of houses at Trethellan, for example, but it is possible that some of the stakeholes along the eastern edge supported a wattle and daub wall, as suggested for houses 2222 and 3022/142 at Trethellan (Nowakowski 1991). The various internal features recorded within structure 1, which consisted of a mix of other postholes and stakeholes, pits and shallow hollows, are likely to have related to a series of different functions, although many of these remain unknown. No well-defined hearth structure was evident; however, the position of pit F2536 combined with the presence of burning on its base and associated charcoal fill suggests that this most likely represents such a feature. Other postholes and stakeholes may have delineated internal features such as fixed furniture, or, as noted above, the arrangement of stakeholes around the eastern perimeter may have formed a revetment lining the side of the terrace. Finds of pottery and stone associated with the occupation phase mostly came from the pits and hollows, but in common with other Middle Bronze Age roundhouses the quantities were low compared to the material from the post-occupation levels.

While the internal layout in structure 1 was moderately clear, this cannot be said for structure 2, where, even allowing for the intrusion sustained from the Iron Age ditch and probable post-Roman oven, the terrace contained only a small number of structural elements and lacked any formal pattern. No pottery and only one worked stone was found in the pits and postholes. The presence of the stone rubble exposed around the northern perimeter of structure 2 may have represented a demolition deposit of structural material suggesting that it may have had a stone-built component. At Trethellan Farm, stone kerbing, lining or walling was recorded in the majority of the structure platforms, but this was always in addition to what would have been a timber frame (Nowakowski 1991). The reason

for the variation between the two structures is not clear, particularly given the similarities of the two terraces, but it is in keeping with the diversity found more widely amongst Middle Bronze Age roundhouses in Cornwall (Nowakowski 2011a, 111–3, 116). At Trethellan, for example, no two roundhouses were quite alike in their structural details and internal arrangements, and the structures were thought to include both residential dwellings and ancillary buildings such as stores and workshops (Nowakowski 1991). Assuming that structures 1 and 2 were in use at the same time, they may have served different but complementary functions.

### Later use of the structures

A characteristic feature of sunken-floored roundhouses in Cornwall is the evidence for ritualised patterns of activity associated with their abandonment. Most artefacts in the roundhouses are found as 'special' or structured deposits in pits or postholes, and particularly in the backfill layers sealing the hollows (Jones and Quinnell 2011a, 219). Structures 1 and 2 fit this pattern.

The modification of some features that formed part of structure 1 is likely to relate to the ending of its use and abandonment. Evidence for this included: the depositing of the pottery vessel, worked stone and cassiterite pebble placed in posthole F2286; the two inserted pits F2686 and F2687 cut into top of post-pit F2507, which included the cache of crushed cassiterite; and the dumping of ashy deposits in posthole F2504. These deposits are likely to have followed the removal of the structural posts and included evidence for probable structured deposition.

Extensive evidence for the burning of the natural subsoil across the terraces of both structures indicates that they were both likely to have been burnt down, indeed, the presence of charred timbers and large charcoal pieces from the infilling deposits were perhaps the remains of structural timbers. Further indication that the structures had been burnt down included the remnants of the burnt post recorded in structure 1 posthole F2468. The tops of many internal features were heat-affected, indicating that these had been largely infilled prior to the burning of the structure. This included posthole F2286 containing an artefact assemblage, the upper fills of which were burnt *in situ* and charcoal-rich, suggesting that this post had been removed, the artefacts deposited and the feature backfilled prior to burning. Conversely, the ashy deposits within posthole F2504 perhaps indicate that this post was removed after the burning of the structure. Evidence for the burning of a roundhouse is unusual, but another example is House A at Trevisker, St Eval (ApSimon and Greenfield 1972; Nowakowski 2011a, 111).

The infilling deposits within both structure terraces contained numerous finds including pottery sherds, fragments of fired clay objects and the large quantity of worked stone objects, many of which were deliberately broken. A large quantity of finds were also recovered from the equivalent infilling deposits of Roundhouse 1 at Tremough, where some objects such as mould fragments and bronze objects were considered to have been deliberately deposited (Jones *et al* 2015). Further parallels recorded at Tremough included the removal of posts and the possible deposition of pottery within the features. The activity represented at Tolgarrick, including the structured deposition of artefacts following partial demolition, the subsequent burning of the structures, some subsequent possible further post removal and the infilling of the terraces with large numbers of artefacts suggests complex activity at the end of their use.

### *Pit group 1 and pits F1018 and F2030*

Pit group 1 and nearby pit F1018 exposed in area A included possible evidence for the structured deposition of artefacts including pottery, worked stone objects and fired clay objects. Within this group, pits F1094, F1113 and F1086 were perhaps the most interesting. Pits F1094 and F1113 were stone lined. In F1094 were deposited one near-complete perforated pyramidal block **SF54** along with fragments of two more, a few more fired clay objects and a worked stone cobble. F1113 contained an elongated worked cobble (**S7**) and the charred fragments of a possible plank. In pit F1086 the deposit of fired clay structural elements represents an assemblage of probable oven superstructure and associated furniture. No evidence for burning was present in the pit and therefore the oven fragments and furniture had almost certainly been transferred from elsewhere. Finds from pits F1104, F1106, F1116 and F1120 included 99 worked stone objects, as well as pottery and some fired clay. The relative density of the pits in pit group 1 suggests that the break of slope above the Calenick stream valley was a favoured location for activity. Pit

group 1 is 110m west of structures 1 and 2. Both sites have similar distinctive material – namely the large numbers of worked stone fragments and fired clay objects – that may derive from specialised activity, although it is uncertain where exactly this took place. The character of the fired clay differs between the two sites, with pit group 1 having the oven fragments and pyramidal perforated blocks whereas structure 1 had cylindrical perforated blocks (possibly tuyères). However, there was also some overlap, with a fragment of cylindrical block being found in pit group 1 (pit F1116) and a piece of a pyramidal block coming from the fill of structure 2, supporting the suggestion that there was contemporary activity at the two sites. Analysis of the fired clay (Poole, above) has shown it to be unusual. The oven, for example, may have had a double chamber and suspended floor. As the oven fragments were not fired at a high temperature the function may have been domestic rather than industrial, and nor did the possible tuyères have significant levels of tin, to provide evidence for smelting. However, the unusual character of the fired clay does point to a more specialised function.

In area C, the limited survival of the base of the pottery vessel in pit F2030 was due to plough truncation. Nevertheless, enough of this had survived to indicate that the pit had been excavated to correspond with the dimensions of the vessel; a characteristic that is often associated with cremations. No charred remains were recovered from the thin surviving deposit to suggest a ritual association with this feature; however, given the level of truncation, any deposit of this nature could have been lost.

### *Evidence for Bronze Age industrial activity*

As is set out by Tim Young (above), evidence for the processing of tin ore (cassiterite) and the smelting of tin in the Bronze Age is rare, with very few examples known in Cornwall, although the use of Cornish resources has been long suspected (Penhallurick 1986). At Tolgarrick, the recovery of crushed cassiterite from pit F2687 and the single pebble deposited in posthole F2686 with associated artefacts represent additions to this limited evidence. The cassiterite had been brought to the site from alluvial mineral-rich or placer deposits, perhaps from Calenick valley below the site. In the case of pit F2687, the pebbles were then partially crushed and finally deposited as a cache in the small pit. Recent excavations carried out for the Truro Eastern District Centre at Tregurra, some 2.5 km to the north east of the site, have also recorded two features containing cassiterite pebbles (Taylor 2015a; 2015b): a possible cache of crushed pebbles in a pit, and a separate cut that contained a mixed deposit including Trevisker pottery, worked stone and worked flint alongside cassiterite pebbles. The pits exposed at Tregurra were not associated with structural remains; however, a direct association with a structure has been recorded at Trevisker, St Eval, where a cache of cassiterite pebbles was recovered from within a roundhouse occupation deposit (ApSimon and Greenfield 1972).

The presence of the cassiterite deposit in structure 1 and the large quantity of worked stone artefacts from both structures, which, as Henrietta Quinnell comments above, were of a limited range of type, suggest that a specific type of activity was being carried out on the site. Indeed, the presence of the potentially complex oven structure fragments and furniture deposited in pit F1086 of pit group 1 and the recovery of portable fired clay objects, like the possible tuyères, also from this pit group and from both structures, provide further indication of possible complex industrial activities being carried out. When looking at the wider area investigated, the occurrence of the burnt pits, which as discussed above, possibly represent charcoal burning pits, should also be considered alongside the artefactual evidence. Despite this, the processes that were being carried out are not entirely clear. While evidence such as the presence of moulds at Tremough provides strong evidence for metalworking, this cannot be said of the Tolgarrick results. Nevertheless, given the distinctive artefact types, possible charcoal production and in particular the recovery of cassiterite, the processing and smelting of tin in the vicinity seems likely. Although the results of the charred plant remains suggest a domestic setting, this is perhaps unsurprising, with industrial and settlement activity unlikely to have been mutually exclusive. As is generally the case on Cornish sites of this period, cereal production appeared to be at a low level, with only limited remains of hulled six-row barley, probable emmer wheat, and cultivated flax, and there were only very low amounts of cereal processing waste.

## Iron Age

Structure 3, iron furnace F2178 and the ditched field system represent the key Iron Age features recorded. Dating is based on one radiocarbon date and 60 sherds of pottery. The radiocarbon date of 361–162 cal BC from the furnace is earlier than the pottery from structure 3 and the field system. This includes both South Western Decorated ware and Cordoned ware, which could all belong to the first centuries BC and AD, though one sherd of Early Iron Age Plain Jar Group pottery from the field system, presumably residual, also suggests activity in the area in the sixth to fourth centuries BC. Whilst a Late Iron Age date is suggested for both structure 3 and the field system, the field system post-dates structure 3 as one of its ditches cut the structure 3 ring gully.

### *Structure 3*

The ring gully measuring approximately 9m in diameter with an opening to the south east is consistent with that of a roundhouse. However, the internal layout consisting of straight ditch F2706 with offset oval posthole ring, is an unusual arrangement. The gully and the ditch were found to have been contemporary and the position of the offset posthole ring, which respects the position of ditch F2706, suggests that these elements were set out as a single phase. At 4m across, the posthole ring would have supported the roof structure and the outside wall would have been between this and the ring gully. The postholes were all shallow suggesting that the features had sustained some plough truncation, which would have removed any occupational deposits, shallow internal features and the lighter post or stakehole elements of an outer wall, if it was of a similar type to that at house 4, Higher Besore (Kenwyn) (Gossip 2005, fig 10). There was a limited number of finds recovered, with only five sherds of Iron Age pottery, with **P18** from ditch F2075 being quite late in the Iron Age or possibly dating to the early Romano-British period. However, the roundhouse compares well in size and orientation to other large roundhouses of Iron Age date excavated in Cornwall (Jones and Taylor 2015, 78–82). The finds of iron slag may derive from the earlier activity (furnace F2178, is 35m to the south west of the house) or could be from smelting activity contemporary with the house.

### *Field system*

The field system is either contemporary with or a little later than structure 3. It is tempting to see structure 3 as a relatively isolated roundhouse representing a single farmstead within its fields. Indeed, the generally sterile accumulation fills of the field system ditches and the limited number of finds recovered from them, suggest that domestic occupation in the vicinity was small scale and supports this scenario. Although larger settlements may be more usual in the Iron Age (e.g. at Higher Besore and Camelford) individual roundhouses are known, for example, the two uncovered on the A30 road scheme at Belowda and Lower Trenoweth (Clark and Foreman forthcoming).

The arrangement of the field system ditches suggests that parts of four plots were exposed; however, it is likely that more of the ditches, shown on Figure 3 as undated but probably prehistoric, are also likely to be part of the field system, as they fit with its layout and alignments. Although the layout is rectilinear it also seems somewhat irregular, perhaps suggesting piecemeal development. The flared terminal to ditch F2064 and the segmented nature of the ditch made up of F2063, F2736, F2068 indicate some complexity in the setting out of entrances with this perhaps related to stock control. The material from the ditches is likely to have been used to construct banks alongside them, which could have had planted hedges along them. Other Iron Age and Romano-British ditched field systems excavated in Cornwall are also rectilinear but somewhat irregular in layout, for example Trenowah (St Austell), Tremough (Penryn), and Scarcewater (St Stephen-in-Brannel) (Nowakowski 2011b, 244).

### *Iron production*

Iron furnace F2178, dated to 361–162 cal BC, represents an addition to the knowledge of Middle Iron Age iron production, something that is fairly limited in south-west England. As discussed above by Tim Young, the furnace exposed at Tolgarrick Farm was a large example and was likely to have had a domed superstructure with tuyères to the rear. Probable Iron Age furnace bases were exposed during recent investigations at the Truro Eastern District Centre at Tregurra (Taylor 2015a; 2015b), which are broadly contemporary, dating to the fourth century BC. The iron working at Tregurra also included evidence for the roasting of ore,

something that was not found at Tolgarrick Farm.

Iron slag was also found in the ditches of structure 3, in a field ditch close to structure 3 and in field ditch F1132 to the west in area A. A dump of furnace lining and superstructure in pit F2287 to the south may also have been associated with iron production. Despite the established relationship between structure 3 and the field system which cut it, the presence of waste iron slag recovered from both these features suggests some link between them. The greater concentration of slag recovered from the field ditch in the area adjacent to structure 3, as well as from throughout the ring-gully, would suggest that both features were at least partially open at the same time that iron production was being carried out, in this case presumably in the Late Iron Age. It also indicates that the plot boundaries were no longer being maintained by this point, at least in terms of the cleaning out of ditches, though the banks and hedges may still have been functioning. Further suggestion that the ditches were largely infilled when iron production was being carried out was indicated by the recovery of furnace lining and possible superstructure from pit F2287, which was cut into the top of ditch F2066. The evidence from the roundhouse, the field ditches and pit F2287 suggests that iron smelting was a significant characteristic of the site, occurring not just in the Middle Iron Age but in the Late Iron Age too. It is possible that the undated burnt pits may actually be Iron Age and used in the production of charcoal for iron smelting.

## Undated probable prehistoric features

### *Burnt pits*

There were 27 examples of this type of feature distributed across areas A, B and C, with clear consistencies in their size, shape, profile and deposit type. All had *in situ* burning causing a reddening of the natural subsoil, and an overlying charcoal deposit that was followed by accumulated fills. This consistent deposit sequence suggests that they had each been used once. The lack of finds from all but one of these features, and an absence of charred plant remains from the sample of pit F2225 (as well as assessed samples from other features of this type), suggest that these were unlikely to have been closely associated with domestic activities. It is therefore likely that these features represent the result of a specific activity. Indeed, analysis of the charcoal from pit F2225 showed it to consist entirely of oak, implying probable fuel selection, which has led to the suggestion that these features could have related to a specialised process like charcoal production (Tim Young, pers comm).

The pits may tentatively be dated to the Middle Bronze Age but this is based only on two sherds found in pit F2225; if the sherds are residual then the pits could easily belong to a later period. For example, a group of similar burnt pits at Manor Tannery, Grampound, produced no finds but were dated to the Iron Age by two radiocarbon determinations (Lawson-Jones and Jones 2016). At Tolgarrick the pits would also fit well in an Iron Age context, in the production of charcoal to smelt iron.

### *Structures 4, 5 and 6*

Based on their character, the three other structures that were recorded in area C were almost certainly of prehistoric origin despite the lack of finds recovered. Structure 4, which consisted of four postholes set out in a squared arrangement and linked by the two gullies is perhaps comparable with Iron Age four post 'storehouse' or 'granary' recorded on sites such as Danebury (Cunliffe 2009), a feature that is however, less common in Cornwall, although examples are reported pre-dating Penhale Round (St Enoder) and at Nansledan (Newquay) (Nowakowski and Johns 2015; Rainbird and Pears forthcoming).

Structures 5 and 6, both comprising circular/oval post arrangements, are likely to have represented the remains of roundhouses. Like structure 3, the shallow depths exhibited by the postholes for these structures was also likely to have been the result of plough-truncation, which similarly would have removed any internal features or occupation deposits. Despite being of likely prehistoric origin, given the presence of Bronze Age and Iron Age activity in close proximity to these structures, it would be difficult to assign these to either period with any confidence and indeed the oval form could potentially indicate a Romano-British date. This factor is also the case for many of the other undated features in this category.

## Post-Roman

The *in situ* burning and presence of charred grain recovered from pit F2113 is consistent with

characteristics of a simple corn-drying oven. As discussed by Wendy Carruthers (above), the species profile recovered from this feature, which comprised mixed oats and rye grains representing 'dredge' cultivation, is consistent in this context with post-Roman and early medieval agricultural practice.

Excavations at Penlee House, Tregony, recorded three corn-drying ovens, which represented a clear comparison in style to the Tolgarrick oven, with these also formed of two parts. These examples also contained mixed grain composition (predominantly oats and barley), representing dredge cultivation (Taylor 2012). Carbon dating from these features provided a date of cal AD 385–545 (1605 ±35 BP; Wk-19959). Similarly, a large pit excavated at Black Cross, near Crugoes Farm, St Columb Major, had a stone-lined gully in the bottom and a quantity of charred cereals, almost entirely oats, which produced two radiocarbon dates of cal AD 420–660 (1490 ±57 BP, Wk-9848; 1496 ±57 BP, Wk-9849; Nowakowski and Johns 2015, 269–74).

The position of the oven, in the corner of one of the Iron Age plots defined by ditches F2064 and F2066, may have been a coincidence; however, it may also indicate that the plots had remained as divisions, perhaps as hedge lines, following the silting of the ditches.

The settlement with which the corn-dryer was associated was presumably nearby, perhaps even at Tolgarrick Farm itself, which is first recorded in medieval documents but is likely to belong to the early medieval settlement pattern.

## Conclusions

The archaeological excavations at Tolgarrick Farm have provided additional information on the composition of settlement structures in the Middle Bronze Age and Iron Age, but perhaps more importantly, it has yielded valuable information on prehistoric industrial activity.

The reasonably well-preserved examples of Middle Bronze Age structures exposed at Tolgarrick Farm sit alongside comparable hollow-floored or terraced roundhouses recorded at Trethellan Farm, Newquay (Nowakowski 1991), Tremough, Penryn (Jones *et al* 2015) and Scarcewater Tip, St Stephen-in-Brannel (Jones and Taylor 2013). More particularly, the evidence for the curation and processing of tin ore (cassiterite) has added to the small number of known sites in Cornwall. At Trevisker (ApSimon and Greenfield 1972) and Tremough (Jones *et al* 2015) stages in the processing of cassiterite were directly associated with roundhouses. At nearby Tregurra, Truro, a cache demonstrated a broadly comparable example of the collection, crushing and deposition of material in pits (Taylor 2015a; 2015b). At Tolgarrick Farm, the presence of the cassiterite deposit alongside possible evidence for charcoal production, as well as a range of specialist artefact types comprising a large number of worked stone objects, that represented a narrow range of types associated with rubbing and crushing, and an assemblage of fired clay objects, all serve to provide an indication that specific industrial processes were being carried out alongside domestic occupation.

Deliberate deposition of artefacts, which was dominated by industrially-related objects, was a prevailing theme, both in pits and in association with the end of use of the Bronze Age structures. This indicates both that these artefacts retained an important emphasis after they had been used, but also that industrial processes and ritualised activity were clearly interleaved.

Further industrial activity on the site was demonstrated by a well-preserved iron furnace, the quality of which has aided an extended knowledge on the use of domed furnaces in the Middle to later Iron Age as well as extending their distribution within the region.

Finally, a probable post-Roman corn-drying oven has added a further example of continued agricultural practice, being perhaps set within a field system established in the Iron Age but respected into the early medieval period.

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The archive and finds are temporarily stored at the Exeter office of AC archaeology under the

unique project code ACD835. In the longer term it is hoped that they will be transferred to a suitable repository as advised by the Royal Cornwall Museum.

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# Excavations at Glasney College, Penryn

DICK COLE

with contributions from JOHN ALLAN, STUART BLAYLOCK, LAURENCE KEEN, GRAEME KIRKHAM, GRAHAM LANGMAN, JOANNA MATTINGLY and ROGER TAYLOR

*In summer 2003, five evaluation trenches were excavated at the site of Glasney College, Penryn, with the aim of confirming the location of the church. Remains of the church were uncovered in four of the trenches. These investigations have allowed a tentative reconstruction to be produced, showing a cruciform structure with an enlarged east end. Analysis of the large assemblage of architectural fragments recovered indicates close links with the output of the Exeter Cathedral workshop. Individual pieces show great similarity to material from building works carried out at Exeter in the first half of the fourteenth century.*

Glasney College was one of the major ecclesiastical centres in medieval Cornwall and it is probable that the Cornish-language miracle play trilogy, the *Ordinalia*, and other plays were written there. The site of the College represents a significant cultural asset for the people of Penryn and Cornwall and its national importance is recognised in its designation as a Scheduled Monument (National Heritage List for England (NHLE) no 1007260); the surviving portion of standing fabric is Listed Grade II (NHLE 1298629). Much of the former College site is now a playing field, in the ownership of Cornwall Council. The site is centred at SW 7858 3419 (Fig 1).

One upstanding section of fabric survives on the north boundary of the field, standing to a height of more than 4m. This has been identified by historic buildings specialist Eric Berry as the north wall of the former Lady Chapel and the east wall of the church (Berry *et al* 2003). It contains a window, the south jamb of which retains its mouldings and the lower part of a ribbed vault.

In 2002, the Friends of Glasney commissioned the Historic Environment Service of Cornwall County Council (now Cornwall Archaeological Unit, Cornwall Council) to undertake an archaeological assessment on the site of the College, followed by evaluation trenching. The project was funded by English Heritage (now Historic England), the Heritage Lottery Fund and other local partners.

The aim of the project was to gain an understanding of the survival, condition, extent and significance of the archaeological remains of Glasney College. The assessment of the archaeological potential of the area was carried out through a combination of desk-based study and fieldwork and an interim statement was produced which, *inter alia,* suggested that the bulk of Glasney collegiate church lay within the playing field (Berry *et al* 2003). These findings guided the positioning of the five evaluation trenches. The results of the work were reported in Cole (2005).

This report summarises the results of the archaeological and historical assessment, the 2003 excavations and assessments of the finds assemblage.

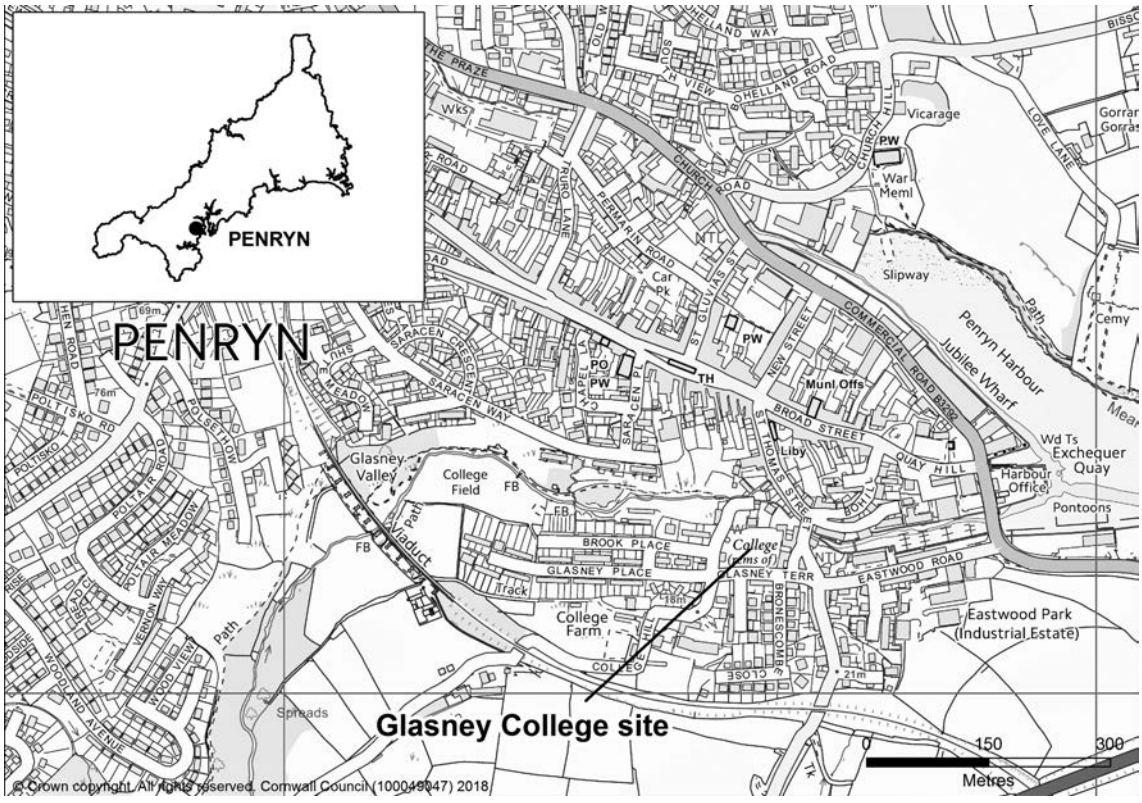


*Fig 1 Glasney College, Penryn: location.*

## A historical assessment of Glasney

*Joanna Mattingly*

Glasney College was founded by Bishop Bronescombe of Exeter on 26 March 1265 as the collegiate Church of the Blessed Virgin Mary and St Thomas of Canterbury (Rashleigh and Vincent 1879, 218). It may have been intended as the western outpost of the diocese of Exeter's administrative and educational programme (Oliver Padel, pers comm) and was sited immediately below the Bishop of Exeter's town of Penryn and in the vicinity of one of his palaces (Peter 1903, 107). Establishment of the College was an important part of the development of Penryn, which appears to have been founded in the early thirteenth century and obtained a market charter in 1259. In addition to religious motives, the development of the College may have been perceived as a means to stimulate economic activity in the new town.

Glasney was a secular foundation (that is, not monastic), modelled on Exeter Cathedral, with a provost, 12 canons and 13 vicars (Orme 1976, 167). Such secular clergy lived in the wider community and were not members of religious (monastic) orders like the regular clergy. Other secular colleges in the diocese of Exeter included St Buryan and Crantock in Cornwall, and Crediton (a Bronescombe re-foundation) and Ottery St Mary in Devon (Snell 1967, 89–93). Glasney was the wealthiest and most important of the Cornish colleges and at its peak may have accommodated 50–70 people within its various walled closes, including chantry priests, choristers, bedesmen and servants (*ibid*, 91. Knowles (1976, 144–9) suggests that the ratio of regular clergy to servants was 1:1; see also Orme (1986, 41) for the household sizes of wealthier canons at Exeter.)

Latin services began at Glasney in 1267, exactly two years after Bronescombe's foundation, and

continued until 1548 when the College was dissolved (Peter 1903, 5, 100–1; Snell 1955, 23–5). Three chantries were founded – in 1275, 1329 and 1354 – to increase the number of daily masses held (Peter 1903, 19–20, 26–33; Whetter 1988, 17). There was a dawn mass for travellers in the Bodrugan chantry from 1329 and at the Dissolution it was claimed that 'all kynde of Straungers' arriving in Falmouth haven (as many as 100 shiploads at one time) 'allwayes used to resort to the saide Colledge to the mynystracon there' (Peter 1903, 27; Snell 1953, 36). In 1533, John Leland noted that the College was 'wel walled and dyked defensably' and sixteenth-century maps (below) show that it formed part of the Henrician coastal defences for Falmouth haven (Smith 1964, 322) (Figs 3, 4).

Glasney is well known for its links with Middle-Cornish literature, since the evidence points to the Cornish *Ordinalia* play cycle and saint's plays of St Meriadoc (Camborne) and the recently-discovered one of St Kea all having been composed there (Bakere 1980, 30ff; Oliver Padel, pers comm). The *Ordinalia* dates from the early fifteenth century and the saints' plays from around 1500. Oliver Padel suggests (pers comm) that Glasney was founded to address the Cornish language issue: bishops of Exeter wanted their clergy to communicate in Cornish with their flocks. This may explain why a Cornish prophecy – '*Yn Polsethow Ywhylyr Anethow*' (in the pool of arrows shall be seen wonders or dwellings) – was built into the foundation charter of the College (Rashleigh and Vincent 1879, 217).

The process of Dissolution began in 1546 with the first surveys of the College, but it was not until December 1548 that the building materials were sold off to Giles Keylwaye for £149 (Snell 1953, 36–40; Peter 1903, 104). However, early in 1549 an unsuccessful attempt was made 'to have the sale cancelled and the church converted into a parish church' (Rowse 1941, 255). Shortly before 1550 most of what remained came into the hands of Ralph Couch, a Penryn gentleman who also held a lease of a watermill from the Bishop of Exeter (RIC HB/1; Palmer 1991, 3, 11). This estate was subsequently broken up and sold to the Pendarves family and their successors, the Bassets. Other Glasney land came to the Bassets via the Killigrews and Bickfords (Royal Institution of Cornwall (RIC) HB1/1–57; Palmer 1991, 3).

## Structural development of the site

Two distinct building phases can be identified from documentary sources. The first, from 1265 to 1316, involved the building of a cruciform church with central tower (and possibly a spire), aisles and clerestory, as well as the chapter-house and ancillary buildings. The second phase began by 1369 and was still not complete in 1445. The work done in this phase is less clear, although it may have involved re-modelling or re-building the choir and choir aisles and possibly extending the church eastwards with a Lady Chapel. Thereafter most references are to repairs.

### *Phase I: 1265–1350s*

In 1265, according to a fifteenth-century account of Glasney's foundation, the site was covered in thorns and brambles and a willow tree containing a swarm of bees had to be uprooted, the trunk being 'preserved for a memorial' or relic (Peter 1903, 4). Mud was removed down river and the site 'cleansed and dried and levelled by means of earth brought from higher places' (Rashleigh and Vincent 1879, 217). This account seems quite plausible and fits the known topography of this unpropitious site, located at the head of a tidal creek and with a watercourse running to the north, the name of which may have meant 'quagmire' (Padel 1985, 104).

The Glasney foundation story statement that 'in two years he [Bishop Bronescombe] perfected the fabric' has been taken literally by some historians, but in fact it is likely that only a small proportion of the building work had been completed by the time that the church and churchyard were consecrated by the bishop on 27 March 1267; most probably only the east end of the choir had been erected, with sufficient cover and glazing to allow worship to commence. Ecclesiastical building projects proceeded relatively slowly at this period: the fabric accounts for the admittedly much larger Exeter Cathedral, for example, cover more than 70 years and the choir at Canterbury Cathedral took ten years to construct and 30 years to glaze (Coldstream 1991, 20, Erskine 1981; 1983. For a Cornish parish church comparison: Johns *et al* 1996, 25).

The 13 canons were each given an acre of land in 1267 and evidence in the cartulary suggests that all had completed houses at their own cost by 1273

(Rashleigh and Vincent 1879, 218–9). These houses were mainly located in a terrace to the south of the cemetery but three or four may have been on the east side of the cemetery, while by 1300 at least two were located on the north side of the watercourse passing the site (Palmer 1991, 7–8, and below). A bridge chapel and chaplains' houses were built on or by St Thomas or College Bridge to the east of the church in 1275 as part of the de Ponte chantry foundation (Peter 1903, 19–20). By 1304, at the latest, the precinct was enclosed with a wall and lockable gates; the chapter-house is mentioned in 1315 although no doubt existed earlier (Rashleigh and Vincent 1879, 244; Peter 1903, 11–12). It is likely that the cloister was part of this phase, although it is not specifically mentioned until 1548 (Peter 1903, 103). The living of Gorran was re-appropriated in 1316 for an additional £26 13s 4d per year for the purpose of 'covering (the church of Glasney) with lead' (Rashleigh and Vincent 1879, 236). It is possible that the spire dates from the end of this phase. Evidence from the excavations indicates that important construction phases date to the early fourteenth century (below).

After the main works had been completed chantries were established. On 6 February 1328 Sir Otto de Bodrugan, knight, received a licence and in 1329 his chantry was described as being in one of the choir aisles at 'Bodrigan's altar where the body of the said knight's mother lay buried'. On 18 October 1354 Sir John de Beaupré, knight, founded a chantry 'in the chapel of the Blessed Virgin in the aisle to be named "Beaupré's" ' (Peter 1903, 29–33).

*Phase II: 1360s–1440s*

Bishop Grandisson left £13 6s 8d to unspecified 'new work' at Glasney in 1369 and ten years later a Glasney canon, William Carslake, bequeathed £20 to 'new work of the church' (Peter 1903, 37, 41). Grandisson was certainly regarded by some as a second founder of the church while another bishop of Exeter, Thomas Brantingham (1370–94), was in 1534 credited with having founded a chantry there (Halliday 1953, 226; Peter 1903, 40, 98). Nicholas Orme (pers comm) suggests this was a mistake for a Bronescombe chantry (de Ponte?). It has been suggested that this chantry was located 'like the Bodrugan chantry in the south ambulatory (or aisle) of the church', based on Sowell's view that the north aisle was the Beaupré one (Whetter 1988, 79, 77). Another interesting possibility is that the de Ponte and 'Brantingham chantries' are one and the same and that around 1393 the former bridge chapel may have been replaced by a new Lady Chapel (see Peter 1903, 98, 166; Snell 1953, 37, for comparable salaries of Brantingham and de Ponte chaplains). However, at Exeter and Crediton, Lady Chapels were an integral part of thirteenth-century schemes (Cherry and Pevsner 1989, 296, 365). Sowell (1865, 30) claimed to have seen 'shafting', which may have separated the Lady Chapel into bays, in the garden of College House – the building on the corner of College Hill – and if this material survives it could help resolve the dating issue.

Indulgences were granted to Glasney on 8 August 1396 and 7 August 1410 by the Pope and Bishop of Exeter respectively. These helped to raise funds by allowing contributors to the fabric of Glasney remission from their time in Purgatory (Orme 1992, 168). In 1400 when Bishop Edmund Stafford visited, he noted that 'the arches and vaulting of the choir and choir-aisles' were incomplete and encouraged the canons to give up a year's salary for this purpose (probably more than £100 in total). By 1404, it could be reported that the 'choir was new vaulted', although whether with stone or timber is unclear (Peter 1903, 54, 41). Hugh Hyckelyng, a precentor of Exeter Cathedral, left £2 to fabric in 1415 and as late as 1445 there were complaints of unfinished work because the canons were not paying 26s 8d each per year. 'The choir boys' chamber in the vicar's quarters' was so out of repair that the boys had to lodge in the town (Peter 1903, 40–41).

*Final phases: 1450s–1548*

Most of the evidence for this period comes from wills and Dissolution accounts and does not indicate any further building work apart from repairs. A token 2d was left to the church by Thomas Enys in 1476, while in 1500 Thomas Killigrew left £66 13s 4d towards Glasney's restoration (Peter 1903, 40). Richard Enys, a chaplain of Glasney, left 6s 8d to Glasney repairs, 3s 4d to the guild of Blessed Mary of *Glasnyth* (Glasney) and the same sum to repair the relics of Glasney in 1513 (CRO EN/1898; reference found by Nicholas Orme).

In 1547 storm damage to woodwork, lead and roof timbers cost £40 or more to repair (Smith 1964, 322; Snell 1953, 38). At the College's Dissolution the steeple contained five bells and a

morrow mass bell and the upper part was covered in lead. The roof of the church comprised lead and slate and some of this was sent by royal warrant to Scilly for the fortifications there (Snell 1953, 38–39). Interestingly, first mention of the cloister was made at this time (Peter 1903, 103). A substantial part of the fabric of the church must have been removed at about this time, although the tower appears to have remained intact until at least the end of the sixteenth century.

*Post-1548*

The later history of the site included an apparently unsuccessful attempt to found a school within the College walls in 1624 as well as references to dwellings adjoining and possibly incorporating part of the east end of the church (Palmer 1991, 12–17). The cemetery and church site (now the playing field) became an orchard surrounded by gardens, with the built-up area on the east gradually encroaching further eastwards, and thus changing the road alignment, as land was reclaimed from the creek.

**The location of the collegiate church**

The most useful account for reconstructing the form of the church is that published by Sowell (1865, 21–34). This includes a plan of the church (Fig 2) on which most of the north side is shaded to indicate a degree of certainty in the reconstruction, for, as the author noted, 'the foundations of the north side of the Chapel [that is, the collegiate church] can be traced somewhat accurately and at the north-east angle they are very massive and strongly cemented' (*ibid*, 29).

Sowell was able to estimate that the building was 246ft (75m) long, or about the length of the present playing field. His plan makes clear that the final 10ft (3m) or so of the Lady Chapel were not visible to him, possibly because they lay under buildings at the east end of the field. The absence of shading at the west end may be due to the fact that this area lay under a road. Sowell was unable to measure the width of the building but noted that 'the foundations of the transept extend about 18 feet 6 inches [5.6m] from the north wall of the Chapel' (Sowell 1863, 31).

William Worcestre unfortunately gave two sets of measurements for Glasney in his 1478 itinerary: 60 steps for both nave and choir or 50 steps each for nave, choir with ambulatory, and length (width?) of transepts (Harvey 1969, 105, 107. Earlier editions misleadingly gave the first measurement as 36 and 60 steps: see Sowell 1865, 30; Peter 1903, 1). The size of a Worcestre step is now estimated to be approximately 21 inches (0.53m), rather than the 2 feet (0.61m) calculated by Sowell (Harvey 1969, xvii–xviii). Taking the higher overall figure

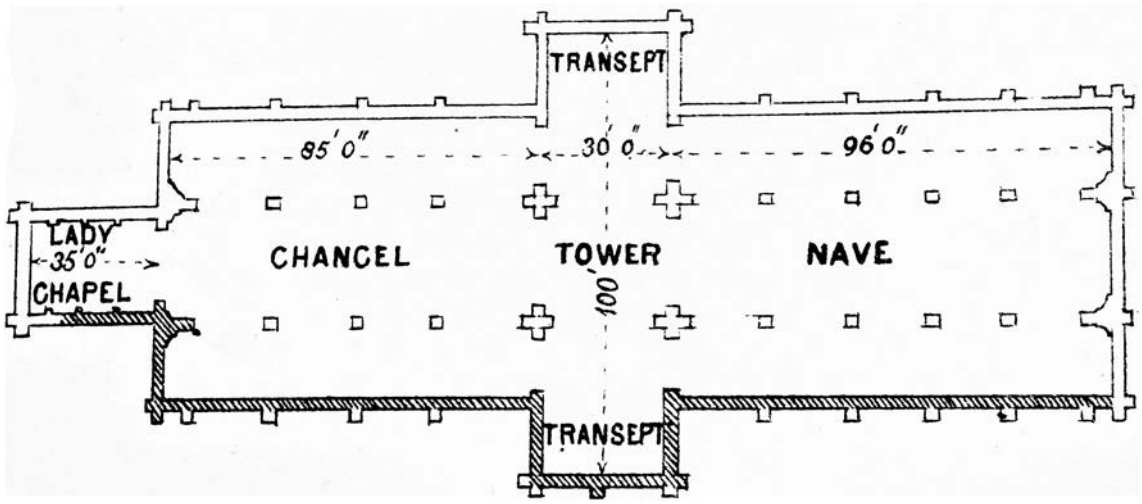


*Fig 2 Plan of the former church at Glasney published by C R Sowell (1865). North is to the bottom. The shaded walling could be 'traced somewhat accurately' at the time Sowell made his plan.*

of 120 steps, this gives an overall length of about 210 feet (64m), excluding the Lady Chapel which Sowell estimated as a further 35 feet (10.7). This is tantalizingly close to the 246 feet (75m) estimated by Sowell. However, his figure of 100 feet (30.5m) for the width is a guess based on Worcestre's steps and may be too wide.

Worcestre's measurements require some explanation in the light of Sowell's observations that 'the nave was 96 feet long, the transept 30 feet across, the choir 85 and the sanctuary [Lady Chapel] 35 feet long' (Sowell 1865, 31). It could be argued that Worcestre's identical measurements for nave and choir were due to the presence of a massive stone screen (in effect double screens with vaulted roofs), like those still existing at Exeter and Ottery St Mary, which would have been located under the tower crossing (for Exeter see the 1825 illustrations in Orme (1986, 100), and Erskine *et al* (1988), view 3, between 80–81). The nave measurement could have stopped at the front of the screen where the choir began. It is not clear why Worcestre omitted the Lady Chapel.

It is possible to locate Sowell's plan quite precisely, however, as he identified the sole pieces of extant masonry as the south jamb of the east window of the north aisle and the north side of the Lady Chapel (Sowell 1865, 29–30). 'Measuring southward about 15 feet from this point [the north-east angle], we find, standing in a garden and attached to the end of a modern house, a damaged jamb with two stones of a pointed arch' (*ibid*). In 1820 this 'pointed Gothic arch' had been noted as the only remains of the College, apart from 'a few mouldering walls' (Gilbert 1820, 786). The drawing of the remains of the window in Sowell shows that the ground level has risen considerably since 1865 and also that the facing stone has been removed since his time: Sowell's illustration shows putlog holes in the external stonework which would have been used in its construction (Sowell 1865, pl II).

This north-east corner of the church, noted by Sowell, could have survived as late as the 1910s or 1920s, as there is a Charles Henderson sketch labelled 'Glasney' that seems to fit this location (RIC Henderson notebook 203A). Observation by Eric Berry, before the re-siting of a metal tank in an adjacent garage, confirmed that the remains are part of a window with a clearly traceable glazing slot; the possible north wall of the Lady Chapel is now only visible inside the garage. The visible fragments of the north jamb seem to match the Henderson sketch and June Palmer's researches, based on later documentary sources, confirm Sowell's findings that the remains must be the east window of the north chantry chapel or aisle (Palmer 1986, 15).

## Historical depictions of the site

*Joanna Mattingly and Graeme Kirkham*

The earliest depiction of Glasney appears on a panoramic map showing the coast from Land's End to Exmouth made in 1539–40 as a planning aid for coastal defence (British Library, Cotton MS. Augustus I.i, ff. 35–6, 38–9; Harvey 1993, fig 32 and endpapers) (Fig 3; a copy of the Glasney portion was reproduced in Peter 1903, facing 41). This clearly depicts the defensive towers at the eastern end of the College site, the church with tower and spire and a bridge across the creek at the bottom of St Thomas Street.

More useful for reconstructing the College layout, however, is a map of Falmouth Haven which survives in the so-called 'Burghley atlas', a collection of maps held by Elizabeth I's advisor and minister William Cecil, Lord Burghley, now in the British Library (BL Royal MSS, 18 Diii) (Fig 4). The map has been variously dated, generically to Elizabeth's reign or more specifically to *c* 1580 (for example, Sowell 1865, 22, pl I; Jago 1875, 54; Jeffery 1889; Linzey 2000, II, 8, fig 8), but is currently dated *c* 1595 by the British Library (British Library online gallery – Falmouth Haven). The map shows only the central tower of the collegiate church standing, together with what may be the truncated walls of the chancel and nave. Otherwise the College precinct appears relatively intact, divided into several enclosures and with a row of canons' houses to the south of the church. As with the map of *c* 1540 it also appears to show St Thomas or College Bridge at the east end of the site of the church. This is not implausible, as it has been suggested above that the Lady Chapel may have been on the site of the original de Ponte chantry chapel, which took its name from the bridge. Deeds in 1594 and 1608 refer to the bridge of Glasney or College Bridge lying immediately to the east of messuages and tenements within the walls of the old College (RIC HB/1/26–7). This could imply that a stream (possibly the tributary of the mill leat shown on the Burghley map) was conduited under the church or churchyard, as at St

*Fig 3 Detail from a map of the south coast between Land's End and Exeter dated c 1540, showing Penryn and Glasney College. (British Library, Cotton MSS Augustus I.i., f. 36. Reproduced by permission of the British Library.)*

Petroc's, Bodmin (Preston-Jones and Mattingly 2000, 9). The depiction of the defensive towers is also similar to that on the 1540 map. The larger round tower, which is the only one that might possibly lie within the present playing field, later came into the hands of the Killigrews. It may be 'the watch tower of the said college' which had the bridge beneath and was still standing in the early 1700s (RIC, Tonkin vol H, 418). June Palmer argues persuasively that the middle gate, which was converted into a dwelling in the early eighteenth century, could be that depicted by Lysons in 1814 (Palmer 1991, 17–20).

Several previous works dealing with Glasney and Penryn have reproduced versions of one or other of two later nineteenth-century 'reconstructions' of the College complex, both of which show the church in an apparently complete state. R J Roddis captioned a copy of one version of the drawing as 'reputed to be a copy of an original (now untraceable) said to have been the property of the Great Lord Burleigh in the reign of Elizabeth' (Roddis 1964, facing 66). This picture, and a further, more 'architectural' version of it (below), have subsequently been said to be based on a 'lost' original attributed to Sir Ferdinando Gorges and specifically dated to *c* 1580 (for example, Wingfield 1979, 4, fig 4; Whetter 1988, vi, 35; Orme 2010, fig 60).

Ferdinando Gorges was born *c* 1565–8 and would therefore have been only in his early or mid-teens in 1580 (Baxter 1890, I, 3; History of Parliament online – Sir Ferdinando Gorges). Early in 1596, however, after a varied military career, he was appointed commander of the newly constructed Plymouth Fort, in which post he also had responsibilities for the defence of the coast of Cornwall to the west and reported frequently to Lord Burghley and his son, Sir Robert Cecil (Baxter 1890, I, 13–20; II, 231–51; Preston 1953, *passim*; Cal SP Dom Eliz 1595–1597, *passim*). Gorges visited Pendennis with Sir Walter Ralegh and Sir Nicholas Parker late in 1597 and commented on its defences (Cal SP Dom Eliz, 1595–1597, CCLXV, 546; Baxter 1890, III, 47; Linzey 2000, II, 13). On his return to Plymouth in December 1597 he sent Sir Robert Cecil a 'rude plan of Falmouth' and another showing proposals for the defences of the haven (Cal SP Dom Eliz 1595–1597, CCLXV, 547; *cf* Baxter 1890, III, 47). It is likely that this 'rude plan' was what is now known as the Burghley map.

The two 'reconstructions' of Glasney – one is likely to be an 'improved' version of the other – both closely follow the principal elements of the representation of the College complex on the Burghley map: they have precisely the same point of view and both similarly reproduce components of the site which are shown on the map and known to have survived the post-Dissolution demolition, including the defensive towers and adjacent bridge. The representations of the canons' houses and other buildings and enclosures in the College precinct similarly follow the Burghley map meticulously. Both drawings incorporate gablets on the collegiate church tower, which are clearly suggested by the depiction on the Burghley map (Fig 4).

These similarities in themselves strongly suggest that these putative copies from a supposed original by or associated with Sir Ferdinando Gorges were in fact imaginative interpretations based on the depiction of Glasney on the Burghley map. A copy

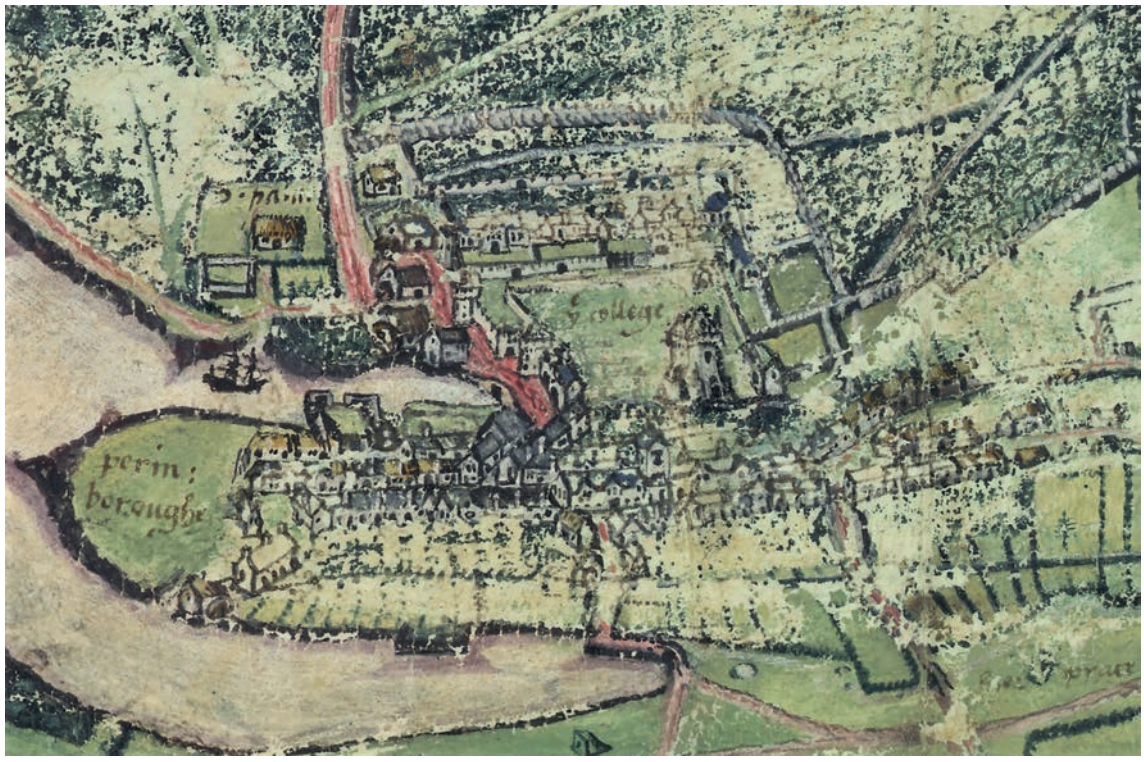


*Fig 4 Penryn and the site of Glasney College from a map of Falmouth haven c 1597 in Lord Burghley's 'atlas' (British Library, Royal MSS 18 Diii, ff. 15v–16. Reproduced by permission of the British Library.) Henry Jeffery published a copy of the Burghley map in 1887, made from a copy held by Penryn Town Council, noting that 'the original in the British Museum is in good preservation, but the outline of Glasney College is blurred by constant folding' (Jeffery 1887, 163).*

of this was held locally in Cornwall: in 1843 a list of suggestions for potential antiquarian research in Cornwall noted that 'A Plan or Panoramic view of Falmouth Harbour, including Penryn, temp. Eliz. deserves notice. There is a copy at Penryn, said to have been taken from the original among the Royal MSS. in the British Museum, 18 d. III., and which belonged to Lord Burghley, who died in 1598 – Arwenack House and Glasney are particularly described' (*Royal Cornwall Gazette*, 10 November 1843, p4). One of the Reverend Sowell's illustrations for his paper on Glasney in 1865 was a detail of the College, captioned 'From a Map temp. Eliz: in the possession of the Mayor of Penryn' (Sowell 1865, pl I) (Fig 5).

Sowell noted that the illustrations for his paper had been prepared for him by Mr T Dunstan, of Penryn, who also 'added some architectural remarks, of which I have availed myself in the text' (Sowell 1865, 34). Dunstan's detail of the College site 'improved' on the Penryn copy of the Burghley map, showing, for example, the outline of the wall bases on the north side of the church and north transept, features not shown on the copy or on the worn original in the British Museum. Two decades later, H M Jeffery noted that Dunstan had used the Burghley map to produce the depiction of Glasney published by Sowell in 1865, adding: 'Of the College Chapel dedicated to Thomas-a-Becket the tower alone appears in Burghley's map: but Mr Dunstan has reproduced the whole edifice by the help of the existing foundations' (*ibid*). (Jeffery noted that Dunstan had similarly produced a 'restoration' of Arwenack, 'made by the aid of the existing remains and of Burghley's Map' (*ibid,* 164).)

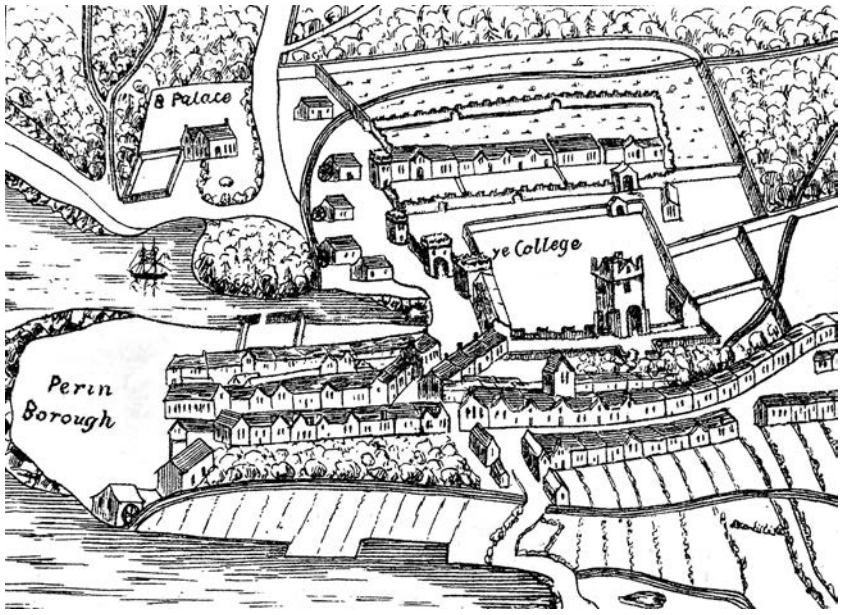


*Fig 5 The Glasney site by T Dunstan, copied from a (probably nineteenth-century) copy of the Burghley map held in Penryn, with the bases of the north wall and north transept of the church added (Sowell 1865, pl I).*

Dunstan's original reconstruction of 'the whole edifice' has not been conclusively identified. It may have been a pen-and-wash drawing titled 'The College of Saint Thomas, Glasnith [sic], Penryn' which is now held in Penryn Museum (Fig 6a; reproduced in Orme 2007, fig 45; 2010, fig 60). This shows the College church in a complete state, together with defensive towers, the canons' houses and other buildings, a burial area with grave-markers, a preaching cross and a laid-out path, and three human figures and a dog. It is captioned 'Enlarged Restored and Copied from an Antient [sic] Drawing which appears to have been the property of the Great Lord Burleigh in the reign of Elizabeth which is now in the British Museum.' The sheet is headed with a Latin text, *Placet mihi dicere vel stanti scriptura, Res auditas ponere pro gente futura,* taken from the entry for Glasney in William Worcestre's *Itinerary,* which had been printed by Gilbert in his *Parochial history of Cornwall* (1838, IV, appendix VI, 243). Two closely similar versions of this depiction are held in the Royal Institution of Cornwall (TRURI:1944.111.209.1–2); both carry the same Latin text but only one bears the same caption as that in Penryn. Another copy of this drawing, again with slight differences, was published by Roddis (1964, facing 66).

A further watercolour or pen-and-wash depiction held by the Royal Institution of Cornwall is considerably larger in size than the other drawings but is otherwise closely similar in its viewpoint and other basic elements (Fig 6b). There are differences in detail, however: no burial markers, cross or figures are shown, for example, but some architectural features such as window tracery are depicted more clearly and confidently, and a somewhat more ecclesiastical arched door is depicted on the north transept, in contrast to the rather domestic square-headed door with label shown on other versions. The drawing is similarly titled 'the College of Saint Thomas, Glasnith, Penryn' but lacks a caption. It is subscribed 'John D Enys', but it is not clear whether this indicates that the drawing was his work or had simply been part of his collection. This representation may be that reported as having been donated to the Royal Cornwall Museum in 1892 by John Burton, proprietor of the 'Old Curiosity Shop' in Falmouth (*Royal Cornwall Gazette,* 31 March 1892, p4; *Lake's Falmouth Packet and Cornwall Advertiser,* 2 April 1892, p5; Anon 1893, 242).

A second version of the 'reconstruction' clearly follows these drawings but is distinct in that it is rather more accomplished, particularly in its representation of perspective and of architectural detail; it also adds in its foreground a walled area of the College precinct on the north side of the church which is not shown by the other drawings. This

*Fig 6a A pen-and-wash 'reconstruction' of the College, now in Penryn Museum, possibly by T Dunstan. (Reproduced by kind permission of Penryn Museum.) The original is very discoloured, with damage to the paper surface; the photograph has been digitally enhanced to bring out detail.*

*Fig 6b Another version of the reconstruction drawing, with significant changes of detail, now in the Royal Cornwall Museum. (Reproduced by kind permission of the Royal Institution of Cornwall. Accession TRURI:1000.466.)*

depiction has been reproduced in a number of later twentieth-century works on Penryn and Glasney, including Wingfield (1979, 7), Whetter (1988, vi), Palmer (1991, 6) and Conservation Studio (1999, fig 1), but none indicate its provenance; Dunstan (1975, 19) acknowledged it as 'Cornwall County Library, Falmouth' but it is no longer held there.

The initial publication of this second drawing has not yet been identified but it probably first saw print soon after 1900. When T C Peter published his *History* of the College in 1903 he noted both this and the earlier reconstruction from which it derived and sought to correct recent misrepresentations of their authenticity:

> 'In the possession of the [Penryn] town-clerk is a drawing of Glasney College honestly marked as "copied and restored" from the map temp. Elizabeth by the late Mr Dunstan. It is a purely fancy picture and of value only as showing what a man of Mr Dunstan's recognised ability imagined the buildings to have been like. A copy of this purely conjectural "restoration" has been recently published, locally, as an "*enlargement*

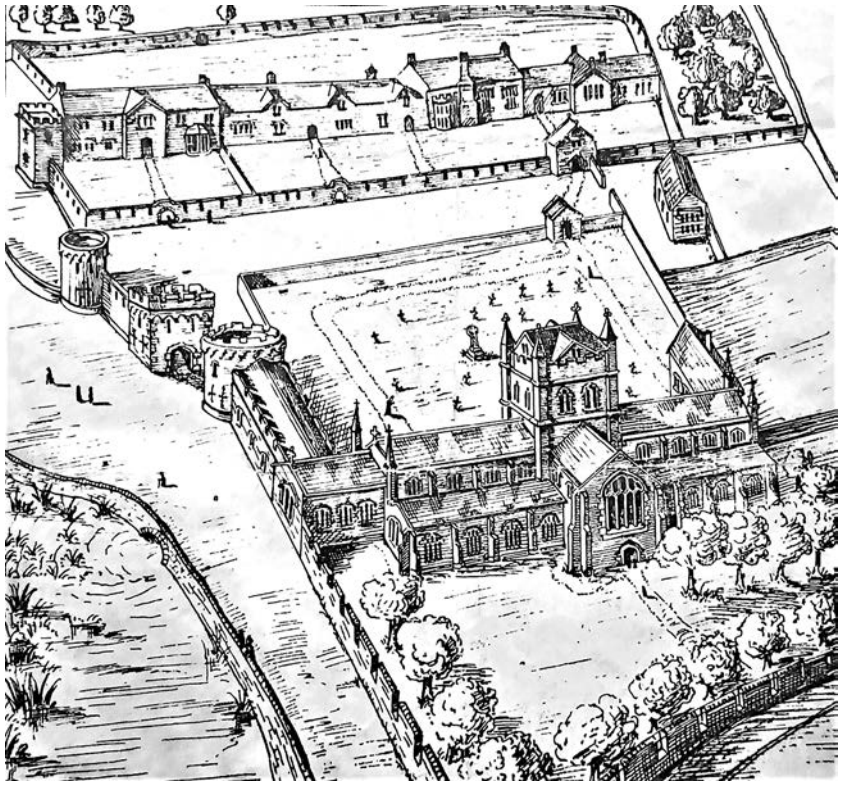

*Fig 7 Another 'reconstruction' of Glasney, from a photocopy of an unidentified printed source, c 1903. The caption stated that the picture 'is an enlargement of a map preserved in the British Museum'. (Reproduced by kind permission of Penryn Museum.)*

> of a map preserved in the British Museum"! False and misleading statements of this kind cannot be too severely reprobated' (Peter 1903, xii).

Penryn Museum holds a faded photocopy from an unidentified printed source showing this second 'restoration' (Fig 7). The image carries the initials HS and is captioned in precisely the words Peter cited, 'enlargement of a map preserved in the British Museum'. The caption also refers to 'The "Cornish Echo," Dec. 24th, 1902'. That issue of the Falmouth newspaper (in fact dated 26 December) includes a substantial piece summarising Glasney's history, the first sentence of which refers to publication of a 'picture of Glasney College in the "Cornish Echo" almanack for 1903' (*Cornish Echo*, 26 December 1902, p8). No copy of the almanac has been located but it seems likely that the illustration published in it was the same as that in the unidentified photocopy at Penryn Museum and carried a similar caption.

The two reconstructions, in their various versions, both show considerable architectural detail in their depictions of the standing church building. It is clear that this was not based on any contemporary depiction of the College when complete. It may have derived, however, at least in part, from a knowledge of the structures which offer the closest comparisons for Glasney: the overall form of the building, for example, is similar to that of the collegiate church at Crediton, Devon (*cf* Whetter 1988, iv). The reconstructions also show what may have been intended as stair turrets giving access to the leads at the east end of the chancel and at the west end of the nave. These appear to be drawn as octagonal, as are those at Exeter Cathedral. (The presence of such features, if they did formerly exist at Glasney, could help to explain the thickness of the masonry to the south of the surviving portion of the north-east window.) Neither drawing shows the spire which appeared on the map of *c* 1540. The reconstructions are likely to be incorrect in showing only four bays to the choir and nave, rather than, for example, something more akin to the five bays of the choir and Lady Chapel, and six bays of the nave, at Crediton. Evidence recovered during the Glasney excavations (below) suggested that the choir there is likely to have

had six bays (Eric Berry, pers comm). The plan published by Sowell in 1865 is not helpful in this respect in that he appears to have added buttresses to his plan of the foundations fairly randomly, implying four bays for the nave, plus a short end section, with a similar five-and-a-bit bay layout for the nave. It seems unlikely that the buttresses were still visible when Sowell (or Dunstan) made this plan, although in other respects it has proved to be accurate, suggesting that a substantial part of the northern foundations were still visible at that time.

## The excavation

The documentary research, in conjunction with the analysis of the standing fabric, guided the position of the evaluation trenches (Fig 8). These were laid out to evaluate the extent and complexity of the remains of Glasney College, the aim being the minimum excavation required to understand the layout of the site. Each of the trenches contained a number of deposits and fills which included considerable amounts of demolition debris, overlying both *in situ* archaeological remains as well as robbed-out hollows. Human remains were found but were not excavated and were left *in situ*.

Each context identified during the excavation was assigned a context number. In this report cut features such as gullies and pits have context numbers in square brackets; for example, [105]. Deposits, fills and layers are shown in round brackets – (115) – and structures are indicated with unbracketed numbers: 121. The trench plans – Figures 9, 11, 13 and 15 – show all context numbers in square brackets.

### Trench 1

Positioned in the north-east corner of the playing field, this trench uncovered the south-east corner of the church. This was aligned with the known upstanding fabric in the north-east corner of the field, thereby showing the position of the east wall (Fig 9). An external cobbled surface and an earthen floor in the position of the presumed Lady Chapel to the east were also uncovered. Due to the unstable nature of much of the excavated material the trench sides were cut back to a sloping profile (battered) and the trench extended in width to 3.1–3.4m.

The southern half of the trench revealed the substantial remains of the south-east corner 102 of the church, including two well-constructed buttresses (Fig 10). This walling was made up of

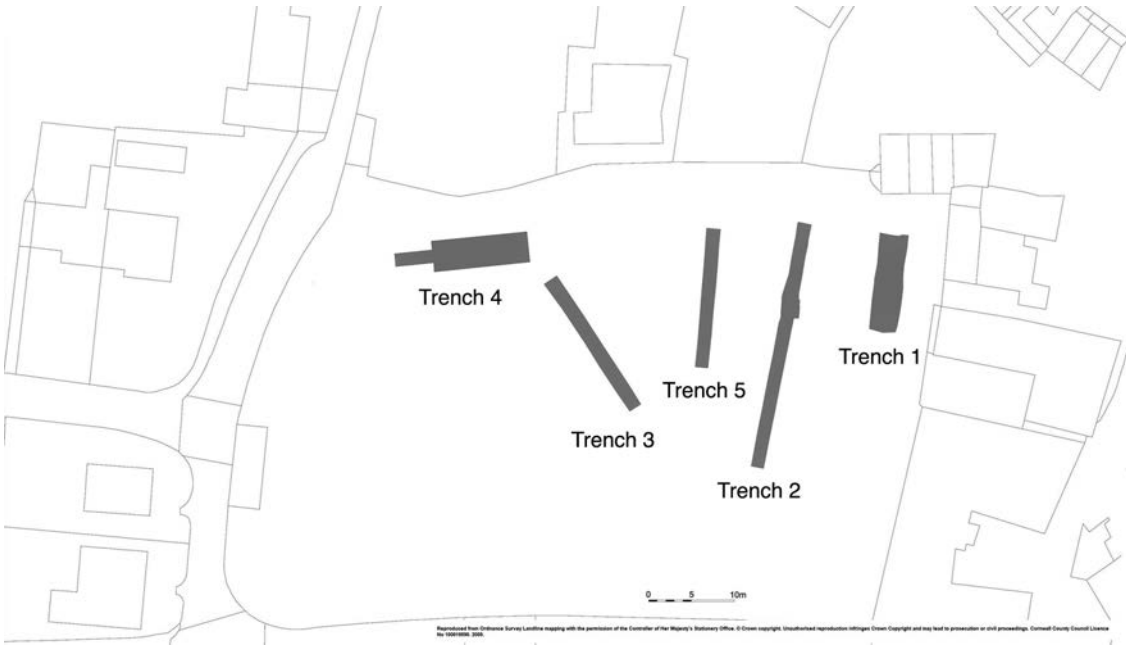


*Fig 8 The location of the five excavation trenches.*

horizontally laid blocks of killas and an occasional block of granite set in a gritty white mortar. Stones laid at an angle to the interior of the wall were thought to be part of a possible window embrasure, similar to that in the surviving above-ground fabric, or a recess or niche. Faced with large stones on the exterior, the core of the wall included smaller rounded stones. It stood to a height of up to 0.4m above the level of the footings, which were themselves only 0.1m high. This structure was built on a foundation raft of blocks of killas and granite (117), sealed by clayey layers (115) and (123). Context (115) contained a single sherd of a hand-made medieval coarseware dating to the thirteenth or fourteenth centuries.

Truncated to both the north and west, the remains of the buttressed corner were nonetheless one of the most substantial components of the building to be revealed by the excavation. The east wall of the church only extended for 1.5m from the buttressed corner to a large hollow filled with a soil and rubble deposit. The wall was 1.7m wide, similar to the above-ground remains of the surviving east walling of the church. The inside face of the east wall survived for a length of only 1m and was plastered. Within the structure there was a mid-green – brown silty clay (124) which may have been the bedding for an internal floor.

The east buttress was 1.6m wide and that to the south 1.4m wide. The south buttress was surrounded by a cobbled floor surface 121 which included a runnel. The level of the cobbled floor was higher than that of the footings recorded to the north-east of the corner and it is likely that similar

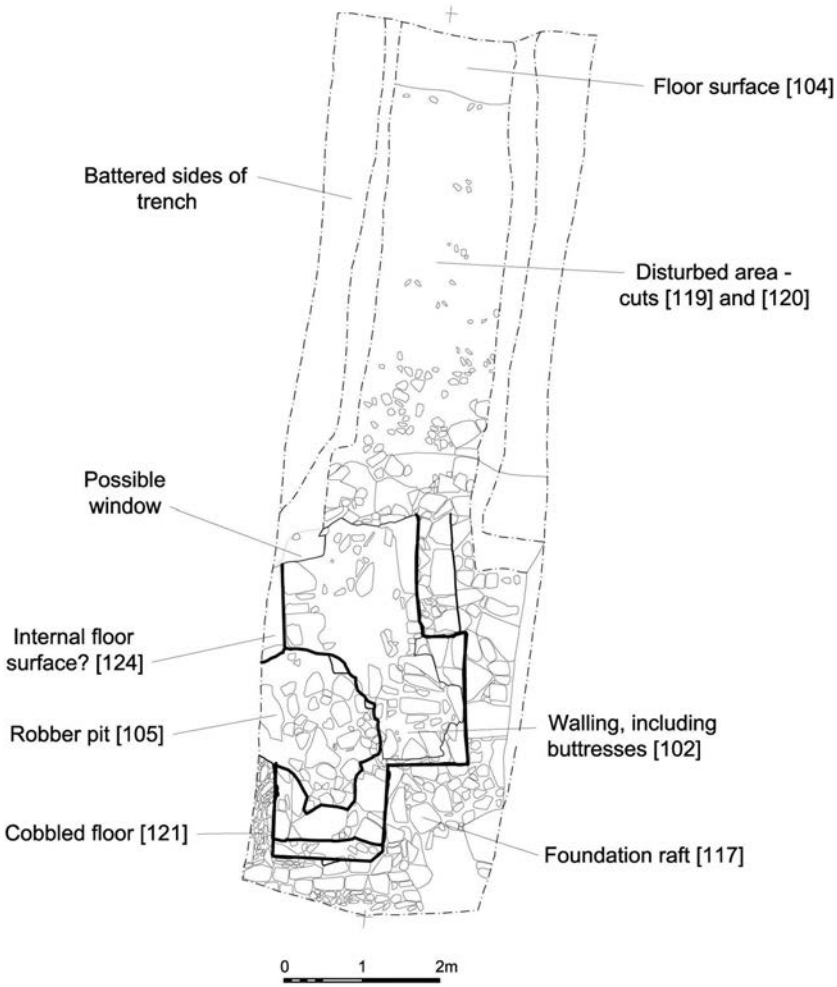


*Fig 9 Plan of trench 1.*

*Fig 10 Trench 1: the buttressed south-east corner of the church, from the south. (Photograph: Cornwall Archaeological Unit.)*

footings were masked by this external floor. An irregular although broadly oval robber pit [105] was recorded where the south wall of the church would have joined the buttressed corner and, although the wall did not survive in this trench, the survival of a possible internal floor surface 124 and the cobbled floor on its exterior show that this wall would have been less substantial than the east wall of the building.

The large hollow to the north of the buttressed corner was made up of two probable cuts [119] and [120]. It was 4.5m wide and filled with a loose soil including a large amount of masonry rubble (103) and two sherds of modern china, showing this to be an area of later activity. It may have been associated with a cottage documented on the site in more recent times (Joanna Mattingly, pers comm). This context was sealed by the 0.3m deep topsoil layer and was excavated to a depth of 1.6m.

The north edge of the hollow was marked by a flat and compact mid-greenish – brown sandy clay layer (104), with a near vertical south edge. This deposit may have been the bedding layer for a floor and the hollow to the south certainly represents the robbing out of the area of the Lady Chapel. The level of this floor and of the foundation raft and footings to the buttressed corner were broadly the same. Layer (104) was covered by demolition layer (103).

Medieval ridge tiles were found in a number of contexts. These included 22 fragments in context (113), a silty clay within the cobbled runnel 121, six fragments in context (107), which overlay (113), and four fragments in (114), which was just above the foundation raft for the building. These ridge tiles may derive from the early stages of the demolition of the church. This interpretation is reinforced by the recovery of three sherds of pottery datable to the sixteenth century from context (107).

## Trench 2

Structural remains were only found in the northern half of trench 2 (Figs 11, 12), which was positioned within the footprint of the church. A series of internal walls and related features, robber trenches in the position of the south wall of the church and the east edge of a possible chapter-house were also noted. Beneath the topsoil (200) and a brown soil (219), together 0.4m in depth, the actual church remains were covered by a demolition layer of killas fragments (201) up to 0.9m deep.

Wall 209, lying on a north–south alignment within the choir, was revealed over a distance of 4.7m and was constructed of roughly-coursed killas blocks with a creamy-white mortar. Only the east side of the wall was uncovered; its original width was in excess of 0.7m and it stood to a height of 0.3m above possible floor levels to the east. It had dressed stone on its south end and the east-facing wall had been plastered. To the north, wall 212 returned and continued to the east for a

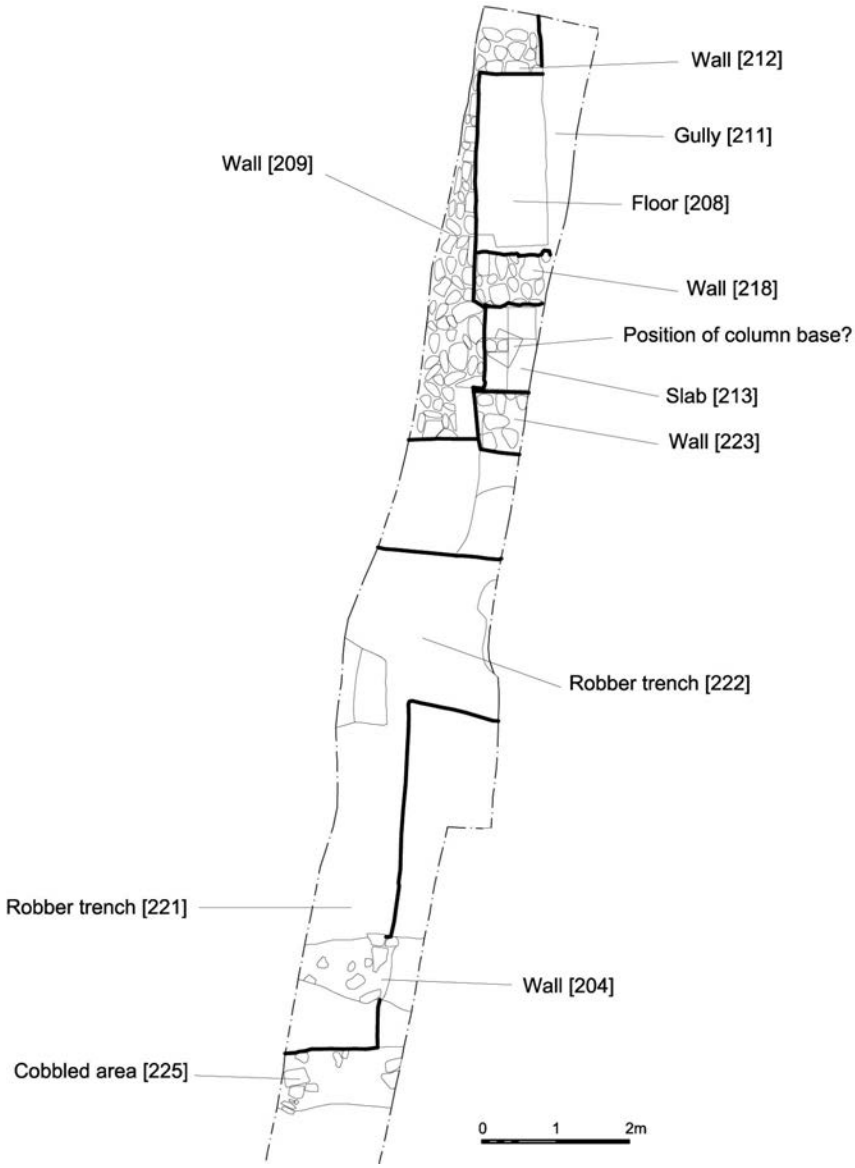


*Fig 11 Plan of trench 2.*

distance of 0.9m, where it was cut by a gully [211] containing a creamy-brown lime mortar deposit. The south edge of wall 223 also continued to the east. This section was 0.9m wide and showed some evidence of footings to the south.

Enclosed within walls 209, 212 and 223, there was evidence of floor levels. This comprised a flagstone surface 213, subdivided in plan from a bedding layer (208) by another wall 218 on an east–west alignment. Wall 218 was 0.8m wide and butted against the best-preserved section of wall 209. Its height above the floor levels was negligible.

The flagstone slab surface 213 measured 1.18m by 0.75m. It was constructed of four worked blocks with a small socket to the west which had been filled by smaller stones. Mortar survived on the slabs, measuring 0.35m by 0.45m, which is likely to represent the position of a column of some sort. To the north, between walling 218 and 212, was a compact mottled deposit (208) which may have been a bedding deposit for a floor. It was only

*Fig 12 Trench 2: walling and slab for a column base, from the south. (Photograph: Cornwall Archaeological Unit.)*

0.11m deep and overlay a slight mortar floor 0.02m deep extending east from wall 209.

The best-preserved section of walling 209 lay 1.1m below the modern level of the field, at 3.36–3.5m OD. The various walls in this area on east–west alignments, and the floor areas, were at roughly the same levels. Wall 218 was at 3.31m OD, wall 212 at 3.24m OD, the flagstone area at 3.26m OD and floor area 208 at 3.34m OD. Wall 223 was slightly lower at 3.01m OD. This demonstrates that most of the walling in this area had been robbed out to ground level.

The position of the south exterior wall of the church survived as a large robber trench [222] 2.1m wide and 0.6m deep. This was a considerable feature; the act of robbing the stonework had in effect created a large ditch. It had a single fill (207) containing building debris. Joining this trench was a further robber trench [221], 2.1m wide and 0.6m deep and approximately 6m long on a north–south

alignment, which then returned to the west. This marked out the location for the east side of the possible chapter-house.

Immediately to the south of this cut there was a small cobbled area 225, which included a runnel extending parallel with the south wall of the chapter house. There was a roughly constructed east–west wall 204 in this area. This feature was of relatively poor quality and overlay the robber trench [221], showing it to be a later feature related to reuse of the site.

Trench 2 was the principal source for various fragments of internal stone furnishing which John Allan and Stuart Blaylock (below) suggest probably derived from the choir or presbytery at the east end of the church, the remains coming from tombs, canopies over sedilia or stalls, a piscina or a screen such as that behind the high altar.

Two stratified sherds of Cornish post-medieval coarseware were recovered from the main deposit of demolition debris (201).

### Trench 3

Trench 3 was laid out to cut across the south wall of the church and the walls of the south transept diagonally (Fig 13). The remains of the walling were covered by a 0.8m deep deposit (334) containing a considerable amount of demolition debris. The south part of the trench was largely sealed by a deposit of silty clay (301).

The base of the south wall 332 was found 1.2m below the present level of the field. (Fig 14). The exposed portion was 1.7m long and only 0.8m wide and was constructed of tightly packed killas pieces; both sides were faced and it had a rubble

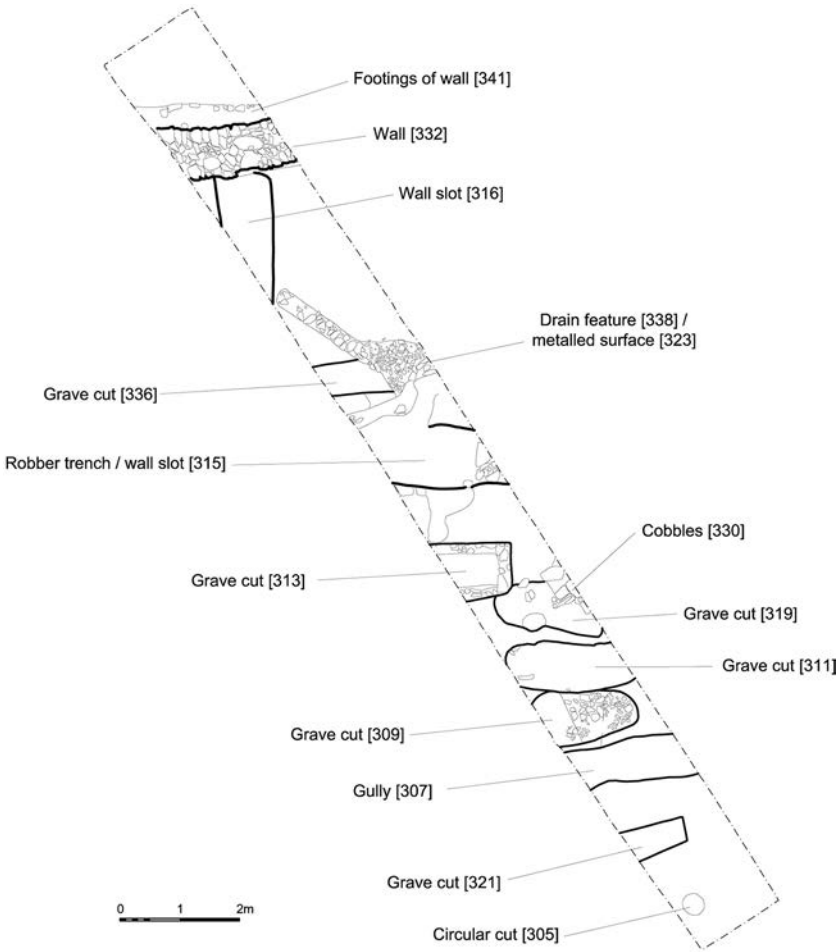


*Fig 13 Plan of trench 3.*

core. The walling here was not as substantial as the east wall of the structure, although slight footings 341 to the north were also visible.

A well-preserved foundation trench [316] for the west wall of the south transept was recorded butting against the south wall. The wall slot was 0.9m wide and 0.4m deep, had near-vertical sides and flat base and contained a single fill (317), a loose killas rubble that had fallen into the robbed-out trench. A robber trench on the line of the south wall [315] of the transept was also excavated. This was of a similar size to the west wall slot, although the area around the trench had been disturbed by tree roots or animal burrowing.

Six grave cuts were also recorded. The northernmost grave [336] lay within the transept; the other five – [309] [311] [313] [319] and [321] – were all outside the church. All were aligned east–west. A gully [307], also on an east–west alignment, was recorded between the two southmost graves. The widths of the grave cuts varied from 0.7m to 0.9m. Grave [319] was 1.72m long but the full lengths of the other graves were not visible in the trench.

The graves varied in construction. Grave [313] was square-cut and lined with stone (329) but some of the others were less angular. There was also evidence of relative chronology, with grave [309] being cut by [311] and [319] by [313]. None of the graves was bottomed. Human remains were noted in grave cut [309], partly excavated to confirm the identification of these features, but were left *in situ*.

The graves in trench 3 contained some stratified pottery, much of it medieval. Fill (310) of grave cut [311] contained two sherds of medieval coarseware, as did fill (314) of grave cut [315] together with a single sherd of a Saintonge jug. Fill (312) of grave cut [313] and fill (318) of grave cut [319] both contained single sherds of medieval coarseware. Later pottery from the upper parts of the graves included modern china and stoneware from (310), stoneware and post-medieval coarseware fragments in (312) and Chinese porcelain in (318). It is likely that these finds represent later disturbance in this area or came from the interface between the grave fills and the overlying deposits.

*Fig 14 Trench 3: the southern wall of the church and the robber trench of the west wall of the south transept, from the north. (Photograph: Cornwall Archaeological Unit.)*

To the south of the burials there was a circular cut feature [305]. It had straight sides and a flat base, was 0.34m in diameter and 0.3m deep. The cut was sealed by a grey sandy clay layer (324) which was itself cut by graves [309] [311] [313] [321]. Also recorded in trench 3 was a small area of cobbling 330, measuring 1m by 0.5m, which overlay grave [319], and a linear drain [338]. This cut was aligned north west – south east and overlay or cut grave [336]; it was itself masked by a possible metalled surface 323.

The archaeological deposits were covered by two topsoil-like layers (300) and (326) which overlay an orange silty clay (302), together representing evidence of the levelling of an old land surface. Between these layers and the grave cuts was a dark greyish-brown deposit (301).

**Trench 4**

This trench was located within the nave, the most disturbed area encountered by any of the five trenches. It did not include any standing structural remains. Excavated to a maximum depth of 1.4m, the eastern 11m of the trench mainly held a single fill of rubble (402). Beneath a topsoil deposit (400) no more than 0.2m in depth, the main deposit was a demolition layer that included a large number of pieces of masonry. It was cut by a single feature [412], 0.4m deep and 2m wide, which appeared to be little more than disturbance of the post-Dissolution demolition debris. Among the stonework recovered from the trench were 13 large blocks from door jambs which may come from a single doorway (Allan and Blaylock, below).

Underlying this debris was a thin layer of a mid-olive – brown sticky clay (407) containing frequent small blocks of killas and overlying natural clay deposits. Four sherds of pottery were recovered from this layer: two post-medieval coarseware sherds and two sherds of a Beauvais single *sgraffito* dish. These could be dated to around the time of the Dissolution.

In the west part of trench 4 the main demolition debris (402) was cut by a large pit [408], probably resulting from later reuse of this part of the site. Two sherds of English transfer-printed earthenware dated to after 1780 were recovered from this cut. The bottom fill of this feature was a mid-greyish – brown silty clay (409) above which there was a clay deposit (406), which has been interpreted as a lining for a hollow or pond. It contained three main fills, (401) (410) and (411), of which the two lower deposits were silty and contained little stone. It is possible that the top fill (401), which contained a large number of killas blocks, represents a phase of deliberate backfilling. It contained a single residual sherd of post-medieval coarseware. The remains of the base of a barrel, probably relatively recent in date, were excavated from the clay lining (406): a circular cut (405), only 0.1m deep, was edged by the remains of a barrel hoop (404).

**Trench 5**

This trench lay across the choir and south aisle, extending into the area to the south of the church (Fig 15). Features recorded include floor levels for the choir and south aisle, an internal wall incorporating a pier base, a large robber trench in the position of the south wall of the church and a well-preserved area of cobbling on the outside of the church.

Trench 5 also contained a large concentration of architectural fragments, including pier sections, moulded blocks, column bases, ridge-rib blocks as well as stone blocks, all of which were from the fabric of this portion of the church.

In the north part of the trench was the surviving floor surface 516 of the choir, which included a quantity of *in situ* floor-tiles (522). Although damaged and uneven in parts, the floor, comprising a white mortar level and small slates for levelling purposes, had enough tiles still in place to show its make-up. It contained tiles from Devon, some of which were decorated, assigned by Laurence Keen (below) to Series 1 from Exeter, dating to before about 1330. Also present were floor-tiles imported from the Low Countries, which may derive from a re-flooring in the second half of the fifteenth century. Some of the *in situ* tiles were red, others alternated black and yellow.

The south edge of this floor area was retained by a wall 511 incorporating a limestone pier base 521 (Fig 16); this was left *in situ*. On the aisle side, the pier base had broad hollow mouldings to either side, fronted by the base of an attached shaft with a concave splayed ('bell-shaped') base moulding. Towards the choir, there was a rather larger attached shaft flanking hollow mouldings. It appears likely that wall 511 post-dates the pier base as part of it overlies part of the column.

The wall 511 was 0.45m wide and had a maximum height of 0.75m, part of which was

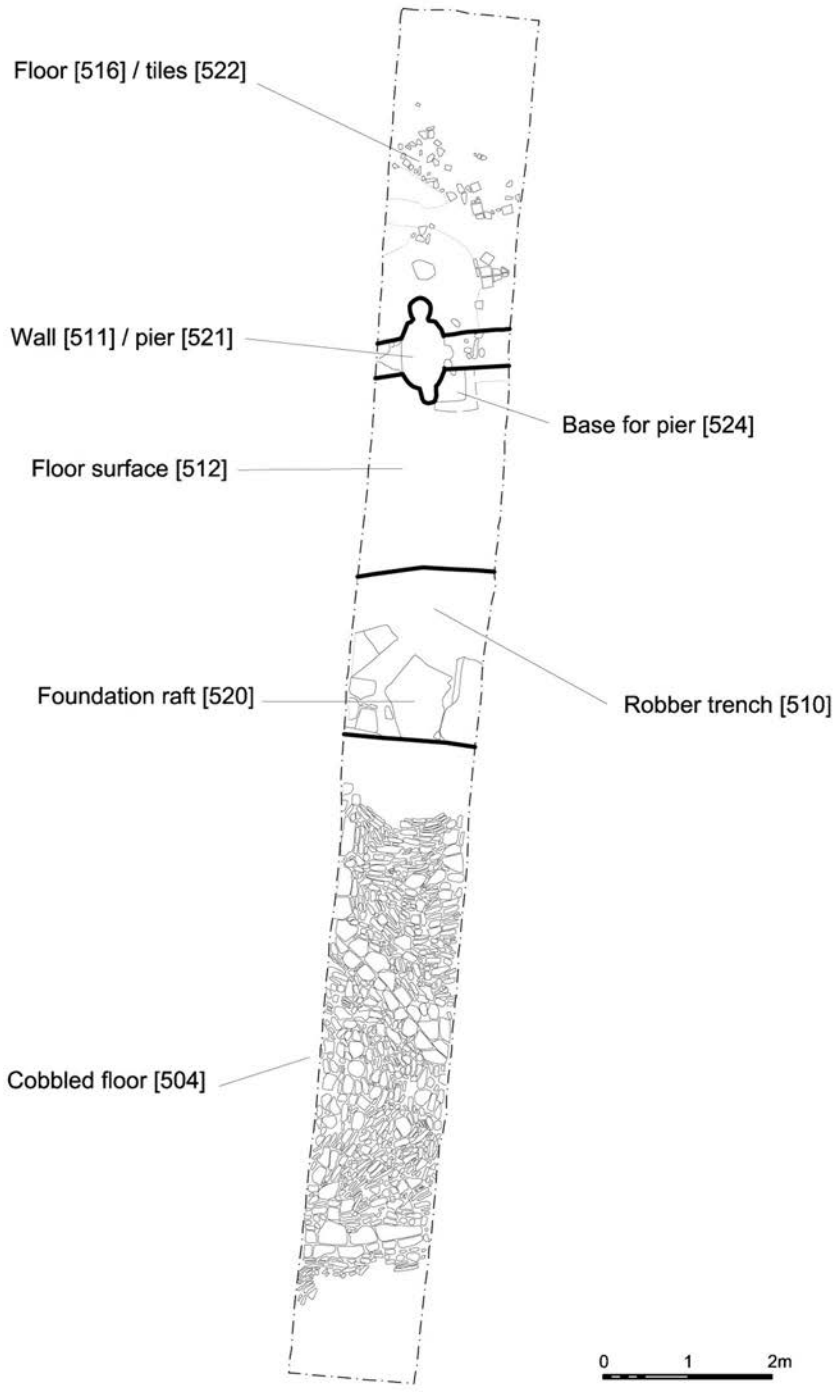


*Fig 15 Plan of trench 5.*

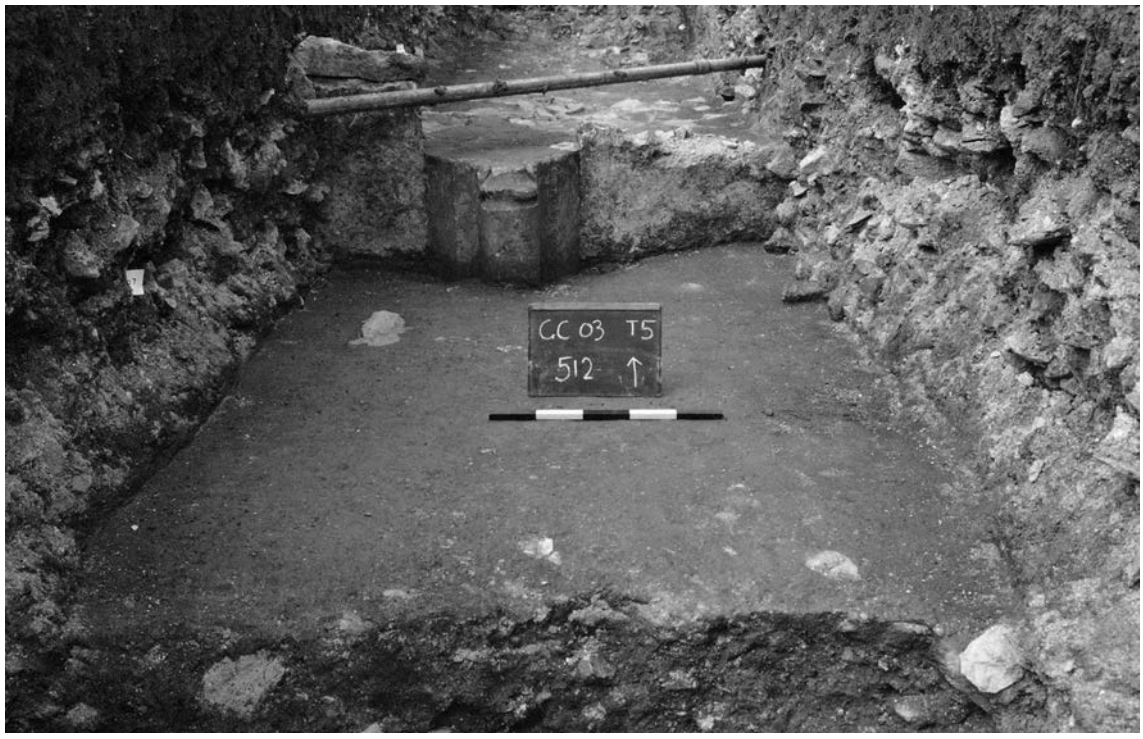


*Fig 16 Trench 5: pier base and wall dividing the south aisle from the choir, from the south. (Photograph: Cornwall Archaeological Unit.)*

masked by a floor 512. The wall was constructed of small killas fragments in a lime mortar and plastered on its south face. The plastering did not extend below the level of the floor to the south and was therefore later. The floor 512 was a light greyish-brown sandy silt deposit. A single fragment of *in situ* floor-tile (513) survived against the wall and has been identified as an import from the Low Countries (below). This tile was removed and a small trench excavated against wall 511 and the pier base 521. This revealed that the pier base was positioned on a slab (524) approximately 0.1m below the level of floor 512, set within a build-up layer 523. This layer overlies and surrounds the slab but underlies wall 511. It included five sherds from a single medieval coarseware vessel, datable to the fourteenth–fifteenth centuries. This suggests that the internal wall was constucted in the second half of the fifteenth century, with the interior of the choir being raised and re-floored at the same time.

The south wall of the church did not survive, although its location was indicated by a large robber trench [510], with a single fill (509) containing numerous stone fragments. The base of the trench was square cut, about 1m wide, 0.3m deep and well defined in the east facing section. It was less regular in the west section.

A loose demolition layer (507) with a maximum depth of 0.6m covered the area of the robbed-out south wall, the south aisle and the choir, where the depth of the deposit was 0.45m.

A cobbled surface 504 extended 5.5m along the trench and survived in good condition to the south of the robber trench (Fig 17), at a depth of 0.4m below ground level. It included two runnels. The northernmost of these extended away from the church in a southerly direction for 1.5m, before heading south-east. This direction was evidently chosen to avoid the south-west corner of the possible chapter-house partially uncovered in trench 2. The second runnel extended broadly east–west across the trench, some 7m to the south of the position of the wall of the church.

The cobbled layer was left *in situ* but disturbance

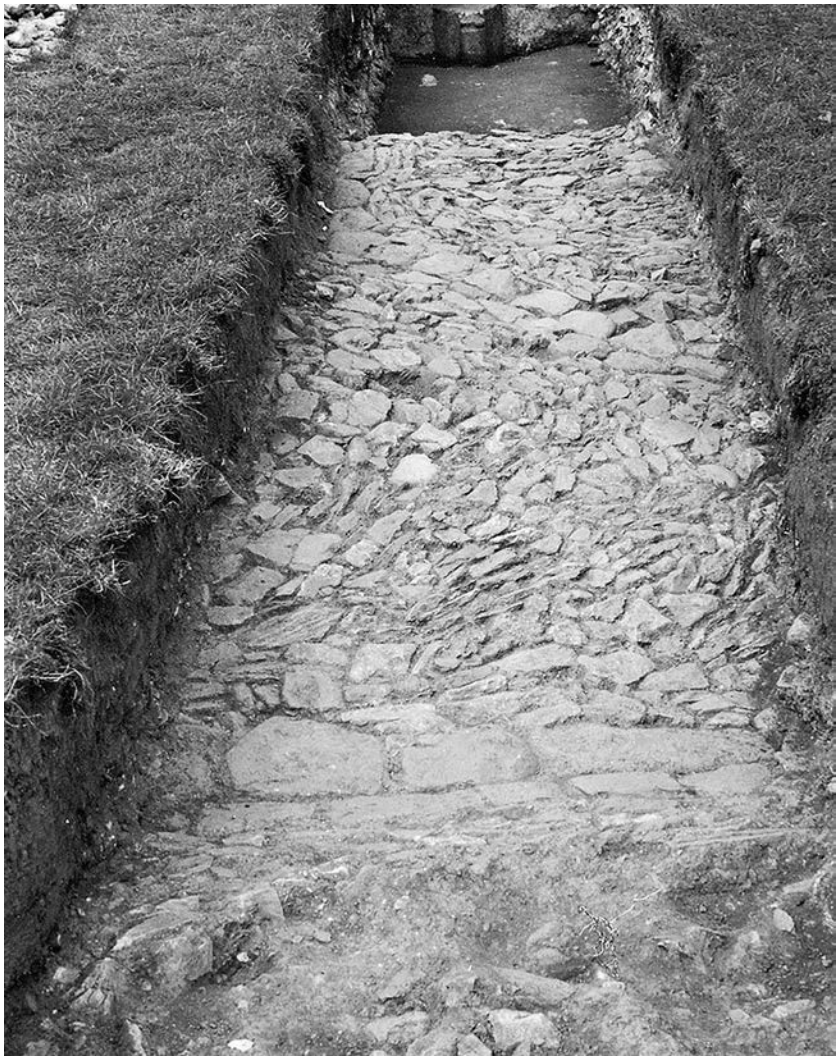

*Fig 17 Trench 5: external cobbled floor surface, from the south. (Photograph: Cornwall Archaeological Unit.)*

in the vicinity of the robber trench revealed that the cobbles 504 overlay made-ground (508). This in turn stood on a deposit of large boulders, which may represent a foundation raft (520) underlying the reclaimed ground on which the church and associated structures were constructed.

Above the cobbled surface was a thin layer of greyish brown sandy silt (503). It contained a total of 11 sherds of medieval coarseware, as well as two sherds of modern china which were also immediately above the cobbled surface.

## Reconstructing the form of the church

The five excavation trenches provide a useful insight into the layout of various parts of the church and its immediate surroundings to the south. They were, however, a small intervention, uncovering only a very small proportion of the interior of the main structure. Nonetheless, the trenches revealed a number of key components of the building, including the south and east walls of the main body of the church, evidence of the walls of both the south transept and a possible chapter-house, an internal wall dividing the south aisle from the

choir and another between the choir and the east end of the building. In most of these instances, the remains were limited. With the exception of the buttressed corner found in trench 1, all the surviving sections of wall were about 1m below the modern surface; surviving internal walls had been robbed to medieval floor levels and much of the south wall, the south transept and chapter-house survived only as wall slots or robber trenches.

When considered with the upstanding remains of the north-east corner of the church and the north wall of the Lady Chapel, and Sowell's measurements (Sowell 1865, 29–30), the evidence uncovered during the excavation provides sufficient data with which to produce a basic reconstruction of the layout of the church (Fig 18). Large amounts of demolition debris reflected the comprehensive destruction of the church. However, these deposits contained large numbers of architectural fragments which add considerably to our understanding of the character of the Glasney complex (below).

### The width of the church and Lady Chapel

The surviving window opening and wall return in the above-ground remains can be compared with the evidence of the south-east buttressed corner to confirm the approximate width of the building and the position of the Lady Chapel. The approximate distance between the possible window in the south-east corner and the south wall was 1.2m (to the inside corner of the building). This allows us to predict the position of the above-ground walling to the north, giving an estimated internal width of the church (east end) of about 19m (assuming that the two chantry chapels were of equal size and symmetrically arranged).

The relationship between the extant portion of the north wall of the Lady Chapel and the conjectural north-east corner of the church, allows us to recreate the same arrangement from the south-east corner. The projected position of the south wall of the Lady Chapel is therefore some distance away from the near-vertical edge found on the internal floor surface 104 (Fig 9), suggesting that this edge represents the margin of another stone-robbing hollow rather than the position of the no longer extant walling.

### The south wall of the church

The south wall of the church was identified in three different trenches. The base of the wall 332, only 0.8m wide, was recorded in the north part of trench 3 and was broadly aligned with the robber trenches [222] and [510] found in trenches 2 and 5. This wall did not align with the buttressed stonework 102 in the south-east corner of the church, from which it is concluded that the east end of the church was wider than the main body of the church, estimated to have had an external width of about 15m. It is possible that this south-east corner represents a later widening for more impressive chantry chapels and, for the purposes of this tentative reconstruction, it is an arrangement that we have assumed was also replicated on the north side of the church.

Evidence for two structures connected to the south wall of the main church building, a south transept and probable chapter-house, were also identified by robbed trenches on the line of the former walls. The position of the west and south walls of the south transept show that it would have had a depth of about 5.4m, very close to Sowell's dimensions of 18ft 6in (5.6m) for the north transept. It seems sensible therefore to accept Sowell's measurements of 30ft (9m) for the external width of the transept, allowing us to identify the position of the tower to the north.

The suggested location of the north transept lies within the garden of a neighbouring property. Interestingly, the probable position of the north-west corner appears to coincide with a kink in the garden wall of this property while one of the house walls appears to conform to its outer extent. However, the Ordnance Survey 1st and 2nd edition 25in: 1 mile maps (*c* 1880 and *c* 1907) show a different layout to that on current maps, so this apparent mirroring of historic remains in modern features may only be coincidental.

The approximate width of the structure identified midway between the south transept and the south-east corner of the church may be reconstructed from its east wall (and south-east corner) recorded in trench 2 and the presence of the external cobbled floor surface in trench 5, with its north west – south east runnel presumably respecting the south-west corner of the cell. It is likely that this was a chapter-house, as at Crediton, although it could alternatively have been another chapel.

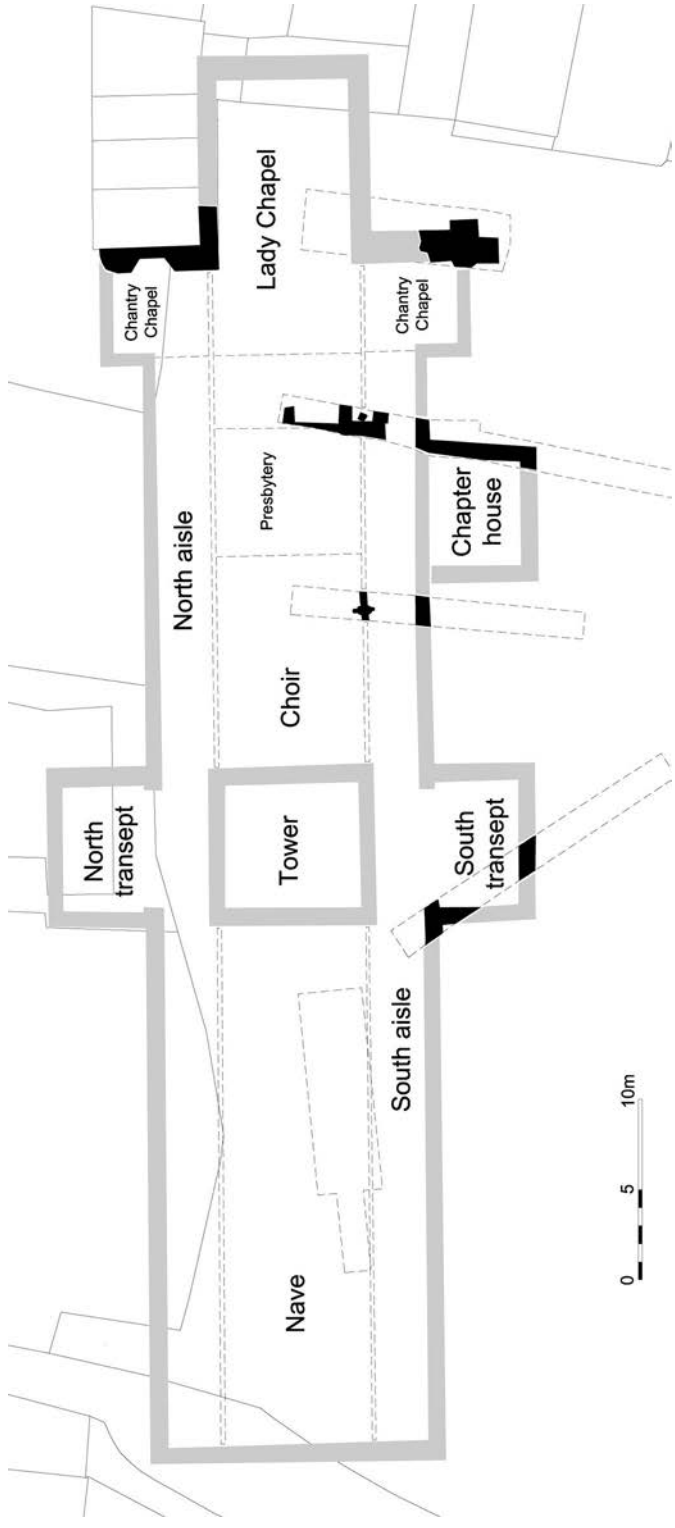


*Fig 18 Reconstruction plan of the church. (© Cornwall Archaeological Unit.)*

### The choir, tower, nave and aisles

Most of the internal parts of the church (nave, choir, south aisle and Lady Chapel) were located during the excavation, although *in situ* structural remains came solely from the south half of the structure.

The pier base in trench 5 and the slab recorded in trench 2, on which another column was placed, represent the wall dividing the south aisle from the choir. The alignment of this wall was the same as that of the projected south wall of the Lady Chapel. Extrapolating the layout on the south side of the church to the north suggests that the north aisle would have been aligned with the north wall of the Lady Chapel.

The position of the robber trench to the south shows the south aisle itself to have been approximately 2.5m wide, while the estimated measurement for the width of the chancel, choir and nave is approximately 8m (centre of pier base to projected centre of wall). These measurements are broadly the same as those predicted for the transept and the presumed position of the tower. The walls of the square tower would have been located on the alignment of the walls of the two aisles, with external measurements of about 9m.

### External features

External features recorded during the excavation were a series of five medieval burials (with another on the interior of the south transept) and evidence of cobbled surfaces. Medieval pottery was recovered from the upper levels of four of the graves, showing them to be contemporary with the church.

One of the main surviving archaeological features recorded during the excavation was the well-preserved block of cobbling 504 in trench 5. Other more limited areas of cobbling were identified elsewhere. In trench 1 cobbles 121 were set around the buttressed corner of the church and in trench 2 the remains of cobbled surface 225 measured 1.5m by 1.2m; in trench 3 surface 330 measured 1m by 0.5m. These fragments are clearly the remains of a large cobbled area outside the church. This interpretation is reinforced by the fact that the runnel extending east–west across trench 5 was on the same alignment as the sections of runnel in trenches 1, 2 and 3, immediately to the south of the buttressed corner of the church, the south wall of the presumed chapter-house, and the south wall of the south transept, respectively. While it is difficult to date such surfaces, the cobbling overlies the medieval burials in trench 3, suggesting a date late in the life of the Glasney complex.

### Comparison with Sowell's measurements

Sowell's plan of the church (Fig 2) was based on the surviving fabric of the north wall and other measurements estimated from this. Comparison of Sowell's work with the new plan (Fig 18) shows some parallels and some differences.

The location of a tower approximately 30 feet (9.1m) square can be confidently inferred from the positions of the south transept and south aisle and the estimated position of the north aisle. From this tower, the length of the choir (to the outside face of the east wall) is 29.5m. Sowell's internal measurement of 85 feet equates to 26m, showing his measurements to be slightly inaccurate, at least in part.

Sowell recorded the length of the nave as 96 feet or 29.3m, the same as the length of the east part of the church. The present tentative reconstruction of the church takes this measurement to be correct, thereby placing the north-west corner of the church under the road to the west but with the south-west corner still in the field.

Sowell's plan was flawed because it failed to recognise that the east end of the church was wider than the main part of the building. As well as making an error with the measurements, he appears not to have noted that the north-east corner of the north aisle and the north wall were not aligned. This may suggest that the survival of remains in the mid-nineteenth century was more fragmentary than Sowell suggested. His estimate of the central part of the church as 100ft wide was therefore exaggerated.

Similarly, Sowell's length for the Lady Chapel of 35 feet or 10.7m cannot be confirmed as only the positions of the north and south walls have been located. The Lady Chapel may in fact have extended into the main part of the building as at Crediton, Exeter and Ottery St Mary.

## The architectural fragments

*John Allan and Stuart Blaylock*

More than 650 architectural fragments were recovered from the excavation. Elements of piers, vaulting bosses, vaulting ribs, doorways, window

tracery, copings, string-courses, labels, voussoirs and stair treads from the body of the church are distinguishable. There is also a very fine series of delicate pieces of architecture in miniature which appear to come from elaborate internal furnishings; these include fragments of canopies, vaults, crockets, shafts and finials. A portion of a figure sculpture, three probable tomb fragments, numerous plain dressed blocks and some unworked pieces are also represented. Almost all the diagnostic architectural material dates from the first half of the fourteenth century, although some of the plainer components could have a wider date-range. The small figure sculpture appears to be of thirteenth-century date, and the tomb fragments are provisionally attributed to the later fourteenth century.

This is a large, varied and highly important collection, which throws new light on the character of the structure and furnishings of the College church and the pattern of masonry supply. It also illuminates such wider questions as the activities of the Exeter Cathedral workshop in the fourteenth century and the works associated with Thomas of Witney and William Joy, two of the leading master masons of fourteenth-century England.

## Extent and method of study

This major collection far exceeded the expectations of the excavators. The writers were invited to prepare an initial assessment but resources were not available for a full study, which will require further cleaning and conservation, the provision of a full corpus of measured drawings of the mouldings and more extensive comparative work, both with previous finds of architectural fragments from the site and with other buildings.

All the fragments were examined. An initial catalogue has been prepared, listing the geology and form of each piece (Allan and Blaylock 2005). The material which appeared most significant upon initial examination was then abstracted. Measured profile drawings of a selection of the best-preserved moulded blocks were prepared (Fig 19); it was then apparent that many of the more fragmentary pieces derived from stones which displayed parts of the same profiles. The measured records were subsequently used to compare details from Glasney with those in buildings and monuments elsewhere. Selected group photographs of key items illustrate the present report (Figs 20–25); some general photographs of the material in store at Truro have also been taken for reference purposes. As is perhaps inevitable with material of this character, the present report gives prominence to the most eye-catching material; the less ornate components of the collection undoubtedly deserve much fuller presentation.

Items which are not illustrated are referred to in the text by catalogue numbers, prefixed by a 'T' number, referring to the trench in which the piece was found (for example, T5, T6). The boxes in which items are archived are also indicated.

## Geology

The major types of building stone represented in the collection are Purbeck marble, Beer stone, granite and weathered basic igneous greenstone, together with water-worn quartz, granite, killas, greenstone and other stones, no doubt collected from the shores close to the site. The first three stone types are well known and can normally be identified with confidence from hand-specimens. Regarding the fourth, Dr Taylor's specialist report (below) shows that, although a variety of colours and textures is represented, all the stones of this type could have come from a single quarry source somewhere in an area between 1 and 6km north-west of the site. Contrary to previous suggestions that Caen stone was used in the College (Whetter 1988, 37; Berry *et al* 2003, 16), no examples of this building stone are represented in the collection.

### *Purbeck marble*

The sole example of Purbeck marble (a Lower Cretaceous limestone from the coast of Dorset, characterised by abundant fossils of freshwater snails) is a fragment of a detached shaft, circular in section with a single polished side. This must have stood in front of a wall surface. It is too small for a major component of the church structure; the most likely context is a furnishing such as a piscina, sedilia or a tomb. (Box 13, T2, item 3).

### *Beer stone*

Beer stone (a white chalk from Beer, Devon) was employed on a substantial scale at the college. It was used for all the vault ribs and bosses, many of the piers of the arcades, some of the window mouldings, all the elaborate internal furnishings,

details such as capitals, bases, shafts and string-courses, and the few examples of figure sculpture and tombs. The presence of plain reused blocks of Beer stone incorporated in houses in Penryn (for example in the frontage of 'Queen Anne Cottage', 32 St Thomas Street), presumably derived from the College, shows that the stone was not used solely for elaborate moulded work.

*Granite*

Granite is represented by only a few architectural fragments in the collection: two large coping stones, a string-course of uncertain date (Fig 19.14) and several arch voussoirs. No doubt the extent to which granite was used in the College is under-represented in the collection, since it will have been used for larger components and ashlar facework, so would have been especially suitable for reuse. Granite is abundant in the retaining walls around the site, many of the stones of which probably came from the College.

*Greenstone*

This weathered basic igneous rock type was widely used in the College. Rectangular blocks form the most numerous finds in this material. Many of these are large enough to have been quoin stones (from the corners of walls) or dressed blocks from the surrounds of openings. Thirteen large jamb stones found in trench 4, all with the same chamfer and probably from a single doorway, illustrate the use of this material for doorways. There are also two dripstones, one fragment of cusping which may be from window tracery (Box 9, T2, 201.2), fragments of engaged shafts (Box 9, T2, 201.5–6) and several voussoirs from the relieving arches over windows and doors.

It is probable that some of the smaller rectangular blocks served in the webs of the vault; that is, the masonry, usually of courses of small rectangular blocks, which infilled the spaces between the ribs. Among the fragments examined there are no small blocks of Beer stone to complement the Beer stone ribs, so the webs were evidently in a different material. Some of the small greenstone blocks are about 100–110mm deep and a few display a chamfered face at approximately 50 degrees, such as might be used in the tapering area of a vault web. Examination of the stones of the small portion of surviving vault web at the east end of the church supports this conclusion: these are of greenstone.

## The architectural forms represented

*Fragments from the body of the church*

THE PIERS AND ARCADES

One pier base was excavated *in situ*, in trench 5, providing vital evidence about the form of the arcade piers (Figs 15, 16). Its sides facing the aisle consisted of broad hollow mouldings, fronted by the base of an attached shaft with a concave splayed ('bell-shaped') base moulding. On the choir side there was a rather larger attached shaft flanking hollow mouldings; this side was only partly seen in plan as the deposits within the choir concealed the base.

Many loose blocks matched parts of this profile, so could be identified as further portions of this complex form (Figs 19.6, 19.6a, 19.6b, 19.11, 19.13). They indicate that each course of the piers was composed of several blocks. Some of the loose blocks are in Beer stone, others in greenstone, implying either that these stones were used in combination to give a polychromatic effect, or that the church contained some piers of one material and some of the other.

BASE AND CAPITALS OF ATTACHED SHAFTS

One capital fragment for an attached shaft approximately 100mm in diameter can probably be identified as part of a pier of this form (Fig 19.9), since each side retains a fragment of broad hollow moulding matching the form of the composite pier which would have stood below it (Fig 19.6). Its very heavily weathered surface incorporates an annular moulded abacus and an inverted bell-shaped capital, with a trace of a stem or other projecting element on it.

One Beer stone block incorporating a base in poor condition preserves an almost-complete complex moulding on one side, enabling a reconstruction to be drawn out (Fig 19.8). It formed the base for an attached shaft about 95–100mm in diameter and was approximately 190mm in total diameter. Its size would fit the attached shafts of the piers described above, but the pier base surviving *in situ* (Fig 16) had a different, concave-sided, moulding, similar to those illustrated in Figure 26. This complex base form may therefore come from a shaft in a different position, perhaps, for example,

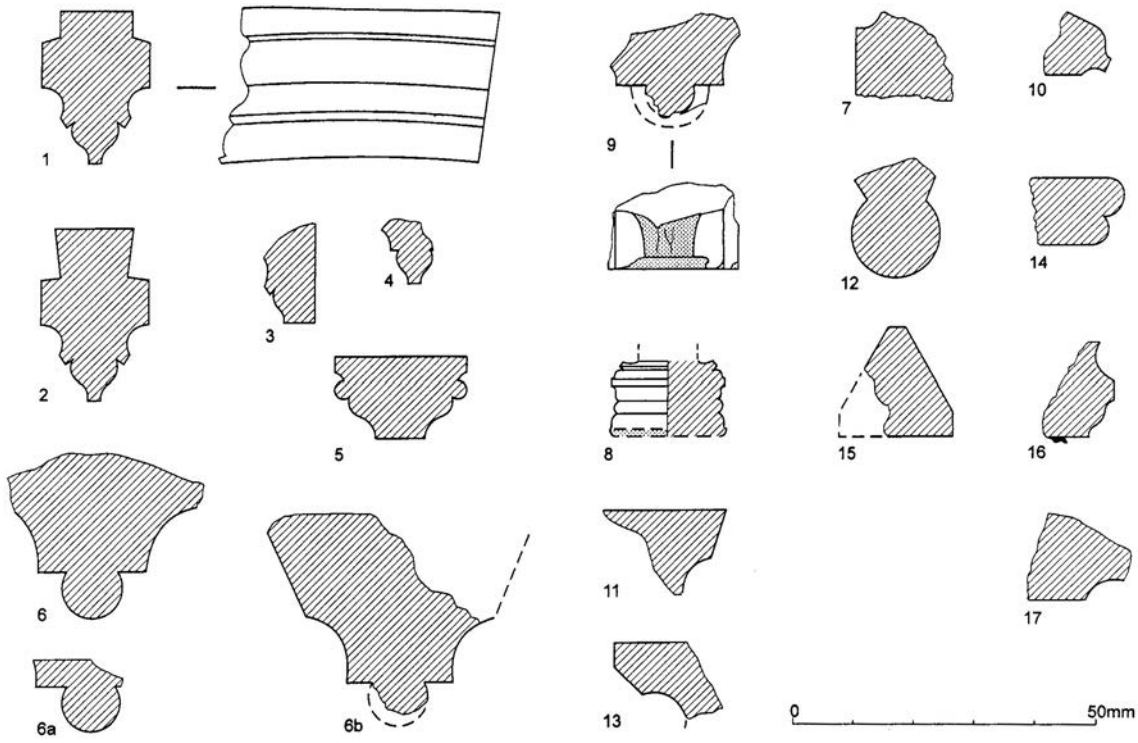


*Fig 19 Moulding sections of selected architectural fragments. (Drawings: S R Blaylock, T Ives.)*

from a shaft framing the splay of a window or from a doorway. Three further capitals, similar in scale to the capital and base in Figure 19.8–9, were also recovered (T3, unstratified, 1/13; T5, unstratified, 1/5; another, trench unknown).

### The vaults

A series of at least eight fragments of long moulded Beer stone blocks, with curving long axes and symmetrical profiles, come from the ribs of a vault or vaults, and numerous smaller fragments probably or certainly come from further ribs of the same form. On the rear (upper) face of each block is a rebate to accommodate the vault web. The best-preserved (but still incomplete) example (Fig 19.1) is 480mm long. Five other ribs, of the same section (Fig 19.2) but with a straight long axis, are identifiable as ridge ribs, again with the rebate on each side of the rear to accommodate the web of the vault. Two further curved blocks have a moulding on only one face (Fig 19.3), implying that they were set into or against a wall. They are interpreted as parts of the engaged respond ribs at the sides of the vault bay. Another potentially important find (T5/22) has one roughly cut face at an acute angle to the centre line. It is possible that this is a face where two ribs joined or where a rib touched a wall face, indicating the use of a tierceron vault in which closely-packed ribs rose above the springers. Unfortunately, however, it is also possible that the oblique face is a secondary feature, cut after the vault had been demolished. These finds are too big to have come from a furnishing and indicate that the church structure had ribbed vaults with ridge-ribs.

Two pieces of Beer stone carved in the round are identifiable as boss fragments. One from the centre of a boss (Fig 20, right) displays foliage carving with two long lobed leaves. The second fragment (Fig 20, left) is smaller and displays leaf-carving similar in scale but with distinctive ‘hooked leaf’ carving.

### Windows

One Beer stone block (Fig 19.15) with long steep chamfers on each side of a central narrow face

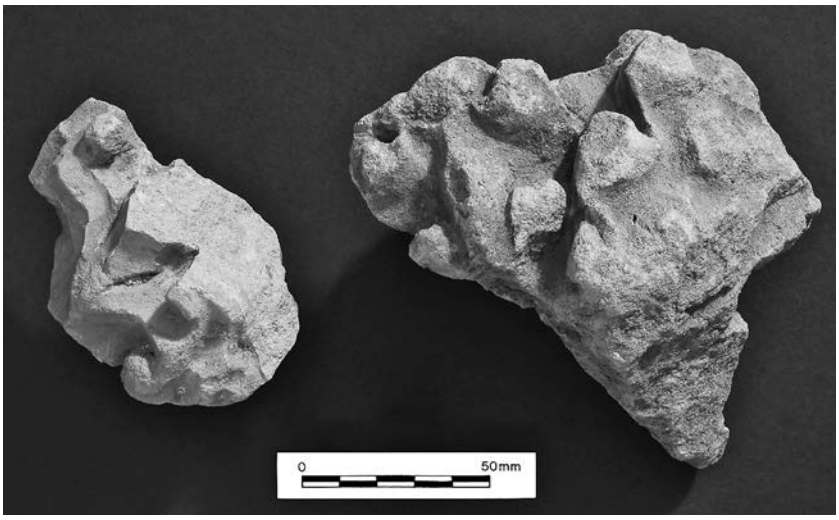


*Fig 20 Fragments of vault bosses. (Photograph: G Young.)*

is identifiable as a fragment of a large window mullion. A sill stone with the base of a mullion of this form on its external face but having a more complex internal profile with ogee profiles survives loose on the site (Berry *et al* 2003).

### Arch mouldings from a possible doorway

Three Beer stone blocks (Fig 19.5) from trench 5 have broad ogee and roll mouldings. Their long axes are curved and they show no evidence of provision for fitting or closing, so come from an open arch, perhaps from the outer arch of a doorway or porch (T5/36; T5/26; T5/36).

## *Fragments of internal furnishings*

### Possible screen fragments

A group of Beer stone fragments, found mainly in trench 2, appears to come from an elaborate internal furnishing which incorporated a series of canopies, ornamented with delicate foliage sculpture. They include five finials from the tops of canopies (Fig 21), all of the same size and all but one found together. The carving style is not identical throughout, but this is not unusual in a single furnishing. A crocket (projecting leaf ornament) may come from the sloping side of one of these canopies (Fig 21, top right). An important fragment from the front face of a small canopy (Fig 22, top) displays a central spandrel with leaf ornament, with stubs of the crockets. The central rib of the vault below is visible within the fragment; a second related piece (Fig 22, bottom) shows cusping. Six fragments (five of which are reproduced in Figure 23) of small angular shafts of repeating design are similar in scale; one of them (Fig 23, left) retains its junction with the foot of a canopy and the edge of the niche below. They appear to represent finials that would have risen between the canopies.

In interpreting these pieces, various types of internal furnishing may be considered. Since the finds come principally from trench 2, it is probable that they derive from the choir or presbytery at the east end of the church. Perhaps the most likely candidates for an elaborate furnishing here are a tomb or tombs, canopies over sedilia or stalls, a piscina or a screen such as that behind the high altar, but a more unusual furnishing such as a minstrels' gallery might also produce material of this sort. Since the finials are numerous and of the same size, they seem to come from a row of repeating canopies, with small vaulted niches below. They seem rather too large to have come from a row of niches at the side of a table tomb, and one might have expected finials of different sizes on a very elaborate tomb. There are too many for a piscina, and they are too small for canopies over sedilia. The most likely context for a row of numerous canopies rising above small niches is perhaps a screen, such as a high altar or rood screen.

### Tomb fragments

The following three carved fragments of Beer stone are probably from tombs, although other contexts are not impossible:

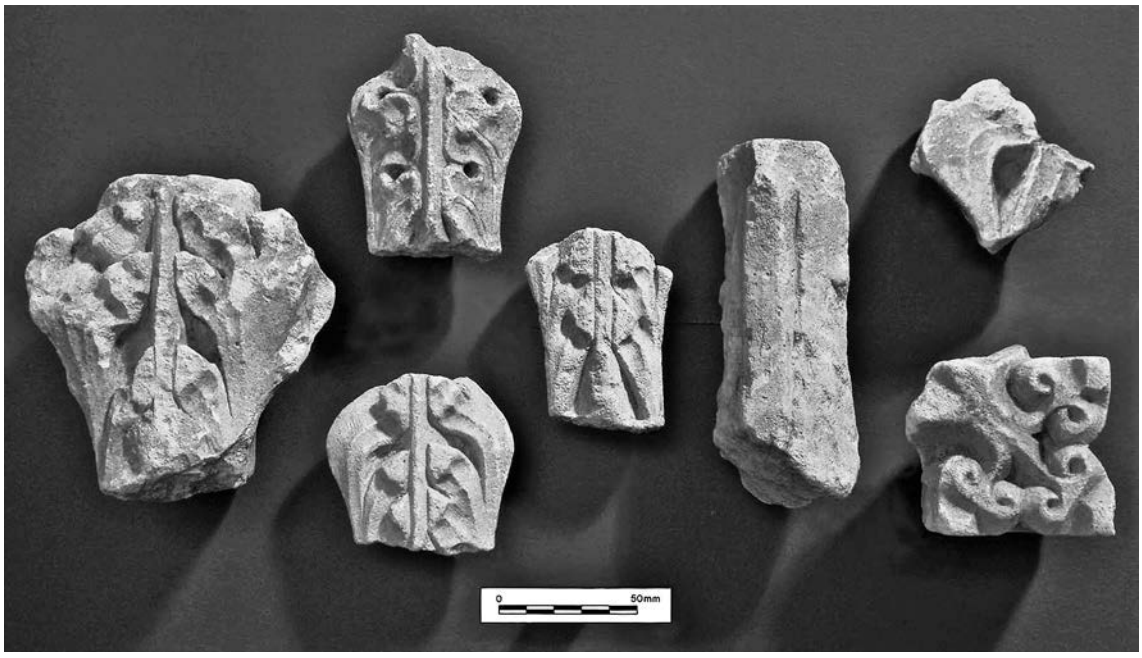


*Fig 21 Finials and crockets. (Photograph: G Young.)*

- A thin panel with flat back, with diagonally set flanking shaft, nook moulding and the possible springing of an arch (Fig 24, left).
- A fragment provisionally interpreted as the edge of a cushion from a recumbent figure, with a sleeve issuing out below it and the stub of an arm or hand; *cf* the arms projecting from the wall face at Haccombe church, Devon, with a similar style of sleeve, dating to *c* 1330–40. The surface treatment could also represent hair. Red staining on the flat surface is resin bonding material. (Fig 24, below right.)
- A fragment of the forehead of a face, with part of the hair band ornamented with tablet flowers. Compare the Courtenay tomb at Exeter Cathedral or the fragments recently excavated from Torre Abbey, Devon. Possibly late fourteenth century. (Fig 24, above right.)

FIGURE SCULPTURE

One fragment (Fig 25) comes from the body of a small figure (T3, unstratified, item 9). It is carved in the round and wears a vestment with sharp angular folds; part of the left hand and the raised left arm survive. The fragment is probably of thirteenth-century date, judging by the sharp angular central folds of the drapery.

MISCELLANEOUS

One fragment (Box 18, T5, 519) was carved with graffiti: a letter with doodles on back and front.

## Masonry practice and surface treatment

The fact that local greenstones (Figs 19.6a–b) were cut to the same profiles as the Beer stone pier mouldings (Fig 19.6) shows that the same masons' templates were employed for the two building stones. This suggests that the major architectural elements of the College in both materials were worked on site rather than being imported ready-worked. The style of the carving and the forms of the mouldings, however, are so similar to those of the Exeter cathedral workshop that it seems probable that masons and perhaps other craftsmen were sent down from there, at least for the more elaborate work. This may not necessarily have been the case with the elaborate canopied fittings, which might conceivably have been prepared in Exeter and transported to Glasney (the so-called 'flat pack' theory), but these show stylistic links to

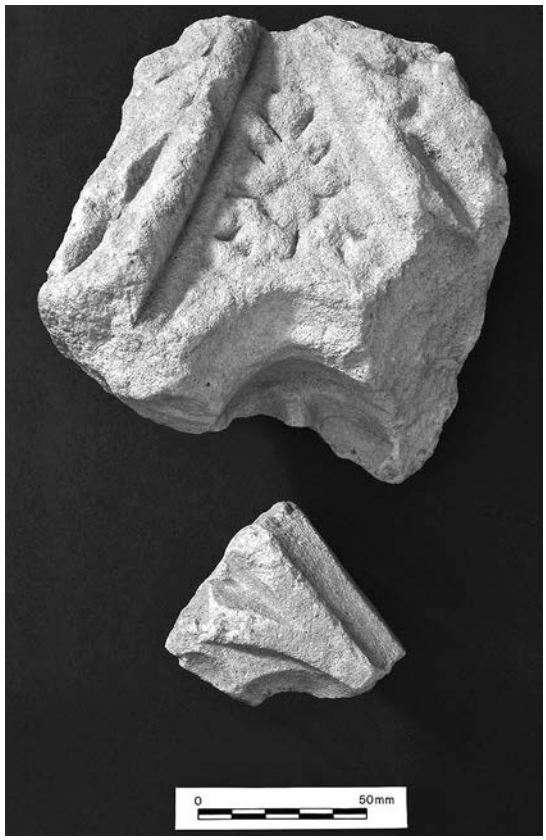


*Fig 22 Fragments of fronts of small canopies. (Photograph: G Young.)*

the boss fragments, which presumably would have been worked on site with the piers and vaulting, suggesting that they too were probably worked at Glasney.

A feature of many of the ribs of the vaults is the use of joggled joints – deeply gouged channels cut on the ends of blocks to improve the strength of the joint. No sign was found of the additional technique used in some contemporary vaults, including those at Exeter, of injected lead jointing.

One further practice is reminiscent of the Exeter cathedral workshop in the early fourteenth century: the use of resin jointing. Several Beer stone blocks at Glasney display the very smooth flat joints and red stain characteristic of such joints. The splicing of small pieces of stone into larger blocks using red resin joints had occasionally been employed, for example at Wells Cathedral, in the thirteenth century. It was, it appears, much more widely used in fine Beer stone mouldings and sculpture, both in the furnishings and west front of Exeter Cathedral (Allan and Blaylock 1991, 104) and at Ottery St Mary in the period 1315–50. Although much research is needed to see how widespread this technique was, it seems on present evidence to be particularly characteristic of the use of Beer stone at this date, perhaps because this laborious technique allowed the use of flawed beds of stone.

An important aspect of the Glasney collection is the opportunity it presents to examine a group of fourteenth-century Beer stone furnishings in

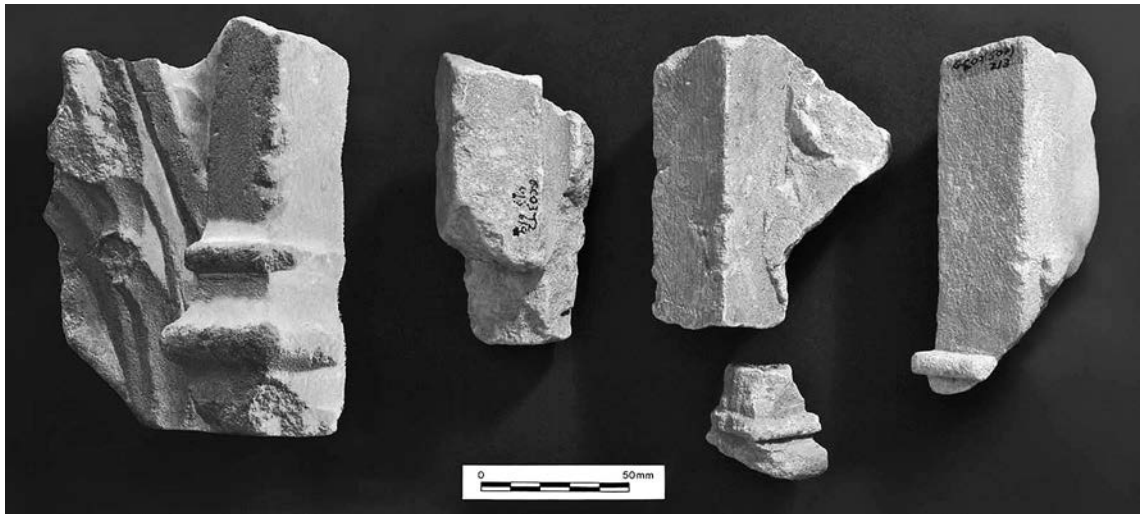


*Fig 23 Fragments of canopy shafts and vault springing. (Photograph: G Young.)*

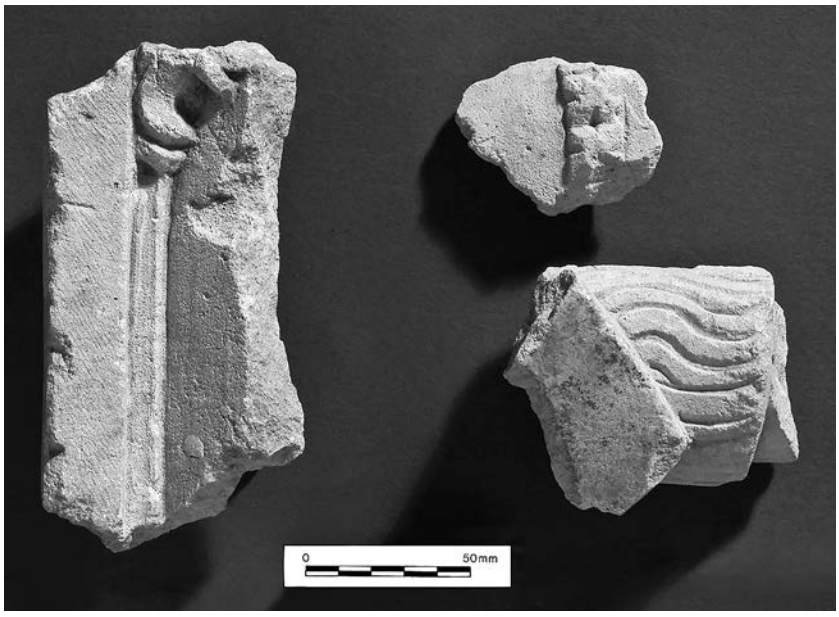


*Fig 24 Fragments of effigy and other probable tomb sculptures. (Photograph: G Young.)*


*Fig 25 Fragment of figure sculpture. (Photograph: G Young.)*

their pre-Reformation state, and especially to see whether they were painted. In standing buildings post-medieval scraping or repainting have often destroyed such evidence. In fact, very few fragments show traces of paint, and those that do appear to come from highly ornamented sculpture and carved ornament. A number of blocks bear traces of limewash. Since the fragments of furnishing are in extremely fresh condition, this strongly suggests that the Beer stone was left to speak for itself. No doubt the gleaming white of the clean limestone would have stood out as an especially expensive building material in an area rich in a great variety of building stones but singularly lacking in limestone. The few painted pieces deserve specific study in the future.

The reuse of blocks is a noteworthy aspect of the collection. Several blocks have been trimmed down to roughly rectangular shapes by removing mouldings and arrises, leaving rough chisel marks on secondary surfaces and faces at odd angles (T2/5, T2/14, T5/10, T5/22, T5/23, T5/34, blocks numbered A2 and A5 in Allan and Blaylock 2005, 58). Mortar was also frequently noted adhering to broken or re-cut surfaces (T5/10, T5/16). This could indicate either that the reused blocks had been built into masonry, or that trimming has taken place *in situ,* with additional structures built up against the surfaces of the trimmed blocks. Since there are numerous such instances among

the stratified architectural fragments, this suggests that many stones were reused in a secondary pre-Dissolution phase of the college buildings.

## General discussion

### *The choice of building stone*

Glasney lies in an area in which traditional building stones are granite and killas. Both these local stones were used in the College church, the killas for wall cores, the granite for hard-wearing features such as coping stones and dressings. The large-scale use of Beer stone from south-east Devon, however, must have given the College church an exotic appearance. In the fifteenth and early sixteenth centuries Beer stone was very widely used, but even then rarely appeared in parish churches in Cornwall. There are a few examples of its employment in this period in parish churches in the Penryn area (a phenomenon perhaps connected to their proximity to this important port, if not to Glasney itself): the arcade, south windows and south porch doorway of Mylor; the doorway in the north wall of St Gluvias, and the inner south doorway at Mabe (Pevsner and Radcliffe 1970, 110; 125; 177; re-identification of stone by the authors). By contrast, in the late thirteenth and early fourteenth centuries the use of Beer stone was very much more restricted. Even in the immediate vicinity of the quarries it was less widely used than the rival stone from Salcombe Regis. At Exeter Cathedral it was little used in the late thirteenth century building programme, which made much more extensive use of Caen stone (Allan 1991, 13–17). The cathedral continued to employ a mix of different quarries for fine freestones in the first quarter of the fourteenth century, but the use of Beer stone developed very rapidly in the 1320s, when it supplanted all other freestones at the cathedral. The construction of the nave of Exeter Cathedral (begun 1328 but using stone stockpiled over the previous decade) appears to have been the first project in which Beer stone was used on a really large scale, to the virtual exclusion of other limestones. The exclusive use of Beer for fine freestone at Glasney conforms to the Exeter Cathedral workshop practice after *c* 1320. The pattern of stone supply at Glasney may have been different from that at the cathedral but this may well indicate that the vaults, arcades and furnishings in Beer stone date after 1320. Even the upstanding fragment of chapel at the north-east corner of the church, in which Beer stone alone was used for the vault and jambs, may therefore be of this date. This would be unexpected, since the construction of the east chapels, which are integral with the west bay of the Lady Chapel, must have proceeded at an early stage in the building programme.

There is one instructive parallel in Cornwall to the extensive use of Beer stone at Glasney in the early fourteenth century: the church of St Ive in east Cornwall. Beer stone was used there for the tracery, piscina, sedilia and image niches of the choir. This work has striking parallels to work at Exeter Cathedral of *c* 1325–40, especially to Bishop Stapledon's tomb, and it seems likely that it was carried out by the cathedral workshop. The link probably reflects the specific personal service of the rector of St Ive around 1330, Bartholomew de Castro, for Bishop Grandisson (Henderson 1925, 111).

### *The character of the architecture*

The excavations provided evidence about the forms of the arcade piers, vaults, windows and internal furnishings. These will be considered briefly in turn.

The complex profile of the arcade piers, described above, is unusual in the local context. The most common types of pier used in Cornwall and Devon in the thirteenth and fourteenth centuries were octagonal or of simple chamfered form, the latter usually without capitals, as for example at Halberton, Ugborough and Littleham in Devon and Lostwithiel in Cornwall. The much more elaborate form used at Glasney is not precisely matched elsewhere but it incorporates bell-shaped mouldings that bear specific comparison to those used at Ottery St Mary (Fig 26; *cf* also Fig 16).

The fragments demonstrate that the church had stone vaults with curving tierceron ribs and flat ridge ribs. This is the only example of a Decorated stone vault known so far in Cornwall, although the other superior Cornish churches may have had them. The use of ridge ribs shows that the Glasney vaults were not of simple quadripartite or sexpartite form. The acutely-cut rib described above may indicate the use of tightly-bunched tiercerons like those of Exeter Cathedral, but it is unfortunate that none of the fragments indicates clearly whether there were tierceron vaults or the more advanced lierne (net) vaults which were coming into use in

*Fig 26 (Left) Shaft base in the nave of Ottery St Mary Church, with bell-shaped moulding, compared to (right) a similar fragment from Glasney on display in Penryn Museum. (Photographs: S R Blaylock.)*

the early fourteenth century both at Ottery St Mary and at the cathedral.

The vault rib profile Fig 19.1–4 is a close match to the corresponding member of the Lady Chapel at Ottery St Mary, which, as Richard Morris *et al* have recently shown, also appears in a slightly different form in the doorways of the image screen at the west front of Exeter Cathedral, and in the cloister at Sherborne Abbey, Dorset (Morris *et al* 2005, 93, fig 86.4–5). All these works are in Beer stone. The image screen of the cathedral can firmly be attributed to William Joy, who is documented as master mason at Exeter in 1346–7 and who probably served in that role over a longer period (*c* 1342–52); its mouldings are quite different from those of his predecessor at Exeter, Thomas of Witney (1313–*c* 1342). The match of profile and of building material amounts to strong evidence that the vault represented by the Glasney fragments was designed either by Joy himself or by one of his team (Allan and Blaylock 1991, 98–103; Morris 1991, 68, 78; for reservations that every work in this style can be attributed to the master, see Morris *et al* 2005, 92–7).

A characteristic of the windows used at Exeter Cathedral from the late thirteenth century was the use of simple flat mullion profiles, sometimes with projecting rolls. As Richard Morris (1991, 62) has pointed out, these old-fashioned forms continued in use there into the 1330s. They were repeated at Ottery St Mary, where simple mullions with plain chamfers on both the internal and external faces were used shortly after 1338. The mullion fragment found at Glasney (Fig 19.15) conforms to this simple type but the window sill that remains loose on site shows that this was combined with more complex ogee forms on the inner face of the window. This is more advanced than the window profiles at either Exeter cathedral or Ottery.

Detailed comparison of individual mouldings with those in other buildings is beyond the scope of the present account but there are both general and specific points of similarity to works carried out at Exeter under the celebrated master mason

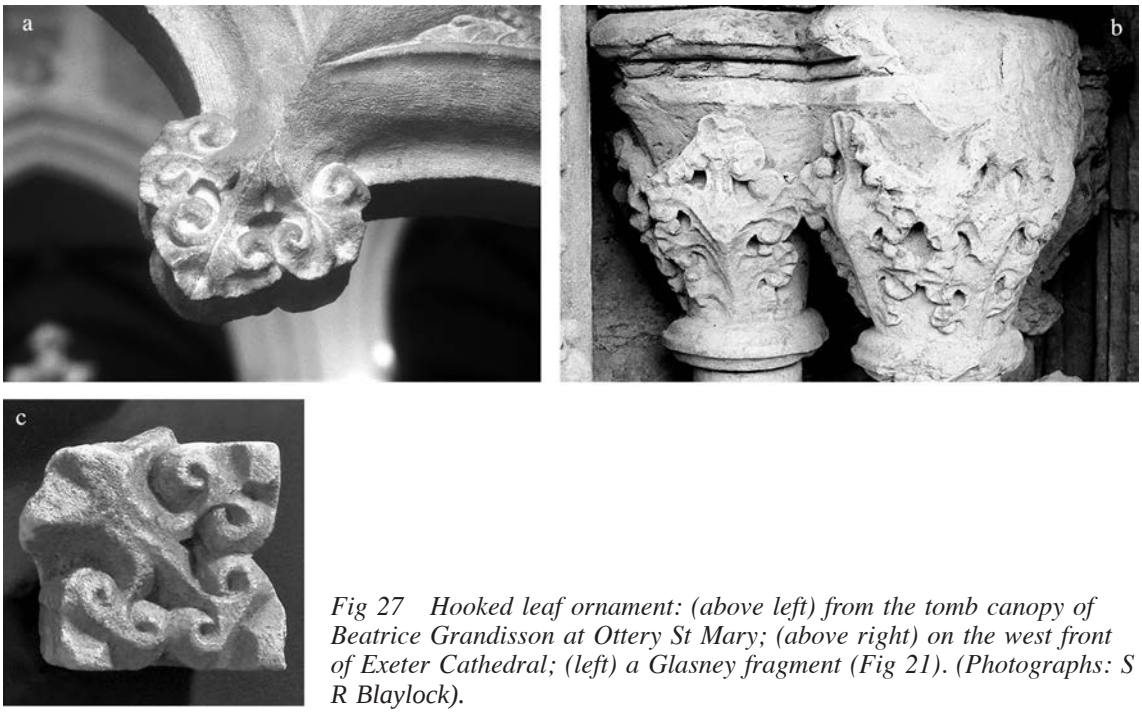


*Fig 27 Hooked leaf ornament: (above left) from the tomb canopy of Beatrice Grandisson at Ottery St Mary; (above right) on the west front of Exeter Cathedral; (left) a Glasney fragment (Fig 21). (Photographs: S R Blaylock).*

Thomas of Witney (at Exeter 1316–42: Morris 1991; Allan and Blaylock 1991, 102) and to broadly contemporary work at Ottery St Mary. The upward-turned fillet and fat moulding composed of two ogee curves with a central fillet (Fig 19.8) appears strongly reminiscent of his mouldings at Exeter Cathedral (*cf* Morris 1991, figs 21–30), while the multiple mouldings of the Glasney bases and capitals resemble closely those designed by him in the nave and crossing of the cathedral (Morris 1991, 64) and at Ottery.

The sculpted fragments likewise offer close comparisons to the sculpture of Exeter, both to works carried out under Thomas of Witney and those of his successor, William Joy (at Exeter 1346–47: Morris 1991; Allan and Blaylock 1991, 102). One Glasney fragment (Fig 20, right) appears to come from a boss carved with long oval leaves with rounded lobes and undulating surfaces. This belongs to a general style of lobed leaf carving introduced at Exeter *c* 1300–05, replacing the earlier fashion for naturalistic leaf sculpture. This general style has quite a long life, still being used into the 1340s and beyond. The closest matches, however, appear to be with some of the bosses of the high vaults of the nave at Exeter, datable to the 1330s, and some of the west front details of the 1340s (Figs 27–28). A second boss fragment and a further small leaf carving display a different style of leaf sculpture in which the terminals are worked into tight hooked forms (Figs 20, left and 21, lower right). This style of leaf carving survived into the fifteenth century but seems to have been introduced to Exeter in the late 1330s and is characteristic of the west front image screen (*c* 1342–47; Fig 27b). It also recurs at Ottery St Mary, in the tomb of Beatrice Grandisson (Fig 27a), for example, which has close links to the west front sculptures and was probably also carved in the 1340s.

Other features of the internal furnishings at Glasney reminiscent of work at Exeter and Ottery in the 1340s are the small attached shafts with their sharply-projecting mouldings set at 45 degrees to the surface of the adjacent canopies, like those in the cathedral's west front (Allan and Blaylock 1991, fig 23), and the Glasney finials, which may be compared to those employed *c* 1338–42 or slightly later on the east side of the high altar screen at Ottery. It should be noted that the shafts and canopies represented by some of the fragments from Glasney (Figs 26–29) are also very long-lived forms, and similar forms can be found in

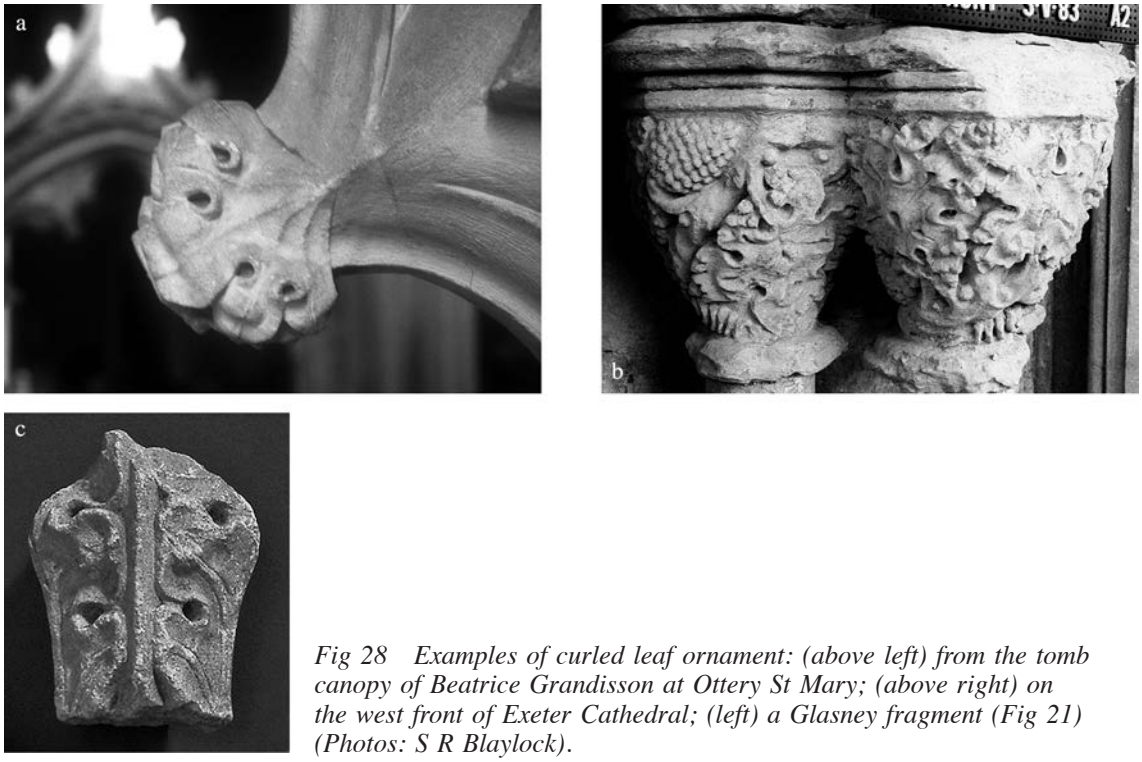


*Fig 28 Examples of curled leaf ornament: (above left) from the tomb canopy of Beatrice Grandisson at Ottery St Mary; (above right) on the west front of Exeter Cathedral; (left) a Glasney fragment (Fig 21) (Photos: S R Blaylock).*

late-Perpendicular work in Devon, for example at Exeter Cathedral in the C register canopies of the west front or the Oldham Chantry, both of early sixteenth-century date. Therefore, a later date for some of the Glasney fragments cannot be wholly excluded.

In summary, the architectural style evidenced by the Glasney fragments is different in character from the robust but relatively crude and usually simple architectural decoration of most medieval Cornish churches. Their refinement and close artistic links to the output of the Exeter Cathedral workshop place the Glasney collection in the mainstream of English Decorated art. Individual pieces are close to works carried out at Exeter Cathedral in the years 1315–27, 1332–42 and 1342–48; it is therefore possible that the fragments reflect works conducted in a series of stages over a period of perhaps 20 years or so. The matches between the Glasney pieces and work of the 1340s in the cathedral's west front are especially striking; they must have come from furnishings commissioned in the time of Bishop Grandisson (1327–69); others could fall in his time or those of Bishops Stapledon and Berkeley, his predecessors (1308–27). Elsewhere in Cornwall, a few fragments from Launceston Priory, now in the Lawrence House Museum, Launceston, are the only works of equal quality known to the writers. Future study should explore further the links not only to Exeter Cathedral and Ottery St Mary but to the superior Devon churches of Haccombe and Bere Ferrers and more distant commissions associated with Thomas of Witney and William Joy, notably those at Wells Cathedral, Tintern Abbey and Christchurch Priory in Dorset.

## Petrological examination of samples of greenstone

*Roger Taylor*

Six samples of weathered greenstone were submitted to the writer for petrological identification; they represented the range of variations in this rock type among the medieval architectural fragments from Glasney College. The samples were examined under a binocular microscope at ×20 magnification; a single example

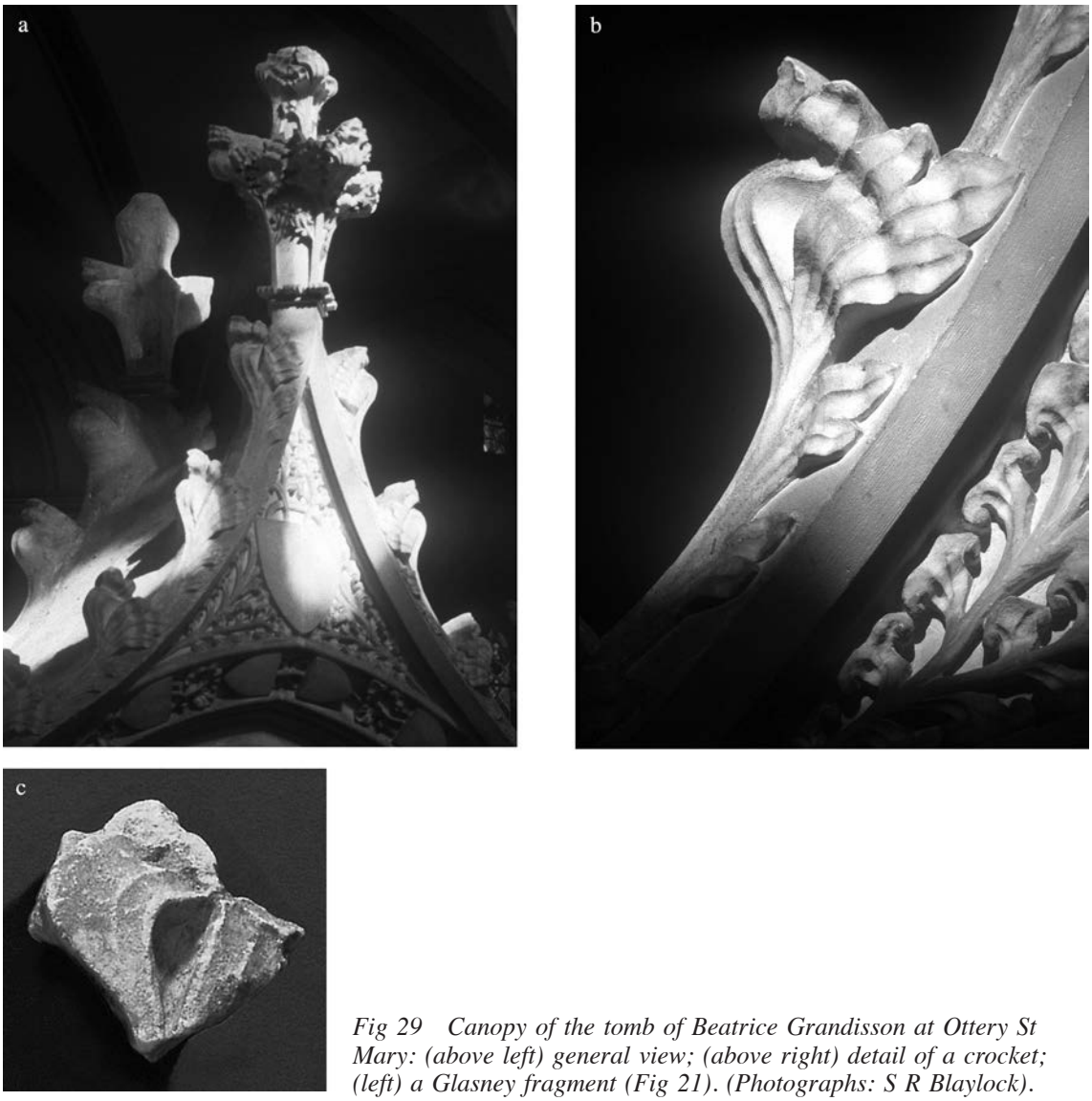


*Fig 29 Canopy of the tomb of Beatrice Grandisson at Ottery St Mary: (above left) general view; (above right) detail of a crocket; (left) a Glasney fragment (Fig 21). (Photographs: S R Blaylock).*

was then thin-sectioned. All the specimens are of intensely weathered basic igneous rock (greenstone).

The fragments are generally similar in appearance; they consist predominantly of chlorite and amphibole (tremolite / actinolite). Some contain patches of quartz, which appear to result from the disruption of small quartz veins by shearing deformation. The deformation also produces a slight foliation in some specimens. Two samples contain traces of altered biotite mica, which is likely to have formed as a result of thermal metamorphism.

The soft and carveable nature of these rocks is entirely the result of weathering and implies that all these stones were obtained from a quarry or quarries at shallow depth, probably not more than 3m. The unweathered greenstone which would have underlain deposits of these types would be hard and intractable. It is not clear whether all these specimens came from a single quarry. One fragment differs from the others in originally

having been porphyritic, containing remnants of feldspar phenocrysts. The material is likely to derive from the basic intrusions in the Devonian rocks located within the thermal aureole to the east of the Carnmenellis granite, lying between 1 and 6km north west of the site.

## The ceramic floor-tiles

*Laurence Keen*

A total of 660 fragments of floor-tiles were retrieved from the five trenches. Of these, 70 per cent (464 fragments) were unstratified: the remainder came from disturbed contexts or demolition deposits. Only in trench 5 were 31 fragments found in association with floor layer contexts 513, (515) and 522.

Two distinct groups (A and B) can be identified on the basis of fabric and technical details. Two other fragments belong to another group (C) and there is one other fragment which is distinct enough to warrant a separate description (D). The fabrics have been identified entirely on the basis of visual inspection using a ×10 hand lens. In due course a more scientific analysis may well overturn the following details, but the basic outline below provides a preliminary assessment of this interesting collection.

### Group A

This group has both decorated and plain tiles. Superficial examination of the fabric, which has fired to a dark or orange-red, and is well mixed, suggests that it is the same as floor-tiles of Series 1 at Exeter (Allan and Keen 1984, 232–6). The fabric at Exeter is described as having abundant, well-sorted, sub-angular to rounded quartz with sparse fragments of a fine-grained sedimentary rock and sandstone, both 0.2mm. Petrological analysis shows that the anisotropic matrix contains moderate angular quartz (about 0.1mm across) and sparse muscovite of similar size (Brown, Vince and Williams 1984). The quartz inclusions at Glasney, however, appear to be a little larger.

Many of the decorated fragments are too small or worn for any design to be drawn. Where the design can be drawn from several fragments this has been done. In several instances there are only single examples which are too small for parallels to

**Table 1** Tile from all contexts

| *Design* | *Context and nos of fragments* | *Total nos of fragments* |
|---|---|---|
| 1 | Trench 2 unstratified (2); 201 (1); 507 (1); 515 (1) | 5 |
| 2 | 507 (1); 515 (2) | 3 |
| 3 | 515 (1) | 1 |
| 4 | Trench 2 unstratified (1); 515 (1) | 2 |
| 5 | 515 (1) | 1 |
| 6 | 515 (1) | 1 |
| 7 | Trench 5 spoil (1) | 1 |
| 8 | 522 (1) | 1 |
| 9 | 507 (1); 522 (1) | 2 |
| 10 | Trench 2 unstratified (8); 201 (2); 507 (2) | 12 |
| 11 | Trench 2 unstratified (2); 201 (2); 507 (1) | 5 |
| 12 | Trench 3 unstratified (1) | 1 |
| 13 | Trench 2 unstratified (3); 201 (1) | 4 |
| 14 | Trench 2 unstratified (1) | 1 |
| 15 | Trench 2 unstratified (1) | 1 |
| 16 | 201 (1) | 1 |
| 17 | 201 (1) | 1 |
| **Total** | | **43** |

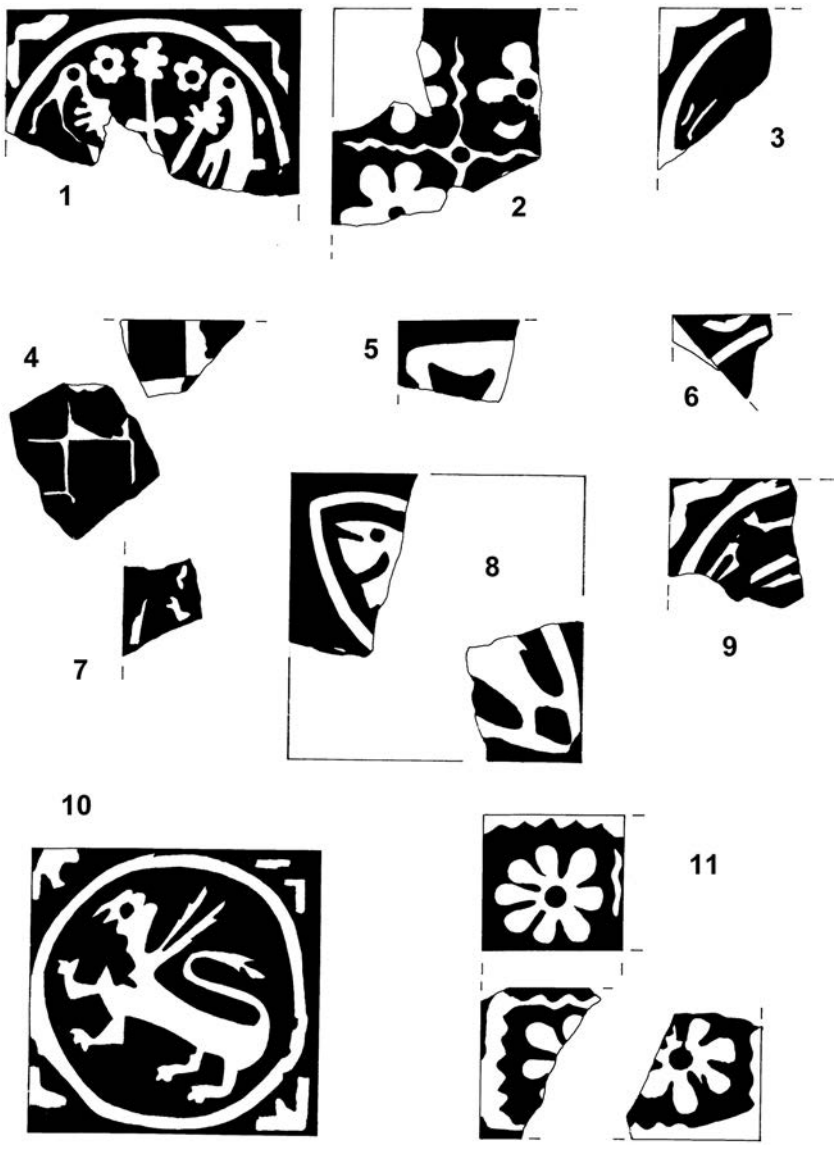


*Fig 30 Floor-tiles from Glasney. Scale 1:3. (Drawing: Laurence Keen.)*

be determined in the discussion below. Drawings, however, have been provided. Seventeen designs have been established (Figs 30–31, nos 1–17). It should be noted that nos 16 and 17 could be part of the same design, whereas design 11 may be two designs rather than one. The contexts and the number of fragments for each design are noted in Table 1.

These decorated tiles vary in thickness, from 16 to 20mm. Where complete sides are present they show that the complete tiles were 125–130mm square. They have almost straight sides and the backs show four shallow knife-cut scoops, very roughly cut, slightly at an angle and not conical in form. The decoration is inlaid with white pipe clay, filling the stamped design to a depth of about 1 mm, sometimes less. The less-worn examples demonstrate that, as expected, the tiles had been lead glazed and sometimes traces of glaze are found on the edges. Examples of designs 6 and 14 show that they had been scored into triangles before firing, serving to demonstrate how they might have been laid in a pavement (below).

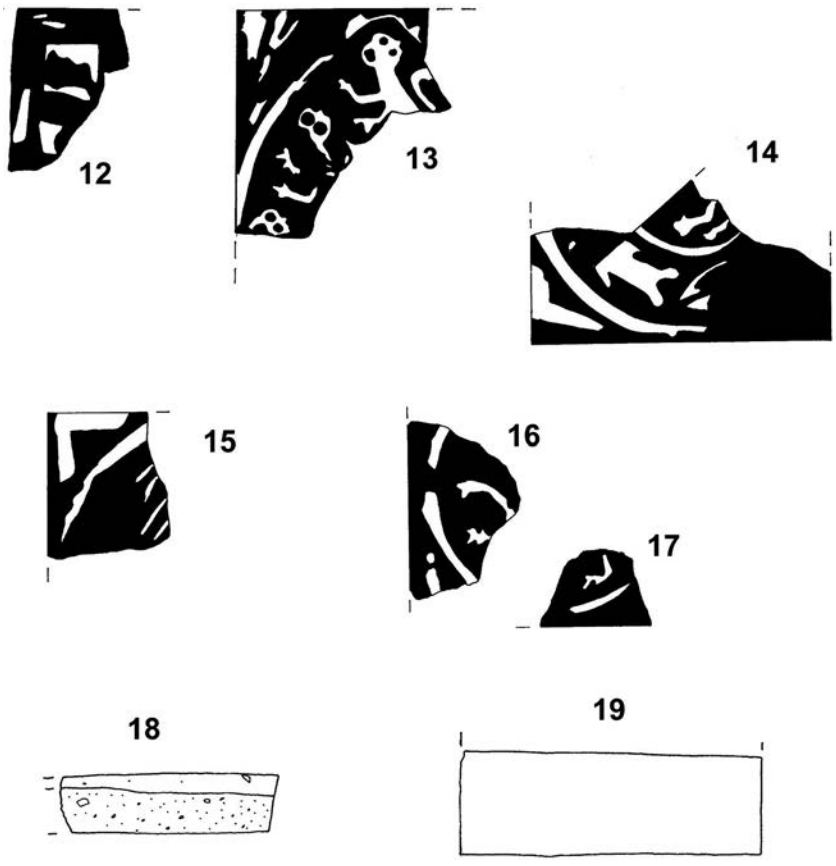


*Fig 31 Floor-tiles from Glasney. Scale 1:3. (Drawing: Laurence Keen.)*

The most numerous designs recovered were 1, 10, 11 and 13, although this does not necessarily mean that these designs were better represented in the pavement(s) than the other designs.

The plain tiles in this group are numerous but unfortunately are often too fragmentary for complete sizes to be determined. No complete tiles of the same size as the decorated examples were located. The most significant fact is that there are several which are clearly rectangles, broken before laying from full-sized plain tiles. These had been scored before firing by two knife cuts so that three rectangular tiles could be obtained from each complete tile (Fig 31.19). They are of the same thickness as the decorated tiles, but, unlike them, they have plain backs. Most are too worn for any of the original glaze to survive, but traces of glaze on the sides of some show that they had been glazed a dark green or brown. One, from context (322), in contrast, has white slip. The more complete rectangles come from contexts (201), (507) and (522), and from unstratified layers in trench 2.

**Group B**

The tiles in this group have a much coarser fabric, were fired to a red to dark red and have straight sides or a slight bevel. The majority are about 126 mm square, although there is one piece from context (503) from a tile 140mm square. The thickness varies between 23 and 33mm, the majority being 26mm. Where the glaze survives this is generally a dark green to light brown. Many have a white slip brushed onto the top surface. In many cases there are small nail holes in the corners, suggesting that a complete tile had four such nail holes; in one case, from context (201), there is an additional fifth nail hole in the centre of the tile. One tile, from context 522, has a diagonal cut producing a triangle. Only in trench 5, against the pier base, was one tile fragment found *in situ*,

in context (513). The more complete examples came from contexts (100), (202), (205), (312), (314), (503), (507), (515) and 522, unstratified in trench 1 and from the unstratified spoil of trench 5.

### Group C

From the unstratified spoil of trench 2 come two fragments with a gravel-tempered fabric. They are both undecorated and are 23mm and 26mm thick. One has the back stabbed with small circular holes about 3mm diameter going almost through the full thickness of the tile.

### Group D

A tile fragment from context (112) (Fig 31.18) has part of one edge giving an overall size of 90mm by 50mm. It is 25mm thick with a slight chamfer and a rough back. The cross section shows two distinct fabrics. The upper, from 4 to 9mm thick, is fired white with very fine sand and sub-angular quartz inclusions up to 3mm. The lower layer is fired red, also with very fine sand and sub-angular quartz up to 4mm. The base layer is 19 to 21mm thick. The top surface has a brilliant copper-rich glaze. From a technical point of view this fragment has to be assigned to a separate group, even though it is the only example.

### Discussion

Medieval floor-tiles in Cornwall are surprisingly rare and these from Glasney represent the only new site in the last three decades. The list of sites is remarkably short. Tiles, apparently from Penn, Buckinghamshire, have been found at King Charles's Castle, Tresco, Scilly (Keen 2002, 229, 233 and note 32, citing Miles and Saunders 1970, 27). There are two tiles extant from Tywardreath (Eames 1980, nos 1351 and 1361, designs 2743 and 2528) and one from Restormel Castle, Lostwithiel (*ibid*, no 11, 669, design 1996). There are three tiles from St Germans Priory in the British Museum (*ibid*, nos 2117–19, designs 2045 and 2219) which complement those in the Royal Cornwall Museum, Truro (Olson and Preston-Jones 1998–99, 158, 165–66, figs 4 and 8).

The largest collection comes from Launceston Priory and was found in 1888 by R and O B Peter during extension of the gasworks. There are three of these tiles in the British Museum (Eames 1980, nos 11, 339–41, designs 1524, 1527 and 1529) and a small collection in the Lawrence House Museum, Launceston. The discoveries were reported at the time (Peter and Peter 1889), but unfortunately without a plan. A subsequent publication included a plan which shows the position of an *in situ* pavement in the north presbytery chapel and described the tiles which were found there and elsewhere in the excavated area (Peter 1889). Peter described the tile discoveries as follows:

> 'In addition to the great number of loose fragments of these tiles, I happily discovered one small portion entire, and also some full size ones bearing capital letters, &c. The entire piece was in St Gabriel's Chapel, close to its eastern wall, and it is singular that all the heraldic tiles, and most of those with capital letters on them, came from that site. The arms depicted are those of Royal personages, that of Richard, Earl of Cornwall, being the most conspicuous. The tiles found within the walls of the Presbytery were almost all of geometrical patterns. Some few with capital letters came from the south Chapel. All the entire tiles, and all the fragments that could be saved, are now in our Museum' (*ibid,* 18).

The tiles were given more detailed treatment by Peter (1896), but drawings in the Lawrence House Museum demonstrate that his coverage was not comprehensive. In the late 1960s, several areas of tile pavement were still visible on the overgrown site, although seriously damaged. Without a detailed plan, which Peter might well have been able to provide, it is unclear if these areas had been relaid; the cement bedding suggested that they might have been. The site was surveyed in 2001, but no tiles were recorded *in situ* (Gossip 2002, 4.3 and [34]).

In December 1886, an area of tile pavement was found on the site of Bodmin Priory. A photograph of the pavement is in Bodmin Museum and, fortunately, a plan of it was made by W Iago. This and full-scale drawings of the decorated designs survive in the Royal Cornwall Museum. The tiles were offered to the vicar of Bodmin, who declined them. They were subsequently offered to the prior of St Mary's, Bodmin, who placed them, together with a selection of architectural stone fragments, in a small decorative, free-standing arrangement which still exists outside the Roman Catholic church of St Mary and St Petroc on the west edge of Bodmin. The tiles will be published as a separate paper. Iago noted that the decorated tiles from

Bodmin Priory were slightly smaller than those at Lanivet, but these have not yet been located by the writer.

Excavations on the site of the priory church at St Germans in 1928 revealed part of a pavement of decorated tiles and fortunately a plan was made by Charles Henderson. This shows groups of 36 decorated tiles (arranged six by six) separated by plain rectangular tiles (half or full-size plain tiles) and a small adjacent area of single decorated tiles framed by plain rectangular tiles (each from complete tiles broken into thirds), with small square tiles in the corners of each frame. As noted above, the pavement and the surviving tiles have recently been assessed by Olson and Preston Jones (1998–99, 157–58, 165–66, figs 4 and 8).

*Group A*

All of the decorated tiles belong to this group. From the designs and technical details they can be assigned with some confidence to Series 1 from Exeter (Allan and Keen 1984, 232–36). Tiles from this series are found at a large number of sites in Devon (*ibid,* fig 136) and these from Glasney add to tiles from the same series found in Cornwall at St Germans, Launceston and Bodmin priories. Many of the Glasney fragments are too small for exact parallels to be cited. However, design 1 is design 23 from Exeter (*ibid,* fig 138) and Tavistock Abbey (Keen 1999, fig 18, 12). Design 13 is also paralleled at Tavistock Abbey (*ibid,* fig 18, 8), and design 14 is very similar to design 10 also found there (*ibid,* fig 18, 10). Design 10 is well represented at Glasney but is currently without parallels. The quarter pieces of design 11 also have no parallels: if the three drawn fragments (Fig 30) all come from the same design they, too, have no parallels, although there is one unpublished fragment with a seven-foil from Exeter, which may match the lower right fragment as drawn here.

As noted, designs 6 and 14 occur on triangular half-tiles, which may suggest that the pavement in which they were laid was aligned on a 45–degree axis. The one-third rectangular tiles suggest that there were panels of decorated tiles surrounded by a frame of plain tiles, although small square plain tiles for the corners are entirely absent. It is possible that single decorated tiles were surrounded by a frame of plain tiles, as has been recorded at St Germans and Newenham Abbey, Axminster, Devon (Allan and Silvester 1981, fig 3). It is unclear how the quarter tiles decorated with design 11 may have fitted into a pavement.

The dating of this group relies on documentary evidence for the purchase of floor-tiles for Exeter Cathedral. The fabric rolls refer to purchases and payments to paviours between 1279–80 and at least 1325–26 (Allan and Keen 1984, 234–35). Given that tiles of the same series have been found at the Franciscan friary, Exeter – the site having been granted to the friars in 1291–2 and construction thought to have been underway by 1303 – the tiles surely date to after *c* 1300. It is concluded that the Exeter pavements generally could all date to before about 1330 (Allan and Keen 1984, 234–35). A survey of all the tiles in Series 1 from Devon shows that there are many designs which are not paralleled at Exeter. It is unclear whether these designs date to before or after the Exeter material, as was suggested for tiles found at Tavistock Abbey (Keen 1999, 195).

Although the collection of floor-tiles from Glasney is fairly small it must surely demonstrate a new flooring of the College church. As Allan and Blaylock show elsewhere in this report, the extensive use of Beer stone is likely to parallel the use of this material in Exeter Cathedral after about 1320. It is unsurprising that a similar Exeter connection is seen in the floor-tiles. It may be suggested, therefore, that the floor-tiles belong to a significant re-flooring project of the collegiate church towards the end of the first quarter of the fourteenth century. The architectural fragments from Launceston Priory have yet to be examined in detail, but it may be significant that Peter recorded Beer stone from a screen in the choir (Peter 1889, plan between pages 8 and 9). This may suggest a similar architectural programme at Launceston in which the floor-tiles of this group may possibly be placed.

*Group B*

Technically, in the treatment of the glazing and the application of white slip to what appears to have been biscuit-fired quarries, and especially in the presence of small nail holes, the tiles in this group belong to a very widespread series of floor-tiles imported from the Low Countries. The earliest Devon reference is at Exeter in 1437–38 (Allan and Keen 1984, Series 3, 236, 240). However, fourteenth-century references are common, and tiles of this type were imported in very large

numbers at ports along the English coast (Keen 1971, 147–8; Knight and Keen 1977, 74; Norton 1976, 30, 32–34) and, indeed, to Scotland (Norton 1994, 150–3). At Glasney they probably belong to a re-flooring in the second half of the fifteenth century, from which the one *in situ* tile in trench 5 may well derive.

*Group C*

The two undecorated fragments have a distinctive gravel-tempered fabric. This is paralleled by tiles of Series 2 at Exeter, dated to the fourteenth to early sixteenth century (Allan and Keen 1984, 236), and probably by a tile from Tavistock Abbey (Keen 1999, 194, 196, Group D).

The fabric suggests that they were made in north Devon. Decorated tiles from Spreyton and Throwleigh, Devon, appear to belong to the same group (Keen 1990). It has been suggested that the tiles at Spreyton may be associated with the re-roofing of the chancel in 1451 (*ibid*, 191). These tiles may well be the forerunners of the series of seventeenth- and eighteenth-century gravel-tempered relief tiles made in north Devon (Keen 1969).

*Group D*

The single tile fragment assigned to this group is especially interesting from a technical point of view since it is clear that the layer of white fabric applied to the base layer of a reddish fabric was designed to enhance the copper-rich surface glaze. Such treatment is extremely unusual. However, a similar technical approach is to be seen in groups 3, 6, 8, 9, 11 and 12 at Norton Priory, Cheshire, where a thin layer (about 1mm) of a slightly different colour has been added to the body fabric to enhance decorative details and produce variation in the resulting glazing (Keen 2008).

**Conclusion**

Despite the relatively small number of tiles recovered, this assemblage is very important in adding new material to the very limited collection of medieval floor-tiles from Cornwall. The presence of tiles of Series 1 from Exeter and, indeed, the fairly numerous tiles imported from the Low Countries, are surely indicators of coastal distribution, a conclusion reinforced, perhaps, by the extensive remains of architectural stonework carved in stone imported from Beer, Devon. The tiles in the north Devon gravel-tempered fabric are unexpected but again serve to illustrate trading connections. When tile material from Launceston and Bodmin priories is examined further and published, the Glasney floor-tiles will offer an extremely useful and important comparison.

## The pottery and ridge-tiles

*John Allan and Graham Langman*

The Glasney pottery assemblage consists of 93 medieval and 687 post-medieval sherds. A high proportion of the material (over 80 per cent by sherd count) was residual in late (post-1850) contexts or was unstratified, and there are no usefully stratified individual groups of finds. There are nevertheless several points of interest in this collection, especially in view of the paucity of published collections of medieval and post-medieval pottery from west Cornwall.

The medieval material includes 12 sherds that are definitely or probably earlier than the foundation of the College in the mid-thirteenth century. These comprise eight early medieval gabbroic sherds, among which two (T1, 108) are grass-marked, and four granitic coarsewares. These are significant finds, showing that the documentary record of the origin of the College in a wooded marsh may disguise the presence of earlier settlement on or close to the site. There is also an interesting scatter of later medieval pottery, including a single Saintonge sherd and a regional import, and a further small series of sixteenth-century fragments. Among this material are the first examples recorded in Cornwall of some quite rare classes of late medieval and post-medieval imported pottery.

The collection of 177 fragments of ridge tiles is entirely medieval in character, and presumably shows that parts of the church at least had ridged slate roofs. There was a concentration of these in trench 5; other pieces were scattered. All are in Cornish granite-derived fabrics and no meaningful distinctions can be made in this material solely on visual grounds.

The assemblage was initially examined by Carl Thorpe and assessment was then carried out by the writers. The present report provides a consolidated listing of the entire collection; detailed listings of

**Table 2** Pottery from all contexts

MNV = Minimum Number of Vessels

**MEDIEVAL**

| *Wares* | *Sherds* | *MNV* | *Notes* |
|---|---|---|---|
| Merida-type coarseware | 2 | 2 | Fifteenth / sixteenth century, costrel rim and body sherd |
| Saintonge | 4 | 4 | 1 green-glazed jug with rouletted strips, 1 jug, ? fifteenth century |
| Dorset/Hampshire | 1 | 1 | Fourteenth – fifteenth century jug |
| English white ware | 1 | 1 | ? Poole, Dorset, thirteenth century, jug with applied clay strip |
| Cornish grass-marked ware | 1 | 1 | Eighth – eleventh century |
| Cornish ?gabbroic coarseware | 6 | 4 | Early medieval |
| Cornish medieval coarseware | 1 | 1 | ? Early medieval, hand-made oxidised fabric |
| Cornish medieval coarseware | 1 | 1 | Hand-made granitic fabric |
| Cornish medieval coarseware | 2 | 1 | Hand-made oxidised gritty fabric |
| Cornish medieval micaceous coarseware | 55 | 42 | Thirteenth – fifteenth century, 1 cooking pot, 4 jugs, 2 broad strap jug handles |
| Cornish micaceous coarseware | 8 | 8 | Fifteenth – sixteenth century |
| Cornish sandy coarseware | 7 | 5 | Fifteenth – sixteenth century |
| North Devon medieval coarseware | 1 | 1 | Mid thirteenth century – late fifteenth century |
| ? North Devon coarseware | 1 | 1 | Fifteenth – sixteenth century |
| Cornish coarseware, ? St Germans-type | 1 | 1 | Fifteenth – sixteenth century |
| **Totals** | **92** | **74** | |

**POST MEDIEVAL**

| *Wares* | *Sherds* | *MNV* | *Notes* |
|---|---|---|---|
| Chinese Porcelain | 8 | 8 | Eighteenth century, 2 cups, 1 dish / bowl, 2 ? saucer rims |
| Italian / Netherlands maiolica | 1 | 1 | Jug, late fifteenth – early sixteenth century (cf Blake 1999, fig 2.1, from Gatehouse London) |
| Spanish olive jar | 2 | 2 | Sixteenth century |
| Portuguese / Spanish tin-glazed | 2 | 1 | ? dish |
| ? Merida-type coarseware | 1 | 1 | ? lid |
| Beauvais sgraffito single slip | 5 | 2 | 1 dish, 1 dish |
| Beauvais yellow-glazed white ware | 5 | 3 | Drinking jugs |
| Saintonge green-glazed | 1 | 1 | Sixteenth – seventeenth century |
| Saintonge unglazed | 2 | 1 | Sixteenth century |
| Saintonge green & brown | 1 | 1 | Bowl/dish |
| ? Saintonge coarseware | 1 | 1 | Sixteenth – seventeenth century |
| Low Countries redware | 1 | 1 | Sooted |
| Raeren stoneware | 3 | 2 | late fifteenth – early sixteenth century, 1 drinking mug, 1 drinking mug foot |
| Raeren stoneware | 1 | 1 | Panel jug with tail of handle, 1575–1600 |
| Cologne/Frechen stoneware | 1 | 1 | 1 inscribed band jug, 1530–60 (cf Gaimster 1997, 153) |
| Frechen stoneware | 8 | 5 | 1 drinking jug, 1 bottle, 1 handle |

**Table 2** cont.

MNV = Minimum Number of Vessels

**POST MEDIEVAL**

| *Wares* | *Sherds* | *MNV* | *Notes* |
|---|---|---|---|
| Westerwald stoneware | 7 | 4 | 1 early seventeenth-century jug, 2 late seventeenth century jugs, 1 eighteenth-century chamber pot, |
| English / Dutch maiolica | 3 | 1 | 1570–1630 dish |
| Unclassified yellow-glazed white ware, French / Low Countries / English | 2 | 1 | |
| Unclassified coarseware import, med/ post-med | 1 | 1 | |
| London-type Bleu de Nevers tin-glazed | 1 | 1 | Jug, late seventeenth century |
| London mottled manganese tin-glazed | 7 | 1 | 1620–50 cup |
| Delft / Portuguese tin-glazed | 1 | 1 | Rim |
| Delft | 22 | 16 | 1 dish, 1 drug jar 1670–1740, 1 bowl eighteenth century |
| English Delft | 5 | 1 | Early eighteenth-century wall tile |
| Bristol / Staffordshire yellow-glazed earthenware | 16 | 15 | 10 cups, 3 feathered slip dishes, 1 double slip dish |
| Bristol / Staffordshire treacle brown-glazed | 2 | 2 | 1 tankard, 1 teapot lid |
| Nottingham stoneware | 5 | 4 | 1 bowl |
| Staffordshire Agate ware | 1 | 1 | |
| Staffordshire grey salt-glazed stoneware with white engobe | 1 | 1 | Brown rimmed mug |
| Staffordshire white salt-glazed stoneware | 2 | 2 | |
| Cornish post-medieval coarsewares | 144 | 87 | |
| North Devon gravel-tempered and gravel-free wares | 34 | 22 | |
| South Somerset red & yellow-glazed sgraffito | 1 | 1 | Seventeenth century |
| South Somerset trailed slipware | 1 | 1 | Eighteenth century |
| South Somerset slipwares | 2 | 2 | Seventeenth-century jug; eighteenth-century dish |
| South Somerset coarsewares | 3 | 3 | |
| ? South Somerset coarsewares | 2 | 2 | |
| Unidentified coarseware scraps | 37 | 11 | |
| Earthenware flowerpots | 10 | N/A | |
| English industrial china | 9 | 9 | |
| Nineteenth- / twentieth-century wares, transfer print, pearlware, stonewares, etc | 325 | N/A | |
| Totals | 687 | 223 | |

the types and dates of the pottery in each context, with a more detailed breakdown of the material dating after 1750, have been presented in an assessment report (Allan and Langman 2005). Although it has been possible to carry out an initial petrological study of the important series of early medieval wares at this stage, it should be emphasised that the present report is intended as a step towards a proposed fuller study which would include a programme of petrological and chemical analyses of the later medieval and post-medieval material.

**Catalogue**

Listed below are a sample of pottery sherds, most of which are illustrated either with a drawing (Fig 32) or a photograph (Fig 33).

1. Unglazed rim of a Saintonge jug, late thirteenth to early fifteenth century. Trench 5, unstratified.
2. Sherd from the neck of a maiolica jug or spouted pharmacy pot with handle attachment. Fine cream fabric, blackish-blue cross-hatching, North Italian or South Netherlands maiolica, late fifteentth or early sixteenth century (*cf* Blake 1999, fig 2.1). Trench 5, unstratified.
3. Basal angle from a dish, the yellow-cream fabric with white clay lumps; glossy tin glaze with edge of a greyish-blue painted line. Spanish or Portuguese, sixteenth or early seventeenth century. Trench 3, unstratified.
4. Beauvais *sgraffito* rosette dish, with single slip, glazed orange-brown, combed and single line *sgraffito*, and knife-trimmed back; burnt. For the general type, see Hurst *et al* 1986, 111, no 160. Rosette dishes were one of the most common Beauvais types; they seem to have been in circulation throughout the sixteenth century (*ibid*; for similar vessels from Southampton, see Brown and Thomson 1996, nos 15, 17, 19). Trench 4, context (407), with local coarsewares.
5. Two rim sherds from a different Beauvais single *sgraffito* dish, glazed orange-brown over slip, with a band of floral motifs and combing. Trench 5, unstratified, and trench 1, context (107), with a North Devon gravel-free ware cup, probably sixteenth century.
6. (Not illustrated). Shoulder of a Raeren stoneware globular drinking mug with a pronounced raised ridge on the shoulder, late fifteenth or early sixteenth century. Trench 5, unstratified.
7. (Not drawn). Sherd from the central vertical zone of a Raeren stoneware panel jug with tail of handle but none of the decorative panels, *c* 1575–1600. Residual in context [313], nineteenth–twentieth century.
8. Sherd from the central part of the body of a small Cologne / Frechen inscribed band jug. The first two letters of inscription WA[…], with part of an acanthus leaf, survive (*cf* Gaimster 1997, 153, where three variations on the text WANN GOTT WILLT SO IST

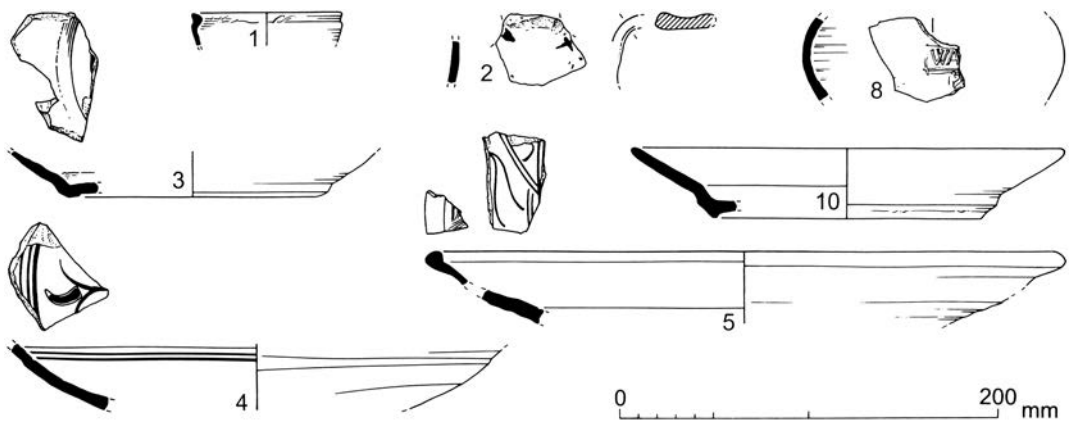


*Fig 32 Medieval and post-medieval pottery from Glasney. (Drawing: Jane Read.)*

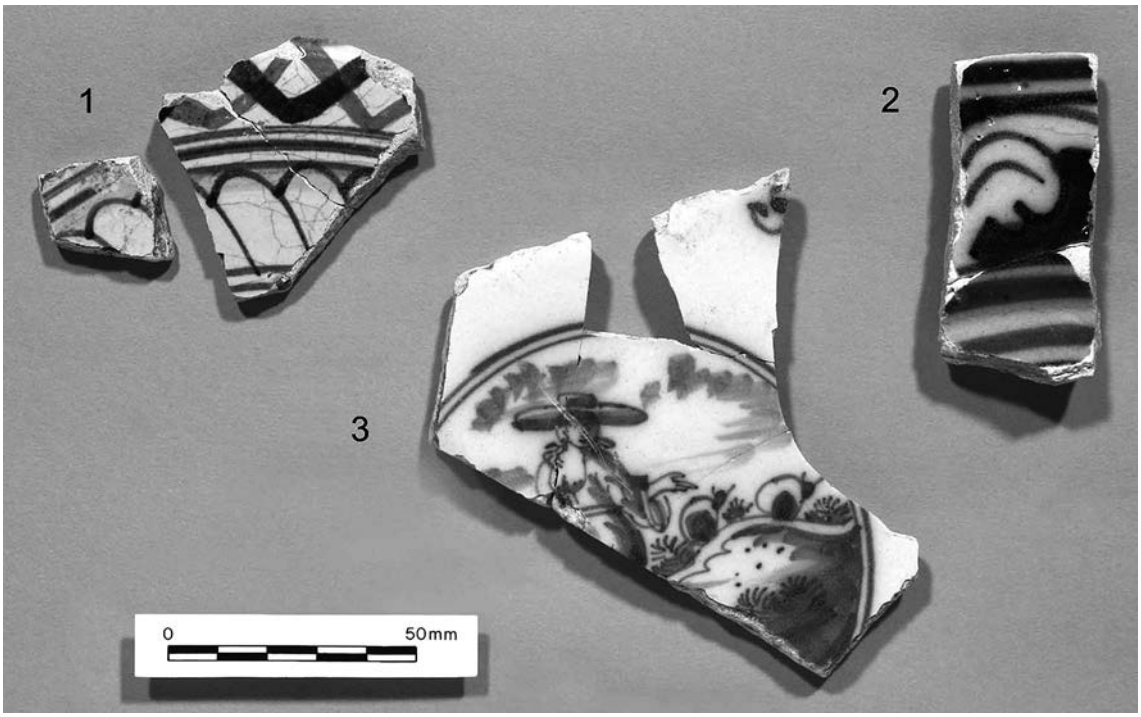


*Fig 33 Post-medieval tin-glazed pottery and tile. (Photograph: G Young.)*

MEIN ZEILT ('when God wills it, then my time is up') are recorded, *c* 1530–70. Trench 5, unstratified.

9. (Not drawn, Fig 33.1). Dutch / English polychrome maiolica dish, the fabric with large iron oxide inclusions, the front painted blue, orange and yellow, the back lead-glazed. For overall pattern see Korf 1981, fig 43, dated [15]67; for the central band see *ibid*, 207; for the rim decoration see *ibid*, fig 231; *c* 1560–1650. Trenches 1 and 3, unstratified.
10. (Decoration shown in Fig 33.2). Rim of tin-glazed dish, pale cream-yellow fabric, thick glossy tin glaze with intense blue and purple painting, English, early eighteenth century. Trench 1, unstratified. (We are grateful to Jonathan Horne for his advice about attribution.)
11. (Not drawn, Fig 33.3). Dutch delftware wall tile of *c* 1715–20 showing a woman with broad-brimmed hat (? a shepherdess) with sheep (to her right) in a landscape. Trench 5, unstratified. (We are grateful to Jonathan Horne for his advice about attribution.)

**Petrological study of the early medieval gabbroic pottery**
*Roger Taylor*

Six vessels identified visually by Allan and Langman as gabbroic wares were submitted to the writer for petrological study. They have been examined under a ×20 microscope without the use of thin-sections. Inclusions are described in approximate order of frequency, starting with the most abundant. All these vessels are indeed gabbroic, but there are minor variations between them which may be of significance. One specific point of interest is the presence of granitic inclusions in two sherds (nos 2 and 3).

*1. T1, (108)*

Two flat grass-marked base sherds from a vessel with an oxidised exterior, grading into a dark reduced core, and moderately oxidised brownish interior surface. A moderately hard-fired ware approximately 10mm thick. Temper forms 5–10 per cent of the fabric.

Feldspar – White altered angular grains and some fresher translucent fragments showing cleavage, 0.2–2mm.
Amphibole – Off-white to greyish-brown, fibrous cleaved and elongated grains, 0.2–1 mm.
Pyroxene – Brown cleaved aggregate and elongated individual grains, 1–2.5mm.
Composite – Feldspar/pyroxene, angular, 2.5 mm –7.0mm.
Quartz – Colourless translucent angular grains, 0.2–2mm.
Magnetite – A few black glossy magnetic angular grains, 0.2–0.8mm.
Mica – Muscovite abundant cleavage flakes in the matrix, less than 0.05mm.
*Comment:* A gabbroic fabric with a poorly sorted mineral content, the grains generally less than 1mm.

*2. T2, unstratified*

Hard-fired oxidised rim sherd, 6.2–6.4mm thick. Temper forms approximately 5–10 per cent of the fabric.
Feldspar – Soft white altered, angular grains, 0.1–2mm.
Quartz – Translucent colourless to white angular grains, 0.1–1.2mm. One grain of vein quartz, rounded and broken, stained reddish, 2mm.
Amphibole – Off-white to light grey fibrous and elongated grains, 0.2–1.5mm.
Magnetite – Sparse black glossy angular magnetic grains, 0.25–0.8mm.
Biotite – One brown flake, 0.5mm.
Composite – Quartz/biotite grain, 1mm.
Mica – Muscovite cleavage flakes in the matrix, less than 0.05mm.
*Comment:* A gabbroic fabric with mineral grains generally less than 1mm, possibly with some minor additions from a granitic source.

*3. T3, unstratified*

Hard-fired oxidised body sherds 5.8–6.9mm thick. Temper forms approximately 15 per cent of the total.
Feldspar – White soft altered angular grains, 0.1–2mm.
Quartz – Colourless translucent angular to sub-rounded, 0.1–0.8mm.
Amphibole – Off-white to grey to light brown, fibrous grains, 0.3–0.1mm.
Magnetite – Black glossy sub-angular magnetic grains, 0.2–0.3mm.
Tourmaline – One yellowish brown translucent striated grain, 0.4mm.
Composite – Biotite quartz, 0.5mm.
Rock fragment – Biotite ? hornfels scaly aggregate of biotite with a soft fine-grained matrix in part, 2mm.
*Comment:* A gabbroic temper with the presence of grains with biotite and tourmaline and the relatively high quartz content indicating some additions from a granitic source. Mineral grains generally less than 1mm.

*4. T3, unstratified*

Oxidised hard-fired body sherd 7.8–9.3mm thick with a patchy calcareous surface coating, probably resulting from contact with mortar residue. Temper forms 10–15 per cent of the fabric.
Feldspar – White soft altered angular grains 0.1–3mm.
Quartz – Translucent to transparent colourless angular grains 0.3–2.2mm. One 4mm grain of red-stained vein quartz.
Amphibole – Sparse buff to brownish fibrous cleaved grains 0.3–1mm.
Magnetite – Sparse black glossy grains 0.1–0.8mm.
Mica – Muscovite cleavage flakes in the matrix, less than 0.05mm.
*Comment:* A gabbroic fabric with mineral grains generally less than 1mm.

*5. T3, no context number*

A small sherd with an oxidised surface grading into a reduced interior. Temper consists of feldspar, quartz, sparse amphibole and rare magnetite, but there is insufficient fabric to merit a more detailed description. Fine-grained muscovite is also present in the matrix.
*Comment:* A gabbroic fabric with relatively abundant quartz.

*6. T5, (503)*

Hard-fired oxidised body sherd, 4.6–5.9mm thick. Temper forms 5–10 per cent of the fabric.
Feldspar – White soft altered angular grains, 0.1–2mm.
Quartz – Translucent pale yellow to white to angular to sub-rounded grains, rare rounded grains 0.3–0.5mm.
Pyroxene – Rare brown cleaved aggregate grains, 1–2mm.
Magnetite – A scatter of black glossy magnetic sub-angular grains, 0.5–0.8mm.
*Comment:* A gabbroic fabric, generally fine-grained, the inclusions less than 1mm.

## Conclusions

The earliest evidence recovered during the 2003 excavations at Glasney was a small quantity of Grass-marked pottery, recovered from either unstratified or disturbed contexts, suggesting activity on the site prior to the construction of the church. A circular cut [305] in trench 3 could not

be dated but was sealed by deposits cut by the later medieval graves.

The excavation found that the north part of the site had been made up in advance of the construction of the church with foundation rafts of large stones, recorded in trenches 1 and 5. Extant remains of the church were uncovered in four of the five trenches, including the south and east walls, an internal wall between the south aisle and choir, the south transept and possible chapter-house, as well as a number of internal and external floor surfaces. This has allowed a tentative reconstruction to be produced (Fig 18), showing a cruciform church with an enlarged east end. Our reconstruction shows striking parallels with a number of important religious sites in Devon, particularly Crediton, Ottery St Mary and Exeter Cathedral. Glasney's estimated length of about 67m (not including the Lady Chapel) shows it to have been a larger structure than Crediton (59.5m) or Ottery St Mary (48m), although considerably smaller than Exeter Cathedral. The width of the main body of the church at Crediton is 15.5m, which is very similar to that now proposed for Glasney.

These Devon churches offer strong possible parallels for the overall form of Glasney. A layout based on a central tower, opposed transepts, north and south aisles and a Lady Chapel integral to the main building is clear at each of these sites, including Exeter and Ottery St Mary which have been modified with the addition of extra chapels or aisles. Small chapels in Exeter Cathedral bear comparison to the suggested improvements to the east end of Glasney. Furthermore, Crediton Church has a chapter-house to the south of the choir, in the same position as that suggested for Glasney. Exeter and Ottery St Mary have chapels at these locations with a similar arrangement attached to the north wall. The suggested reconstruction of Glasney therefore remains tentative but could be tested by further excavation.

The large assemblage of architectural fragments recovered from the site, of great complexity and intricacy, indicates close links with the output of the Exeter Cathedral workshop. This includes the extensive use of Beer stone, of which individual pieces bear great similarity to features associated with three phases of building work carried out at Exeter during the period 1315–48. The form of bases and capitals recovered at Glasney, for example, have been shown to resemble those in Exeter Cathedral's nave and crossing which were designed by Thomas of Witney.

This evidence for a major phase of building work in the early fourteenth century is not immediately apparent from the historical documentation. The phases identified are somewhat arbitrary (Jo Mattingly, pers comm), due to a dearth of documentary evidence. Grandisson's 'new work' mentioned in his will could have started earlier, perhaps *c* 1330, as his bishopric spanned the period 1327–69. Allan and Blaylock (above) tentatively propose probable dating after 1320 on the grounds of the incidence of Beer stone, the sculptural style of the various foliage carving fragments and the fact that they are unable to clearly identify earlier phases in the corpus of architectural fragments.

The excavated evidence also suggests subsequent modifications to the fabric, including a probable re-flooring of part of the church and perhaps other changes in the second half of the fifteenth century. The historical sources make it clear that there were times when the church was in poor condition and when repairs were presumably carried out

The post-Dissolution demolition of the church was comprehensive, although not thorough. The extent of the rubble overlying the church remains, the amount of good building stone that was left and the later cuts into the demolition layer confirms there was not a single, ordered removal of the remains of the church. The evidence appears to represent an *ad hoc* robbing of the site, perhaps involving many local people.

Overall, the scope of the 2003 excavation at Glasney was limited, as was the post-excavation analysis, and much could still be done. Further excavation could be targeted on testing the tentative reconstruction plan (Fig 18) and more detailed specialist analysis is required on the geology of the building stone and studies of the architectural fragments and pottery. Nonetheless, the excavations achieved a considerable degree of success in confirming the position and layout of the church, correctly located during the initial assessment, and revealing important information on its form and architectural detailing.

The project was also a success as 'public archaeology'. The excavation was covered by local radio and television but a particularly important element of it was the strong involvement of the Friends of Glasney and of local people from the Penryn area. Around 60 volunteers participated in

*Fig 34 Excavations in progress on the Glasney site, 8 July 2003. (Photograph: Colin Ross.)*

the actual excavation and more than 500 people visited the site during the work (Fig 34).

**Acknowledgements**

The author would like to thank the late Dr James Whetter of the Friends of Glasney for commissioning the work and for his enthusiasm and encouragement throughout. Without him the project would not have taken place. This report is dedicated to his memory.

Thanks are also due to English Heritage, the Heritage Lottery Fund and other partners for funding the works, and to the staff of the former Carrick District Council, the then owners of the site, who allowed the excavation to proceed.

Among the staff of the then Historic Environment Service of Cornwall County Council, thanks are due to Pete Dudley, Steve Hartgroves, Matt Mossop, Dr Konstanze Rahn, Jo Sturgess and Imogen Wood for their work during the excavation. Cataloguing of the finds was undertaken by Dr Konstanze Kahn and Emily Jones, while Carl Thorpe undertook the initial assessment work. The Project Manager was Andy Jones and Peter Rose also read and commented on the archive report. The work of the external specialists – John Allan, Dr Stuart Blaylock, Laurence Keen, Graham Langman, Dr Joanna Mattingly and Dr Roger Taylor – was also greatly appreciated. Gary Young of Exeter Archaeology produced photographs of the architectural fragments from Glasney and Tony Ives assisted with the illustration of the architectural fragments. Professor Nicholas Orme also supplied interesting comments in advance of publication.

The author would also like to thank digger driver Barrie Williams (from R J Mann) for his work and the following volunteers who helped with the excavation (all names are as recorded on the daily attendance sheet): M Archdeacon, Val Atkinson, Claire Bedford, Vanessa Beeman, Brian Busselle, Ron Caddy, Sue Collings, Jan Cunningham, Roger Downham, J Einarson, Ray Einarson, Robert Fraser, David Garman, Trystan Hall, Frank Heard, Vicky Heard, K S Hocking, Gill Holiday, Alex Hooper, Daniel Hoyle, Jean Hughes, Margaret Hunt, M Hurst, Lisa Jackson, Gillian James, Emily Jones, R S Jones, John H Key, John Kirby, Karen Kitson, Ruth Lindow, Sarah McNaughton, Tom Minns, M C Moore, Sylvia Parker, Hazel Perham, Gareth Phillips, Michael Polkinhorn, Mike Reed, Shirley Richards, Adrian Rodda, R Skelton, Andrew Slade, Adam Spring, Helen Thomas, Les Thomas, Brenda Tombs, John Tonkin, Jacky Trevivian, Mike Tripplett, Jayne Tucker, Lynette Turner, Gavin Vincent, Kieran Vincent, Janice Vincent, Ernie Warmington, David M Wheeler, Jenny Wittamore, Sean Wilkes, Christine Wilson, Andy Wing, Tamsin Woodford and P Woodley.

The excavation archive has been deposited with the Royal Cornwall Museum. The accession number is TRURI 2006.34.

*Editorial note*

The text and illustrations for this paper were near complete more than a decade ago but a variety of minor problems delayed publication. The contributions by John Allan and Stuart Blaylock on the architectural material, and by Laurence Keen on floor-tiles, were updated in 2011; the section on historical depictions of the College has been revised more recently. However, it should be noted that no further revisions have been made to the paper to incorporate more recent literature.

The editors are grateful to Sean Taylor (Cornwall Archaeological Unit) for his help with the digital illustrations. Graeme Kirkham thanks Angela Broome at the Courtney Library (Royal Institution of Cornwall), Shirley Richards and Margaret Whibley at Penryn Museum and Kim Cooper and colleagues at the Cornish Studies Library, Redruth, for their help with tracing historical depictions of Glasney.

Further archaeological work was carried out at Glasney by John Moore Heritage Services in 2011 and 2012, focused on a small area on the north side of the church site in the garden of 6 College Ope. This revealed evidence of structures on the probable site of the north transept and recovered significant pottery and other finds. The work was reported in the following excavation archive reports: A Chadwick, 2011. *An archaeological evaluation at 6 College Ope, Penryn, Cornwall*, Beckley (Oxon) (John Moore Heritage Services); S Yeates, 2013. *An archaeological excavation at 6 College Ope, Penryn, Cornwall*, Beckley (Oxon) (John Moore Heritage Services).

In 2013 conservation management work was carried out on the surviving standing portion of the fabric of Glasney College. This was carried out by Cornwall Council Historic Environment Projects (now Cornwall Archaeological Unit) as part of its Scheduled Monument Management programme, funded by English Heritage (now Historic England), Cornwall Council and Cornwall Heritage Trust. The work was described in A Preston-Jones, 2014. *Glasney College, Penryn, Cornwall: report of conservation management work*, Truro (Historic Environment Projects, Cornwall Council).

John Allan has recently published a further assessment of the influence of Exeter Cathedral on Glasney and other Cornish churches: Exeter Cathedral and church architecture in Cornwall in the early 14th century, in P Holden, ed, 2017. *Celebrating Pevsner: new research on Cornish architecture. Papers from the 2015 Cornish Buildings Group conference 'Only a Cornishman would have the endurance to carve intractable granite,* London (Francis Boutle Publishers), 49–64.

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# A tomb for the living: Grumbla cromlech, the Giant's Chair, Sancreed

PETER HERRING

*A small site near Grumbla in Sancreed, a spread of stones with several upright, including one very large slab, appears from survey and interpretation to be remnants of the Neolithic cromlech that gave the settlement its name. It was dismantled in the early nineteenth century when some of its stones were reused in building a small and short-lived cottage. The cromlech, or quoit, appears to have been a 'simple chambered tomb' in recent terminology, similar in scale and form to Chun and Mulfra Quoits. It was unusual in being low-lying, near the foot of a hill, though other 'cromlech' derived place-names suggest that there may have been others in such modest locations.*

Just west of Sancreed Beacon in Sancreed parish is an area known as Grumbla. This place-name is a direct development from **cromlegh*, meaning 'dolmen, quoit' (Peter Pool, pers comm; Pool 1985, 52; Padel 1985, 72), and the cromlech which gave Grumbla its name appears to survive as a small archaeological monument on the lower north-western slopes of Caer Bran Downs in Sancreed parish, at SW 40489 29539. An entry for Sancreed Beacon in the Cornwall and Scilly Sites and Monuments Record (PRN 37326, now MCO27059) led the author to Vivien Russell's *West Penwith Survey* (Russell 1971, 23), a conversation with Peter Pool, and in turn to a letter sent to the editor of the *Royal Cornwall Gazette* (22 December 1843) and reprinted in the May 1844 edition of the *Gentleman's Magazine*. Its author, 'P', complained of several recent examples of damage to ancient sites in the neighbourhood of Penzance, 'by the killing kindness of antiquarian specimen-hunters, and by the systematic and wholesale plunder of stone-carriers, masons, and farmers, and by the ruder but scarcely less injurious attacks of wanton ignorance…' ('P' 1844, 485; and see Kirkham 2012).

Sites noted as affected included 'crosses innumerable', Chapel Carn Brea, one of the entrenchments at the 'Castle Treryn' cliff castle in St Levan, 'cromlechs' in Zennor and Gulval parishes (their locations still uncertain), and Chun Castle. In the parish of Sancreed, Chapel Uny was described as 'now totally ruined', and,

> 'A fine cromlech near the Beacon in the same parish, whose appearance, in consequence of the upper stone having slipped off its back, entitled it in the opinion of the country people to the name of the "Giant's Chair", has been broken up within the last five years' ('P' 1844, 485).

Peter Pool then suggested that this cromlech stood at the site discussed in this note, 100m south-south-west of the former Bible Christian chapel at Grumbla (Fig 1). There three granite uprights (two of them large) stand among a 9m diameter spread of other large stones, some broken in the nineteenth century by tare-and-feather splitting, some by blasting (charge holes are visible in two stones). The two largest uprights (up to 2.15m high) are significantly taller than the kerb or cist stones of any typical later Neolithic or Early Bronze Age cairn, although, in want of an alternative explanation, Vivien Russell believed the site to be an example of the latter, including it in her list of 'Barrows'

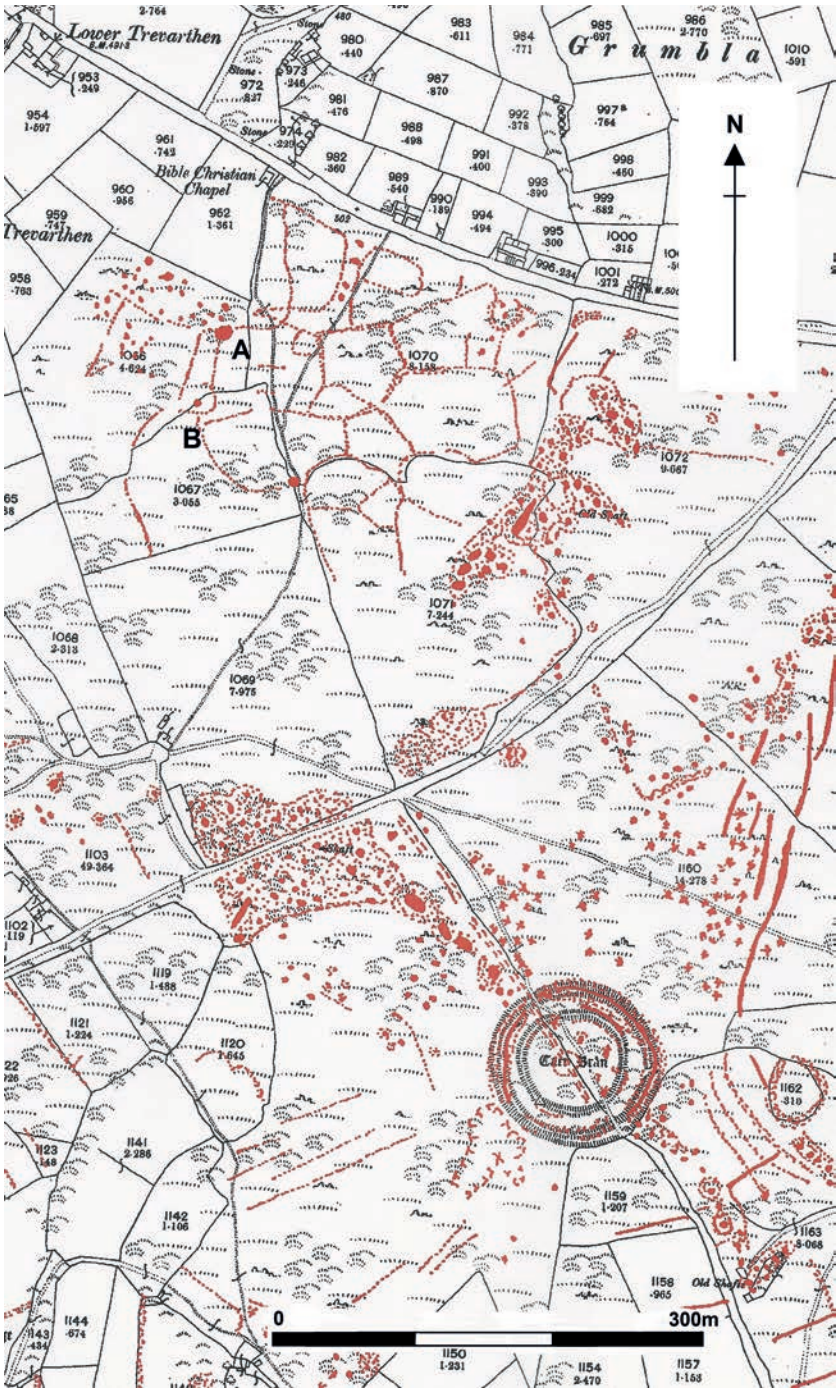


*Fig 1 National Mapping Programme detail plotted from aerial photography (red) overlain on the 1877 Ordnance Survey 25in: 1 mile map shows Grumbla cromlech (A) and a possible ring cairn to its south (B) incorporated into a prehistoric curvilinear field system that survived until the 1970s. The ground falls northwards from Caer Bran (near bottom) and the cromlech is thus set low on its hillside. (Ordnance Survey historic mapping (c) Crown Copyright, used by permission. NMP detail: Historic Environment Record, Cornwall Council.)*

and noting the existence of 'Part of retaining wall of very large stones' (1971, 23). The stones are also higher than those found in the wall of a typical hut circle, or ruined round house, although this is what our former President Martin Fletcher thought the site might have been when he visited in 1985, when working for the Royal Commission on the Historical Monuments of England (Pastscape Mon.

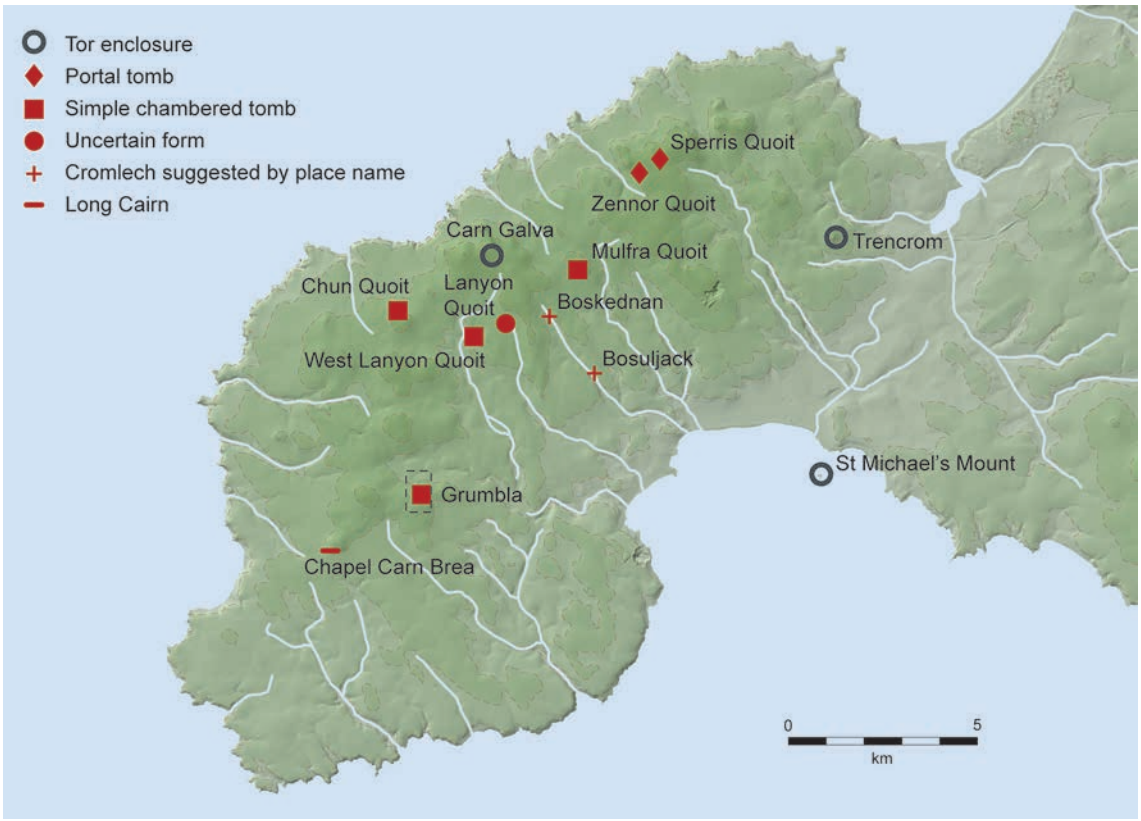


*Fig 2 West Penwith, showing major Early Neolithic sites: Grumbla Quoit, other chambered tombs (extant and suggested by field names), the Chapel Carn Brea long cairn and three tor enclosures, including the postulated one on St Michael's Mount. (Prepared by Sharon Soutar, Historic England, with permission. Height data – ©Bluesky International / Getmapping PLC.)*

No. 422326), and the modern Ordnance Survey 1:2500 mapping consequently labels the site a 'hut circle'. Charles Henderson had also visited in 1914, when still a boy, and thought the largest upright slab 'might well have formed the support of a huge cromlech' (Henderson 1914–17). J H Wade, in his *Rambles in Cornwall* (1928, 130), noted that by the side of the Sancreed to St Just road, 'at the northern foot of Caer Bran, is a small circle of stones known as the Grumbla.'

A visit by the author in June 1994 suggested that a measured survey would help establish whether the site might have once been the 'fine cromlech near the Beacon' (Herring 1994a). Although the peak of Caer Bran Downs, 500m to the south east, is closer to it, that hill's convex slopes close off views from the cromlech to the summit and Sancreed Beacon, 900m to the east, is the more dominant landscape feature (Fig 3), hence 'P' naming it in preference to Caer Bran. Furthermore, the archaeological remains also indicated that the monument had indeed been dismantled in the first half of the nineteenth century, although probably at some time earlier than the five years before December 1843 as several of the stones had been tare-and-feather split using the larger diameter hand drill that was employed in the first decades of the nineteenth century (Herring and Thomas 1990, 83; Herring 2008, 88). Most surprisingly, a tiny cottage had been built in the heart of the site, revealing the reason for the breaking up of the cromlech (Figs 4 and 5). This cottage was abandoned by 1877 (it was not shown on the first edition of the Ordnance Survey 1:2500 mapping) and indeed the

*Fig 3 Grumbla cromlech from the west. The foreground upright is stone A; the broken stump of another upright (D) is immediately to its left and beyond that to the left is the broken lump of stone B, blasted and split in the nineteenth century. The large semi-circular upright to the right is the reused capstone and the dark hill beyond is Sancreed Beacon. (Photograph: P Herring, 1994.)*

site had already been reduced to something like its present condition when visited by Henry Crozier, probably within a decade of the *Royal Cornwall Gazette* and *Gentleman's Magazine* description, he having left the Penzance area some time before 1855 (Pool 1990, 99). The simplest resolution of the slightly inconsistent evidence would be that 'P' had been misinformed about how recent was the dismantlement of the cromlech. This and the building and removal of the cottage appear more likely to have taken place a decade or two before he wrote, not five years.

Crozier saw on these slopes 'two circles of stones apparently the foundations of dwellings about 60 feet in circumference – they are about 50 yards apart and the Easternmost has been formed in part of a large stone in situ which measures 7 ft high by 10 ½ wide and 2 thick' (Penzance Library, Misc, 44.7).

Permission was obtained from the owners, CAS member Alma Hathway and Bruce Watton-McTurk, to survey the monument and this was done by the author and Tony Blackman in May 1995 (Figs 6 and 7). The whole site was planned by offsets from a straight line at 1:100 and the two principal standing stones had their elevations drawn, again by offsets from a straight line, at 1:50.

## The cottage

A dolmen at Kerguntuil near Trégastel in Brittany was adapted by insertion of walling, door and window to form a post-medieval dwelling (Graeme Kirkham, pers comm; see Gruyer (1927, 29) for a photograph of an elderly woman in the doorway) and no doubt others among the thousands of similar structures around the world were reworked to serve as homes. Several Cornish megalithic sites are known to have been reused in early modern times as animal houses, notably the Devil's Coyt and Pennance entrance grave (Johnson 1979, 8; Anon 1883–4, 310; Herring 1990), and possibly also Zennor and Trethevy Quoits (judging from the surviving holes of plugs for fixing timbers to respectively their side and end), but Grumbla appears to be the only one that was remodelled to form a dwelling.

The Grumbla cottage is roughly square, and internally is just 3.2m north-west to south-east by 2.8m (making an internal area of 8.86 sq m), with a small fireplace (0.7m wide) in the centre of the uphill south-western wall (Fig 6). Its western jamb still stands (0.75m above present ground level) as does the lowest part of its small stack, projecting from the south-western wall.

The south-eastern wall of the building is largely made up of one of the site's two principal uprights, the one measured by Crozier, being 2.15m high, 3.5m long and up to 0.9m thick (7 feet 1 inch; 11 feet 6 inches; 2 feet 11 inches) (see above for Crozier's dimensions and Fig 7 for an elevation drawing of this slab). Two fragments of this stone were carefully detached by tare-and-feather splitting before being set up on edge to form the lower part of the downhill, north-east end of the cottage (Fig

*Fig 4 Grumbla cromlech cottage ruinous, from the north east, with reused cromlech capstone to left, fireplace central in the uphill wall, and the possible ring cairn on the skyline above. All traces of the curvilinear field system (Fig 1) had been removed by agricultural clearance in the 1970s. (Photograph: P Herring, 1995.)*

4); these have now fallen. A narrow passage (0.5m wide) at the south-west end of the cottage's north-west wall was probably the cottage's doorway, there being no obvious alternative means of access. The floor was levelled into the slope and the other walls, which were built of small and medium-sized roughly weathered granite stones, are now low and overgrown (0.3 to 0.6m high, 0.6 to 0.8m wide). It is not possible to establish whether there was any window, but there would have been space for one in either of the north-east and north-west walls; the door might also have been hepsed, allowing light in when the upper half was open (Jenkin 1945, 333).

The cottage was probably single-storeyed and single-roomed and its roof appears to have been thatched as no fragments of slate were noticed in the several areas of disturbed ground on and near the site. Several thatched buildings survive in West Penwith and numerous historic images indicate that the material was used throughout the peninsula, mainly for more modest dwellings and farm buildings. For example, 17 of the Victorian photos gathered by Reg Watkiss (1975) feature thatched buildings; these have influenced the conjectural reconstruction of the cottage (Fig 9).

It appears to be too far from road or mine to have been either a smithy or a crib hut but it is possible to imagine a single bed (most probably in the north-east corner), and perhaps a small table and chair having been arranged in relation to hearth and doorway.

There are examples of the ruins of very small nineteenth-century family homes in several parts of Cornwall, mainly in the granite areas. At Barber's Hill in Altarnun, just south of Brown Willy, in 1851 a family of five (the Bilkeys) lived in a single-storeyed house whose internal dimensions were just 6.25m by 2.6m (16.25 sq m), still nearly twice the size of Grumbla (Dudley 2003, 17–18; figs 11 and 12). Among the survivals – either ruined or incorporated into later, larger houses and farm buildings – of small single-storeyed post-medieval dwellings in the north coast farms of West Penwith are the four at Carne, Zennor, shown on the 1842 tithe map and in which a total of 19 people lived in 1841 (Zennor parish census returns, online).

One is ruinous and has an internal area of 23.4 sq m (Herring 1987a, 33–4, figs 9 and 10; Herring 2016, 228–9, fig 9.13), similar in form and scale to the two ruined dwellings at Bosigran Mill farm, also in Zennor (Herring 1987b, 125–9, fig 29; Herring 2016, 229, fig 9.12). The comparable small cottage excavated by Vivien Russell over the hill from Grumbla at Carn Euny had internal dimensions of 7m by 3.5m, making 24.5 sq m (Christie 1979), similar to the smaller of the abandoned houses on Samson in Scilly (Berry and Ratcliffe 1994). The Grumbla cottage is significantly smaller than any of these, and even allowing for nineteenth-century levels of overcrowding it is unlikely that it was a family home but was instead the abode of a single person. It is comparable to those found on Bodmin

Moor near tinworks, like that at Minzies Down, St Neot, 3.9m by 3m internally (Sharpe 2008, fig 40), or one on Barber's Hill, Altarnun, which was even smaller than Grumbla at 3.1m by 2m internally (Dudley 2003, 28; fig 12).

Unfortunately, no records have been found through which to establish who lived at Grumbla; there is nothing in the 1841 census returns for Sancreed, and the cottage is not shown on the 1841 tithe map, but it appears most likely to have been by then already abandoned. It is not possible to establish whether the inhabitant was male or female, or in or out of employment, but it may be supposed that they were poor. There are few accounts in the archaeological record for Cornwall of the remains of the homes of the poorest members of its society, what has been termed the archaeology of poverty (for which see Orser 2011).

We do know that many extremely poor people lived in eighteenth- and nineteenth-century Cornwall and homes such as that created at Grumbla cromlech are reminders of the difficulties many of our ancestors or predecessors in Cornwall experienced. Hamilton Jenkin described the construction of several very modest cottages, with which Grumbla might be compared (1945, 318–30) and in the decade between 1830 and 1840 the *West Briton* newspaper published numerous articles regarding aspects of dire poverty.

A Mr Alsop of St Austell collapsed and died of starvation in St Austell in March 1830 (Barton 1970, 193–4) and 24 'vagrants' and 'trampers' were committed to the Penzance treadmill for a month's hard labour in January 1833 (*ibid*, 227). In July 1835 Mary Blakewell, 15 years old, of St Buryan, was found guilty of stealing single potatoes from her neighbour and sentenced to two months imprisonment with hard labour (Barton 1971, 17). A letter to the editor in February 1837 complained that the poor of Penzance were not being given respectful funerals (*ibid*, 31) and in July that year, on the paupers of St Ives being given notice that they were to be examined in advance of removal to the Union Workhouse, a mob assailed the Guardians with missiles and burnt an effigy on the cliff. Despite this, the new 'bastilles' (as the workhouses became known) were soon full to capacity (*ibid*, 37).

The 1841 census returns record 227 inmates at the Penzance workhouse in Madron and show that most were either under ten years old (20 boys, 30 girls) or more than sixty (47 men, 57 women), with just 73 people aged between 10 and 59 years (24 male, 49 female). The author's observations of the census returns for the parishes of Madron, Sancreed and Zennor show that poorer people of those ages, teens to fifties, were more likely to have been employed as agricultural labourers, domestic servants or workers in the mines and streamworks of west Cornwall. This is an outline of the social and economic context of a person launching one of the 'ruder but scarcely less injurious attacks of wanton ignorance' when transforming the partially collapsed 'fine cromlech' into a tiny home. The bias towards females finding shelter in the workhouse (136 to 91 males) might suggest that the cottage was occupied by a man. It is regrettable that an Early Neolithic cromlech was transformed in the creation of a cottage, but a holistic approach to the past encourages us to see interest and value in its remains as well as those of the cromlech.

## Grumbla cromlech

Survey of the remains at Grumbla has allowed those elements relating to the cottage described above to be separated out, enabling clearer sight to be gained of those derived from the cromlech itself. (The word cromlech, rather than quoit, is adopted here for reasons that become apparent later, when discussing the site's name.) The largest upright in its present position (and form) is part of the cottage, but it is also similar in scale and shape to the capstones of known Cornish chambered tombs (Table 1) and is probably the displaced, damaged and reused capstone of Grumbla cromlech. To be part of the cottage structure and to remain upright a portion of this stone is now underground; if such stability required around 1.0m to be buried then it may be roughly 3.5m by 3.0m and of a sub-rectangular shape, similar to the capstone of Chun Quoit (Barnatt 1982, fig 7.3). The much smaller upright 2.4m to its west is the western jamb of the cottage's fireplace, not part of the cromlech, although the cottage builder may have utilised a fragment from one of the broken supporting stones (below).

A third upright (A on Fig 6), a further 2.7m west of the fireplace jamb, is not part of the cottage and its long axis is at an angle to it. This stone may therefore be in its original prehistoric location. It is also large enough to be regarded as a surviving upright member of the cromlech, being 1.6m high, 1.4m long and 0.8m wide. A reconstruction of the

**Table 1** Dimensions of Cornish quoits compared

| *Quoit / Cromlech* | *Capstone maximum dimension* | *Capstone minimum dimension* | *Chamber size* | *Chamber height* | *Mound* |
|---|---|---|---|---|---|
| **Grumbla** (Sancreed) SCT | 3.5 | *c* 3.0 | 1.3 × 1.3 | *c* 1.9–1.6 | *c* 9 × 9 |
| **Chun** (St Just/ Morvah) SCT | 3.43 | 3.09 | 1.71 × 1.60 | 1.65 | 13 × 14 |
| **Mulfra** (Gulval) SCT | 3.66 | 3.05 | 2.01 × *c* 1.5 | 1.68 | 12 × 10 |
| **West Lanyon** (Madron) SCT | 4.21 | 3.05 | *c* 1.8 × 1.5 | 1.68 | 'Large' |
| **Devil's Coyt** (St Columb Major) SCT | | | 1.0 × 1.1 | 2.3–2.1 | |
| **Zennor** (Zennor) PD | + 5.33 | 2.9 | 1.71 × 1.71 | 2.74–2.4 | 13 × 13 |
| **Trethevy** (St Cleer) PD | 4.15 | 2.95 | 1.68 × 1.68 | 3.14–2.6 | |
| **Pawton** (St Breock) PD | 4.6 | 2.54 | 2.44 × 1.13 | *c* 2.0 | 21 × 15 |
| **Lanyon** (Madron) | 5.33 | 2.74 | *c* 2.1 × 1.5 | *c* 2.1–1.8 | 24 × 11 |
| **Sperris** (Zennor) | | | *c* 2.3 × 1.5 | 1.58–1.22 | c 12 × 12 |
| **Carwynnen** (Camborne) | 3.73 | 3.51 | *c* 2.1 × 1.6 | 1.58–1.5 | |
| **Lesquite** (Lanivet) | 5.28 | 2.82 | | *c* 1.9–1.7 | |

All figures are in metres and all except for Grumbla Quoit are from Barnatt 1982, appendix B. PD = portal dolmen; SCT = simple chambered tomb, following the typology of Kytmannow (2008). Lanyon, Sperris, Carwynnen and Lesquite are of more uncertain forms.

*Fig 5 The reused cromlech capstone from the south east, showing its rounded surface and where a large flake was detached in the early nineteenth century for use in the north wall of the cottage; the cottage's fireplace jamb is visible to the left, in front of the cromlech's surviving upright, stone A. (Photograph: P Herring, 1995.)*

cromlech's form should start with this stone.

The other larger stones on the site have all been broken and moved around, but it can be suggested that all derive from just three stones of roughly similar size to stone A. If no other large stones have been removed from the site (and the nearest field hedge to which stones might have been carried is over 20m to the east), it seems likely that these derive from the cromlech's other uprights. The broken stub of one (D) is immediately adjacent and perpendicular to stone A, suggesting that it was a shorter side stone and that the four stones formed a rectangular chamber, similar to Mulfra and Chun Quoits (for which see Barnatt 1982, fig

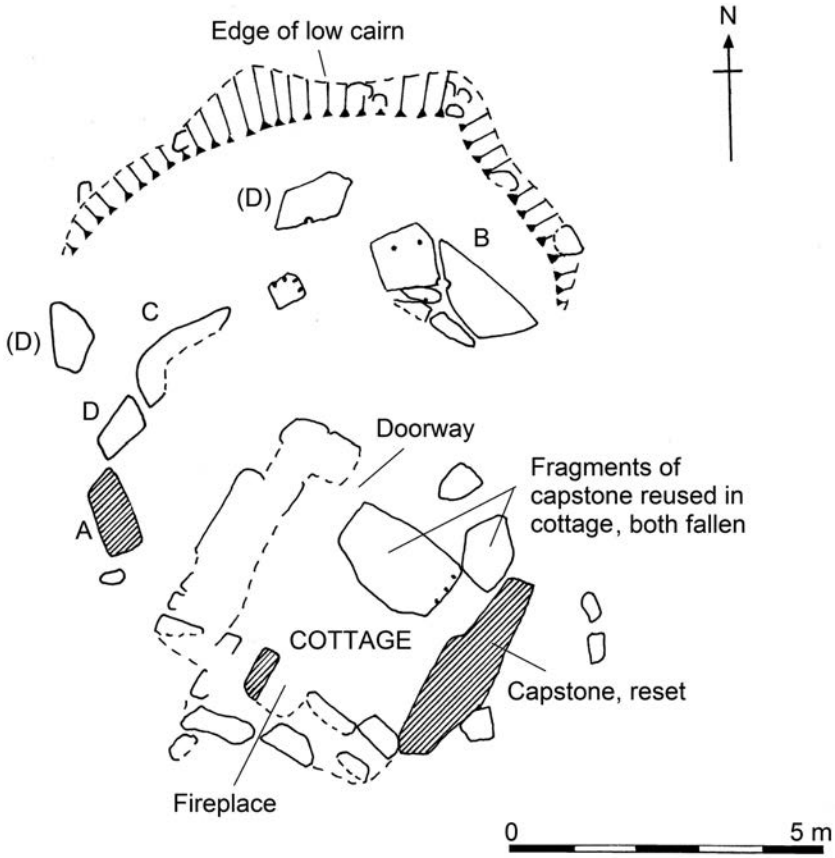


*Fig 6 Plan of Grumbla cromlech showing the surviving upright A, the* in situ *stump of another, D, and probable fragments of this as (D), the most northerly split by blasting (charge-hole visible). Of the displaced third and fourth stones, B and C, the former were broken by both blasting and tare-and-feather splitting and the cromlech's capstone was set on edge when reused as the main part of the south-east wall of a small nineteenth-century cottage.*

2.2), and not a portal dolmen, which would have had a simple façade or antechamber formed by two portal stones, as at Zennor, Pawton and Trethevy Quoits (*ibid*). Tatjana Kytmannow has recently categorised the two types as 'simple chambered tomb' and 'portal tomb' (2008).

The largest of the three displaced stones (B on Fig 6), near the north-eastern edge of the complex, was broken using powder, presumably in the nineteenth century. The central charge-hole and holes drilled to further reduce the piece by tare-and-feather splitting are visible. Stone B has maximum dimensions 2.9m by 1.4m; if erect some of its length would presumably have been placed into the ground and it would have been as long as stone A. Its width is less certain, but may be expected to be less than 1.4m, perhaps close to the 0.8m of stone A. If it stood at the far downhill side of the cromlech to match stone A and had around 1.0m of its length in the ground then the capstone may have originally been set fairly horizontally. The 2.0m long stone (C) lying to the north of A may then have been on the south-eastern side of the cromlech if the low stone (D) on the north-western side is a stub of a broken side stone still *in situ*. The other fragments to the west and north-west of the complex (and possibly including the stone reused as the jamb of the cottage's fireplace) may then be seen as two other parts of this stone D.

A reconstruction of the chamber may then have its upper south-west side as stone A, stone B at the opposite lower north-east side, and stones C and D the south-east and north-west sides respectively (Fig 8). The side stones may have been nearly the same length and if there was little overlap at the box's corners the chamber may be reconstructed at about 1.3m square, slightly smaller than Chun and Mulfra, but a little larger than that suggested for the Devil's Coyt (Table 1; Johnson 1979; Barnatt 1982, fig 2.2). The chamber's uprights appear to have been more pointed than those at Chun and Mulfra, making the structure appear more open

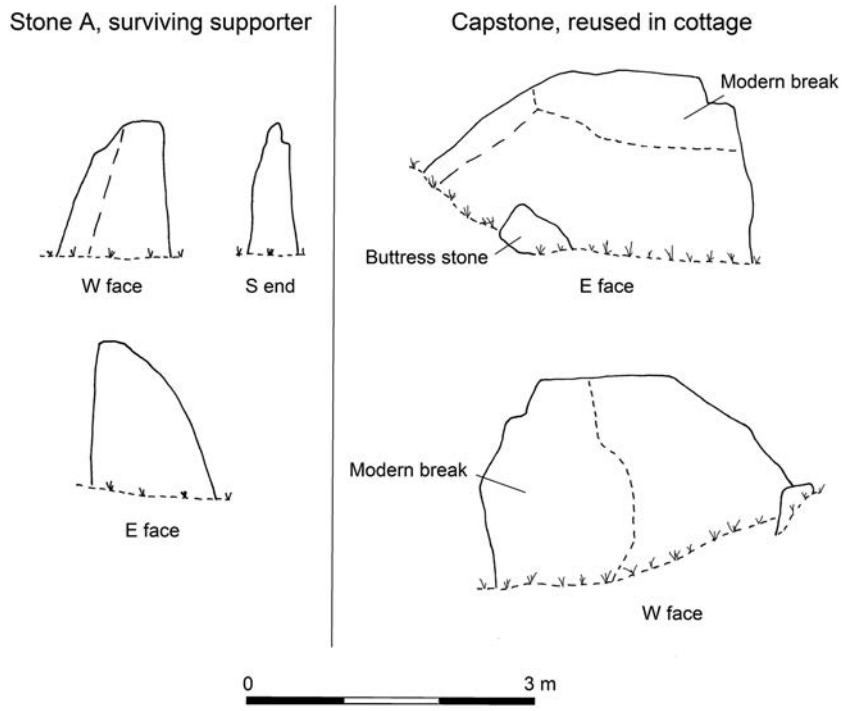


*Fig 7 Elevations of stone A, the surviving upright, and the reused capstone, with two flakes removed (for use in the cottage's north wall).*

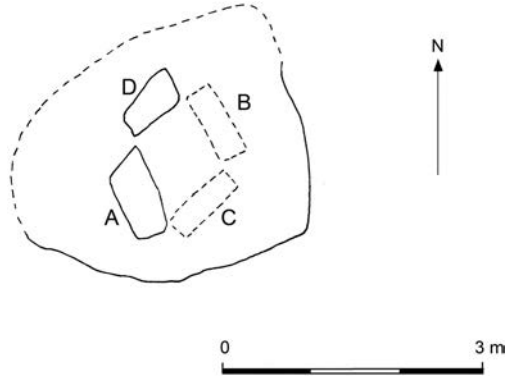


*Fig 8 Suggested original plan of the cromlech, a 'simple chambered tomb', with stones A and D more securely reconstructed than stones B and C (see text). The probable position of the capstone is also shown (based on how it would have been turned over two times to reach its current position) and with the portions that were either trimmed in the nineteenth century or set into the ground shown as a broken line, to represent uncertainty.*

and allowing easier access to the chamber. The overhang of the capstone would also appear to have been greater than at those other two sites. Figure 9 includes a reconstruction of the cromlech based on the analytical survey undertaken here.

Although the site has been much disturbed, the positions of stones A and D appear to be original and suggest that there may be preserved features in the area of the chamber (stone-holes, deposits, dateable material, etc); excavation may yet confirm or adjust the interpretations made here.

'P' had noted in 1843 that the capstone had already slipped off its supporters, and presumably leant fairly vertically against the chamber it had once covered for local people to have seen it as a 'Giant's Chair'. In the reconstruction of the Giant's Chair (Fig 9) it has been assumed that the capstone slipped because the south-eastern support moved forwards into the chamber, leaving the capstone leaning at an angle similar to that of Mulfra Quoit's capstone. If the slipped capstone stood on the south-east side of the chamber, it was probably tipped over two times and then set vertical to become the cottage wall. If so, the original upper surface of the capstone was that more uneven, more convex side now facing south east, again comparable to

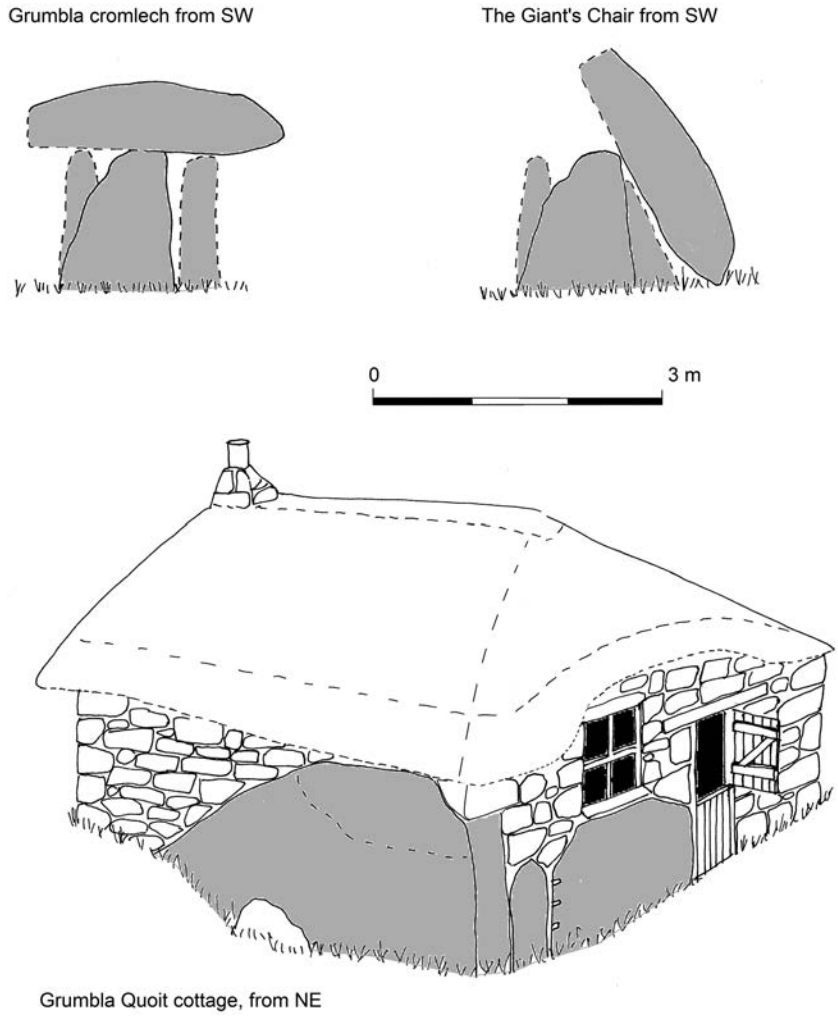


*Fig 9 Suggested reconstructions of the site at three key stages. For the cromlech, the nearest upright is certain and the others can be suggested with some confidence. The Giant's Chair is based on P's account and assumes that the south-eastern upright (C on Fig 7) has slumped forwards into the chamber to allow the capstone to slip but still be supported by the other uprights. For the cottage the three uprights that derived from the cromlech's capstone have been shaded; see text for discussion of other detail. (Drawings: Peter Herring.)*

Chun Quoit.

In summary then, the remains seen on the site today fit very well with interpretation as a dismantled cromlech, and the site is a good candidate – at present the only candidate – to have been the cromlech which gave Grumbla its name and which was known in the nineteenth century as the Giant's Chair.

Cromlechs, or dolmens, are Early Neolithic structures, carefully engineered (with great effort and at some risk to their builders) in the fourth millennium BC (Kytmannow 2008, 105–6; Jones and Quinnell 2011, 204), but their original functions are still debated. Dr Borlase regarded them as sepulchral and doubted that their principal feature, the capstone, was used for making sacrifices. It was difficult to clamber onto; fires would not have been lit on it as they would leave too little safe space for a 'druid' to work and some thin capstones (Mulfra, Zennor) would have been cracked by the heat. Their surfaces were also often too 'gibbous' (that is, convex on both sides, like a gibbous moon) for a druid to safely stand on when performing rites or ceremonies (Borlase 1769, 226–8).

Zennor and Sperris Quoits, which both appear to have had more complex structures than Grumbla, had cremated human bone placed within their chambers in the mid-fourth millennium cal BC (Kytmannow 2008, 105–6; Jones and Quinnell 2011, 204). These depositions need not be primary, but they certainly indicate that the monuments are early. Simple chambered tombs, as Grumbla

appears to be, have much in common with those sites, most notably the hoisting of a large capstone onto upright slabs and it may be that separating 'simple chambered tombs' from portal dolmens is an unnecessary complication created by the archaeological practice of classification. But their variable forms warn us that it is not yet certain that all cromlechs are contemporary with each other, nor can it be assumed that all were used in the same way and meant the same things for those who created them and for those who later moved among them.

Some of the meanings attached to cromlechs may have drawn upon those that appear to have been attached to that awesome inherited natural 'monument', the tor (Tilley 1995). Richard Bradley, among others, noted how the cromlech's chief common feature, the large irregularly topped capstone, makes them resemble natural rock formations and he and Chris Tilley were impressed by how tors were also often deliberately included within the broadly contemporary tor enclosures (Bradley 1998a; 2000, 109; Tilley 1995). Large numbers from substantial territories may have gathered at the tor enclosures to perform and undertake a wide range of activities (Herring 2011), while smaller groups, probably subsets, given the differing densities of their distributions, gathered at the cromlechs, perhaps for different purposes. If performing rituals connected with their own dead was one of the activities undertaken at cromlechs (as those possibly secondary cremations at Zennor and Sperris suggest), the participants may have been associating their ancestors with those supernatural predecessors, the creators of the tors.

Roger Farnworth tightened this connection when proposing that both tors and cromlechs, whether portal dolmens or simple chambered tombs, were used for excarnation, the dead being placed either on the quoit's capstone or on a tor whose sides overhung the rocks below, in both cases the overhang preventing scavenging mammals from reaching the corpse and leaving it to be purified instead by carrion birds like kites. All well-preserved Cornish cromlechs have chambers formed from their uprights, as also modelled here at Grumbla. The cleaned bones would, it is suggested, be placed in these, or into similar natural chambers or caves found amongst tors (Farnworth 2012; forthcoming). The height above ground of Cornwall's cromlechs' capstones appears to have been designed to exceed the four feet that a fox is easily able to leap. There is also evidence for the practice of excarnation elsewhere in early prehistoric Britain (for example, Collis 1983; Myers 2000; Fowler 2010). If this model is accepted then excarnation must have been just one of a number of ways of dealing with human remains in Early Neolithic Cornwall as the cremated bone at Zennor and Sperris Quoits indicates another.

When not in use for excarnation or the gatherings of communities, the cromlechs would have been 'tombs for the living', striking features and prominent permanent monuments to the ancestors and indicators of the place or territory with which they and the surviving community were attached (Fleming 1973; Bradley 1998b, 51–67).

The survey of Grumbla cromlech also recorded a roughly semi-circular sloping platform downhill to the north-west of the cottage that reaches 9.0m in diameter and 0.7m high and appears to be the remnants of a low cairn (Fig 6). It may relate to post-medieval activity (the breaking of the cromlech's stones, the construction of the cottage, the cultivation of land immediately beyond the site), but its curving northern edge suggests that it was focussed on the cromlech itself. It may have originally been part of a prehistoric cairn partly surrounding the cromlech, whose chamber would appear to have stood either at or near its south-western edge. Low stony cairns survive around cromlechs at Zennor, Chun, Sperris, Mulfra, Lanyon and West Lanyon in west Cornwall and at Pawton (Table 1), but their relationships with the cromlechs are, as here at Grumbla, all uncertain; all could be secondary to stone structures that originally stood free and unencumbered.

In later prehistory, perhaps in the later Neolithic period or Early Bronze Age, perhaps substantially later, the summit of the hill on whose lower slopes the Grumbla cromlech stood (Caer Bran Downs) was enclosed by a circular stony bank within which were constructed three ring cairns (Lawson-Jones and Herring 1997, 40–55, fig 8), to create a feature very similar to that on the summit of neighbouring Bartinney Downs (Herring 1995; Jones 2010, 217–8). These may have been communal gathering places, the activities performed still perhaps focussed on ancestors and place. Those climbing the northern slopes of the hill would have passed the old cromlech, a clear reminder of earlier ways of paying respects to the dead and making ritual or ceremonial connection with people of the past.

In either the later second millennium BC or

in the first, the area in which the cromlech stood was transformed by the creation of an extensive field system of an accretive curvilinear form that included several roundhouses, one of which may survive uphill to its south, though it may be more likely that this circular feature was a small early Bronze Age ring cairn (Cornwall and Scilly HER, MCO 20992; HER no. 16063; B on Fig 1). The cromlech was directly incorporated into the field system, towards its western edge, with three boundaries meeting on it, as Henry Crozier had noticed before 1855: 'On the North East slope of the same down there are many stony walls of antient enclosures and just above the road to St Just from Sancreed at the angles of these enclosures are two circles of stones…' (the cromlech and the roundhouse / ring cairn) (Penzance Library, Misc, 44.7). It is unclear how closely these houses and fields were related to the (unfinished) hillfort, Caer Bran, nearly 500m to their south at the summit, whose builders appear to have carefully respected the remains of the earlier prehistoric hilltop enclosure (Lawson-Jones and Herring 1997, 55–9). The hillfort builders may have taken care over this enclosure because the function of the hillfort may well have been quite similar, if it was an arena for communal gatherings (*ibid*; Herring 1994b).

The roundhouse settlement and its fields appear to have been abandoned by the Romano-British period and then the cromlech stood in rough grazing until early modern crofts (large enclosures of privately held rough ground taken in from commons and delineated by stock-proof Cornish hedges or dry-stone walls) were established. Fields of improved pasture were enclosed in the later nineteenth century, after the cromlech was largely dismantled to construct the cottage described above (Fig 1). In the medieval period the low remains of the disused fields and round houses would have been visible to some, but the cromlech, standing about 1.9m high with its impressive capstone probably still *in situ* (given the naming of Grumbla – see below), was the thing that would have caught the eye of most people on the hill's northern slopes, so it is not surprising that it appears to have contributed to the naming of the hillfort in the early medieval period and then the farming settlement of Grumbla by 1238 (Gover 1948, 659).

The *kestelcromleghe* (castle-cromlech) recorded as part of the boundary of St Buryan in what appears to be a genuine early tenth-century Anglo-Saxon charter was probably Caer Bran, the unfinished Iron Age hillfort, as suggested by Gover (1948, 658–9) and Olson (1989, 79). If so, it is likely to have been named from the same cromlech that gave Grumbla its name. Although both hillfort and cromlech are now within Sancreed parish, not St Buryan, the boundary clause of the charter actually refers to a dyke (or substantial boundary) 'which stretched around' *kestelcromleghe* (Hooke 1994, 23) which therefore need not have been within St Buryan, but could have been within Sancreed, its boundary being shared by the parish boundary, which also includes the stretch running south from Chapel Euny, whose spring appears to have been the preceding feature recorded in the boundary clause of the charter.

Grumbla is therefore also important for confirming that the earliest surviving Cornish word for the archaeological term 'chambered tomb' appears to have been **cromlegh*, a compound word, incorporating the Cornish elements for 'curved' and 'slab', and echoed in the Breton *krommlec'h* and Welsh *cromlech* (Padel 1985, 72). Dr William Borlase also noted that cromlech, rather than quoit, was the word used 'among the learned', and he pointed out that the second 'c' was not pronounced, making the word sound like 'crom-leh' (Borlase 1769, 225), hence the easy transformation to the place-name Grumbla.

Five other place-names derived from **cromlegh* have been identified in Cornwall, three as settlement names (Padel 1985, 72; 267). All may be regarded as possible former sites of cromlechs and borne in mind when reconstructing the geography of Early Neolithic Cornwall (although each might also, of course, refer to a completely natural curved slab). Grambler Farm (SW 7077 4190) in Gwennap parish is at 175m above OD on the north-western slopes of Carn Marth with clear views to Carn Brea's tor enclosure just 2 km to the west-south-west. Grambler (SW 6964 4758) in St Agnes parish is at 75m on the crest of the steep eastern valley side of the Porthtowan valley; a short walk up hill, probably within the land of the farm, takes one to a point where Carn Brea would be visible 7 km to the south-south-west. Grambla (SW 6889 2846) in Wendron parish is also at 75m and on the northern slopes of a rounded hill on the isthmus between the Cober and Helford Rivers and with long views north to the Carnmenellis granite.

The fourth example, as 'Grambley', appears as two fields (both numbered 52; separated by a modern-looking straight line representing a hedge)

*Fig 10 The views north from Grumbla cromlech are restricted by the rounded downs of Botrea and Bosvenning Common 2 km away (top centre), preventing the great northern hills, including Carn Galva, from being seen. Towards the north east (top right) the views open somewhat towards Trengwainton Carn (4 km) and Castle-an-Dinas (10 km), but only to the east-north-east are there longer views. Figure 3 shows how these views, between Castle-an-Dinas and Sancreed Beacon, extended beyond West Penwith, but on all other sides they were restricted to nearby slopes. (Photograph: P Herring, 1994.)*

on the map of Boskednan, in Gulval parish, in the 1696 Lanhydrock Atlas (Herring 2011, 37; Holden *et al* 2011, 66–7). They are at SW 44356 34179 and were named 'Cromlea' in the apportionment schedule of the parish tithe map of *c* 1840 (TA 147–9; Russell 1971, 14). It is not known whether any slabs or other remains survive at this site, or at any of the other three cromlechs suggested by settlement names. A cromlech at or near the Boskednan field would have been quite low on the slope of a valley side (of the Chyandour Brook, which rises a short way to the north west) and had limited views, the longest being down the valley to the south east.

Also in Gulval and just two kilometres further down the Chyandour Brook, again on its eastern side, on the land of Bosuljack, is a group of fields named 'Gambler', again possibly from **cromlegh*, on the parish tithe apportionment. They are mapped in the area around SW 4565 3260 (Russell 1971, 14).

Most surviving quoits in West Penwith are in more commanding positions than Grumbla and the possible sites at Boskednan and Bosuljack. Apart from the only other surviving one in a valley side location, West Lanyon (at 155m), all are also at a greater altitude than Grumbla. Mulfra (220m) is close to the summit of a rounded down, Chun (205m) on the high crest of another and Lanyon (190m), Zennor (225m) and Sperris (225m) are on high shelves on hillsides and have extensive views in at least one direction. Grumbla cromlech (165m) is low on Caer Bran's hill, which shuts off views to the south and south east. There are downlands within a mile to the west (Bartinney), north west (Leswidden) and north (Botrea Down and Bosvenning Common) that close off longer views in those directions. These leave only one long view, to the east-north-east, past Sancreed Beacon towards Castle-an-Dinas and the land beyond (Fig 3). Grumbla is thus unusual among surviving West Penwith cromlechs in that the tors of Carn Galva (the hill with a probable Neolithic tor enclosure) cannot be seen from it (Kirkham 2011). (Incidentally, Carn Galva *can* be seen, just, from the possible ring cairn further up the hill.)

The sense gained is that Grumbla may be a rare survival of a kind of cromlech whose significant landscape was more closed and thus more local than those of most other better preserved (and better-known) examples, which survived partly through being in more marginal parts of West Penwith. It is likely that there were other cromlechs in west Cornwall, and elsewhere in Cornwall, and

the early form of the Cornish name for them may be used as one means to pursue some other possible sites, as suggested above. Details of the Gulval and Zennor cromlechs destroyed in the early nineteenth century (as reported by 'P') may yet come to light; the former may even have been either the Grambler or Grambly mentioned above.

In 1974 the site at Grumbla was threatened with removal during agricultural improvement and Peter Pool, a brave champion of West Penwith's historic landscape and ancient sites (Pool 1970), persuaded the then Department of the Environment to schedule it as a probable 'Megalithic tomb' (Cornwall Scheduled Monument 970; NHLE no. 1001724). When surveyed in May 1995, it and the ruined round house or ring cairn, 45m uphill to the south, scheduled at the same time (Cornwall 971; NHLE no. 1001725), were the only islands of rough vegetation (gorse and bramble) in a large field of uniform improved grassland created after the removal in the later 1970s of the walls and hedges of the several small early nineteenth-century intake fields and crofts, and the later prehistoric curvilinear fields that lay on this slope (Fig 3). The starkness of the contrast in vegetation demonstrated the effect of scheduling too small an area – it prevented the farmer destroying these nationally important monuments, preserving below-ground remains as well as the stone structures themselves – but allowed them to lose not only their semi-natural settings, but also their immediate archaeological contexts (Herring 1998, fig 6). The present owners have since the early 1990s altered the agricultural regime, allowing the improved grassland to gradually revert to rough ground.

## Acknowledgements

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*Cornish Archaeology* 55, 2016, 135–148

# A Middle Neolithic structure and Iron Age pits at Manor Tannery, Grampound, Cornwall

ANNA LAWSON-JONES AND ANDY M JONES

with a contribution from DANA CHALLINOR

*Between October 2011 and May 2012 a series of archaeological watching briefs were carried out at the Manor Tannery site, Grampound, in advance of the construction of new housing. One burnt spread and 16 pits and postholes were uncovered, among other features, spread across three fields. None produced artefacts but eight had charcoal-rich fills suitable for analysis.*

*Three charcoal samples were submitted for radiocarbon dating, two from pits, and one from a posthole associated with a structure. The posthole produced a determination of 3634–3376 cal BC, securely placing it within the Middle Neolithic period. Buildings of this period are rare in Britain and it is the first to be recorded in the south west. The pits produced determinations in the range 380–100 cal BC, dating to the Middle to Late Iron Age, and are unusual because they are not associated with any artefacts.*

*The paper describes and considers the character of these features, and discusses their significance.*

In 2011 Historic Environment Projects (now Cornwall Archaeological Unit), Cornwall Council, was commissioned by Linden Homes to undertake archaeological recording in advance of a proposed housing development which covered approximately 3.2 hectares.

The first phase of the archaeological recording comprised a desk-based assessment and geophysical survey (Shepherd 2011). The survey, by GSB Prospection Ltd (2011), recorded a number of responses, including linear and pit-type anomalies. The second phase included historic building recording of the tannery complex and a series of archaeological watching briefs (Sturgess 2013). The watching briefs uncovered a range of features including postholes, pits, and a burnt spread which are reported on here.

## Location and background

The project area (SW 93644812) is located on the south-eastern edge of Grampound on south to south-east facing land, dropping from 50m in the north east to 28m above sea level in the south west (Fig 1). To the south, a tributary of the Fal runs from east to west. Field 1 was located close to the tannery and following the closure of the site in 2000 it became rough ground. Fields 2 and 4 were under pasture.

Grampound is a thirteenth-century planned medieval market town (Sheppard 1980, 33) which takes its name from the original bridge over the Fal, the '*Grand Pont'* (Padel 1988, 89). It still retains its medieval character, with a markedly wide main street and long, narrow burgage plots which merge into the surrounding strip-derived fields.

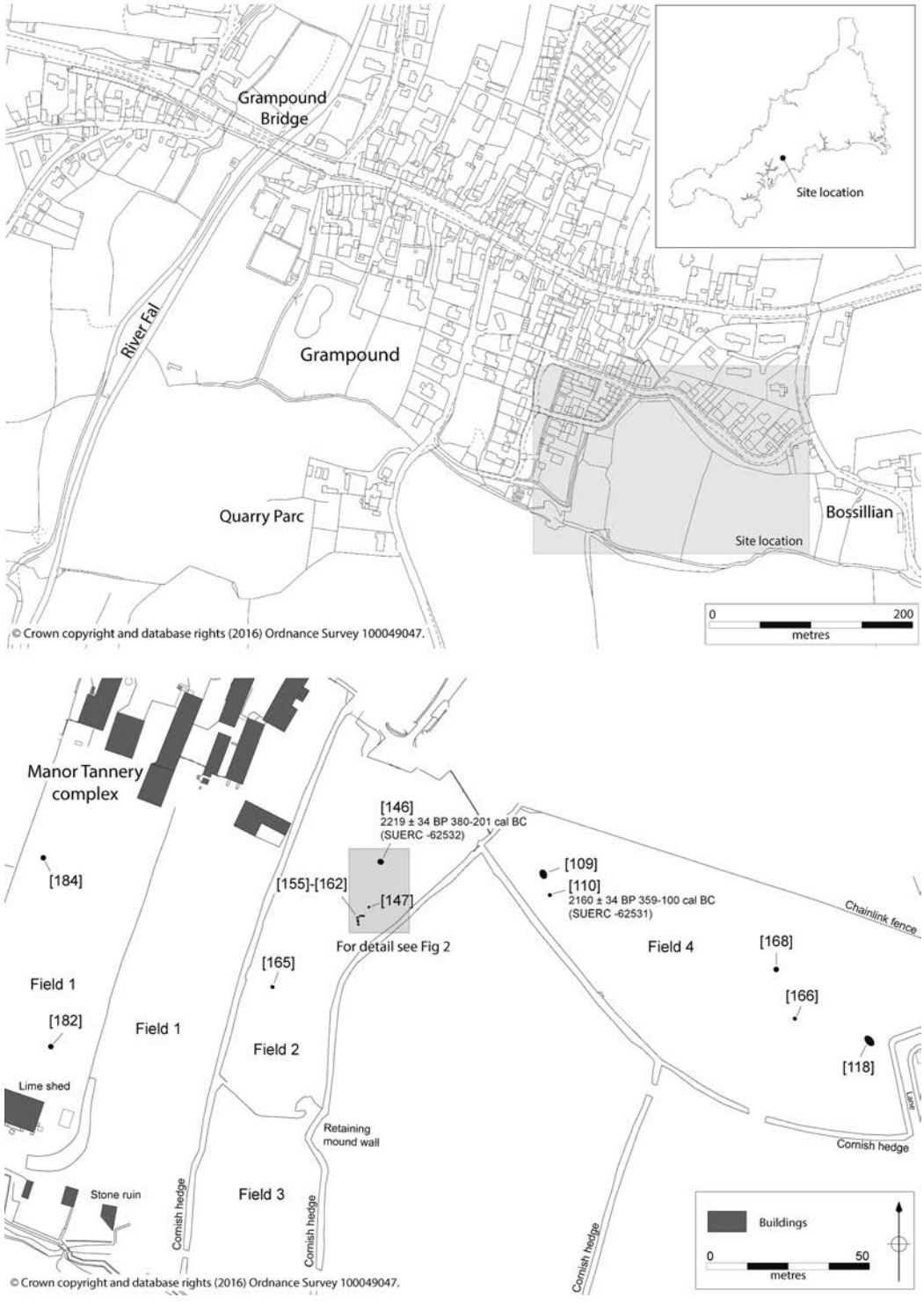


*Fig 1 Manor Tannery: general location (above), and (below) the overall distribution of features.*

The area of the development falls into a historic landscape character zone classified as Anciently Enclosed Land (Cornwall County Council 1996). This is land which has been settled and farmed since at least the medieval period and often contains buried archaeological remains dating from the prehistoric period. The site occupies several former medieval burgage plots, with field boundaries that had been largely unchanged since the 1840s.

No archaeological sites were known within the development area itself, but the Cornwall Historic Environment Record (HER) documents a number of prehistoric and medieval sites in the wider vicinity. The prehistoric sites include two barrows (HER reference numbers MCO3158 and MCO3159) and a possible pre-medieval field system to the east (MCO21238). The Manheirs barrow (MCO3090) lies to the south and to the north east is the later prehistoric or Romano-British enclosure and field system at Higher Trevillick (MCO21626 and MCO21068). Medieval settlements are represented by Grampound itself (MCO26133), Manheirs (MCO15617) first recorded in 1302, Bossilian (MCO13539), first recorded in 1296 and Quarry Parc (MCO16511), which was first recorded in 1337. The stripped area was also adjacent to the tannery, records for which extend back to the seventeenth century (Sturgess 2013). Very little evidence was, however, uncovered which could be associated with the tannery.

## Results from the watching brief

The archaeological watching brief led to the recording of a number of archaeological features in three fields (1, 2 and 4) (Fig 1). All features have been described in the project archive report (Sturgess 2013). This paper discusses a scatter of charcoal-rich pits and postholes, a burnt spread and most significantly, postholes belonging to a structure. None of the recorded features produced any artefacts; however, three radiocarbon determinations were obtained which fell in the Middle Neolithic and Iron Age periods (see below). Two small pits of much later date are also described in this section.

### Structure 1

An L-shaped structure composed of seven closely positioned postholes was found in field 2 (Figs 1 and 2). Three postholes formed the northern arm which was 2m long, and four postholes formed the 3m-long western arm. Contained within the angle formed by the junction of these two alignments was an eighth posthole, [159]. An outlying posthole, [147], was located to the north east of the structure but it is uncertain whether it is of the same period. The postholes were typically around 0.5m in diameter and 0.15m deep. They are likely to have been heavily truncated and are considered to be postholes rather than pits because they are closely set but not intercutting and form a coherent pattern when viewed in plan (Fig 2). Details are given in Table 1 and the character of the structure is discussed below.

A radiocarbon determination obtained on charcoal from posthole [156], 4721 ±34 BP, 3634–3376 cal BC (SUERC-62533), places the site in the Middle Neolithic.

### Burnt spread (109) and pits [110], [118], [146], [165], [166] and [168]

A burnt spread and six pits with charcoal-rich fills were revealed in fields 2 and 4. None of these features were directly associated nor did they form a coherent pattern. They are, however, with the exception of burnt spread (109), all morphologically similar. All are circular or sub-circular, around 1.0–1.5m in diameter and up to 0.15m deep, and most have shallow bowl-shaped profiles. All produced substantial amounts of charcoal, and all had a fire-scorched bedrock base, suggesting *in situ* heating. The features in this group are described in Table 2.

Radiocarbon determinations dated two of the pits to the Iron Age. Pit [146] in field 2 had a date of 2219 ±34 BP, 380–201 cal BC (SUERC-62532) and pit [110] in field 4 was dated to 2160 ±34 BP, 359–100 cal BC (SUERC-62531).

### Pits possibly associated with the tannery

Two pits of a rather different character to those discussed above were located in field 1, in the part of the development closest to the site of the tannery.

Pit [182] was located close to the southern end of the field. It was sub-oval with a steep, U-shaped profile. It measured approximately 0.45m in diameter by 0.3m deep and was filled with grey, black-brown clay loam (183) which contained flecks of charcoal and coal (Challinor, below).

**Table 1** Structure 1 postholes

| | *Description* | *Fills* | *Comment* |
|---|---|---|---|
| **Northern alignment** | | | |
| [156] | 'U' shaped profile, 0.6m diameter and 0.17m deep. | Lower fill (163): red-brown silty clay, 0.02m thick.<br>Upper fill (151): a 0.15m thick layer of grey-brown silty clay, which was charcoal-rich (Challinor, below). | Radiocarbon determination on charcoal from upper fill (151): 4721 ±34 BP, 3634–3376 cal BC (SUERC-62533). |
| [157] | Circular, 0.42m in diameter and 0.18m deep. | (152): grey-brown silty clay heavily mottled with charcoal. | |
| [158] | Circular, 0.52m diameter, and 0.15m deep, with an irregular profile. | (153): a grey-brown silty clay, which was heavily mottled with charcoal. | |
| **Western alignment** | | | |
| [155] | Sub-oval, 0.4m by 0.3m and 0.12m deep. | (140): a pink-brown clay containing charcoal fragments. | |
| [160] | Sub-circular, 0.5m diameter and 0.15m deep. It was steep-sided and flat bottomed. | (141): a dark brown-grey silty clay deposit with charcoal fragments. | |
| [161] | Oval with a shallow 'U' shaped profile. It measured 0.7m by 0.53m and 0.1m deep. | (142): a dark brown-grey silty clay mottled with charcoal. | |
| [162] | 'U' shaped in profile and sub-circular, approximately 0.6m in diameter by 0.15m deep. | (143): a dark pinkish-brown silty clay mottled with charcoal. | |
| **Inner posthole** | | | |
| [159] | Circular and 'U' shaped in profile, measuring 0.4m diameter and 0.1m deep. | (154): a dark grey-brown silty clay mottled with charcoal. | Located within the right angle formed where the two lines of postholes met. |
| **Outlying posthole** | | | |
| [147] | 'U' shaped in profile; 0.7m by 0.6m and 0.17m deep | Lower fill (148): a red, grey-brown, 0.07m thick, silty clay with shillet fragments and flecks of charcoal.<br>Upper fill (139): a grey-brown clay loam with numerous large charcoal fragments, and 0.14m thick. A lens of charcoal was recorded at the interface between the two fills. | Posthole [147] was situated approximately 5m to the north-east of structure 1. |

Pit [184] was steep-sided with a flat bottom, and measured 0.2m diameter by 0.2m deep. There was little charcoal in the fill and it may have been a posthole. There was no direct dating, but like the nearby pit [182] it could have been a post-medieval feature.

## Summary

The excavated pits and postholes did not contain artefacts and, with the exception of the postholes forming structure 1, which were clearly associated and contemporary with one another, there was no direct stratigraphic relationship between any of them.

The charcoal assemblage from structure 1 was quite different to that seen in the other investigated features and the radiocarbon date suggests that it stood in the Middle Neolithic period. Buildings of this period are very rare in Britain as a whole, and its significance will be discussed below.

The remaining pits and the burnt spread that are found across the project area may belong to more than one period, although the radiocarbon determinations for two of them fell in the later Iron Age. These pits share a number of similarities, including their diameters, shallow profiles, burnt bases and remarkably similar oak-only charcoal content (Challinor, below). This could suggest

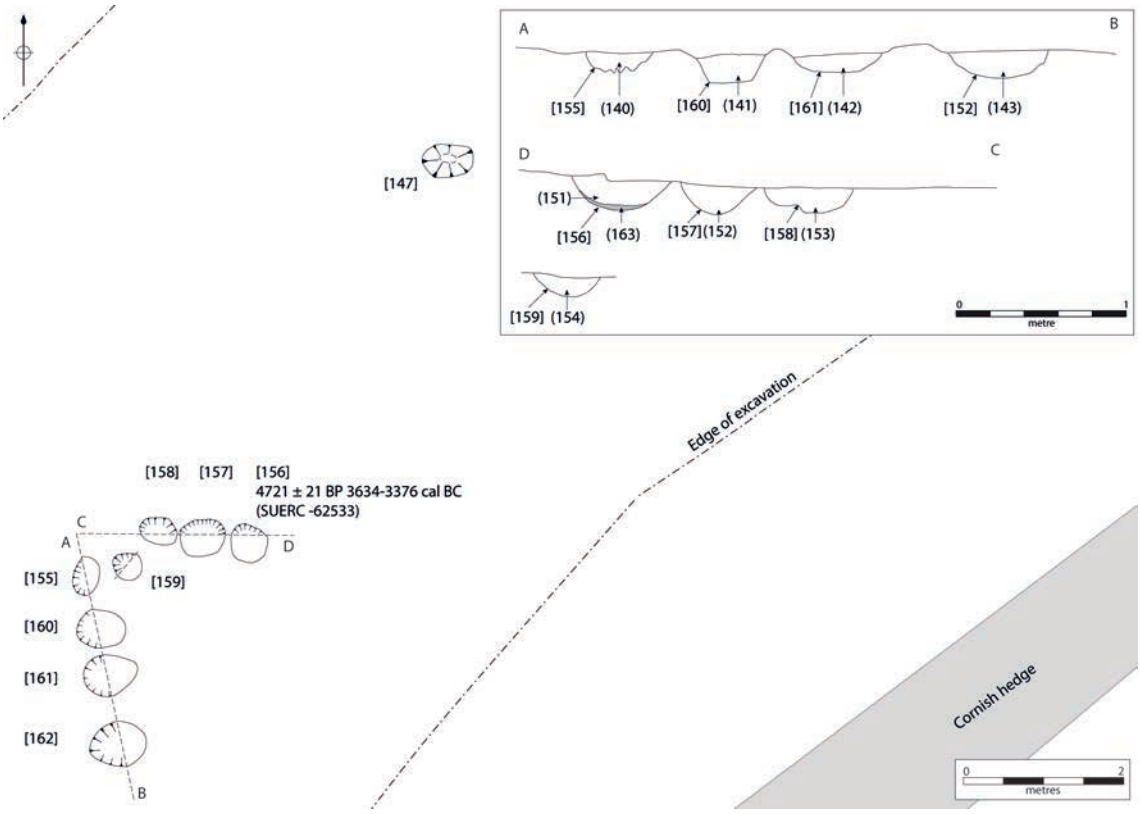


*Fig 2 Structure 1 plan and sections. Charcoal from postholes [156] and [162] was analysed.*

that they are all of Iron Age date. They were not, however, associated with artefacts, and similar looking charcoal-rich pits across Cornwall have been found to date to a wide range of periods (for example, Jones and Quinnell 2014, 127–33).

The two pits within field 1, [182] and [184], are considered to be much later in date. They were a different shape and size to the other pits, and charcoal analysis (Challinor, below) shows a markedly different charcoal assemblage from the other pits. The presence of coal, however, dates pit [182] to the post-medieval period. They may have been associated with the tannery, which was located nearby, although their function remains uncertain.

## Charcoal

*Dana Challinor*

Eight charcoal samples from a series of pits and postholes and a burnt spread were analysed. Several showed evidence of *in situ* burning, [110], [118] and [146], and context (109) was actually a burnt spread at the western end of field 4. Fragments of *Quercus* (oak) sapwood from [110] and [146] were selected for radiocarbon dating, and produced similar Iron Age determinations of 2160 ±34 BP and 2219 ±34 BP respectively.

Two features from field 2, [156] and [162], were postholes rather than pits and were part of a structure. A fragment of Corylus avellana (hazel) from [156] produced an unexpected Middle Neolithic date of 4721 ±34 BP. Other samples were not dated directly, but it is possible that they relate to these two phases of activities, as discussed below.

### Methodology

It was immediately apparent that taxonomic diversity was low and, consequently, a sub-sample of 30 fragments from each sample was considered ample for assemblage characterisation. Additional

**Table 2** Features in Field 2 and Field 4: burnt spread (109) and pits [110], [118], [146], [165], [166] and [168]

| | *Description* | *Fills* | *Comment* |
|---|---|---|---|
| **Field 2** | | | |
| Pit [146] | A large circular pit 1.6m in diameter by 0.15m deep, with a shallow flat-bottomed profile. The rock-cut base had been scorched to red, orange-brown, reflecting *in situ* burning. | (138): a charcoal-rich (Challinor, below), dark grey-brown clay loam. | Radiocarbon determination from charcoal from fill (138): 2219 ±34 BP, 380–201 cal BC (SUERC-62532) |
| Pit [165] | Circular, 1m in diameter and just 0.07m deep. The underlying bedrock had been scorched by *in situ* burning. | (164): a charcoal-rich grey-black loam with fragments of burnt red-brown clay. | |
| **Field 4** | | | |
| Burnt spread (109) | The burnt spread measured approximately 1m in diameter by 0.07m deep and lay directly over heat reddened bedrock. It was within a wider, roughly 3m by 2m, very shallow north–south aligned oval hollow. | (109) consisted of charcoal and dark pink-brown clay with burnt shillet fragments. | The lack of an identifiable cut suggests that this may be the remains of an open bonfire-like feature. |
| Pit [110] | Sub-circular and bowl-shaped in profile, with an irregular base. It measured 1.1m in diameter and 0.15m deep (Fig 3). | Upper fill (111): a reddish-brown silty clay with occasional stones, and possibly associated with roots. Lower fill (112): a black-brown charcoal-rich silty clay with some large charcoal lumps and burnt clay. Large amounts of charcoal were recorded from this deposit (Challinor, below) | Radiocarbon determination on charcoal from fill (112): 2160 ±34 BP, 359–100 cal BC (SUERC-62531). |
| Pit [118] | A sub-circular bowl-shaped pit, 1.1m in diameter and 0.15m deep. The basal bedrock was scorched red through *in situ* burning. | (119): a dark reddish-brown silty clay with abundant charcoal fragments (Challinor, below). | |
| Pit [166] | A sub-circular, very shallow bowl-shaped pit 1m in diameter and 0.03m deep. The base was slightly irregular and the bedrock was scorched red. | (167): a dark grey-brown black clay loam with numerous charcoal fragments and burnt stone. | |
| Pit [168] | A sub-circular, shallow bowl-shaped pit with a slightly steeper eastern edge; 1.5m in diameter and 0.07m deep. The base had been scorched through *in situ* burning. | (169): a dark grey brown-black clay loam. Numerous charcoal fragments and burnt stone were recorded. | |

scanning of the whole sample confirmed the adequacy of the sub-sample. Sample 17 (post-medieval pit [182] produced only sparse charcoal and 100 per cent of the identifiable material was examined. The charcoal was fractured and sorted into groups based on the anatomical features observed in transverse section at ×7 to ×45 magnification. Representative fragments from each group were then selected for further examination using a Meiji incident-light microscope at up to ×400 magnification. Identifications were made with reference to Schweingruber (1990), Hather (2000) and modern reference material. Classification and nomenclature follow Stace (1997). Identifications are provided to the highest taxonomic level possible according to the native British flora, that is to say,

*Fig 3 Pit [110] half sectioned, viewed from the west.*

where there is only a single native species, this is named, but where there are several native species, the genus or subfamily is given. Observations on maturity and character of the wood were recorded where visible.

## Results

A total of 225 fragments were examined, producing four positively identified taxa: *Quercus* sp. (oak), *Alnus glutinosa* (alder), *Corylus avellana* (hazel) and *Cytisus/Ulex* (broom/gorse) (Table 3). Four of the samples produced very abundant assemblages of charcoal (>1000 fragments), in which only oak was identified: these were the two pits [110] and [118] and burnt spread (109) from field 4 and pit [146] from field 2. To some extent this reflects differences in sample sizes taken during the excavations (for example, sample 2, from pit [110], derived from three sample bags of soil), but most of the assemblages derived from around 10 litres of soil, and it is clear that the abundance of material relates to the evidence for burning *in situ* in the pits and spread. The condition of the charcoal in these samples was notable for the high levels of vitrification (to the point of total fusion in several fragments). Frequent radial cracks and distortion also inhibited the examination of maturity; although tyloses were sometimes visible (indicating heartwood), the absence of the characteristic is much less easy to verify in poorly preserved material (signifying that sapwood is probably under-represented). Some fragments of burr wood (that is to say, with dense knots or swirls in the grain caused by deformed growth) were recorded. Fragment size was good in these samples, with some large fragments (one of 60mm length and 30+ years growth in sample 2), but the condition generally precluded examination of growth rings. Occasional fragments of bark were noted.

The remaining four samples, from postholes [156] and [162] (field 2) and pits [166] (field 4) and [182] (field 1), produced much smaller assemblages of charcoal with only mid-small fragment size. The majority of the hazel fragments exhibited moderate to strong ring curvature indicating roundwood, although attached bark and pith were not preserved. The fragments of broom or gorse derived from short-lived twigs (up to about 3 years). Rare fragments of coal were observed in the sample from pit [182]. The two indeterminate fragments from this sample were small twigs.

## Discussion

The quantity of charcoal in the four rich samples (burnt spread (109) and pits [110], [118] and [146])

**Table 3** Results of the charcoal analysis (showing fragment counts)

| | ***Field number*** | *4* | *4* | *4* | *2* | *2* | *2* | *4* | *1* |
|---|---|---|---|---|---|---|---|---|---|
| | ***Cut number*** | *-* | *[110]* | *[118]* | *[146]* | *[156]* | *[162]* | *[166]* | *[182]* |
| | ***Fill/layer number*** | *(109)* | *(112)* | *(119)* | *(138)* | *(151)* | *(143)* | *(167)* | *(183)* |
| | ***Sample number*** | *1* | *2* | *4* | *5* | *10* | *14* | *15* | *17* |
| *Quercus* sp. | oak | 30 (hb) | 30 (hs) | 30 (h) | 30 (hsb) | | 4 (h) | 30 (h) | 3 (r) |
| *Alnus glutinosa* Gaertn. | alder | | | | | | 1 | | |
| *Corylus avellana* L. | hazel | | | | | 30r | 20 (r) | | 2r |
| *Alnus/Corylus* | alder/hazel | | | | | | 5 | | |
| *Cytisus/Ulex* | broom/gorse | | | | | | | | 8r |
| Indeterminate | | | | | | | | | 2r |
| Total | | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 15 |

h=heartwood; b=burrwood; s=sapwood; r=Roundwood

accords with the evidence for burning *in situ* in these features. The similarity of the assemblages (both the single taxon and the condition of the charcoal) suggests a common origin in terms of activity and phase. The total absence of artefacts or ecofacts in these assemblages suggests that they were more likely to be related to an activity such as charcoal-burning (or just the burning of timber off-cuts), rather than representing the remains of other domestic or industrial fuel. There is, however, nothing specific in the charcoal record to indicate a function; oak, if well-seasoned, produces a high calorific value fuelwood and it is also suitable for conversion to charcoal and was readily utilised for both in the Iron Age. The presence of heartwood and, especially, the burr wood in (109) indicates that some trees of significant maturity had been burnt.

The highly vitrified condition of the oak charcoal was unusually widespread and a notable feature of the assemblage. Unfortunately, the significance of this is hard to determine, since there is no single explanation for vitrification in charcoal which has been adequately reproduced in experiments to date (McParland *et al* 2010). It has been shown that it does not relate to high temperatures or the burning of green wood, but may be from post-charring or depositional processes, or a combination of pre- and post-charring occurrences (*ibid*). While this does not, currently, elucidate the function of these pits, it does show that the same processes were occurring to all of the burnt pit assemblages, which suggests contemporaneity.

The assemblages from the postholes in field 2, [156] and [162], were dominated by hazel roundwood and the similarity between these samples (as well as contextual evidence) suggests that they were contemporaneous. The likelihood that these features represent the remains of a Neolithic structure is of particular significance, given the rarity of such features – or indeed of any known Neolithic settlement in the immediate area (see below). The archaeological evidence did not indicate *in situ* burning and the charcoal certainly does not represent a single large beam or post; but the assemblages (comprising small hazel roundwood) could derive from the burnt remains of withies and may represent burnt debris from the demolition of the structure.

The assemblage from pit [182] was more mixed in character, with small roundwood pieces and more likely to represent fuel waste, but charcoal was sparse and, in the absence of corroborating evidence, the interpretation is inconclusive. However, the presence of coal within the fill demonstrates that it is of a much later date.

## Radiocarbon dating

In the absence of artefacts the key aim was to obtain secure dating evidence for a selection

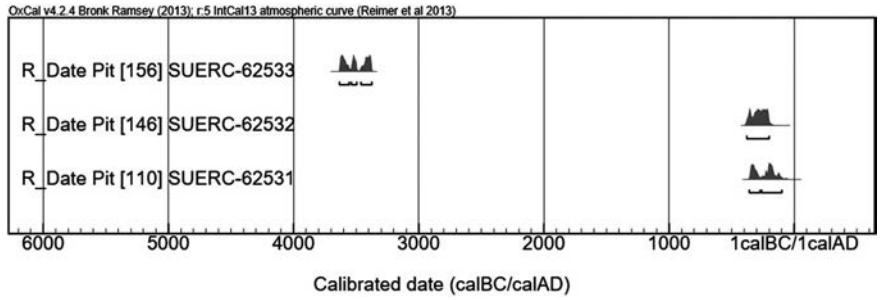


*Fig 4 Results from the radiocarbon dating.*

**Table 4** Radiocarbon dates from posthole [156] and burnt pits [110] and [146]

| *Feature* | *Lab. no.* | *Age BP* | *Material* | *Calendrical years 95.4%* |
|---|---|---|---|---|
| Posthole [156], (151) | SUERC-62533 | 4721±34 | Charcoal: *Corylus* Hazel | 3634 to 3376 cal BC |
| Burnt pit [146], (138) | SUERC-62532 | 2219±34 | Charcoal: *Quercus* Oak | 380 to 201 cal BC |
| Burnt pit [110], (112) | SUERC-62531 | 2160±34 | Charcoal: *Quercus* Oak | 359 to 100 cal BC |

of charcoal-rich features. The selected pits and spread had all produced evidence for *in situ* burning, while the postholes formed part of an undated structure.

It was hoped that a spread of dates would establish dates for apparently varied activity across the site, including early activity associated with the tannery.

Three samples were submitted for accelerator mass spectrometry dating (AMS) at the Scottish Universities Environmental Research Centre (SUERC), from posthole [156], pit [110] and pit [146]. All three samples were on charcoal from short-lived species (Table 4).

The probability distributions have been calculated using OxCal (v4.2) and all radiocarbon determinations are quoted at 95.4 per cent probability throughout this paper unless otherwise stated.

### Results

The three radiocarbon determinations were unexpectedly early, and clearly unrelated to the tannery. The posthole produced a secure Middle Neolithic date, while the two dispersed pits both produced Middle to Late Iron Age dates (Fig 4). The significance of the dating will be discussed below.

## Discussion

The watching brief at Manor Tannery has produced some very interesting results, which include three unexpected radiocarbon dates, one associated with a posthole structure and two with the scattered burnt pits.

### Structure 1

#### *The wider context of structure 1*

Charcoal from posthole [156] within structure 1 produced a date of 4721 ±34 BP, 3634–3376 cal BC (SUERC-62533). This date spans the end of the Early Neolithic and the Middle Neolithic. Given the scarcity of dates of this period in Cornwall and the south west generally (Jones and Quinnell 2011; Mudd and Joyce 2014, 180), as well as the rarity of Neolithic structures nationally, the dating is very significant.

Nationally, far fewer Middle Neolithic sites are known than in the preceding Early Neolithic and subsequent Late Neolithic periods, and this has led some commentators to suppose that the initial Early Neolithic boom was followed by a period of bust prior to growth in the Late Neolithic period (for example, Shennan *et al* 2013). In part this may be due to a gap between the construction of large monuments, including chambered tombs

and causewayed enclosures dating to the Early Neolithic on the one hand and the building of henges and timber circles during the Late Neolithic on the other. The Early Neolithic period has also been the focus for two major radiocarbon dating programmes (Bayliss and Whittle 2007; Whittle *et al* 2011) and in recent years a number of substantial projects have been undertaken at Late Neolithic sites (for example, Richards 2005; Parker Pearson 2012; Leary and Field 2013).

By contrast, the Middle Neolithic period (*c* 3500–3000 cal BC) was not a time of major monument construction and sites of this period in southern Britain tend to take the form of smaller ring-ditches and pits or land surfaces associated with Peterborough Ware pottery (for example, P Jones 2008; Ard and Darvill 2015). In other words, scarcity of large monuments, together with a lack of coordinated programmes of radiocarbon dating, has made the Middle Neolithic period appear less evident.

These problems are particularly compounded in the south-west region, where Middle Neolithic ring-ditches are unknown and Peterborough Ware is still uncommon (Jones and Quinnell 2011). Indeed, it is only recently that Peterborough Ware has been found in Cornwall, with the first pit-associated finds being discovered in Helston in 2007 and Truro in 2012 (Hood 2009; Taylor, forthcoming). In Devon, mid-fourth millennium cal BC dates have recently been obtained from three pits which had produced a small Peterborough Ware assemblage (Mudd and Joyce 2014, 19–20).

Random radiocarbon dating of pits without any associated finds in Cornwall has led to some features being assigned to this period. Securely dated Middle Neolithic features include a small number of pit sites. For example, at Trenowah, on the St Austell North-East Distributor Road, a Neolithic date of 4429 ±41 BP, 3313–2930 cal BC (Wk-11935) was obtained from pit [40], one of a group of charcoal-rich pits (Johns 2008). A radiocarbon determination of 4505 ±68 BP, 3486–2938 cal BC (Wk-12676) was obtained from a pit at Metha (St Newlyn East) from a charcoal-rich pit which contained hazelnut fragments and an apple pip, with hazel and *Pomoidae* charcoal (Jones and Taylor 2004, 41). Lastly, and although slightly earlier, at Tremough (Penryn) a date of 4850 ±55 BP, 3765–3520 cal BC (AA-44601) (Gossip and Jones 2007, 8), was obtained on charcoal from a pit which was located in a part of the site where there was a scattering of similar looking charcoal-rich pits. Prior to excavation, there was no indication that any of these sites were of Middle Neolithic date and it is only due to radiocarbon dating that they can be assigned to a period.

Another problem in Cornwall may lie with some Early Neolithic pottery forms having continued in currency into the middle centuries of the third millennium cal BC. There is a growing number of excavated pits in Cornwall containing 'Hembury-type' vessels which have been radiocarbon dated to the middle centuries of the fourth millennium cal BC, spanning the end of the Early Neolithic period and into the Middle Neolithic period (Jones and Quinnell 2014, 131), when Peterborough Ware was in use elsewhere. For example, at Penmayne (St Minver) a pit associated with Early Neolithic carinated bowl pottery and hazelnut shells produced radiocarbon determinations of 4770 ±30 BP, 3641–3384 cal BC (SUERC-315182), and 4775 ±30 BP, 3642–3387 cal BC (SUERC-315183) (Gossip *et al* 2012). At Tremough two pits containing Early Neolithic period bowl pottery produced identical radiocarbon determinations (SUERC 29383 and SUERC-29387) of 4750 ±40 BP, calibrated to 3640–3370 cal BC (Jones *et al* 2015, 150). Finally, pit [235] at Bossiney on the north Cornish coast produced a radiocarbon determination of 4690 ±23 BP, 3625–3372 cal BC (SUERC-42047). This again contained sherds of Neolithic bowl pottery (Jones and Quinnell 2014, 16). All of these determinations lie at the end of the Early Neolithic and, although they may pre-date 3500 cal BC, extend into the Middle Neolithic period and may indicate the continued use and deposition of older forms of bowl and carinated pottery into the middle centuries of the fourth millennium cal BC.

Taken together, this means that the Middle Neolithic period in Cornwall has been very difficult to characterise and it is almost certain that many more archaeological features which belong the second half of the third millennium cal BC have not been identified, or possibly assigned to an earlier phase of activity. The only way to resolve this issue would be a large targeted programme of radiocarbon dating on pits and hearths which have not produced finds.

*Character of the structure*

Given the rarity of other Middle Neolithic sites in Cornwall, structure 1 is therefore both an unexpected and highly significant discovery.

Structure 1 was L-shaped and consisted of eight separate postholes forming two linear arms measuring approximately 3m and 2m long. The structure stood on a gentle south-south-west facing slope. Given its surviving character, the form of the structure is uncertain. On the one hand, the postholes were not immense and they are closely set, which is more indicative of a small-scale construction, than with a monumental post alignment. On the other hand, they are rather too substantive for fencing. Although it is possible that they could have been associated with an L-shaped setting, such as a windbreak, we would suggest that they represent the last, truncated remnants of a larger structure, the evidence for which is discussed below.

Neither the entrance nor an associated occupation surface was identified. However, long-term cultivation, since the late prehistoric period, perhaps suggested by the evidence for Iron Age activity in the immediate area (see below), could have affected the survival of the structure. Ploughing may have removed associated external old land surfaces, internal floor surfaces, artefacts, ephemeral spreads or hollows, or indeed shallower postholes. Vulnerable finds such as pottery would not survive even sporadic disturbance or exposure through ploughing, while any unstratified flintwork will have been removed during the topsoil stripping. It is also possible that, if the structure was rectangular in shape, other elements such as postholes located to the east or south would have lain outside the stripped area.

The northern arm consisted of three postholes and the western arm of four postholes, all of which were closely spaced. An eighth posthole lay within the inner angle formed by the junction of the two arms. Based on its shape, it is possible that further posthole [147], just over 4m to the north east, was contemporary, if not directly associated with the structure. However, there were no associated finds and it did not produce charcoal suitable for analysis.

None of the postholes forming structure 1 were deeply cut and there were no surviving packing stones. Seven of the eight had steep, partly concave edges and rounded or uneven bases. Posthole [160] was the exception, with steep straight sides and a flat base. All have similar dimensions, ranging from 0.1m to 0.2m deep and diameters of 0.3m to 0.7m and are clearly structural, being set in close proximity in a linear arrangement. The lack of post-packing, combined with the shallowness of the cuts, indicates that there had been a good deal of truncation which may have removed shallower postholes and, as mentioned above, account for the lack of occupation material.

The postholes formed the north-western right-angled corner of a structure which originally extended to the east and/or south. Although clearly a standing structure, the original size, character and function of this building is difficult to ascertain. Clearly one corner at least required post support – the closeness of the postholes implying a really quite sturdy structure. The outline of at least part of the superstructure was defined by posts, but little further evidence for the materials used in its construction survived beyond this. However, evidence from the charcoal analysis (Challinor, above) might suggest that some elements within it could have been constructed from hazel withies, for example as wattling. If withies were widely used in its construction, this might partially account for the lack of more substantial structural evidence running around the remainder of the structure.

Given that a corner was uncovered, it is likely that the structure was either square or rectangular in plan. Neolithic buildings are still uncommon in southern England and to date, with the exception of the stake-built lean-to buildings on Carn Brea (Mercer 1981) only two structures have been recorded in Cornwall. Both were found during archaeological recording along the route of the A30 near to Penhale round (St Enoder) (Nowakowski and Johns 2015, chapter 3). Structure 3053 was circular and was stake-built. A second, structure 3299, was rectangular but, measuring 25m by 7m, is probably very much larger than structure 1. In addition to being of rather different forms, both of the investigated structures at Penhale have been radiocarbon dated to the first half of the fourth millennium cal BC (*ibid*) and are therefore much earlier than structure 1.

Indeed, across Britain and Ireland there are rather fewer structures than in the preceding Early or succeeding Late Neolithic periods (Darvill 1996; Smythe 2014, 81–5). The Middle Neolithic structures which have been identified, with few exceptions (see Richards and Jones 2016, chapter

5) are much less substantial and less regular in shape than those dating to the Early Neolithic period (Smythe 2014, 83). However, several of these buildings are square or rectangular in plan (Darvill 1996, fig 6.5) and, for example, include the Padholme Road structure at Fengate, which measured approximately 8m by 7.5m (Pryor 1974, 8). Although the full extent of structure 1 is unknown, it might have been closer in size to the Padholme road structure, reflecting a general decrease in building size after *c* 3500 cal BC.

### *The end of structure 1*

Given the absence of floor surfaces or artefacts nothing can be said regarding the function or the character of the occupation within structure 1. It is, however, possible to make some comment concerning the closure of the building.

There is some evidence to suggest that the structure was formally dismantled, rather than allowed to slowly decay and collapse. Elsewhere in Britain there is evidence for the formal abandonment of buildings, although this often takes the form of deliberate and highly memorable acts of destruction involving fire (Noble 2007, 57–8; Thomas 2007, 244–5). With regard to structure 1, although it is true to say that the ensuing period of approximately 6000 years would have significantly reduced their visibility, no post-shadows or packing stones were visible in the posthole sections to show that posts had rotted *in situ*, and it is possible that the posts had been removed from their sockets. Furthermore, although the lack of artefacts may be the result of truncation, their complete absence might also have been part of a deliberate clearance of the site at the time of abandonment.

## Burnt pits and a spread

In addition to structure 1, there was a dispersed grouping of features consisting of six charcoal-rich pits [110], [118], [146], [165], [166] and [168], and a burnt spread (109).

The pits ranged from 0.7m to 1.6m in diameter and were very shallow, ranging from 0.03m to 0.15m deep. Each had a heat reddened base caused by *in situ* burning. Four had their charcoal analysed ([110], [118], 146] and [166]; Challinor, above) and were found to contain oak. Two of these, pits [146] and [110], were radiocarbon dated, with respective dates of 2219 ±34 BP, 380–201 cal BC (SUERC-62532) and 2160 ±34 BP, 359–100 cal BC (SUERC-62531). Both dates fall in the later Iron Age.

In addition, the charcoal analysis has shown notably high levels of vitrification, which was seen through the fusing of predominantly oak heartwood. The similarity of feature dimensions, *in situ* burning and high concentrations of similar charcoal suggests broad contemporaneity.

The oval burnt spread (109) was found to overlie an area of scorched bedrock and to be positioned within a hollow. The spread covers more than twice the area of one of the burnt pits, but in other respects was remarkably similar in terms of profile and charcoal content, the assemblage comprised highly burnt oak (Challinor, above).

In common with the burnt pits, burnt spread (109) did not produce any artefacts. Again this could be down to preservation; however, the complete absence of pottery from all the features is surprising for a site of later Iron Age date, where finds, especially ceramics, tend to be fairly ubiquitous. Truncated features at Camelford School, for example were still found to contain sherds of Middle to Late Iron Age pottery (Jones and Taylor 2015). The features are therefore probably not part of a settlement and not in the immediate vicinity of one.

The absence of artefacts from the pits at Grampound may therefore relate to their function, as opposed to the complete removal of the artefactual assemblage. It is of interest that the analysis of the burnt spread and the pits revealed that the wood assemblage was entirely of oak. The lack of mixing with other tree species could suggest that the assemblages were generated by an episode(s) of field clearance and the removal of woodland during the later Iron Age. However, only pit [110] had root holes in it and the excavation records do not obviously suggest that tree stumps were being burnt *in situ*. Another possibility could be that they were used for charcoal burning but this cannot be proved by the assemblage (Challinor, above). It is, however, perhaps likely that given the quantity of oak charcoal they were associated with some form of woodland management.

The wider context for this activity is also uncertain. An Iron Age / Romano-British ‘round’ or enclosed settlement is located approximately 2 km to the north east at Higher Trevillick and cropmark field systems predating the current field layout have also been identified in that area

from aerial photographs. However, the dating of these features is uncertain and they may not be contemporaneous with the burnt pits. It is also possible that an unenclosed settlement, similar to the one found at Higher Besore (Kenwyn) (Gossip, forthcoming), may be located nearby. Only further work in the surrounding area would establish whether a contemporary settlement is located in the vicinity.

## Summary

The excavations at Grampound were interesting as they have provided evidence for two phases of activity, the first in the Middle Neolithic and the second during the later Iron Age. Although, unlike many other excavated pits and postholes, there were no artefacts, making interpretation difficult and relative dating of features impossible, the strong similarities shared by the burnt pits suggests that they represent a coherent episode of land use, which radiocarbon dating from two of the pits places in the Iron Age.

Most significant is the identification of structure 1 as a rare example of a Middle Neolithic building, which is the first to be identified in Cornwall or the wider south-west region. The results from the project also underline the need to undertake radiocarbon dating, even on those archaeological features that are without artefacts, and which might appear to be unpromising.

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*Cornish Archaeology* 55, 2016, 149–161

# Mountain Barrows, Pelynt: a south-eastern Cornish barrow group in its local context

CATHERINE J FRIEMAN AND JAMES LEWIS

*This paper discusses the Bronze Age barrow group at Mountain Barrows, south west of Pelynt village in Pelynt parish. It brings together reports of antiquarian activity at the site, the results of recent geophysical surveys and a wider examination of the landscape in south-east Cornwall to discuss the development of the barrow group within its local and south-western British context. It also considers how this barrow group influenced the development of the local landscape. It is argued that Mountain Barrows together with two adjacent groups of barrows in Pelynt parish may have flanked an ancient routeway.*

This paper investigates the Bronze Age barrow cemetery of Mountain Barrows (Cornwall and Scilly Historic Environment Record (HER) PRN 10112 / MCO 1961), located in Pelynt parish in south-east Cornwall (SX 20030 54400). This is undertaken through an examination of published records of antiquarian activity and the results of recent geophysical survey at the site. Since 2012 the authors have been investigating the later prehistoric landscape of south-east Cornwall, especially the area around Pelynt village, to learn more of the nature of sites recorded by the Cornwall Historic Environment Record (HER) and designated by Historic England. This work includes assessing the preservation of sites recorded in the nineteenth century and sometimes disturbed by antiquarian activity and examining the relationships between sites and between them and the wider landscape.

The area around Pelynt village in south-east Cornwall shows a surprisingly dense distribution of prehistoric monuments. Barrow cemeteries, hillforts and other banked and ditched enclosures cluster together in the low hills and valleys. Indeed, no other parish within south-east Cornwall contains more prehistoric enclosures and barrows than Pelynt. Clearly something of importance was happening here in the second and first millennia cal BC to produce this wealth of monuments, but it has not yet been explained or fully investigated.

## The archaeological history of south-east Cornwall

Cornwall's south-east corner has not been subject to the industrial development which has influenced the landscape history of some other parts of the county and has remained largely agricultural. The area is characterised by deep river valleys and land enclosed since at least the medieval period. Navigable rivers, including the Tamar, Looe and Fowey cut north–south through this area, connecting the peninsula's inland regions to the English Channel (Fig 1). The area within Cornwall's southeast corner with which this paper is concerned is defined as the land between the Fowey and the West Looe rivers and south of Bodmin Moor.

In this area, there has been relatively little large-scale development; and, as a result, only a handful of modern archaeological excavations have taken place (see Jones 1998–99; Ray 1994; 2001; Wessex

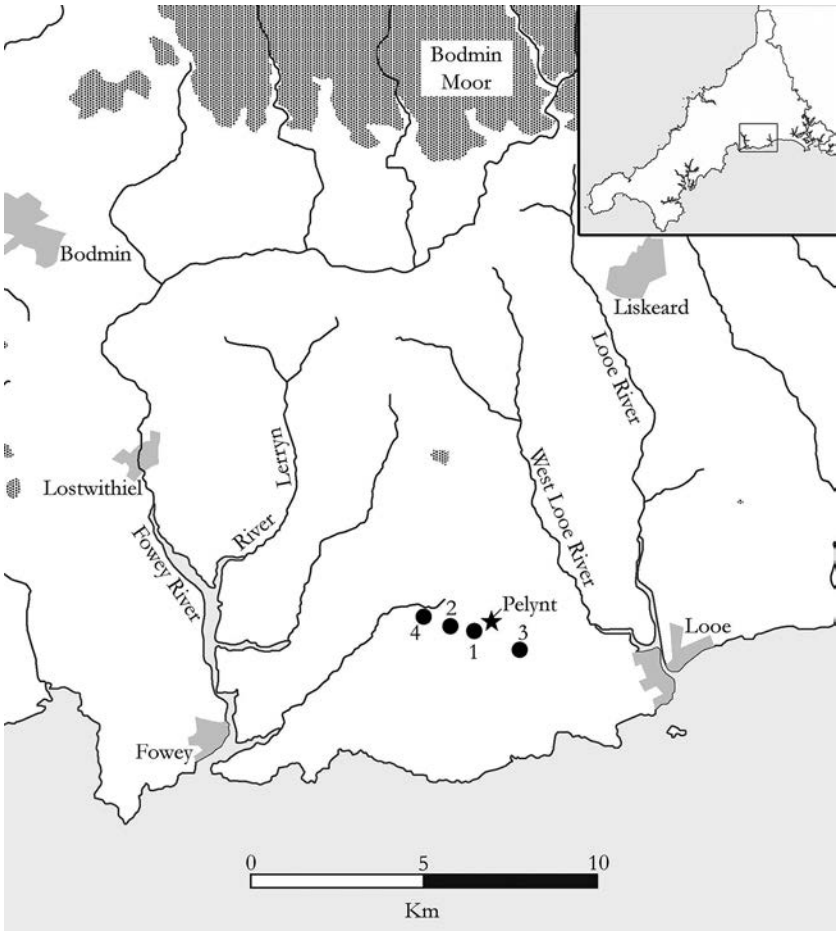


*Fig 1 South-east Cornwall with sites mentioned in the text marked. 1. Mountain Barrows; 2. Hendra / Cartole barrow group; 3. Ashen Cross barrow group; 4. Bake Rings enclosure. Star marks the location of Pelynt village. Stippled areas are above 200m elevation.*

Archaeology 2009; Borlase 2013), although numerous sites have been identified through the Cornwall National Mapping Programme (Young 2007). Over the last 50 years, archaeological research in the eastern half of Cornwall has focused primarily on Bodmin Moor with its landscape of open moorland and granite tors (Johnson and Rose 1994; Herring 2008; Bender *et al* 1997; 2008; Bradley 1998); in contrast, little or no systematic fieldwork has been carried out in this 'lowland' landscape in the last two decades.

In contrast to the open, dramatic landscape of Bodmin Moor, south-east Cornwall is characterised by intensive agriculture and enclosure. This makes movement across the landscape for fieldwork and prospection for sites difficult as multiple landowners and field boundaries have to be negotiated. Moving across country, travel is restricted to deep sunken lanes and roads connecting settlements, and the few existing footpaths either follow the river valleys or survive as isolated sections within the field systems and are consequently rarely used. The high Cornish hedges severely disrupt views of the landscape. Much of the upstanding archaeology has been severely damaged by the escalation in agricultural activity from the nineteenth century onwards.

In 2012, a research project was developed by the authors to begin to examine this rich and poorly understood prehistoric landscape. The South-East Kernow Archaeological Survey (SEKAS) was launched with a geophysical survey of Mountain Barrows, carried out in collaboration with Tamarside Archaeological Survey (Frieman and Lewis 2013), and has continued to focus on the monumental landscape around Pelynt and the surrounding parishes (Lewis and Frieman 2014; 2015; 2016). The goal of this landscape project

is not just to gain a better understanding of key sites but also to explore how they relate to each other and to the movement of peoples, ideas and, crucially, metal and other valued objects through the landscape and from the coast to the uplands and vice versa.

## History of research at Mountain Barrows

The cluster of mounds known colloquially as Mountain Barrows (or, in earlier periods, as Burrows, Five Burroughs, and within the community as Wilton Mill and Wilton Farm barrows; Caroline Vulliamy, pers comm) is the largest and best known of the three barrow clusters in the parish of Pelynt. Unlike the others, probably due to its density and visibility, it attracted antiquarian interest, and several of the barrows were opened in the nineteenth century. The group consists of ten barrows unevenly scattered over a large field about 0.75 km south west of Pelynt (Fig 2). While early nineteenth-century reports suggest that all or most of the ten currently listed in the Cornwall HER were clearly visible on surface at that time (Box 1847; Couch 1846), today only two are clearly visible and a third is present as a low ridge in the field. As the excavation and disturbance of these barrows commenced, at the latest, several decades prior to its large-scale mapping by the Ordnance Survey in the early 1880s, it is possible that the cluster may originally have had more than the ten barrows known today.

The site was investigated twice by local antiquarians. In 1834, two barrows were opened by the tenant in order to obtain the soil for manuring, with further activity monitored by a local doctor, Jonathan Couch. Then, in 1845, three more were excavated by workmen under the direction of local antiquarians. The accounts of this activity (Couch 1846; Box 1847) are uncommonly clear and remain the only known records of major antiquarian works in this region, although several other sites (particularly barrows) show some evidence for having been disturbed. In the following paragraphs, the antiquarian digging at these barrows will be described and the barrows whose opening was observed will be identified with a letter ('Barrow A', 'Barrow B', etc.). In the subsequent discussion, we will attempt to correlate these barrows with the evidence from the geophysical survey.

The two barrows destroyed in 1834 well illustrate the diversity found in Cornish barrows.


*Fig 2 The barrow group at Mountain Barrows, based on Cornwall and Scilly Historic Environment Record (HER) records.*

Barrow A, which was damaged by ploughing (Fig 3a), was described as one of the smaller barrows. It consisted of an earth mound which covered a stone, beneath which was a spread of charcoal and burnt bone (Couch 1846). Nearby within the mound, although not directly associated with the burnt deposit, was a copper-alloy dagger blade (Fig 4a). This blade has recently been published by Jones and Quinnell (2013), who identify it as a Camerton-Snowshill type dated to the first quarter of the second millennium cal BC. Couch (1846, 35) reported that the tenant farmer subsequently attempted to level the largest barrow in the field which was near the southern hedge. However, in this case, the covering of earth overlay 'a huge bed of stones', probably a stone cairn, which was covered by a layer of large, flat stones (Fig 3b). At the centre of this cairn, Couch observed 'a considerable quantity of black ashes, which had been evidently burnt on the spot' (*ibid*). A perforated stone tool was also recovered from this cairn, although its location and association with the area of burning are unknown. Presumably, it was found within the cairn, as Couch discusses recovering it and states that his involvement in the investigation of this barrow commenced only after the cairn was revealed. The artefact has been identified as a rather unusual ground stone macehead, probably reworked from an earlier battle axe shape (Evans 1877; Needham, forthcoming) and made from an ophitic dolerite, an igneous stone with outcrops in south-west Britain (Clough and Cummins 1988, 145) (Fig 4b). Box (1847, 48) alludes to this episode of barrow digging, though he says three barrows were opened, not the two Couch (1846) observed. He was probably referring to Couch's (1846, 34) secondhand report that a third barrow at this site may have been disturbed at some point prior to 1834 but only partially destroyed, having yielded nothing more than a metal 'celt'. Box also writes, *contra* Couch, that bones were recovered from all three barrows (Box 1847, 43).

On 24 November 1845 two antiquarians, J D Cook and Henry McLauchlan, opened three further barrows in the Mountain Barrows group with the aid of local labourers (Box 1847). They began with Barrow C, the largest visible barrow (presumably a different monument to the one opened by the tenant in the previous decade), which was described as 80ft (24m) in diameter and 5ft (1.5m) high. A trench 9ft 6in (2.9m) wide was cut east–west through the centre. Within this trench a number of features were observed (Fig 3c). Towards the west end and extending nearly to the centre of the mound, the excavators found a black, greasy layer with particles of charcoal, overlying a burnt layer described as 'incinerated brown coloured clay, having much the appearance of coarse brick', which was interpreted as an area of *in situ* burning, specifically 'a funeral pile', presumably for the cremated bone found with sherds of an urn at the centre of the mound (Box 1847, 43–4).

The sides of the trench revealed a careful layering of soils, suggesting that this barrow was built up of numerous layers, probably over a considerable period of time. The earliest phase was a small earth mound 0.45–0.5m high. This was covered by a 50mm thick layer of light-grey sandy clay separated by a thin layer of earth from a 70–100mm thick layer of dark orange soil which also had a thin layer of earth over it; the whole mound was sealed by a 75–100mm thick layer of heavy black loam. Charcoal fragments embedded within this layer suggested to Box that a further episode of burning was carried out on the upper surface of the mound. Box believed that none of the coloured soils used in the barrow's construction were local to the Pelynt area.

The other two barrows investigated by Cook and McLauchlan were described in less detail, but some data are available. Box (1847, 44) noted that all three barrows were investigated in the same manner, presumably implying that a wide east–west trench was excavated across them. The second barrow excavated (Fig 3d), Barrow D, lay 65 paces west of the first barrow investigated (perhaps 59m, presuming, following Coles (2015, 62), a pace length of 36in or about 0.914m). This mound was described as 60ft (18m) in diameter but only 3ft (0.9m) high and was probably heavily ploughed down, but contained at its centre a small stone cist which enclosed fragments of cremated human bone concentrated at the eastern end. These remains have recently been re-analysed and appear to comprise the cremated remains of an adult male aged 22–35; they were dated to 2050–1700 cal BC (Jones and Quinnell 2013). Box (1847, 48) refers to the cist as being oriented east–west and measuring 2ft (0.61m) in length internally and approximately 1ft (0.3m) wide and deep. It was composed of 12 apparently unworked stones: nine flat slabs of the local slate, a somewhat less flat slate stone for the cover, and two angular 'quartzoze blocks'. This latter is notable as quartz stones were included in a number of local monuments, including the

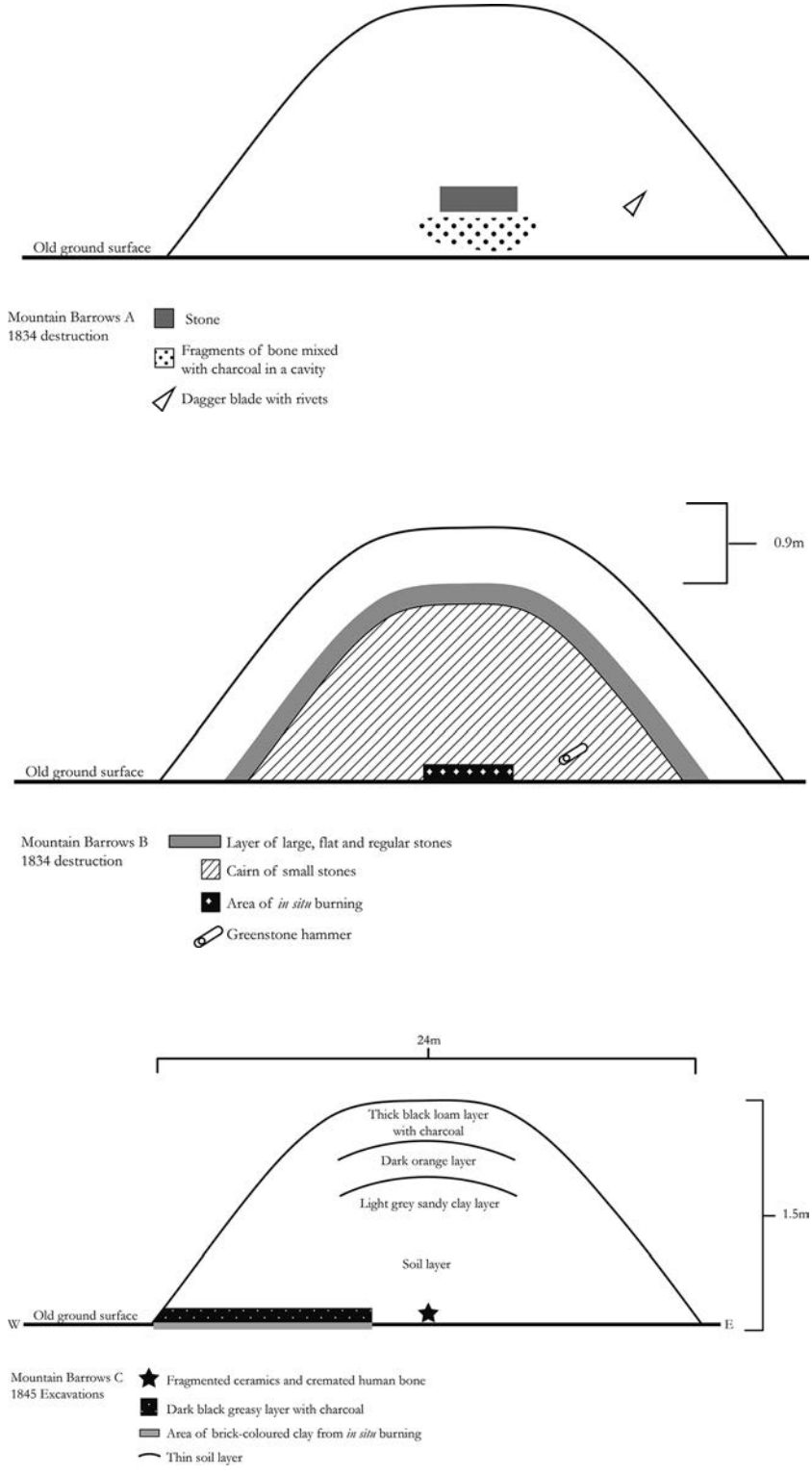


*Fig 3 Schematic vertical profiles of the five barrows at Mountain Barrows opened in the early nineteenth century, based on reports by Couch (1846) and Box (1847) and including analytic data from Jones and Quinnell (2013). Elevation and orientation data are included where available, based on the nineteenth-century accounts. All measurements are approximate.*

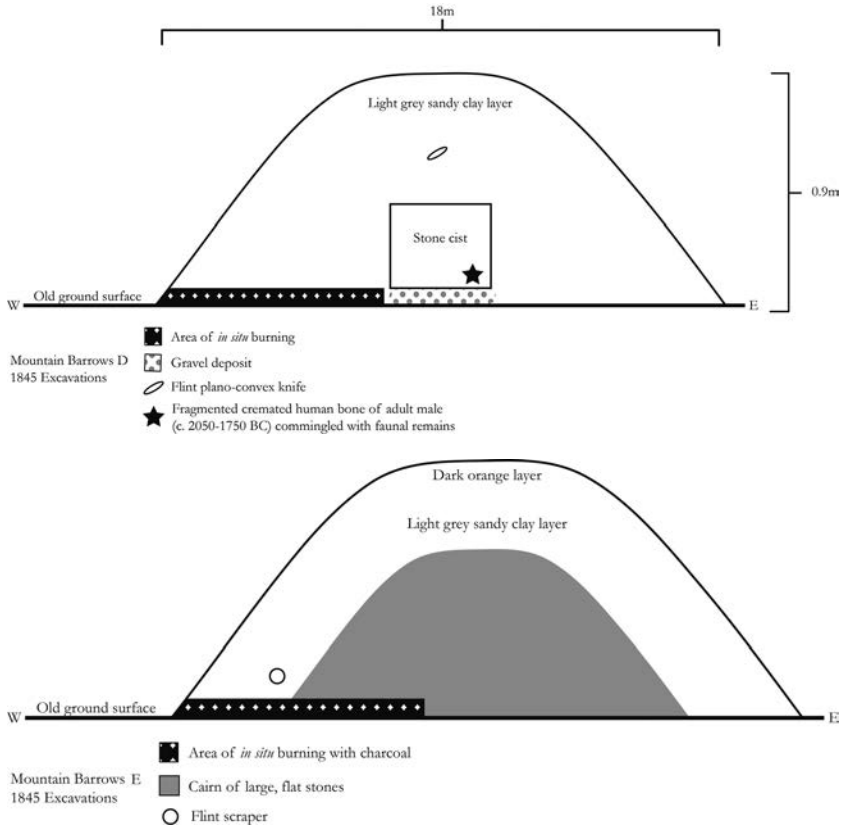


*Fig 3 Continued.*

probably contemporary site of Duloe stone circle (Nicholas *et al* 2017). No artefacts were associated with the cremation, but a very finely made plano-convex knife was found 'a little below' the upper surface of this mound and a few inches above the covering slab of the cist. The knife is made in a glossy dark-grey flint, measures 86mm × 36mm and has some evidence of secondary retouch or resharpening along the edges (Fig 4c). An area of *in situ* burning was present beneath the mound to the west of the centre. Box noted that the cist was built over a coarse gravel surface that he thought indicated the source of a spring in that location, and was covered by an earth mound (Box 1847, 50). A thin lens of light-grey sandy clay was visible within the makeup of the mound.

Barrow E, the third mound (Fig 3e) excavated, lay 16 paces (approximately 14.6m) south west of the second. In this case, the mound covered a cairn of largely flat stones, perhaps the local slate or mudstone. A lens of dark orange soil was present in the uppermost layer of the soil covering the stone cairn, and a lens of the light-grey sandy clay was also present within the makeup of the mound. Again, excavation revealed an area of *in situ* burning to the west of the centre; in this case it was described as 'thickly strewn with fragments of charcoal some of which were large, and were evidently derived from the oak' (Box 1847, 53). A small flint found just above this area of burning was the only find recovered. The flint is a somewhat oblong thumbnail scraper, 26mm × 23mm, made on a flake with steep retouch around its edges to create a working edge. Little obvious use-damage is present on the blade edge or ventral surface, and it shows no trace of resharpening (Fig 4d).

No further excavations appear to have been carried out at Mountain Barrows in subsequent decades, although, as noted above, agricultural activities significantly reduced many of the visible barrows. The site is a Scheduled Monument (National Heritage List for England (NHLE) 1004465)).

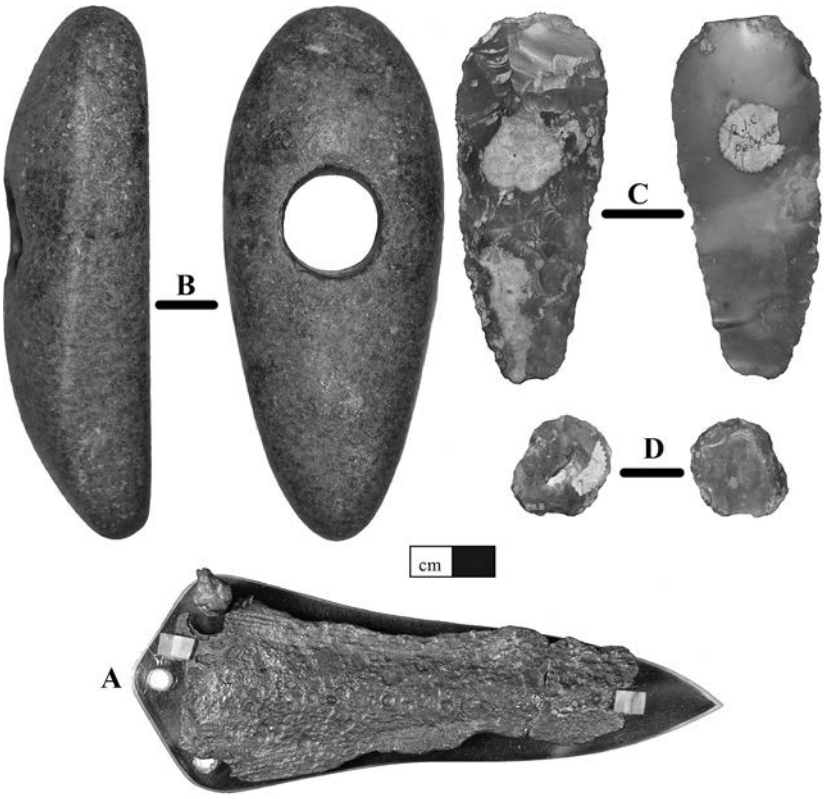


*Fig 4 Artefacts recovered during antiquarian excavations at Mountain Barrows. A: Copper-alloy dagger blade of Camerton-Snowshill type. B: Ground stone shafthole axe. C: Plano-convex flint knife. D: Flint thumbnail scraper. (Reproduced by kind permission of the Royal Cornwall Museum, Royal Institution of Cornwall.)*

## Geophysical survey at Mountain Barrows

In 2012, the authors, in cooperation with Tamarside Archaeological Survey, carried out a magnetic survey at Mountain Barrows (Frieman and Lewis 2013). The goals of this investigation were to assess the site's preservation and to determine the location and layout of features of archaeological interest within the Scheduled area. About 75 per cent of the Scheduled area was surveyed, with the investigation focused over the assumed position of the barrows based on historic Ordnance Survey maps and HER records (Fig 5).

While the entire Scheduled area was not surveyed, the results are clearly satisfactory for assessing the state and type of remains in the field. In the following discussion of the geophysical results, all bolded numbers in the text refer to features shown in Figure 6.

Of the ten barrows recorded in the late nineteenth century, eight (**1**–**8**) are clearly visible as circular features on the geophysical survey. A small negative anomaly (**9**) within one of these (**8**) might be the remains of a pit or possibly the consequence of previous disturbance at this site. The southernmost barrow surveyed (**6**) appears to show two concentric ditches (Fig 5); however, this is not our interpretation, as previous experience of magnetic surveys in the region suggests that the apparent concentric circular anomalies are more likely to be a result of the fill of the ditch giving an ambiguous magnetic signal (Frieman and Lewis 2013, 13; also, for example, Lewis and Frieman 2015). That said, a semi-circular linear feature (**10**) near the westernmost barrow surveyed (**2**) might be evidence of a further less well-preserved ditch associated with this barrow. Until now, comparatively few Cornish barrows investigated by archaeologists have been ditched (Nowakowski 2007), so the number of ditched barrows at this site is striking. Two further weakly negative circular anomalies (**11** and **12**) might be ploughed-out barrows, but they may equally be other contemporary or more recent structures. One of these (**11**) takes the form of a somewhat


*Fig 5 Results of the magnetic survey of Mountain Barrows superimposed on the map of the site generated from HER mapping data.*

irregular, sub-rectangular ditch. It is smaller and much less evenly circular than the other barrows noted in this group, and it is possible this might be a feature unrelated to the barrow group; however, on balance it is interpreted here as a barrow. The other (**12**) might be interpreted as a semi-circular ditched feature enclosing a sub-circular pit (**13**). In this case, the ditch (**12**) is placed close to where the field begins to slope into the stream valley which bounds it on the northwest, so this ditch might be interpreted as a barrier to keep the contents of the pit from sliding downhill.

Also, visible on the geophysics are a number of linear features (**14**–**25**). Several of these (**15**–**17**) align with currently visible or historic field boundaries or respect the position of specific barrows (**18** and **19**), suggesting that they post-date the construction of the barrows and probably date to the medieval or post-medieval eras. These are possibly traces of removed field boundaries or pathways; for example, we have speculated that **15–17** seem to lead to a now-disused quarry to the east of the barrow group (L Dodd, pers comm). That said, as seen in other parts of the UK (Harrison 2002), these later boundaries may well have been directly superimposed on prehistoric ones, and two of the linear features (**14** and **25**) seem to intersect with specific barrows, clearly engaging with the presumably older monuments.

It is unclear which of the barrows shown by the geophysical survey are those whose excavation was recorded by Box (1847) and Couch (1846). Barrow B, the southernmost barrow, which was opened in 1834, might be present as the small barrow nearest

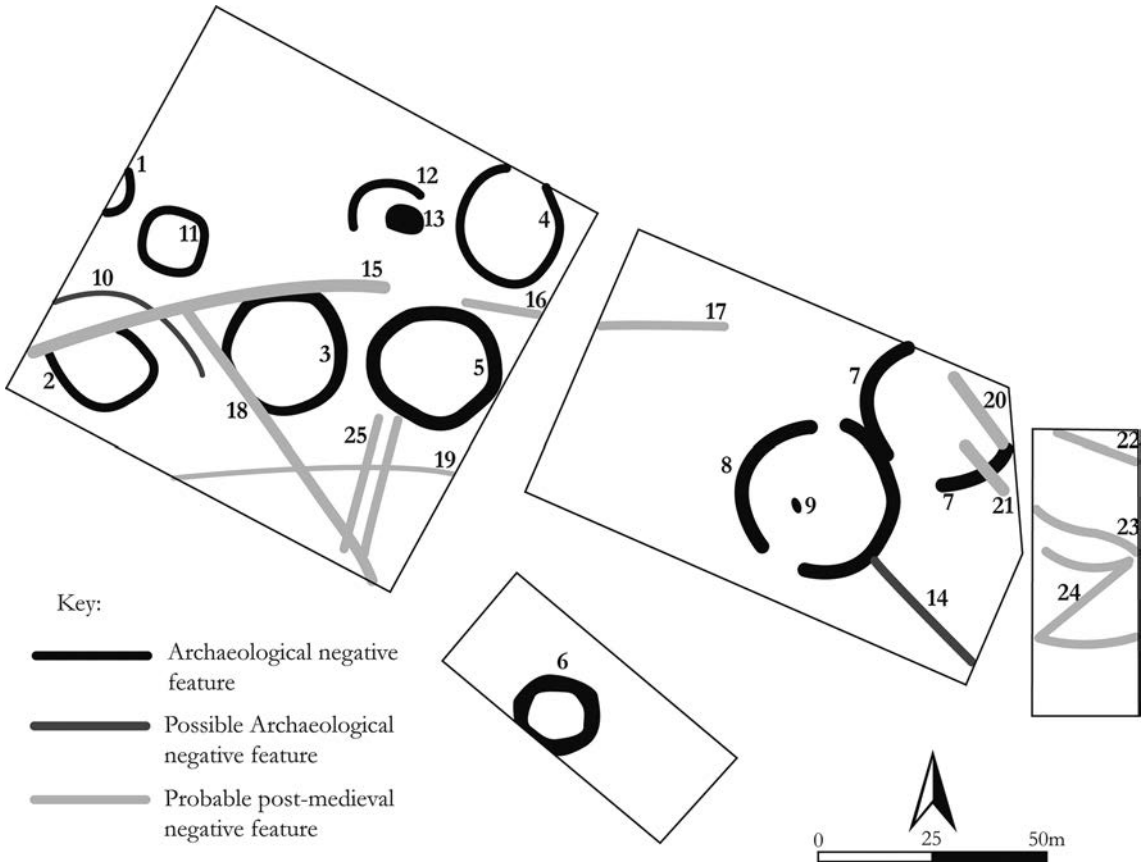


*Fig 6 Interpretation of the magnetic survey of Mountain barrows. All identifiable subsurface features are numbered and discussed in the text.*

the southern hedge (Fig 6, no **6**; MCO 45399). The largest barrow in the field is the southernmost of the pair of large barrows near the eastern hedge (MCO 45407 and 45408, respectively). The magnetic survey of this barrow shows clear areas of disruption at its north and south edges which could be the result of the antiquarian investigation in the 1840s, although this excavation was described as undertaken with an east–west rather than a north–south trench. Alternatively, this could be the result of *ad hoc* removal of stone or earth.

If this barrow is Barrow C, then Barrow D would be located about 50m to its west. No anomaly indicating a barrow was found in this location, although the HER records one in this location (MCO 45406) based on 1880s Ordnance Survey data. It is possible that, at some point after the Ordnance Survey mapping of the area, this barrow was thoroughly levelled by ploughing such that no trace remains. Alternatively, it may remain as a subsurface feature, but was not recorded in the geophysics, for example, due to its lacking a ditch, cairn or other features which would be identified in a magnetic survey.

Barrow E is expected to be located about 12m south west of Barrow D; that is, the point where MCO 45406 is mapped. Again, the HER records a barrow in this location based on the 1880s OS survey (MCO 45400). This barrow too was either fully destroyed, unable to be identified using magnetic survey or slightly outside the area surveyed. As a number of the barrows identified through geophysics were not centred exactly on the points where the HER records them and, as there were no available air photographs of this site when the HER was consulted (June 2012), it is possible

that barrows which remain present as sub-surface features are in slightly different positions to where one would expect based on the nineteenth-century maps.

## The Pelynt area and beyond

Although, up to this point, we have discussed the barrow group at Mountain Barrows in isolation, it was in fact constructed in what was becoming a densely monumentalised landscape (Jones *et al* 2015). MacLauchlan (1847) described an urned cremation apparently found within a cist in a nearby lane during roadworks. In 1857, a stone cist which yielded a complete urn was reported to have been uncovered in a field about 500 yards (460m) east of the Mountain Barrows (Dunkin 1875). Of greatest relevance, however, are two further barrow clusters found near Mountain Barrows, in the vicinity of Pelynt (Fig 7). At least four somewhat dispersed barrows stand west of Mountain Barrows on Hendra and Cartole farms (MCO 2396, 2796–2800) and several more are known from Ashen Cross (sometimes Trenderway or Burrow Park) (MCO 2049–55, 39311) to the south east of the Mountain Barrows (both in Pelynt parish). The barrows at Ashen Cross were not recorded during the 1880s Ordnance Survey mapping of the area, but MacLauchlan (1847, 32) noted four barrows visible on the surface of this field and Scantlebury (1957) believed aerial photographs showed 11. A surface assessment of barrow numbers at this site is currently ambiguous. Recent geophysical survey confirms the presence of several barrows, but the results are still being analysed (Lewis and Frieman, forthcoming).

Clearly, the landscape south of what is now Pelynt village was of considerable significance to the local Bronze Age population, who returned again and again to build these monumental structures (further evidence for this suggestion can be found in Jones *et al* 2015, 165–6). Moreover, based on the evidence discussed above for multiple construction episodes at Mountain Barrows, as well as evidence from elsewhere in Britain (Frieman and Lewis, forthcoming), it is unlikely that the mounds arose through a single phase of construction. For example, evidence from barrow excavations around south-west Britain indicates that deposits of colourful clays were regularly placed on the upper surfaces of barrow mounds and then left exposed and allowed to weather, perhaps for long periods (*cf* Bradley and Fraser 2010; Jones and Quinnell 2012; Miles 1975; Owoc 2002; 2006; 2007). At Mountain Barrows, the same clay sources seem to have been used to cover several different barrows, implying that memory was conserved between the different monuments, even if they were not built together or exposed simultaneously (*cf* Fowler 2013, 200–1). The barrows' placement also suggests that the people who built them had a shared understanding of the local topography. All three barrow groups are located just above 100m OD and appear to have been constructed preferentially in proximity to small streams, a pattern of association found across southern England (Field 1998).

Many studies of prehistoric landscapes, in Cornwall and elsewhere in the British Isles and Europe, stress the intervisibility of monuments to demonstrate that they were linked together, placed with regard to regular cosmological principles or part of a coherent semi-planned or centrally controlled landscape (Bender and Aitken 1998; Bender *et al* 1997; 2008; Bourgeois 2013; Eve and Crema 2014; Fisher 1997; Hamilton *et al* 1999; Llobera 2007; Tilley 1994). However, despite their similar placement and shared soil sources, the three groups of barrows south of Pelynt are not intervisible. They all lie on the rolling slopes of low hills, which serve effectively to shield them from the wider landscape. Nevertheless, we do believe that there is a spatial connection between them, but one that relies on an embodied knowledge of the local landscape rather than a commanding view of it. In other words, people who knew the landscape around what is now Pelynt, who regularly traversed it and who, perhaps, had participated in some phase of barrow construction at one or more of the three local barrow cemeteries, would have recognised the links between these three barrow groups.

In fact, the three groups form a somewhat dispersed linear alignment running south east – north west along a low ridgeline. Moreover, this alignment flanks the route of the old road between Looe and Fowey, which appears to wind between the barrow cemeteries. Ridgeways were frequent locations of routeways in pre-modern Cornwall and elsewhere in Britain, as they facilitated movement by avoiding low boggy ground and, presumably, had more open vistas to aid in wayfinding (Lewis 2016). We suggest, that these three groups of barrows might mark the line of a routeway which, like the modern road, followed

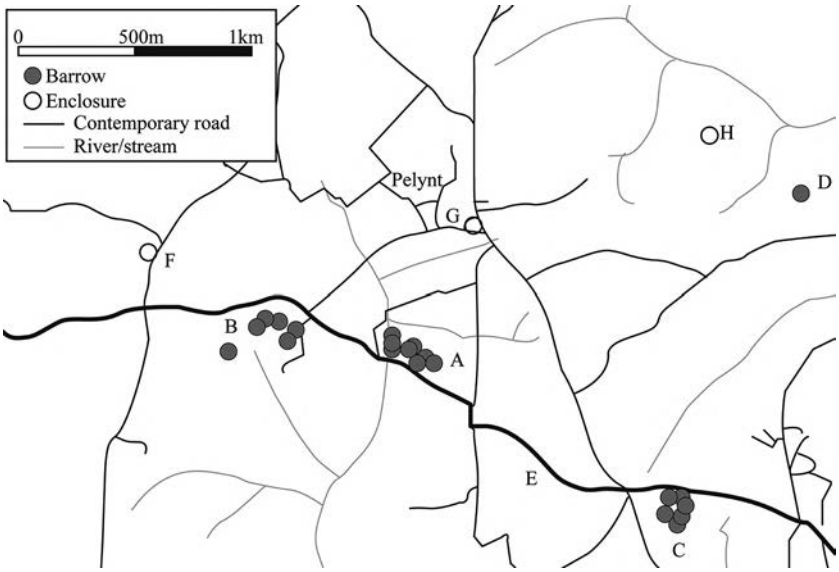


*Fig 7 Map of the three Pelynt barrow groups along the old Looe-Fowey road, with other nearby sites. Potential barrow road is bolded for emphasis. A: Mountain Barrows. B: Hendra / Cartole barrow group. C: Location of Ashen Cross barrow group. D: Little Larnick Barrow. E: Route of the Looe-Fowey road. F: Bake Rings enclosure. G: Pelynt village church, a possible round. H: Hall Rings enclosure.*

this ridge. This hypothesis is supported by the fact that the Hendra / Cartole barrows and the Mountain Barrows lie on either side of a well-established fording place, a situation which sees a potential parallel further north in St Neot, where a linear group of five barrows crosses the St Neot River (Jones 2005, 81–9). One potential piece of evidence for an existing routeway along this path is the placement and orientation of the nearby Iron Age – Romano-British enclosure known as Bake Rings (Pelynt). This bank-and-ditch enclosed settlement sits about 3.5km north west of Hendra / Cartole and appears to have its monumentalised south-eastern entrance aligned on a path between the three barrow groups (Lewis and Frieman 2014), suggesting that this may have been an established direction of approach – that is, a well-known and long-standing routeway – even prior to the construction of the entrance area. Furthermore, the Looe – Fowey road truncates no hedges along its route and this suggests that the routeway probably pre-dates these upstanding field boundaries. Research over recent decades has suggested that, in many parts of Europe, medieval roads which follow the path of barrow or megalithic alignments may, in fact, be prehistoric in date (Bakker 1976; Johansen *et al* 2004; Wheatley *et al* 2010). So, we might suggest that the present Looe – Fowey road is not modern or medieval, but follows the route of a much older path through the landscape which either developed as a route between the barrow groups, perhaps at some time in the late second or first millennium BC prior to the construction of a settlement at Bake Rings, or, alternatively, one which was regularly travelled before the second millennium BC and alongside which the barrows were constructed. Since the three clusters of barrows are not intervisible, the latter seems more likely.

## Conclusions

This paper has combined recent fieldwork with careful analysis and interpretation of antiquarian records. This has allowed us to do two things: first, to present an interpretation of the construction and anatomy of a locally important barrow cemetery, Mountain Barrows; second, to present an interpretation of how Mountain Barrows and nearby barrow cemeteries operated within the local area. We suggest the location of Mountain Barrows and the Hendra and Ashen Cross barrow cemeteries can be fruitfully understood as being directly associated with routeways and overland paths within the prehistoric landscape. As noted above similar interpretations have been presented to explain the location of barrows elsewhere in Europe.

The number and frequency of recorded prehistoric monuments around Pelynt testify to the importance of this landscape to the people inhabiting it during prehistory. While we still

have much to learn about south-eastern Cornwall and the archaeological sites within it, both known and still undiscovered, the recent work undertaken by SEKAS demonstrates that the antiquarian literature, when combined with data from modern archaeological research, has the potential to give us a detailed insight into the prehistoric landscape.

## Acknowledgements

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The corresponding author is Dr Catherine J Frieman.

The authors dedicate this paper to the memory of the late Peter Nicholas.

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*Cornish Archaeology* 55, 2016, 163–179

# Excavation of a Porthcressa-type cist grave at Churchtown Farm, St Martin's, Isles of Scilly, 2013

CHARLES JOHNS AND SEAN R TAYLOR

with contributions from SARNIA BUTCHER†, DANA CHALLINOR, KATIE HEAD, JO HIGGINS, JULIE JONES, ANNA LAWSON-JONES, HENRIETTA QUINNELL and CARL THORPE

*Investigation of a void in a field at Churchtown Farm, St Martin's, Isles of Scilly, revealed a Porthcressa-type cist grave which was dated to the later first century AD by a T-shaped brooch. The only surviving human remains were a few tooth crowns belonging to a child aged six to eight years at death. The positions of the tooth crowns and the brooch suggest that the child was buried with its head at the south-west end of the cist, placed on its left side and facing north-west. Geophysical survey results indicate that there may have been at least one more cist burial in the vicinity.*

Churchtown Farm, on the off-island of St Martin's in the Isles of Scilly, is a working flower farm and part of Natural England's Higher Level Stewardship scheme. In April 2013, a void opened up in one of the farm's bulb fields and closer inspection revealed that this was probably the remains of an Iron Age or Romano-British cist burial.

While the feature remained open its contents were exposed to the elements, vulnerable to contamination and liable to eventually deteriorate and disintegrate. In addition, available cropping land on St Martin's is limited, making this a vital field within the farm business. As such it was important to record and consolidate the remains of the cist as soon as possible, recording information vulnerable to immediate loss during this process. A budget for emergency excavation was secured by Natural England and in November 2013 Historic Environment Projects (now Cornwall Archaeological Unit), Cornwall Council, was commissioned by Ben and Zoe Julian of Churchtown Farm to undertake the archaeological investigations.

The aims of the project were: to establish the surface extent of the cist; record and assess the construction and contents of the cist by a careful excavation; reinstate the site by backfilling the interior of the cist, resetting any obviously displaced capstones, and re-covering it with topsoil, in order to ensure the future conservation of the remaining cist structure and contents; to ascertain through geophysical survey whether the cist is part of a cemetery; and, if so, to establish the number and extent of other burials.

## Location and historic landscape setting

Churchtown Farm is located at the heart of St Martin's (Fig 1). The cist is located in one of the farm's nineteenth-century bulb fields at NGR SV 93006 15729 (Fig 2). The field slopes gently from the north-east boundary and the south-western half is almost flat. The surface of the field is fairly even

and it is likely that any unevenness would have been smoothed out during ploughing.

The Historic Landscape Assessment for Scilly defined the farmland within which the cist lies as late nineteenth- and early twentieth-century bulb strips (Land Use Consultants 1996). These are small narrow enclosures designed for the cultivation of flowers (chiefly narcissus). The vast majority of the strips have been created by subdivision of Anciently Enclosed Land, of medieval origin, although the distinctive pattern of parallel strips formed by the bulb fields tends to obscure the earlier field pattern.

The underlying geology of St Martin's is granite, with weathered periglacial head, known locally as *ram*, covering the lower hill slopes and supporting soils suitable for cultivation and pasture (Geological Survey of Great Britain, 1975, Isles of Scilly, Sheets 357 and 358).

# The investigations

## Excavation

The excavation took place over eight days in November 2013. A trench measuring 2.6m by 2m was set out centred on the hole in the ground and the overburden excavated using hand tools to the horizon where the capstones of the cist were revealed (Figs 3 and 4). The capstones were recorded and removed. The fills of the cist grave were excavated in quadrants so that longitudinal and transverse sections could be recorded (Fig 6).

This section provides a summary description of the excavated cist and is followed by detailed specialist reports. Throughout the report, the context numbers for features and cuts are shown in square brackets, for instance [5], those for deposits, layers and fills in round brackets, (2), and structures without brackets, 3. Calibrated radiocarbon dates are cited at 95 per cent confidence level unless otherwise stated.

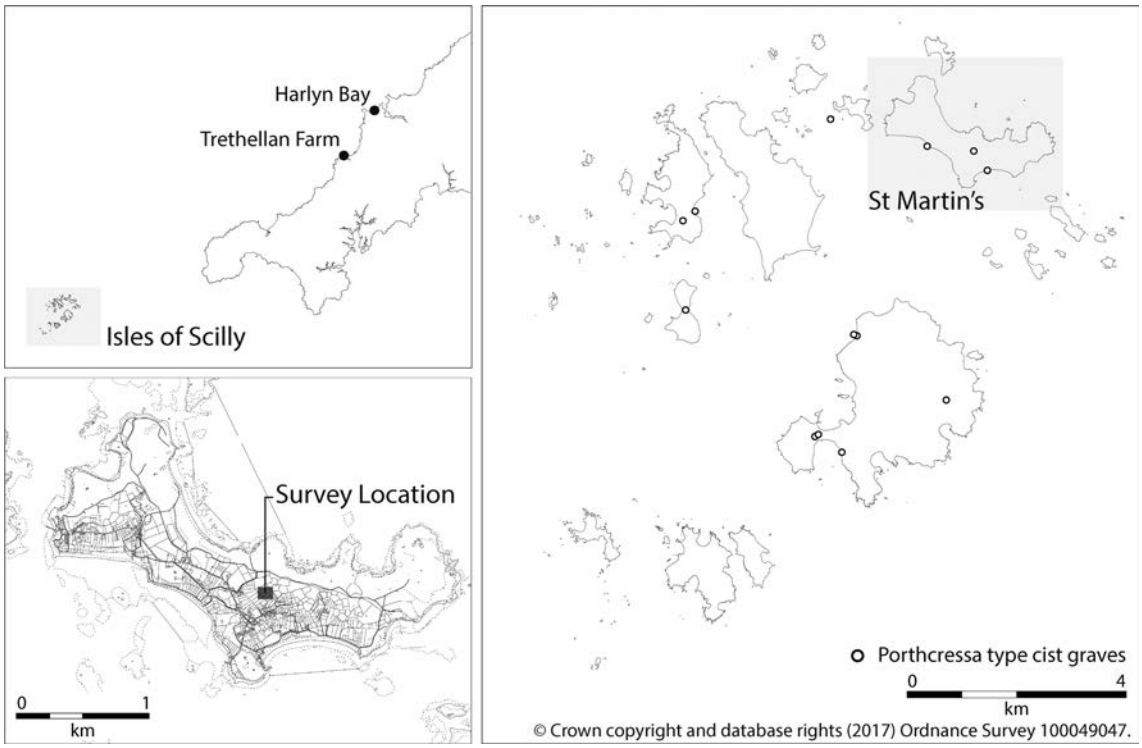


*Fig 1 Location maps.*

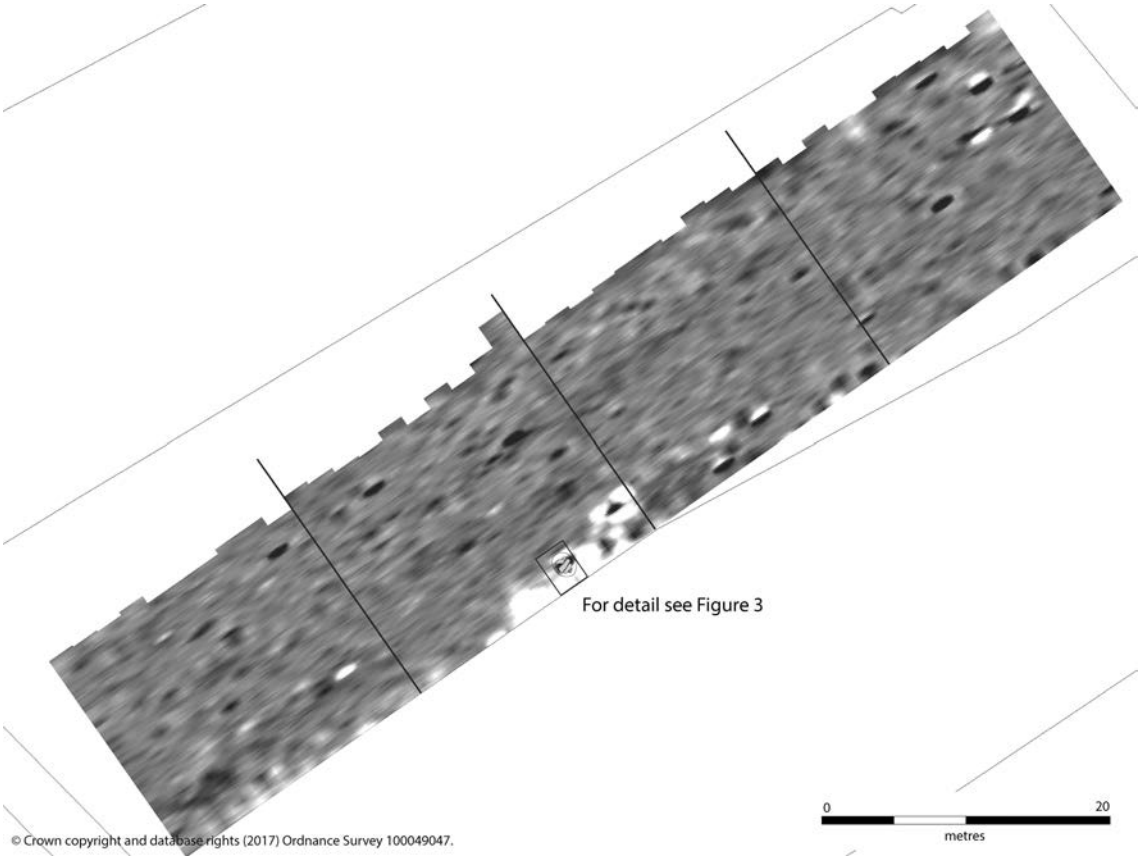


*Fig 2 The cist field showing the trench location and the geophysical survey results which indicate that there may be a second cist burial about 5m north east of the excavated cist. (Survey: Tamarside Archaeological Survey.)*

*The cist*

The cist was built in a large oval pit [13], aligned on a north-east to south-west axis and measuring 1.69m long by 1.29m wide, which was cut through a buried land surface (2) – an horizon of dark yellowish-brown sandy clay containing a Late Iron Age / Romano-British potsherd, flints and water-worn pebbles – and into the natural granitic clay subsoil known locally as *ram* (11). Two shallow hollows in the base of the pit had been filled with yellowish-brown sandy clay, (9), possibly to level the base of the pit where stones had been removed.

The cist walls, 5, were built within the construction pit and comprised granite stones, edge-laid, and up to four courses high (Fig 5). The cist was oval in plan (Fig 7) and enclosed a space 0.94m long by 0.69m wide by 0.4m deep. The flattened north-east end was formed by a single upright flat slab. Adhering to sections of the interior wall were patches of light brownish-white clay, (10), which had been used as 'luting' (*cf* Ashbee 1954, 9) to seal the gaps between the stones. The cist walling was left *in situ* and not disturbed during the excavation.

After the body had been placed within the cist the three large granite capstones were laid on the cist walls, covering the burial chamber (Figs 3 and 4). Stone 3A at the north-eastern end was distinct from the others as it was smooth and oval. Stone 3B was the longest and lay across the middle of the cist. Stone 3C lay at the south-western end of the cist. A fourth smaller stone, 3D, lay at the western corner. It was unclear whether this was a broken section of 3C; if so the break was very weathered

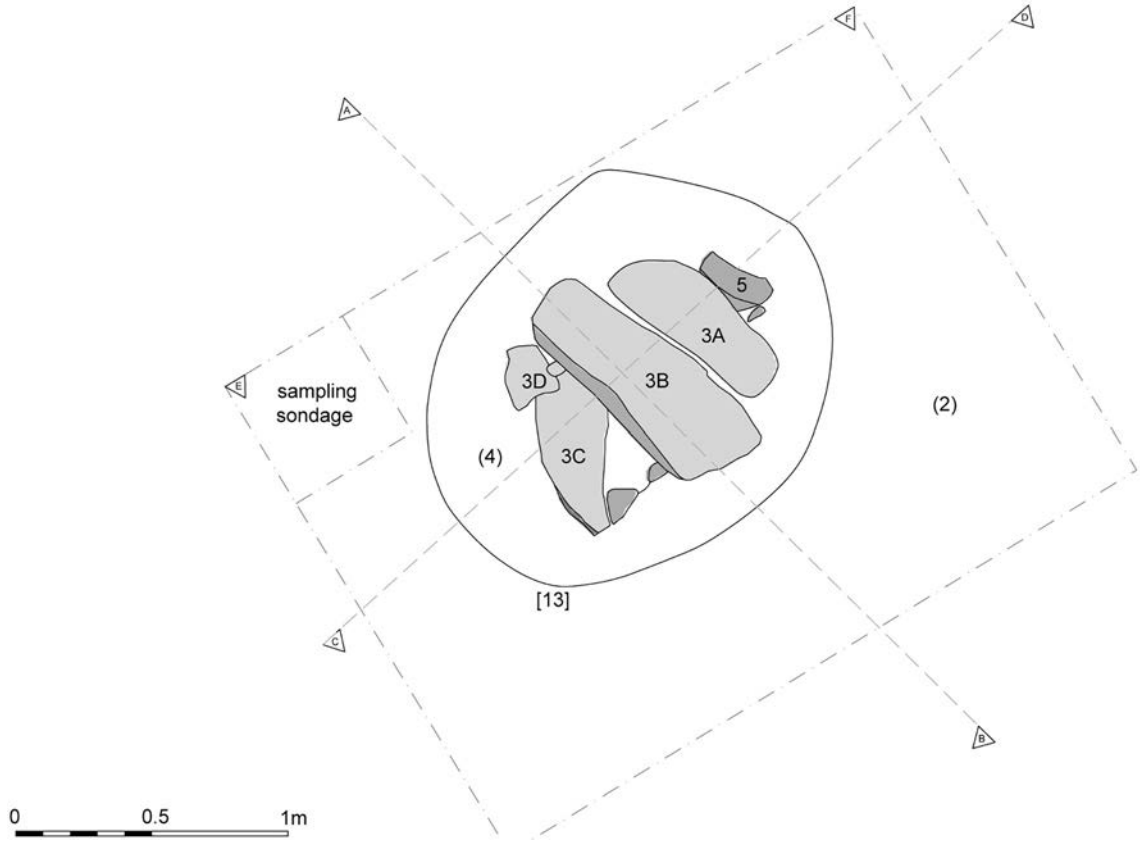


*Fig 3 Pre-excavation plan of the cist with capstones in situ.*

indicating that it happened a long time before the collapse that led to the discovery of the cist. It is likely that the gaps between the capstones were originally sealed with the clay luting, though no traces of this survived on the stones.

The space between the outside of wall 5 and the edge of construction cut [13] was backfilled with yellowish-brown sandy clay, (4). This material is likely to be a mix of old land surface (2) and natural *ram* (11) that had been removed in the course of digging the pit. This deposit was not excavated.

### *The burial*

The base of the cist was covered with a deposit of greyish-brown clay, (8), up to 0.1m deep, mainly derived from clay luting washed in from the walls and capstones. Because of the acidic soil conditions no perceptible human remains survived, and the only find was a copper-alloy brooch in the west quadrant (Figs 7 and 8; Butcher, below). A few areas of darker mottling hinted at a body stain or organic remnants, but because of waterlogging it was not possible to clean the material well enough to highlight these areas. This layer was 100 per cent sampled, with the material from the north, south, west and east quadrants being bagged separately. A number of human teeth fragments were recovered at a later date when the material from the western quadrant was sieved (Higgins, below). The proximity of the teeth and brooch suggests that the body was placed with the head to the south west and resting on its left side.

### *Soil overburden*

Within the cist, overlying primary deposit (8) were two intrusive modern layers which had

*Fig 4 Pre-excavation photograph of the cist, viewed from the north west. (Photograph: Cornwall Archaeological Unit.)*

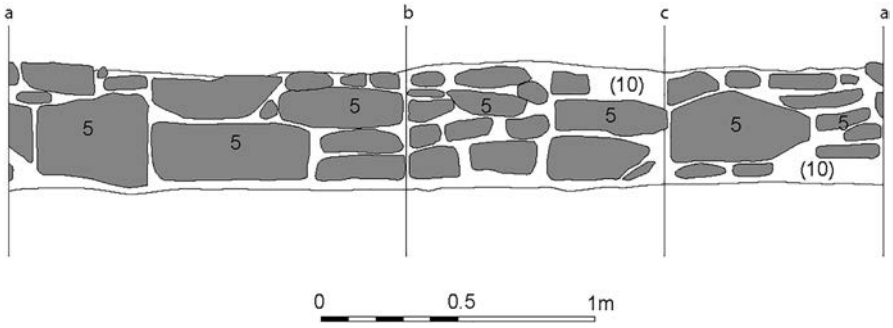


*Fig 5 Elevations of the cist walls. The positions of a, b and c are shown on Figure 7.*

accumulated subsequent to the collapse of the capstones: layer (7), a greyish-brown sandy clay 0.14m deep, containing glazed pottery and two pebbles and, above this, layer (6), a much looser dark greyish-brown sandy clay 0.14m deep, containing glazed pottery, flint, and animal bone.

Overlying the capstones was a buried soil horizon, (12), a greyish-brown silty clay, 0.15m deep, containing two sherds of medieval pottery. Above this was the modern ploughsoil, (1), very dark greyish-brown friable sandy clay up to 0.3m thick containing post-medieval pottery and water-worn pebbles.

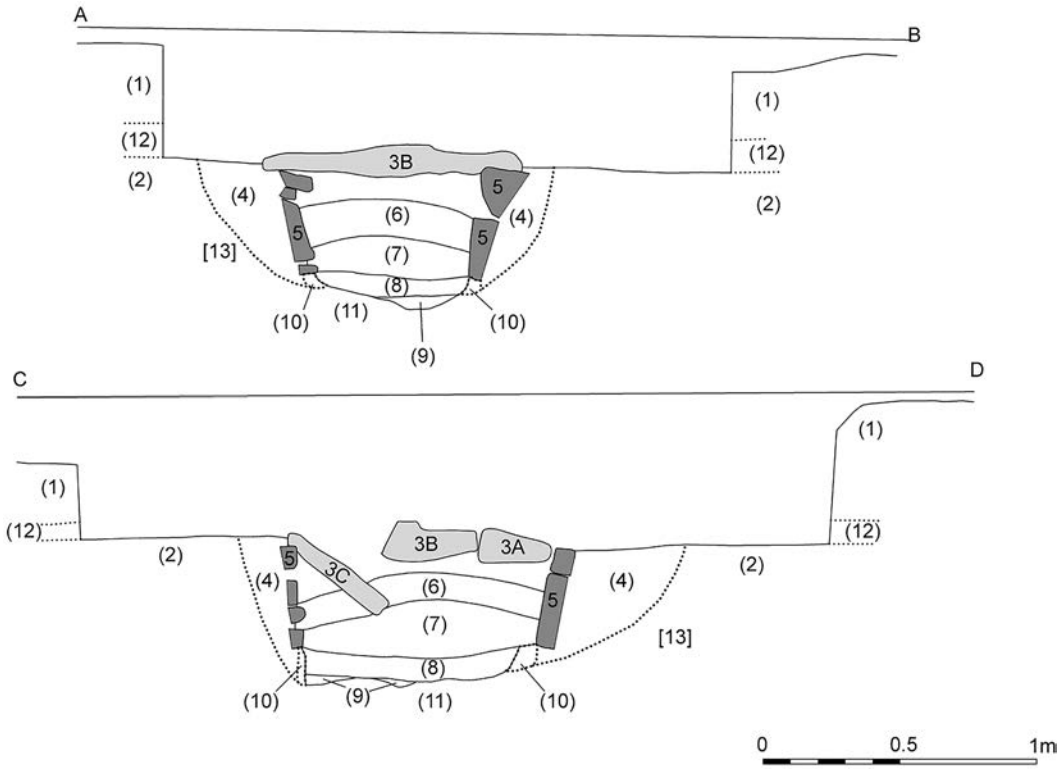


*Fig 6 Sections through the cist.*

*Reinstatement*

Coins minted in 2013 were placed as a date marker on the floor of the cist by CAU and a floral tribute was laid by Ben Julian. The capstones, including the one dislodged, were placed on edge inside the cist to ensure that they remain with the rest of the structure. The cist was then backfilled with redeposited *ram* obtained from a nearby quarry and the trench backfilled with the excavated spoil.

**Geophysical survey**

Because the field had a valuable winter forage crop of stubble turnips, topographical and geophysical surveys were carried out by Tamarside Archaeological Survey in May 2014, after the crop had been grazed and the field had been seeded with grass.

Geophysical (magnetometer) survey data was collected in 20m grid squares in the field and in the adjacent fields to the north west and south east (Fig 2). A clear black / white anomaly just over 5m north east of the excavated cist showed a strong magnetic response and may indicate a second cist but equally could represent a cremation, hearth or fire (Les Dodd, pers comm). There were no geophysical anomalies in the remainder of the field or in the adjacent fields

## Specialist reports

**Human bone**
*Joanna Higgins*

A number of human tooth fragments were recovered during sieving of the bulk soil sample from the west quadrant of the cist grave (context (8), sample <5>). All tooth fragments were examined macroscopically, using a hand lens (×10) where necessary. All analyses, where possible,

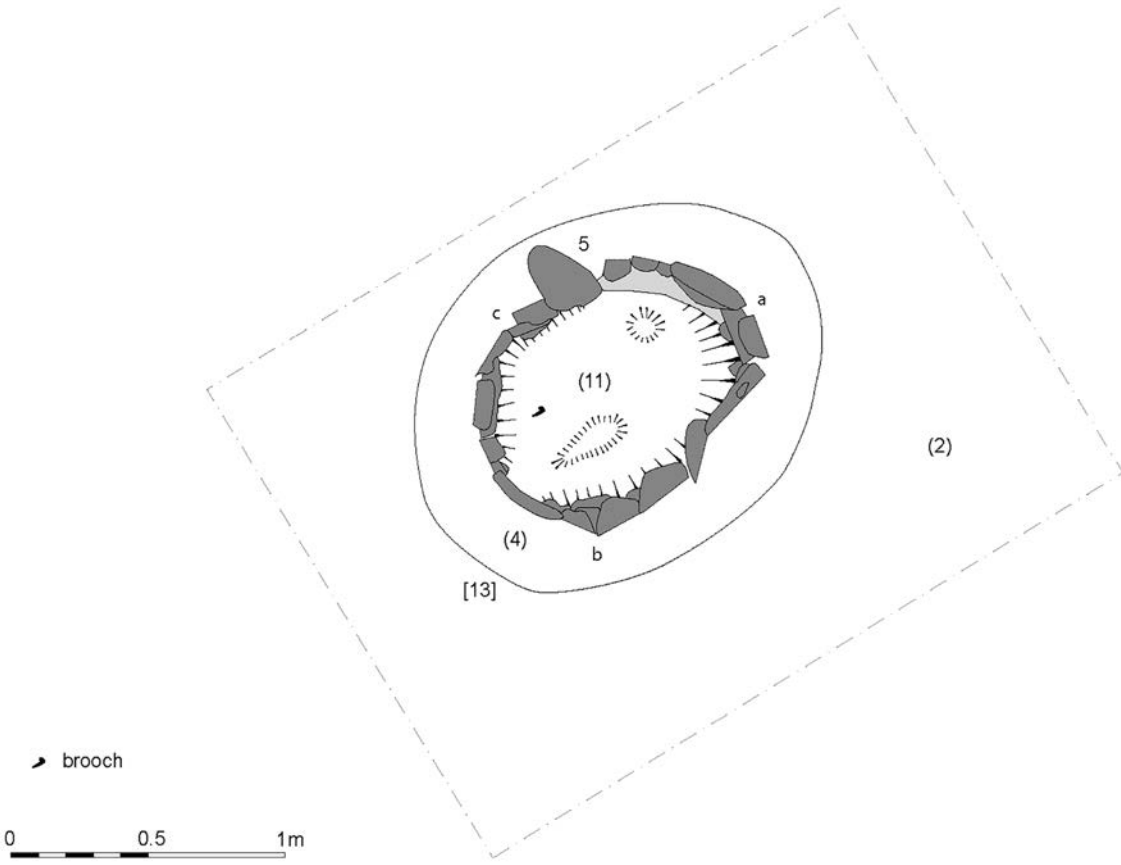


*Fig 7 Post-excavation plan of the cist showing the position of the brooch.*

were undertaken in accordance with established standards and guidance (Brickley and McKinley 2004; English Heritage 2002).

The human remains comprised a number of whole and partial enamel tooth crowns, and more than 20 unidentifiable enamel fragments. All of the identifiable tooth crowns appeared fully formed. However, no traces of root development were present. Wear facets on several of the crowns indicated they were erupted teeth, rather than crowns still in the process of formation. Therefore, tooth roots or any other traces of dentine were simply not preserved. The enamel of all the teeth and tooth fragments was light brown in colour, rather than the normal cream or white. This uniform discolouration is most likely taphonomic, the result of staining by, or chemical reaction with, minerals in the surrounding soil.

Identifiable teeth were a mixture of deciduous and permanent teeth, and the remaining unidentifiable fragments of enamel probable represent much of the missing deciduous dentition. Isolated, identifiable teeth are listed and described in Table 1. Traces of calculus, an accumulation of mineralised plaque, were noted on some teeth. However, the dentition was too fragmentary and poorly preserved to enable systematic recording.

A small fragment of bone, identified as possibly human, measuring a maximum of 8mm, and weighing less than 1g was recovered during sieving of sample <7> from the east quadrant of context (8). However a radiocarbon determination of cal AD 1729–1789 (SUERC-50252; 191 ±30 BP) indicated that it was a much later intrusion into the deposit containing the burial, and most likely animal bone (see below, Radiocarbon dating).

**Table 1** Inventory of tooth crowns, context (8)

| *Tooth* | *Side* | *Wear* | *Pathology* | *Other observations* | *Erupted?* | **Age at which crown fully formed* | **Normal age of eruption* |
|---|---|---|---|---|---|---|---|
| **DECIDUOUS** | | | | | | | |
| ? canine (c) | ? | unobservable | - | worn fragments only | yes | 9 months | 16–24 (Av. 18) months |
| maxillary 1st molar ($dm^1$) | right | polished appearance, wear facet on buccal cusp affecting enamel only – no dentine exposure; small interproximal wear facet near distal margin | thin layer of calculus on distal and lingual side of crown | crown complete, no root observable | yes | 5.5–6 months | 9–21 (Av. 14) months |
| maxillary 2nd molar ($dm^2$) | right | wear facet on mesio-buccal cusp affecting enamel only – no dentine exposure; mesial interproximal wear facet. | thin layer of calculus on mesial and lingual aspect | crown complete, no root observable | yes | 10–11 months | 20–36 (Av. 24) months |
| mandibular 2nd molar ($dm_2$) | right | wear facet on disto-buccal cusp exposing 'dot' of dentine | none | crown complete, no root observable, fragmented | yes | 10–11 months | 20–36 (Av. 22) months |
| mandibular 2nd molar ($dm_2$) | left | unobservable | unobservable | poorly preserved fragment, eroded post-deposition crown complete, no root observable | yes | 10–11 months | 20–36 (Av. 22) months |
| mandibular 1st molar ($dm_1$) | ? | none observed (fragment only) | none observed (fragment only) | crown complete, no root observable | yes | 5.5–6 months | 9–21 (Av. 12) months |
| **PERMANENT** | | | | | | | |
| maxillary 1st molar ($M^1$) | right | small wear facet on mesio-lingual cusp | none observed | crown complete, no root observable | yes | 2.5–3 years | 6–7 years |
| ? 2nd maxillary molar ($M^2$) | ? | none observed (fragment only) | none observed (fragment only) | crown complete, no root observable | not known | 6–7 years | 11–13 years |

* Values for tooth formation and eruption derived from Schwartz (1995, 188–193)

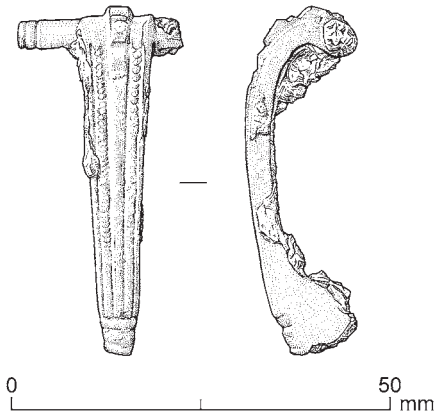


*Fig 8 The brooch from the Churchtown Farm cist. (Drawing: Jane Read.)*

*Conclusion*

The tooth enamel crowns and enamel fragments recovered from the cist represent part of the dentition of a single individual and were the only remains to survive due to acidic soil conditions, with the exception of two very small, unidentifiable fragments of bone. Due to the lack of preservation of either the jaw or of the root dentine of the remaining teeth it was not possible to assess the age at death of the individual from established methods using stages of root development and tooth eruption. However, moderate wear of the deciduous teeth indicated that they had erupted a significant amount of time prior to death. In addition, slight wear of the permanent 1st molar indicated that this tooth had probably erupted a relatively short time before death. Based on the degree of wear observed on the permanent 1st molar, an estimation of age at death was given as six to eight years (minimum); however, this was based on evidence from a small number of isolated teeth and assumed only a short amount of time had elapsed since the eruption of the tooth resulting in only slight wear using the values for tooth formation and eruption given in Schwarz (1995). Traces of calculus were noted on some teeth. No other demographic or pathological data could be ascertained.

**The brooch**
*Sarnia Butcher†*

The copper-alloy brooch from the Churchtown Farm cist probably belongs to the large group of T-shaped brooches produced in south-west Britain in the later first century AD (Fig 8).

The bow has lines of longitudinal decoration, narrowing from its crest over the crossbar down to a small cross-moulding at the foot. The crest is formed by raised rectangular mouldings on the central rib, which is plain below this. It is flanked by two narrow beaded ribs running down from the crossbar to the foot moulding.

The foot is missing but it was hinged behind the crest in the narrow round crossbar; one end of this is broken but the other shows two cross-mouldings.

The plain catchplate is broken but clearly emerges from one side of the lower bow; it appears to be solid and undecorated.

Several quite close parallels have been found in south-west Britain: Exeter (Holbrook and Bidwell 1991, figs 100 and 101 nos 9 and 10); Camerton, Avon (Wedlake 1958, fig 53 no 45); Charterhouse, Somerset, fragments of two brooches seen in Bristol City Museum; Caerleon, Gwent (Wheeler 1928, fig 13 no 6); Newquay, Cornwall, from Atlantic Road (Reynolds, forthcoming).

One from another part of Britain is Aldborough, North Yorkshire (Bishop 1996, fig 30 no 307). Most significantly one was found in a cist grave in Parson's Field, St Mary's (Ashbee 1954, fig 6 no 98); from the drawing this appears to have no beading or other decoration on the ribs.

None of these brooches comes from a clearly dated context but they have characteristics common in south-western brooches of the second half of the first century AD. All of the general group of south-western brooches which have been analysed were made of leaded bronze.

**Prehistoric / Romano-British pottery**
*Henrietta Quinnell*

*SF1 context (2), buried soil*. A single moderately abraded sherd weighing 7g, oxidised, with common inclusions <2mm of granite-derived stream sand. The sherd comes from the footring of a bowl and was originally burnished. The footring comes from a Cordoned ware bowl of Types F/G (Threipland 1956) to which a date range is currently given of a little before 100 cal BC to the late first or early second centuries AD (Quinnell 2011). The fabric with stream sand suggests a mainland rather than island manufacture. Cordoned ware forms in fabrics other than gabbroic are rare both on Scilly and in mainland Cornwall.

## Medieval and post-medieval pottery and other finds

*Carl Thorpe*

The assemblage comprised 30 artefacts with a date range from medieval to modern. The sherds were generally less than 30mm in size with abraded edges and worn surfaces, which made some of the identifications tentative.

In summary, two medieval sherds were found in buried soil (12) and the remainder of the finds, from the topsoil and the recent infill of the cist, were post-medieval and modern.

*Context (1), topsoil*. A single sherd of Cornish post-medieval Glazed Red Earthenware, later seventeenth or eighteenth century in date; six sherds of North Devon post-medieval Glazed Red Earthenware, later seventeenth or eighteenth century; five sherds of North Devon post-medieval Gravel-tempered Glazed Red Earthenware (Barnstaple Ware), one rimsherd came from a large bowl, while a handle sherd most likely came from a jug, later seventeenth or eighteenth century; a single sherd of modern china, four sherds of yellow glazed china, one fragment of furnace lining, one shard of bottle glass, two brick fragments and seven fragments of animal bone.

*Context (6), recent fill of cist*. Two sherds of North Devon post-medieval Glazed Red Earthenware, eighteenth or nineteenth century in date.

*Context (7), recent fill of cist*. One plate rimsherd of modern Yellow Glazed Stoneware (china).

*Context (12), buried soil beneath topsoil*. Two sherds of Cornish medieval Coarseware dating to between the late twelfth century and the end of the fourteenth century.

The majority of the material is typical of collections which may be found in fields close to farms; the finds are usually derived from domestic middens which were spread to manure and improve soil fertility. The bulk of the wares are domestic coarsewares, the assemblage dominated by pottery from north Devon with local or Cornish wares being sparse. In the modern period cheaper mass-produced wares of Bristol and Staffordshire supplant most other production centres. The entire assemblage seems to represent an agrarian economy, with no foreign imports.

## Stone

*Henrietta Quinnell*

*Context (1), topsoil*. Fine-grained granite beach pebble 62mm × 40mm × 28mm naturally fractured along line of intrusion, the surface of this fracture being flat and just possibly worn through use as a small rubbing stone.

*Context (2), buried soil*. SF13 Slightly water-worn coarse granite cobble 65mm × 40mm × 28mm, one flattish surface just possibly used for rubbing. Also from this context are a fragment of white vein quartz, a fragment of a bladed beach pebble, and four beach pebbles, two of which are vein quartz and two of other materials.

SF16 Slightly water-worn pebble of granite, maximum dimension 27mm.

*Context (7), recent fill of cist*. Pebble of white vein quartz and one of another lithology.

*Context (8), primary fill of cist*. Thirteen pebbles, more or less rounded, varying between 8mm and 13mm in size, of a variety of different locally occurring materials, including three of vein quartz. Most of these come from sieving samples and are most likely have come into the soil with sand or sand adhering to seaweed used as manure.

The stonework derives from a local beach, some being the white vein quartz pebbles which occur as deliberately deposited finds in prehistoric ritual contexts (Miles 1975). The use of the two suggested small granite rubbers is far from definite.

## Flint

*Anna Lawson-Jones*

The flint assemblage was residual to the cist and only a summary is given here. The full flint assessment is deposited with the project archive.

A small assemblage of 12 pieces was recovered consisting of three natural pieces, five unused waste pieces, three possibly utilised waste-like flakes, and a single awl. Only five pieces retain any cortex, and all reflect the use of local beach pebble flint. The more diagnostic waste pieces are Bronze Age in character. Two small undiagnostic waste pieces from the burial deposit are Neolithic in appearance and should be seen as residual, unintentional inclusions. With the exception of an awl, none of the pieces are clearly identifiable as tools.

**Pollen**
*Katie Head*

*Fieldwork and sampling policy*

A sondage 0.5m by 0.5m by 0.33m deep was excavated from the surface of layer (2) to the top of the *ram* for the purpose of taking pollen samples (Fig 9). Four spot samples were taken and processed for pollen analysis. The samples were assessed on their potential for further work, attempting to identify the assemblages to a sum of 300 land pollen.

The four samples were taken from deposits considered to be of high potential for the recovery of pollen remains. Three were from an Iron Age / Romano-British buried land surface, context (2), which was 0.3m deep and 0.35m below ground level: samples 1, 2 and 3 were respectively 0.45m, 0.53m and 0.62m below the present ground level. Sample 4 was taken from a buried soil, context (12), 0.3m below ground level.

*Processing and analysis*

Sediment samples of 2cm$^3$ were measured volumetrically and one *Lycopodium clavatum* exotic marker tablet (Stockmarr 1971) was added to each sample in order to calculate pollen concentrations. Pollen processing followed standard methods by Moore *et al* (1991), with the samples being subjected to potassium hydroxide digestion, acetolysis, and hydrofluoric acid digestion, and preserved in silicon oil.

Pollen grains were only counted to a total of approximately 130 land pollen grains (Total Land Pollen – TLP), rather than 300TLP, as the pollen was extremely degraded, most probably due to the highly siliceous sediment matrix that they were taken from. Analysis was undertaken on a GS binocular polarising microscope at 400x magnification. Identification was aided by using a modern pollen reference collection and the reference manual by Moore *et al* (1991). Nomenclature follows Stace (1997) and Bennett (1994).

*Samples 1–3, context (2)*

These three samples were all very similar in species composition, suggesting that they are broadly contemporary (Table 2). The results suggest an open herbaceous landscape dominated by grasses (Poaceae) and the dandelion family (Lactuceae), making up 60–80 per cent of the assemblage. The coastal aspect of the site is also highlighted, with a large presence of figwort (*Scrophularia*-type) and rare occurrences of thrift (*Armeria maritima*) and aster (*Aster*-type), all common on upland coastal areas such as sea cliffs. There are minimal amounts of tree pollen, represented by alder (*Alnus*), birch (*Betula*), and willow (*Salix*), as well as heaths (Ericaceae), but not enough to suggest that they were locally present.

*Sample 4, context (12)*

Sample 4 was taken from the layer just above the cist. Species composition was similar to the other samples, again indicating an open grassland herbaceous landscape (Table 2). Occasional occurrences of heathland pollen are present but no trees or shrubs, and most likely represent heath-grass communities elsewhere on the island. There

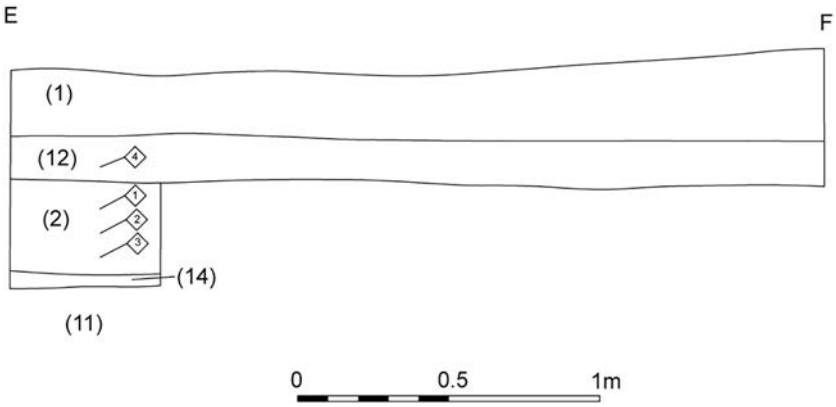


*Fig 9 South-east facing section of the trench edge showing the location of the pollen samples.*

**Table 2** Pollen counts from samples 1–4

| *Latin name* | *CF13 Sample 1* | *CF13 Sample 2* | *CF13 Sample 3* | *CF13 Sample 4* |
|---|---|---|---|---|
| *Alnus* | 5 | 1 | 0 | 0 |
| *Betula* | 1 | 2 | 0 | 0 |
| *Salix* | 1 | 2 | 1 | 0 |
| Ericaceae undiff. | 2 | 0 | 0 | 1 |
| *Calluna vulgaris* | 0 | 0 | 0 | 1 |
| Poaceae <37um | 42 | 46 | 23 | 37 |
| Cyperaceae | 5 | 3 | 3 | 1 |
| *Armeria maritima* | 2 | 0 | 1 | 0 |
| *Aster*-type | 0 | 5 | 2 | 4 |
| Brassicaceae e.g. *Sinapsis*-type | 0 | 0 | 0 | 3 |
| Caryophyllaceae | 0 | 0 | 0 | 1 |
| Chenopodiaceae | 3 | 3 | 1 | 0 |
| *Cirsium*-type | 0 | 0 | 1 | 0 |
| Lactuceae | 28 | 42 | 66 | 25 |
| *Plantago lanceolata* | 1 | 0 | 2 | 0 |
| Rosaceae undiff. | 0 | 0 | 0 | 1 |
| *Scrophularia*-type | 26 | 27 | 8 | 38 |
| *Seratula*-type | 0 | 0 | 1 | 0 |
| *Thalictrum* | 0 | 1 | 0 | 2 |
| *Urtica dioica* | 0 | 1 | 0 | 0 |
| **TOTAL LAND POLLEN** | **116** | **133** | **109** | **114** |
| *Pteridium* | 1 | 3 | 1 | 3 |
| **Exotic marker (*Lycopodium*)** | 69 | 95 | 203 | 47 |

are a few Brassicaceae grains, possibly *Sinapsis*-type, an arable weed, which might indicate arable farming in the medieval period or later, as found at other sites on Scilly (Scaife 2006).

## *Discussion*

All four samples were low in pollen concentrations and the grains were highly degraded, often being crumpled and / or broken. Bunting and Tipping (2000) note that in archaeological soil samples such as these, there is opportunity for post-depositional biasing in the pollen record. In other words, the assemblage will not be uniformly destroyed. This may be the situation at Churchtown Farm, as grains from the Brassicaceae, Caryophyllaceae, Chenopodiaceae, and Lactuceae families are more robust and, even when damaged, are still more easily recognisable than some other taxa (Bunting and Tipping 2000). It is possible that figwort (*Scrophularia*-type) has also survived better, as it is notably present in all the samples. The assemblage compared in all four samples is similar. This may merely indicate that the landscape has not changed greatly at Churchtown Farm, with Scilly in general having been largely cleared of trees by the Late Bronze Age / Early Iron Age (Charman *et al* 2016). The assemblage, however, may be biased, due to the large numbers of degraded pollen. Although the arable aspect is poorly represented, evidence from Churchtown Farm points towards a primarily pastoral economy with pockets of arable. Other

pollen records from Scilly are in agreement, suggesting a mixed arable and pastoral economy from the Early Iron Age onwards (Ratcliffe and Straker 1997; Charman *et al* 2016).

At Churchtown Farm, the vegetation from the Iron Age / Romano-British period onwards seems to suggest a pastoral landscape of open grassland, with a few arable indicators in the later medieval context. The coastal position of the site is also reflected within the results. Pastoral land use and coastal influence in the grassland that replaced the forest on St Martin's from the Late Neolithic are also apparent in results from the Lyonesse Project (Charman *et al* 2016).

### Plant macrofossils

*Julie Jones*

The only macrofossil was a single charred grass caryopsis from context (8), which is too small for radiocarbon dating. Otherwise there was just sparse modern plant material.

### Charcoal

*Dana Challinor*

Three small samples of wood charcoal were recovered during wet-sieving of the cist contents, contexts (8) and (9), and submitted for identification.

Standard identification methodologies were followed, with 100 per cent of the identifiable fragments examined. In practice, there was very little that could be identified as there were few pieces and none were more than 2mm in transverse section.

Two taxa were identified: *Quercus* sp. (oak) and *Cytisus* (broom) or *Ulex* (gorse). The latter two cannot be distinguished on anatomical characteristics. One fragment of oak from <6> (9) exhibited tyloses, indicating that the charcoal came from heartwood.

The provenance of the charcoal in these samples is uncertain, not least as the fragments are small and scarce enough to be intrusive. However, there have been few recent excavations of cists in Scilly, and none in which charcoal was examined. Oak would have been an important resource in the deciduous woodland recorded in early pollen evidence from St Mary's and St Martin's (Ratcliffe and Straker 1996, 32; Charman *et al* 2016). If the charcoal is contemporary with the Romano-British burial, it suggests both woodland and heathland in the vicinity.

### Radiocarbon dating

A very small fragment of possible human bone from sample <7>, context (8) was submitted to the Scottish Universities Environmental Centre (SUERC) for radiocarbon dating and produced a radiocarbon age of cal AD 1729–1789 at 95.4 per cent confidence (SUERC-50252; 191 ±30 BP) indicating that it was most probably animal bone and a much later intrusion into the deposit containing the burial.

## Discussion

### The context of the Churchtown Farm cist

By the beginning of the Roman period, St Martin's would have been a distinct island for several centuries, but with a large intertidal area stretching across to Tresco and towards St Mary's (Charman *et al* 2016, 218, fig 8.22).

No settlement has been identified near the Churchtown Farm cist, which may have been relatively isolated in an area of open grassland, but presumably there was one not far off. The nearest broadly-contemporary settlements known on St Martin's are two of O'Neil's unpublished roundhouse sites which are reported to have produced finds from the Roman period: one, Par Beach Site A, is a coastal site, about 0.5 km to the south-south-east, in an area where there are Porthcressa-type cists; the other, May's Hill, is an inland site some 0.7 km east-south-east of Churchtown Farm (Ashbee 1974, 318, fig 34, fig 35). Two scraps of Samian ware and sherds of native Romano-British pottery were recovered from the roundhouse at May's Hill (Thomas 1985, 109). Early medieval imported pottery, also found on the site, led Charles Thomas to suggest that a second phase of occupation involved more or less uninterrupted use of the site from the second to the end of the seventh centuries AD (*ibid*, 195). Close to May's Hill, the Historic Environment Record records a field system of prehistoric or Roman date between Pound Lane and John Batty's Hill (reference MCO31472).

The Churchtown Farm site has produced evidence for long-term activity during the earlier

prehistoric period, in the form of worked flint, and by the Iron Age / Romano-British period the pollen evidence suggests a pastoral landscape of open grassland, with a few arable indicators in the later medieval context. Other sites on St Martin's or nearby have evidence for Romano-British cereal cultivation. During the 2014 excavations at Old Quay, St Martin's, a single late Roman small pit or posthole was identified (Garrow and Sturt 2017, 132). The feature contained no finds, other than very large numbers of wheat and barley grains recovered during wet-sieving. A single barley grain from this pit was radiocarbon dated to cal AD 250–390 (OxA-31869; 1724 ±25 BP). Another grain, this time wheat, from a second almost certainly Neolithic pit close by, produced a date with almost exactly the same calibrated range, cal AD 250–400 (OxA-31870; 1704 ±27 BP). The dating of these grains to the Late Roman period came as something of a surprise to the excavators given the total absence of any other material culture from that period from the site.

The base of the midden at East Porth on the nearby island of Teän, sampled during the 1989–93 Coastal Erosion Project, dated from the third century AD (Ratcliffe and Straker 1996, 13). The only crop identified with certainty was barley, which was not referable to species. The narrow range of wild plants were probably arable weeds: wild radish, fat hen, knotgrass and vetch or tare, all of which are commonly associated with arable crops and occur in prehistoric deposits in Scilly. Romano-British animal remains from the midden include the bones of a sheep or goat, grey seal, a small range of birds and a single fish species, wrasse. There were also ox, pig and dog associated with first to fourth century AD pottery (Thomas 1985, 183).

There are a number of other recorded Porthcressa-type cist graves on St Martin's, all on the south side of the island. The best documented site is on Par Beach, in an area of the middle shore now covered by deep sand. Excavations in 1949 revealed three small cists, dug into an early land surface on the shore (O'Neil nd, a and b). One cist was Bronze Age in form. The other two cists were rectangular, 1.4m by 0.9m and 1.8m by 0.6m internally, each walled by both large and small slabs and accompanied by several former covering slabs; the larger cist was dug into the interior of an Iron Age roundhouse and retained its covering slabs *in situ*. Other such cists, some with skeletal remains, were recorded in this vicinity on Par Beach by various observers from the later eighteenth to early twentieth centuries (Crawford 1928, for example). As noted above, there was also a Romano-British roundhouse here.

A cist was exposed in the cliff face at Lawrence Bay until recently (Ratcliffe 1993), but has now eroded away. In addition, Troutbeck (nd [*c* 1794], 112) reports 'a great many graves, of all sizes' exposed at low tide at the Neck of Pool, near Middle Town, with 'stones set edgewise in the form of coffins'. However, these were aligned east–west and so were probably early Christian in date. The Rev H A Lewis searched for this site (1948, 8) but could find no trace.

St Martin's also has an interesting decorated standing stone, found in a field wall on Chapel Down at the eastern end of St Martin's, representing the face and upper torso of an anthropomorphic figure (Ratcliffe and Parkes 1989, 259–60). The base of this stone has been broken off from a larger stone that may once have stood upright upon the Down and it has been interpreted as a Romano-Celtic idol (Ashbee and Thomas 1990).

In summary, the indications are that the burial took place in a well-used landscape, with settlements dotted across the island, associated with field systems and a mix of arable and pasture, and with intertidal and marine resources also available. Other cist burials on the island may have related to specific settlements or landholdings.

## Porthcressa-type cist graves

The Late Iron Age and Roman-period south-western cist-burial tradition has been identified through the chance discovery and excavation of a number of cemeteries and isolated burials around the coasts of Cornwall and the Isles of Scilly, with a couple of examples in Devon, and was an optional burial rite among the Dumnonii (Thomas 1966, 77). In Scilly these burials are known as Porthcressa-type cist graves after the type site on St Mary's, where Paul Ashbee investigated ten cists and an uncisted burial in 1949–50 (Ashbee 1954; 1979; Dudley 1960–61). The practice of crouched inhumation in cists was essentially a Late Iron Age burial tradition which continued into the early Roman period in Scilly. The bodies of most British Iron Age and Romano-British people, however, were disposed of in ways that have left no archaeological trace (Johns 2002–3, 63).

The Churchtown Farm cist is similar to these and the 36 or so other cist-graves which have been discovered at 10 sites in Scilly in addition to Porthcressa: Par Beach, St Martin's (Crawford 1928; O'Neil nd a; nd b); Old Man, Tean (Tebbutt 1934); Green Bay, Bryher (Thomas 1977); the east side of Porthcressa Bay, St Mary's (Ratcliffe 1999); Halangy Porth / Toll's Porth, St Mary's (Mackenzie 1967; Ratcliffe 1994); East Porth, Samson (Ratcliffe and Sharpe 1990); Lawrence Brow, St Martin's (Ratcliffe 1993); Hillside Farm, Bryher (Johns 2002–3); and Lunnon Farm, St Mary's (Butcher 2002; Johns and Mulville 2011).

Although there are some isolated examples, most cists have been found as part of cemeteries. At Porthcressa the cists were in lines and were equidistantly spaced, which suggests that some element of the grave was visible above ground. Over the top of one of the cists were the remains of what may have been a cairn. Such cemeteries are associated with contemporary settlement sites and are often located close to these. The cemetery at Porthcressa also had a spatial association with the site of a possible Romano-Celtic shrine. On Par Beach, St Martin's, a cist was dug into the floor of an Iron Age hut (O'Neil nd, a and b), and elsewhere cists have been found dug into the soil of earlier cultivation terraces (Ratcliffe 1989). Churchtown Farm may be an isolated cist, or possibly one of a pair. This is similar to Hillside Farm, Bryher, where only one other cist was identified in the same field as the sword and mirror burial (Johns 2002–3, 40).

The Churchtown Farm cist burial is important because, along with the Lunnon Farm cists, it has widened the known distribution pattern of Porthcressa-type cist burials to inland Scilly. Prior to their discovery all had been found in low-lying locations, below, just above or slightly inland of the modern shoreline, having been revealed by coastal erosion, cultivation or modern development.

Generally oval or rectangular in plan, and occasionally coffin- or 'D'-shaped, Porthcressa-type cists are set in grave pits and constructed of stone slabs placed on edge, coursed walling or a combination of both building techniques. They are covered by stone slabs set at right angles to the main axis. Quantities of oak charcoal found in the cist on Old Man, Tean, led to the suggestion that it may have had a wickerwork lining (Tebbutt 1934). Cist dimensions range from 0.9m to 1.6m in length, 0.5m to 1m in width, and 0.3m to 0.8m in depth. The vast majority of cists are aligned north–south; a handful are orientated north-north-west to south-south-east or north-north-east to south-south-west. The Churchtown Farm cist is orientated north east to south west and is 1.1m long by 0.9m wide by 0.5m deep.

Where skeletal remains have survived in the acid soils, they represent the remains of crouched inhumation burials (with the body lying on its side). Grave goods often accompany these and include bronze brooches, pottery vessels, glass beads, and, in one instance, an iron pin.

Two brooches were found in three of the cists at Porthcressa and in another only one. In two other cists there was brooch and pot and in another a brooch, a pot and glass bead. The Old Man, Tean, cist contained fragments of two brooches (Tebbutt 1934, 302–4). With one exception these date to the first century AD (Ashbee 1954, 16–18). The frequent occurrence of brooches suggests that they played a special role in the funerary rite and may have been used to hold together a shroud (Ashbee 1954, 11–25; 1973, 143; 1979, 63). However, like the Churchtown Farm example, the brooches are invariably broken or incomplete and this may have had significance in the burial rites (Johns 2002–3, 71).

Typological dates for most of the brooches and pottery recovered from the Porthcressa cemetery are not earlier than the end of the first century AD, which led Ashbee to consider the graves to be wholly Roman in date and to surmise that 'refugees' from the Cornish mainland may have imported the cist-burial tradition to Scilly sometime after the Roman conquest (Ashbee 1979, 78; 1986, 207). However, radiocarbon dates from a cist burial at Hillside Farm, Bryher, demonstrate that the tradition dates to at least the first century BC in Scilly (Johns 2002–3, 23).

The Bryher cist burial, excavated in 1999, was a unique and internationally important discovery containing a crouched inhumation with an iron sword in a bronze scabbard, a decorated bronze mirror, shield fragments, a copper-alloy brooch and a tin object. Two radiocarbon measurements, OxA-12095 (2098 ±27 BP) and GrA-22411 (2100 ±35 BP), were taken from a long bone fragment from the burial. A weighted mean of these was calculated prior to calibration (2098 ±21 BP), so that the calibrated date of the burial is 195–45 cal BC, reflecting the metalwork typology which dates to the first half of the first century BC (Johns 2002–3, 27).

## Evidence for child burials

Formal child burials seem to have been rare in the Iron Age and Roman period (Whimster 1981, 65) although they are a feature of the south-western cist burial tradition.

Five of the 50 cist graves discovered at Harlyn Bay, St Merryn, at the turn of the twentieth century were relatively tiny cists used for the burial of small children and one cist contained the remains of three adults and an infant (Whimster 1977, 73). At Trethellan Farm, Newquay, a cemetery of pit graves which was probably in use between the second or first centuries BC and the first century AD, there were two joint adult / child burials, one child aged five or six and the other under 10, and the single burial of a child less than 10 years of age (Nowakowski 1991, 216–29).

One of the cists found at Lunnon Farm, St Mary's, in 2002 measured 0.35m wide and the length visible in the trench was 0.25m, which may have been a third of its total length. Below the capstones was a void 0.4m deep. The small size of this cist indicates that it is also likely to have been a child's burial (Johns and Mulville 2011, 22, fig 9).

The known cemeteries and individual cists represent only a small proportion of the whole population of Late Iron Age / Romano-British Scilly; distinctions of some kind were therefore being made within local communities by choosing to dispose of some of the dead in cist graves while the majority were treated in some other way, perhaps excarnation. The Churchtown Farm cist burial is significant in that it confirms that children were included amongst those individuals who were chosen to be buried in Porthcressa-type cist graves.

## Acknowledgements

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*Cornish Archaeology* 55, 2016, 181–184

# A second inscribed stone from Lanivet church

CHARLES THOMAS †

*Part of an early Christian inscribed stone was discovered at Lanivet church in 2009, the second from the site. The stone is likely to date to the sixth century AD and provides further evidence of the Christianisation of Cornwall by migrants probably arriving from Wales via the Camel estuary.*

In July 2009 Carole Vivian of Pelynt noticed what appeared to be a fragment of an inscribed stone built into the external north wall of Lanivet parish church (Fig 2). Duly informed, Andrew G Langdon, expert on Cornish crosses of any size or date, photographed the stone and noted approximate dimensions. It is, however, set in the wall directly above steep steps down to a boiler room and is also partly obscured by a downpipe. He subsequently paid another visit and was able to use a ladder to take a rubbing (Fig 3).

The object is a piece of granite, slightly irregular in outline, with the visible portion about 730mm (29in) long by, at its widest, 240mm (9½in). The letters are up to approximately 100mm (4in) high (Figs 3 and 4). They can be read as O C V I, in ordinary Roman *capitalis*, C being rather square and V with a rounded point. An immediate impression is that we probably see only about half of the original length of the inscription, with other letters missing (certainly a consonant before O, perhaps three or more others). It is likely that the end of the stone nearest the I is also incomplete, because, assuming the stone stood upright, about a quarter of its length would need to have been set in the ground; the original length (or height) could therefore have been nearer 4 feet or 1.2m. Granite occurs in Lanivet parish (Polsue 1870, III, 20), but the geological origin of the stone now in the church wall is unknown.

The church at Lanivet was extensively 'restored' by J Piers St Aubyn in 1864. We are told that 'in clearing the interior preparatory to the restoration some relics of a previous church were found worked into the walls' (*ibid*, 15; *cf* Couch 1865, 76). At least part of the churchyard had probably been over-dumped, for '[O]n removing the accumulated soil from the south wall of the church on the outside' the well-known ornamented 'hogback' coped grave cover was discovered (Polsue 1870, III, 16). All this is relevant because it makes it more-or-less certain that the inscribed stone is not exotic but has been in Lanivet churchyard ever since it was first lettered and set up.

Lanivet churchyard is a site of great antiquity and interest. Its stated patron saint, 'Neved' or 'Nevet', is a modern fiction and a grossly improbable one. The place-name, recorded as *Lannived* in 1268, *Lanivet* in 1276, comprises Old Cornish *lann* 'Christian location (church and / or cemetery), religious enclosure', and **neved*, 'pagan sacred place, sacred grove' (Padel 1988, 106). The element **neved* is also seen in the Devon place-names Nymet Rowland and Nymet Tracy, for example, and in the Romano-British **Nemetostatio* (*nemeton + statio)* (Gover *et al*, 1931–2, II, 348; Rivet and Smith 1979, 424–5). The name hints that the Lanivet valley held, perhaps until the fifth century AD, some

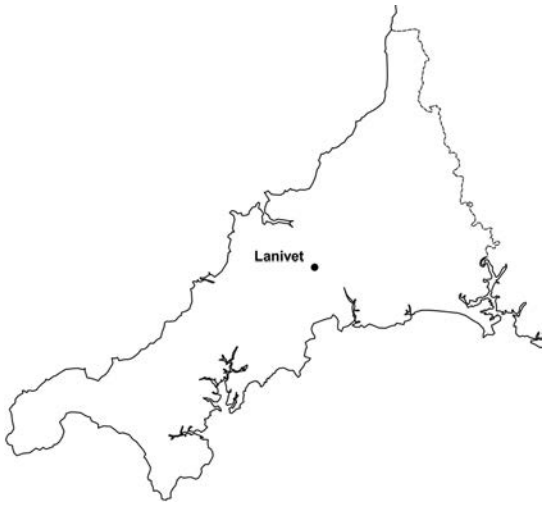


*Fig 1 Lanivet: location*.

famous grove or wood with pagan associations, and perhaps a shrine. Under what guise it became Christian is uncertain.

The gradual conversion of north and east Cornwall by settlers entering via the Camel estuary, Christian priests and laymen among them, from south-central and south-west Wales, is mainly deduced from early inscriptions on stone (Thomas 1994). These exhibit a range of personal names (apparently all masculine) that can be (continuing) Roman, like *Latinus*, *Ingenuus*, *Iustus*, or Celtic, including Irish because of Irish settlements in late- and post-Roman Wales, like *Ulcagnus*. While almost all show Roman capitals, devolving over time, some also have the dead man's name in ogam, the Irish stroke-writing, another import from Wales (Thomas 1994, ch 3; 2015). The inscriptions can be very short, like a single name, almost always in the genitive even when prefaced by HIC IACIT, 'here (he) lies'; the sense must be '(Stone) of-X, (Body) of-X'. One early stone from St Kew, probably for a member of the small monastery there when St Samson landed *c* AD 530, has IVSTI, '(Stone) of-Iustus' and the same in ogam, *IUSTI* (Thomas 1994, 240). Lewannick, near Launceston, is another very early site, its near circular *lann* enclosure prominent within the modern churchyard. One stone here has in four horizontal lines INGEN / VI / MEM / ORIA, *Ingenui memoria*, 'the *memoria*, the funerary monument, of Ingenuus', with ogam *IGENAVI MEMOR* up one side; the other, summit missing, reads vertically (HI)C IACIT VLCAGNI, 'Here he lies, (body) of-Ulcagnus', with a botched ogam up one edge and correct *ULCAGNI* down the other. They could belong to the phase *c* AD 500–550 and Ingenuus may have been an incoming priest (*ibid*, 262–3).

The Lanivet stone, with a single vertical line, gives us ( )O C V I, ( )*ocui*. Again it must be a name in the latinised, second declension masculine genitive for somebody called ( )*ocuus*. The name may well be Celtic (Irish?) and not continuing-Roman; like Ingen-*ui* from Ingen-*uus* it follows

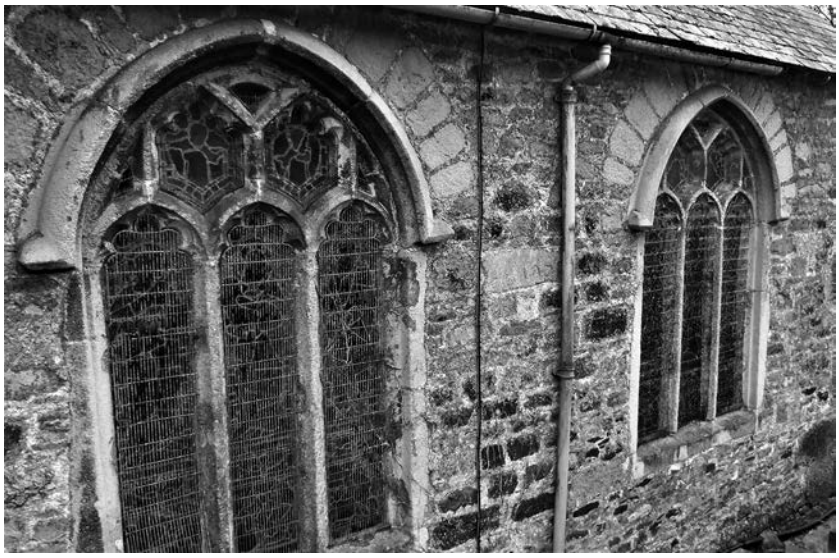

*Fig 2 The ( )OCVI stone in situ in the north wall of Lanivet church. (Photograph: Graeme Kirkham.)*

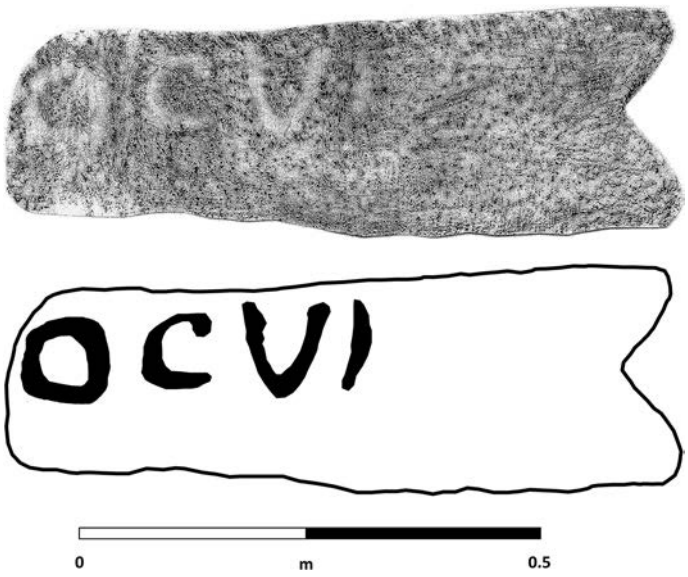


*Fig 3 A rubbing from the ( )OCVI stone made by Andrew Langdon and Ann Preston-Jones.*

*Fig 4 The ( )OCVI stone. (Problems of access mean that a drawing direct from the stone is not practical and it has therefore been produced digitally from the rubbing.)*

*Fig 5 The inscribed stone found in the nineteenth century and now located inside the church at Lanivet. The stone bears the inscription ANNICV FIL( ) within a cartouche (Photograph: Graeme Kirkham.)*

a model, but exactly what is represented it is impossible to be sure.

Lanivet has one inscribed stone already, mounted within the church, found in the village near the church and rescued before 1925 (*ibid*, 265, no 465, fig 17.16; Henderson 1964, 105; Kirkham 2016 [this volume]). Larger than the recent discovery, it is a granite pillar and, within a roughly outlined frame not unlike that on the smaller St Kew *Iusti* piece, one reads downwards ANNICV FIL( ), '(Stone) of-Annicus (Annicius?), son' (with 'of-X' missing) (Fig 4). Again, this is in neatly-pecked Roman capitals, the C being rounded; it suggests a date in the first half of the sixth century AD, and a memorial to a member of whatever small group founded their *lann* within the former pagan grove.

What then of the new discovery? Not much can be argued from only four letters but there are pointers. We surely have a single name, as of a priest (the earthly parentage of whom would be irrelevant). The final 'I' is vertical, not set horizontally in relation to other letters, a minor fashion arising in early sixth-century Wales which also spread to the south west. One would be inclined to suggest that the newly discovered

stone, 'Lanivet no 2', could date from *c* 550 and not much later.

What should be done? Provided the stone is visible – perhaps the drainpipe could be re-sited? – it might as well be left. There are a few other inscriptions, whole or fragmentary, which were built into church walls (lettering showing) during Victorian restorations. Cuby and Cubert are instances in Cornwall, each with a complete large stone (Thomas 1994, 282–4), and there are others in Wales, notoriously, for example, at Llanddewibrefi (Thomas 1996; Edwards 2007, 150). Lanivet as a churchyard has its impressive later standing crosses, all well documented. One cannot today propose excavation of a major early Christian site still in use, but the discovery does suggest the potential value of an exhaustive surface examination of the whole place and perhaps its immediate environs.

**Acknowledgements**

With thanks to Carol Vivian of Pelynt, who first recognised the stone and to Andrew Langdon for taking a rubbing in far from ideal circumstances.

**Editorial note**

Charles Thomas prepared his note on the second Lanivet stone in the summer of 2009, shortly after its discovery, and sent an initial draft to the editors of *Cornish Archaeology* to indicate his intention to publish a fuller version once photographs and a rubbing or drawing were available. He did not in the event revise this initial draft and it has been prepared for publication, including the addition of references, by Graeme Kirkham, Ann Preston-Jones and Dr Oliver Padel.

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# Inscribed and decorated stones at Lanivet: exploring the context

GRAEME KIRKHAM

*The discovery of a second inscribed stone from Lanivet emphasises the probable significance of the site in the early Christian period. Both these stones were reused in buildings, as were a significant number of other such stones in Cornwall.*

*In addition to the lann enclosure fossilised by the present churchyard, with which the inscribed stones were almost certainly associated, historic maps suggest a second enclosure nearby. This could conceivably represent a pre-Christian ceremonial site (suggested by the place-name) or a later early medieval secular site. Both the lann and second enclosure are rather larger than is typical of later prehistoric and Romano-British enclosed settlements or 'round'-type enclosures in the area, but if they are in fact former rounds the difference in size may be linked to past uses, possibly deriving from the former wooded environment of the area.*

*The churchyard at Lanivet also holds three later early medieval ornamented stones of significant quality. The context for these may have been the social aspirations of a local landholding group or may reflect an association with an important religious institution such as the monastery of St Petroc's.*

*Lanivet's place-name and its location, by tradition at the centre of Cornwall, raise the possibility that it may represent a significant place at the centre of a former tribal 'territory' coincident with the historic county of Cornwall. The place-name may relate to the prehistoric henge monument nearby at Castilly and there are intriguing parallels with a similar coincidence of place-names and a henge monument in central Devon.*

The discovery of an inscribed stone built into the fabric of Lanivet church, the second to come from the site, further emphasises the significance of what is, as Charles Thomas indicated in his note on the stone, a place of 'great antiquity and interest' (Thomas 2016 [this volume]). In addition to these stones of the early Christian period, the site is also notable as the location of three impressive pieces of later early medieval decorated stonework. These attributes prompted Niklaus Pevsner in the first edition of his *Buildings of England* volume on Cornwall to call Lanivet 'one of the most rewarding places in Cornwall for information or at least impressions of the Dark Age from the C6 to the C10', modified in the recent revised edition to 'one of the most rewarding places to see monuments of pre-Conquest Cornwall' (Pevsner 1951, 75–6; Beacham and Pevsner 2017, 275).

Inscribed stones and Cornwall's later early medieval monuments have been assessed in major works by, respectively, Charles Thomas (1994) and Ann Preston-Jones and Elizabeth Okasha (2013). This paper is not aimed at expanding on or amending the conclusions of those studies but rather at exploring some diverse aspects of the context and setting of the Lanivet stones. These include the later reuse of the inscribed stones, the *lann* represented by Lanivet churchyard and the

character of a possible adjacent enclosure, the implications of the presence of the later medieval decorated stones, and consideration of recent work by Oliver Padel highlighting Lanivet's central location within the early medieval hundreds of Cornwall and the historic county (Padel 2010).

## Written on stone

The place-name and curvilinear form of the churchyard identify Lanivet as an early Christian *lann* site (Padel 1985, 276; 1988, 106; Preston-Jones 2011, fig 7), which, on the basis of the dates which Charles Thomas ascribed to the two inscribed stones now known from the site, was probably in existence by at least the mid sixth century AD (Thomas 2016 [this volume]; 1994, 265). (For discussion of *lann* sites, Preston-Jones 1994; 2011, 272–3; Preston-Jones and Okasha 2013, ch 5.) Notably, Lanivet is one of only nine places currently known in Cornwall where inscribed stones occur in association with a *lann* and one of only two such sites with more than one stone, the other being Lewannick (Preston-Jones and Okasha 2013, 42; Thomas 1994, 262–3).

Neither of the Lanivet inscribed stones was found *in situ*, although it is likely that both came from the near vicinity, most probably from within the *lann* enclosure. The recently discovered ( )OCVI stone is located in the outside wall of the north aisle of the church, between the first and second windows from the west end (Thomas 2016 [this volume], fig 2). The present church dates to the fifteenth and early sixteenth century and when it was restored in 1864 the remains of medieval wall paintings were found on the interior of part of the north wall (Beacham and Pevsner 2017, 274; Royal *Cornwall Gazette*, 7 October 1864; Couch 1865, 79–80). The inscribed stone, therefore, probably formed part of the late medieval fabric. The Bodmin doctor and antiquarian Thomas Q Couch noted rather vaguely that some 'unimportant relics of an older church have been discovered worked into the walls . . . among them numerous encaustic tiles' (*ibid*, 76). It is possible therefore that the inscribed stone had also been reused from an earlier church on the site.

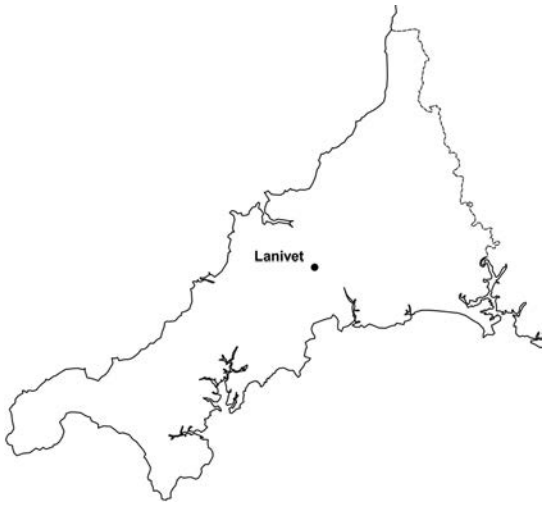


*Fig 1 Lanivet: location.*

The other stone, inscribed ANNICV FIL( ), which is now inside the church, was first reported in the early 1870s by Thomas Couch and the incumbent of Lanivet, the Reverend Henry Borrow. It too had been reused as a building stone and was discovered built into the wall of an 'old thatched cottage near the parish schoolroom'; other accounts described this as 'adjoining' the churchyard and 'near west end of church' (Anon 1873b, xlvi; Polsue 1872, IV, additions and corrections [1873], vii; Anon 1877, 94; Langdon 1906, 416). When found the ANNICV stone was in two pieces, with the larger part of the inscription visible but set upside down in the wall (the stone recently discovered in the north wall of the church is also inverted and has the inscription on the external face) (Fig 2). The smaller fragment was initially covered by plaster but was subsequently revealed by the Reverend William Iago, to whom the larger piece had been shown by Couch and Borrow; Iago reported the discovery to the Society of Antiquaries of London (Iago 1873, 486–7). He announced that he was seeking permission to remove the stone to the church and when next noted, in 1895, the pieces were lying by the south porch; by 1925 they were housed within the church (Iago 1873, 486–7; Langdon and Allen 1895, 51; Henderson 1964, 105).

Inscribed stones have been found built into the fabric of other churches in Cornwall, visibly at Cuby, Cubert and, prior to rebuilding of the church in the eighteenth century, Redruth (Thomas 1994, 282–4; Tangye 1985). One of the two stones at Lewannick was found broken into two parts, both of which were built into the north porch of the church with the inscription partly visible (Langdon


*Fig 2 The ANNICV FIL( ) stone in situ, drawn by the Reverend William Iago. When discovered in the early 1870s the stone was upside down and partly covered by plaster, built into the wall of a house adjacent to the church (Iago 1873, 486–7).*

1895; Macalister 1945, 444). At St Just-in-Penwith the SENILVS inscribed stone was 'found in the wall of the Chancel, built in among other stones, when the wall was taken down to be rebuilt in 1838' (Haslam 1845, 30). The inscribed stone at Phillack was similarly completely concealed within the foundations of the fifteenth-century church, and again only revealed by major building works (Iago 1872, 59–60). It is very probable that further stones remain to be found in churches, even – as at Lanivet – in external walls which are relatively easily visible (*cf* the recent discovery of a fine later early medieval cross-shaft built into the north wall of Paul church: Preston-Jones 2011, fig 8; Preston-Jones and Okasha 2013, 184).

Other inscribed stones have been found reused in more mundane settings, as gateposts, stiles and, in the case of those at Worthyvale (Minster), Bleu Bridge (Gulval) and perhaps St Kew, as footbridges (Borlase 1754, 356, 359, 360; Okasha 1998–9, 145; Thomas 1994, 330; Gilbert 1817, I, 203). As with Lanivet's ANNICV stone, a number of stones have been found in domestic buildings. One was uncovered forming part of a fireplace in a post-medieval cottage at Kerris (Paul), in west Cornwall, and a stone discovered serving as a gatepost at Vellansajer in St Buryan may have previously been trimmed for use over a doorway in a medieval building (Okasha 1998–9, 139–40; Thomas 1980). The impressive stone formerly at Rialton (Colan), now in the Royal Cornwall Museum, was found in 1809 supporting the roof of a linhay and later '[B]uilt into a wall of one of the farm buildings' (Gilbert 1817, I, 195; Anon 1873a, xxix). Another at Lancarffe (Helland) was recovered from a stream between two farms in the 1920s, then built into a mortared garden wall and subsequently incorporated into an outbuilding (Anon 1930, 210–2; Macalister 1945, I, 435).

Such reuse of inscribed stones is not at all surprising. These are for the most part substantial pieces of granite, often in a pillar form which lends itself to structural use; as Iago noted of the stone at Phillack, 'its massive proportions attracted the notice of those who were beginning to build the Church, and they, perceiving that it would be serviceable for the work, removed it from its site and imbedded it in the base of the sacred structure' (Iago 1872, 60). The fact that in some instances the inscription has been left visible on stones reused in the external walls of buildings is probably due to their suitability as facing stones, the face bearing the inscription being flatter and more regular than the others, perhaps in some cases having been dressed to receive the inscription, rather than because of any desire to exhibit the inscription itself (Ann Preston-Jones, pers comm). The reuse of so many inscribed stones in mundane, secular settings makes it unlikely that there was any symbolic element in their selection for situations such as the north wall at Lanivet church.

## Lanns, rounds and other enclosures

The curvilinear character of the boundaries of the large enclosure within which the church stands at Lanivet shows well in air photographs and on the tithe map (Figs 3, 4), the whole area covering about 0.53 ha (1.3 acres). This is substantially larger than is usual for *lann* sites, perhaps indicating a centre of more than local significance (Preston-Jones 1994, 86–8, fig 9). It lies at 80–85m above OD on a sloping site at the base of a south-facing valley side. The valley carries an unnamed watercourse which joins the Lanivet stream a short distance to the west, the latter rising on higher ground to the south in Luxulyan parish and flowing north to meet the River Camel. More than half of Cornish churches with names in *lann* have similar locations, at or close to the base of a valley (Preston-Jones 1994, 87). A feature of the site may have been a spring or holy well: a spring was marked just outside the churchyard close to the east end of the church on

*Fig 3 Lanivet churchtown from the south, showing the churchyard lann enclosure and to the west (left) the possible second enclosure. (Photograph: © Historic Environment Record, Cornwall Council, F86–131; 23 September 2009.)*

the Ordnance Survey 1st edition 25in: 1 mile map of 1881. This is no longer extant – a road now runs across the site – but wells and springs occur in the near vicinity of several other *lann* sites in Cornwall, including, for example, Crantock, St Just-in-Roseland, Mylor and Probus (Quiller-Couch and Quiller-Couch 1894, 20–1, 190; Blight 1858, 81; National Heritage List for England (NHLE) nos 1020713, 1141639). It is likely that they were incorporated into early Christian religious practices at these places, possibly continuing pre-Christian observances (Preston-Jones and Okasha 2013, 42; Turner 2006a, 132–3).

The present churchyard does not occupy the whole of what on morphological grounds is likely to have been the original extent of the *lann*. At some time before the 1790s (Fig 5), almost half an acre (0.18 ha) at the western end of the enclosure was separated from the present churchyard. This western segment was recorded in the Lanivet tithe survey as 'House, Mowhay & Waste' (TA 942) and was then the homestead for one of the two churchtown farms (Fig 4).

The 1840 Lanivet tithe map also shows what appears to be a second enclosure situated to the west of the church, defined by field and tenement boundaries to the north and west and by a road on the south and east (Fig 4). This is sub-circular with a diameter of approximately 90–100m and an area of about 0.88 ha (2.2 acres). This second enclosure has not previously been remarked and, while it seems clear on the tithe map, it has not been proved archaeologically and may be illusory. However, the block of fields to the north, with sinuous reversed-J boundaries apparently deriving from medieval or early medieval cultivation strips, appears to depend from it, suggesting that it pre-dates them. Similarly, the road approaching Lanivet churchtown from the east passes the north side of the *lann* and then turns sharply south to run between the two enclosures, following the eastern and southern edge of the western one, implying that the second

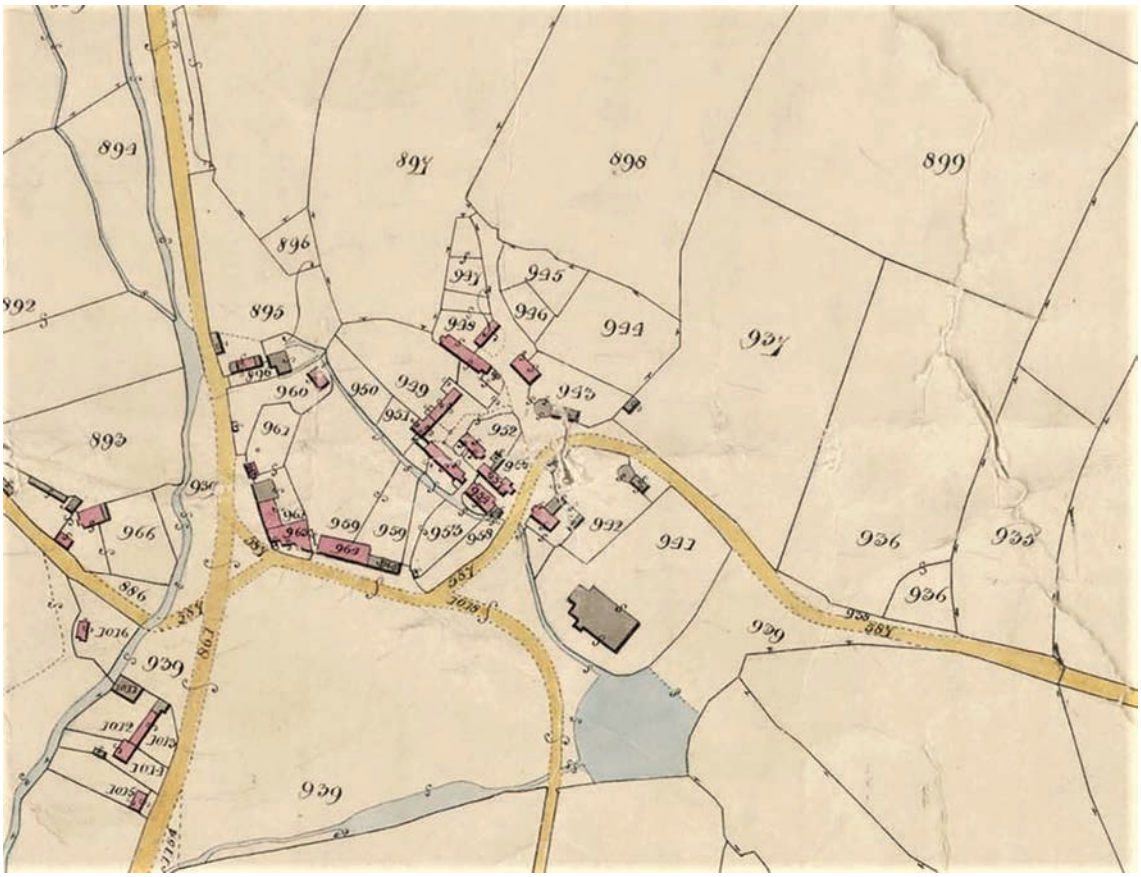

*Fig 4 Lanivet churchtown from the Lanivet tithe map, 1840, showing the churchyard and what appears to be a second sub-circular enclosure to the west. North is towards top right of the map extract. A substantial mill pool lies south east of the church, fed by a leat from the Lanivet stream, with the leat from the pool to the mill running outside the southern boundary of the churchyard and through the second enclosure. North of the churchtown is a block of fields with boundaries showing the characteristic reversed-J form which indicates that they derive from medieval cultivation strips; the open area (939) to the south and extending along the Lanivet stream on the west side of the map is Churchtown Common. (Cornwall Record Office TM/110; by permission of Cornwall Record Office.)*

enclosure was in existence at the time that local communication networks were developing.

The maps of 1793 and 1840 (Figs 4, 5) indicate that most of the post-medieval churchtown settlement at Lanivet was located within the western enclosure: in 1793 only the church, a mill and two buildings identifiable with farmhouses later recorded by the tithe survey lay outside it. The tithe survey recorded several dwellings and associated small garden plots within it, together with a beer shop and the parish poorhouse and school. Some of these were set around the apparent perimeter, others along a short 'street' running parallel to a leat of unknown date which cut through the enclosure from a pool south east of the church to a mill to the west. Both the former *lann* around the church and the western enclosure were bounded to the north by agricultural land, held in the nineteenth century by the two farms located in the churchtown, but were otherwise surrounded by Churchtown Common.

While not confirmed archaeologically, the presumed second enclosure located adjacent to the *lann* is potentially interesting. Could it represent


*Fig 5 Part of a map of the Manor of Lanivet which accompanied sale details for the manor in 1793, showing Lanivet churchtown and the surrounding area. The nearby farm settlements of Clan and Lamorrick fell within the manor, together with the southern portion of the possible enclosure to the west of the church (plot 22). This was recorded with an extent of almost an acre and noted as a 'Public House, Garden & small Plot adjoining', occupied by the fortunately named Isaac Newton. (Cornwall Record Office X81/2; by permission of Cornwall Record Office.)*

the pre-Christian sacred place implied by the **neved* element in the Lanivet place-name (Padel 1985, 172; 1988, 106; *cf* Webster 1995, 448–9)? Such a pre-Christian site may have been long out of use by the time the *lann* was established, memorialised only by the survival of the place-name: current scholarship suggests that the Lanivet place-name is likely to have arisen from '*lann* at a place (or district) called Nevet', rather than '*lann* at the pagan sacred grove' (Oliver Padel, pers comm). At the same time, recent investigations at Hay Close, St Newlyn East, have demonstrated that a sub-circular enclosure dating from the Early Iron Age was in use for non-Christian ritual activities in the fifth or early sixth centuries AD, despite being sited in an area which shows some of the earliest evidence for a Christian presence in Cornwall (Jones 2014). Early medieval deposits cut into the infilled enclosure ditch at Hay Close included a setting of quartz blocks, deposits of pottery, including high-status imported wares and amphorae, burial of a cattle skull and probable evidence of feasting (*ibid*).

If a comparable non-Christian site formerly existed at Lanivet, the *lann* may perhaps have been purposefully located immediately adjacent in order to 'Christianise' it. A comparable 'defusing' of a site of pagan observance appears in the 'Life' of St Samson, which Charles Thomas has suggested recounts events of the early to mid-sixth century AD (Thomas 1994, 229). Continuity of location of a Christian centre with a pre-Christian focus has also been proposed at Crantock, where a *lann* site occurs less than 100m – but separated by a stream – from the location of several short-cist burials assumed to be of Iron Age date; at least one 'holy well' in the vicinity could also have formed part of a pre-Christian ceremonial centre (Olson 1982; Preston-Jones and Rose 1986, 156).

Paired curvilinear enclosures are known elsewhere in Cornwall. They are usually assumed to date from the later prehistoric or Romano-British periods and to represent enclosed settlements or 'rounds' (for example, Johnson and Rose 1982, 172; Young 2012, 110). An example of such adjacent enclosures at Bosence (St Erth) is notable

in the present context because a third enclosure nearby is likely to have been a ritual or ceremonial religious space, incorporating a well or shaft with deposits which included Roman-period pewter objects, including one dedicated to the god Mars (Borlase 1759; Penhallurick 1986, 215).

While it is likely that a proportion of *lann* sites were founded on pre-existing rounds (Preston-Jones 1994, 82–4), the *lann* and putative adjacent enclosure at Lanivet are rather larger than most round-type enclosures: only nine of 77 univallate enclosures interpreted as of Iron Age and Roman date identified from air photographs in the hinterland of the Camel estuary north of Lanivet were greater than 0.5 ha in extent (Young 2012, 77). Rounds have not generally been associated with valley-bottom locations, as at Lanivet (Preston-Jones 1994, 82–3). However, the investigations in the Camel basin referred to above found that enclosures in that area are mostly sited at altitudes of 50–100m and often located close to streams and the confluences of streams (Young 2012, 76); the Lanivet enclosures fit well within these parameters. Two sub-circular round-type enclosures have also been recorded from air photographs on the lower valley slopes not far to the north of Lanivet, at Rosehill (Cornwall and Scilly Historic Environment Record (HER) MCO 40898) and Lamorrick (HER MCO 40897), with the latter site only 350m from the churchtown.

If one or both of the Lanivet enclosures did originate in the late prehistoric or Romano-British periods, differences in their sizes and location from those of others in the wider region could be attributable to specific functions. Most rounds in Cornwall are found within areas of historic landscape characterised as Anciently Enclosed Land. While this landscape Type is formally defined as having been enclosed by the seventeenth century (Cornwall County Council 1996; Herring 1998), it has frequently been shown to have accommodated settlement activity since at least the later prehistoric period, often since the Middle Bronze Age (*c* 1500 BC) (for example, Johns 2008; Jones and Taylor 2013). Rounds in this context are usually interpreted as enclosed settlements at the centre of estates which were exploited with mixed agricultural regimes; they are not infrequently identified with archaeological evidence for associated field systems (Johnson and Rose 1982; Rose and Preston-Jones 1995; Quinnell 2004; Young 2012). Apparently similar enclosures found in other landscape contexts may have had other functions, however. Examples located within former rough ground or on its margins may have had specialist roles as centres for extensive pasturing of cattle, flocks or horses, or could have accommodated industrial processes requiring access to abundant fuel supplies (Herring 2011, 103). Enclosures at Little Quoit Farm (St Columb Major) and Killigrew (St Erme) were apparently specialised ironworking centres rather than settlements (Lawson-Jones and Kirkham 2009–10; Cole and Nowakowski, forthcoming). In the present instance, it is possible that one or both of the enclosures at Lanivet had functions linked to their location close to sources of alluvial tin along the Lanivet valley (below) and a ready supply of fuel from what was historically an extensively wooded landscape. Alternatively, their functions may have derived from the woodland setting itself, perhaps, for example, as specialist settlements for feeding cattle or pigs or producing worked timber or charcoal.

Place-names and evidence from Domesday suggest that woodland was widespread in central Cornwall down to the medieval period (Lawson-Jones and Kirkham 2009–10, 221; Ravenhill 1979, fig 74). An area extending east from Lanivet to Cardinham, on the south side of Bodmin Moor, shows a notable paucity of *tre-* place-names and coincident frequent occurrence of 'wood' place-name elements, including ones in English, suggesting that it was markedly well wooded until at least the central Middle Ages (Oliver Padel, pers comm). This zone probably extended south as far as the valley of the River Fowey, where the place-name Lostwithiel marked the 'tail' of a substantial forest (Padel 1988, 111). In the Lanivet area the former wooded character of the landscape is signposted by a number of local place-names. These include Stephen Gelly and Clann, both incorporating Cornish *kelli,* 'grove, small wood', and Lesquite, from *lost,* 'tail', and *cos,* 'wood' (Padel 1985, 47, 68). In the same area are Woodley, first recorded in the early thirteenth century, and Atley, documented in 1355 (Cornwall Record Office (CRO) AR/1/310–11; A26/1). Both names incorporate Old English *leah* or Middle English *lei(e);* earlier uses of this meant a clearing or open land in woodland or a settlement adjacent to woodland, although it later came to mean simply open land or meadow (Cameron 1982, 187; Gelling 1993, 199; Padel, pers comm).

There is no archaeological evidence, other than their curvilinear form and use of one as a *lann*, to date the origins of the Lanivet enclosures. Both may have been rounds or be of dates contemporary with rounds but with other non-settlement functions; the *lann* may reuse a former round or have been constructed as a Christian site on the model of a round. The western enclosure – if real – may or may not be contemporary with it.

A possible parallel situation of dual enclosures in use in the early medieval period has been suggested at St Stephen-by-Launceston. This was a *lann* site, recorded as *Lanscauetona* in Domesday and at that time a collegiate church held by the canons of St Stephen's (Thorn and Thorn 1979, 4,2; Olson 1989, 88). The church is located within a curvilinear enclosure – assumed to be the *lann* of the place-name – but historic maps suggest a second enclosure immediately to the west in which the historic settlement was located (Sheppard 1980, 79–80; Preston-Jones 1994, fig 12). This second enclosure has been assumed to be the site of a secular settlement, latterly a borough, which had a market before 1066 and which accommodated a mint known to have functioned between the late tenth and mid-twelfth century (Thorn and Thorn 1979, 4,2; Sheppard 1980, 79–80; Penhallurick 2009, 13–16).

Lanivet offers no comparable proto-urban attributes in its history but the example of St Stephen-by-Launceston does raise the possibility that the second enclosure may have accommodated a secular settlement adjacent to an early medieval religious site. As at St Stephen, settlement in Lanivet churchtown during the post-medieval period also appears to have been focused within the second enclosure. Tithe map depictions of some other *lann* sites in Cornwall offer intriguing hints of potentially comparable second enclosures nearby, including at Lewannick, Landewednack and perhaps Lanteglos-by-Camelford and St Tudy.

## A St Petroc's connection?

Comparison of Lanivet with St Stephen-by-Launceston prompts a shift of chronological focus to the later early medieval period. Three large and finely decorated stones in the churchyard at Lanivet (Figs 6–8) date to this period and their presence suggests that it was a significant religious focus at that time. It is unclear, however, whether this represents continuity with the earlier *lann* on the site, or a new development. A coped stone grave cover of broadly 'hogback' form found buried in the churchyard in 1864 (Lanivet 3) is likely to date to the late tenth or eleventh century AD and the two highly decorated crosses and shafts there (Lanivet 1 and 2) are of about the eleventh century, with Lanivet 2 perhaps a little later, extending into the early twelfth century (Preston-Jones and Okasha 2013, 96–7, 160, 162, 159–64, ills 114–30, 362–5, 375–9). A further grave cover, also brought to light in the churchyard in 1864, was previously believed to be of similar late early medieval date but is now dated to the twelfth to thirteenth century (Preston-Jones and Okasha 2013, 238–9; Langdon 1896, 419; Thomas 1966, 87).

This concentration of high-quality and high-status sculpture is interesting. Sam Turner has suggested that highly decorated later early medieval crosses and ornamented stones such as the Lanivet 3 grave cover may relate to the social aspirations of either incoming English *thegns* gaining estates in Cornwall in the period after it came within the orbit of Wessex during the ninth and tenth centuries, or of an acculturating Cornish landholding elite (Turner 2006a, 162; 2006b, 35; Gore 2015, ch 4). In this respect a cluster of medieval English settlement names not far to the north of Lanivet churchtown – Atley, Woodley, Newton, Forda – may be significant. Such settlements could have been established (or have received new names) before the Norman Conquest (Padel 2007), although in this instance there is no direct evidence for an early date.

Landholders in the Lanivet area, Cornish or English, would have been able to accrue wealth with which to sponsor such monuments through participation in the tin industry. Tinworking is documented at Bokiddick, in the south of the parish, by the early fourteenth century (for example, CRO AR/1/318, 319, 338), and the earthworks of several undated streamworking sites have been recorded from air photographs within 1 km of the churchtown (HER MCO 40891, 40900–2). On the evidence of a penannular brooch of post-Roman type recovered from a streamworks 'near Lanivet' and an oak shovel radiocarbon dated to the period cal AD 635–1045 recovered in the nineteenth century from streamworks at Boscarne, on the River Camel, in the north of Lanivet parish, tinworking is likely to have been an established and significant element in the local economy well before the Conquest and had probably been

*Fig 6 The decorated wheel-headed cross (Lanivet 1), probably of eleventh-century date, located at the west end of Lanivet church (Preston-Jones and Okasha 2013, 159–61). Scale: 1m. (Photograph: Graeme Kirkham.)*

*Fig 7 A second wheel-headed cross (Lanivet 2) with unusual and profuse ornamentation, situated on the north side of the church. It was traditionally said to be at the 'very centre' of Cornwall. It is likely to date to the later eleventh or early twelfth century (Preston-Jones and Okasha 2013, 161–3). Scale: 1m. (Photograph: Graeme Kirkham.)*

*Fig 8 The late tenth or eleventh century AD 'hogback' grave cover found in the churchyard at Lanivet in 1864 (Preston-Jones and Okasha 2013, 163–4). (Photograph: Ann Preston-Jones and Andrew Langdon.)*

actively pursued from at least the Roman period (Penhallurick 1986, 200, 209–12, 237). It may be significant that the settlements noted above with medieval English names are on or close to streams flowing north into the Camel.

Alternatively, fine pieces such as the Lanivet stones would be appropriate in association with an important ecclesiastical site of the status of, for example, the eleventh-century St Petroc's minster at Bodmin. Bodmin itself is in fact conspicuously lacking in such pieces, but the earlier site of St Petroc's at Padstow has a rich collection of tenth–eleventh century monuments with which the Lanivet assemblage bears comparison (Preston-Jones and Okasha 2013, 160, 176–82). The two crosses at Lanivet fall within a stylistic group located in mid and east Cornwall, which, it has been suggested, is likely to have had some association with the wealth and prestige of St Petroc's; this includes a cluster in parishes in the area around Bodmin (*ibid*, 94–5; Padel 2013, 32, fig 11).

There are in fact hints of a link between Lanivet and St Petroc's in the late early medieval period. One of the estates recorded by Domesday as having supported St Petroc's before 1066 was *Tremhor,* identified as Tremore in Lanivet, with the manorial centre located about 2.5 km west of the churchtown (Thorn and Thorn 1979, 4,22; Maclean 1873, I, 123–4) (Fig 9). In 1086 this was half a hide held from the Count of Mortain by Thorkil (or Thorkell) but was noted as having formerly paid a customary annual due to St Petroc's of 1 ox, 15d and 12 sheep (Thorn and Thorn 1979 4.22; University of Hull Domesday dataset: Cornwall notes). Nicholas Orme (2010, 127) does not include Tremore among St Petroc's pre-Conquest landholdings, but the former payment of a customary due and the listing of Tremore in the Domesday record immediately after a sequence of several other estates which had formerly belonged to St Petroc's but had been taken from it, do suggest some association (Thorn and Thorn 1979, 4,22; *cf* University of Hull Domesday dataset: Cornwall notes).

It is tempting to speculate that when St Petroc's acquired its new inland site at Bodmin, perhaps in the late tenth or earlier eleventh century, the proximity of Lanivet may have been an additional factor in the move (Oliver Padel, pers comm). Lanivet is actually within Pydar Hundred, in which St Petroc's landholdings were concentrated, unlike Bodmin which was (presumably already) in a different hundred outside St Petroc's governance (Fig 10).

A St Petroc's interest in the Lanivet area also fits well with the monastery's apparent interest in the tin industry. During the tenth century AD it acquired Tywarnhayle, incorporating the rich tin areas of Perranzabuloe and St Agnes (Padel 2014, 72–4), and it also held other manors in the pre-Conquest period for which there are indications of broadly contemporary tin working. Among these were Treloy (Colan), where the relatively easily worked tin ground was evidently being exploited in the late Roman and medieval periods, and Fursnewth (St Cleer), which lies close to historic streamworkings on the River Fowey (Thorn and Thorn 1979, 4.11; 4.17; Penhallurick 1986, 200–3; Sharpe 2008, fig 39).

A further possible link between St Petroc's and Lanivet is attested only in the post-Conquest period. Charles Henderson noted that the manor of Lanivet was 'held in the Middle Ages by the Giffard family as free tenants under the monks of Bodmin' (Henderson 1958, 286–7). Henderson's source for this observation has not yet been identified. The Giffards were certainly in possession of the manor of Lanivet in the later thirteenth century, at which time it included the farm settlements of Lamorrick and Clann and the lands on which the medieval chapel at St Benet's was later established, together with the advowson (the right to appoint clergy) of Lanivet (Maclean 1876, II, 151–3). Lamorrick, Clann and St Benet's are located respectively north, west and south of Lanivet churchtown, all within 600m of it and located in the valley of the Lanivet stream. In the later sixteenth century the manor of Lanivet also included property in the churchtown itself, including part of the second enclosure noted above, and was centred on Tremeer, 600m east of the churchtown (CRO AD 528/11). The place-name Clann, documented in 1285 as *Kylelan* (Maclean 1876, II, 151), is from Cornish *kelli,* 'grove', and *lann* (Padel 1985, 256). This hints at an association of these lands with the *lann* site in the churchtown, as well as, perhaps coincidentally, providing an echo of the Lanivet place-name by linking a 'grove' and a religious site. It may be significant that Lamorrick is also a place-name in *lann* (ICS place-name index: Lanivet).

Together the lands of Clann, Lamorrick and St Benet's, as mapped in the late eighteenth century, make up a compact block in the vicinity of the churchtown (Fig 5). The area to the south of the

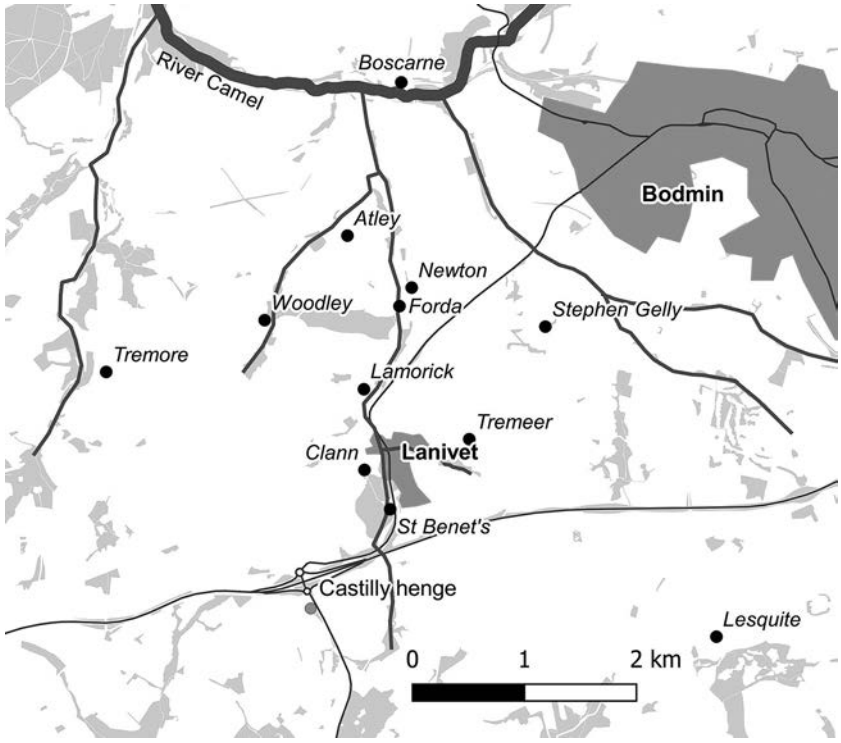


*Fig 9 Lanivet and environs, showing locations referred to in the text, with major roads and watercourses. (Contains OS data © Crown copyright and database right (2018).)*

church was glebe land, documented in the late seventeenth century, together with the substantial area of Churchtown Common, identified in the late eighteenth century as the commons for tenements in the churchtown (Potts 1974, 75–8; CRO X81/2). Could this block represent a former estate linked either with the *lann* or with the later religious focus hinted at by the decorated stones in the churchyard? Or both? Could such an estate perhaps have been documented as part of Bodmin's landholdings in the medieval period (as noted by Henderson) but omitted from the Domesday record? Henderson implied something of this kind for Lanhydrock parish – recorded as a chapelry of Bodmin priory in the thirteenth century but not named in Domesday – when he described it as 'one of the oldest possessions of the Monastery of St. Petroc at Bodmin' (Henderson 1964, 104). He suggested that it may have equated with an unnamed hide recorded as having been usurped from St Petroc's by Earl Harald (Henderson 1958, 284). Interestingly, the cross at Lanhydrock is closely similar to one of those at Lanivet (Preston-Jones and Okasha 2013, 158–9), perhaps providing some support for a common association.

These hints that a significant landholding of St Petroc's formerly existed within Lanivet parish offer a plausible context for the presence of the group of late early medieval decorated stones in the churchyard, including what Andrew Langdon has described as the 'most elaborately decorated wheel-cross in the county' (Langdon 2002, 43). And yet a puzzle remains: if Lanivet was an important religious centre (or a focus for a group of wealthy patrons for religious monuments) in the pre-Conquest period, as the presence of these superb stones suggests, it might be expected that there would be some documentary evidence for this, pre- or post- Conquest, in the form of (say) a charter or a reference in Domesday Book itself. Even for a secular manor, the earliest reference to the place-name, in 1268, is relatively late (Oliver Padel, pers comm).

An alternative is that some or all of these monuments are not in fact *in situ* and were brought to Lanivet from elsewhere at a date well after their creation; the former St Petroc's monastery at Bodmin, a site notably lacking surviving stone monuments, is the obvious candidate as a previous location (Padel 2013, 32; Preston-Jones and

Okasha 2013, 160–1). However, it is not easy to identify a plausible context and timing for such a relocation.

Certainly, many crosses and other decorated stones were moved in Cornwall during the nineteenth and twentieth centuries, but the two crosses at Lanivet were recorded in the churchyard at the beginning of the nineteenth century and the Lanivet 3 grave cover was found buried there during groundworks in 1864 (Britton and Brayley 1801, 518; Anon 1805, 1201; Polsue 1870, III, 16). It was reported that the other grave cover was only identified as such when the stone was turned over during the same operations, but A G Langdon noted that it had in fact been built into the church wall prior to its discovery (Polsue 1870, III, 16; Langdon 1896, 419). In either case it seems unlikely that these latter stones were recent arrivals.

It has been pointed out that in 1539, in the immediate aftermath of the dissolution of Bodmin priory, four bells from it were purchased for Lanivet (Maclean 1873, I, 345; Henderson 1935a, 226), with the implication that the crosses could have been similarly acquired (Preston-Jones and Okasha 2013, 160). The crosses would probably have been located at St Petroc's church, the site of the monastery at the period they were fashioned, rather than within the priory complex. That apart, though, while the bells may have been valued for their association with the recently dissolved house (*cf* the acquisition in 1537–8 by Morebath, Devon, and Huish Champflower, Somerset, of stained-glass windows from the priory of Barlinch: Duffy 2003, 90, 217n), they also had an intrinsic function and would have represented a prestigious asset for the parishioners of Lanivet, reflected in the substantial price paid for them (Orme 2010, 153). It seems less likely that the removal to and re-erection in the churchyard of such massive and evidently antique objects as the crosses would have been easily accommodated in the post-Dissolution cultural climate, in which older religious iconography and overt regard for it was increasingly under scrutiny (Duffy 2003, ch 5 and 6; 2005, ch 14; Orme 2013, 127).

There is also a question of whether such archaic Christian monuments continued to be valued by this period: pre-Conquest crosses were re-used as building material in the fabric of late medieval churches at Cardinham, Gulval, St Just-in-Penwith, Ludgvan, St Erth, Sancreed and Paul, and at sites in Devon (Henderson 1935b, 194; Preston-Jones and Okasha 2013, 131–2, 142, 146, 156, 167, 184, 198; Turner 2006b, 39). The incorporation of these toppled stones into church buildings may have had some symbolic component (Turner 2006b, 39), but these examples do suggest that such crosses were no longer respected as objects for display or as part of religious activities. In this context, relocation to Lanivet from elsewhere in the later medieval period seems unlikely.

Importation of the crosses in the succeeding period, down to the early nineteenth century when they were first noted at Lanivet, also seems improbable: during this era many crosses in Cornwall (as with inscribed stones) suffered ignominious fates, either from deliberate seventeenth-century iconoclasm or opportunistically because they were no longer respected as religious objects, being variously thrown down and buried, reused as gateposts or in farm buildings or broken up for building material (Langdon 1896, 20–25; for Lanivet examples, Henderson 1935b, 196; Langdon 2002, 48–50; for the wider area, Langdon 1996, 5–7, *passim*). In the absence of any obvious chronological context for their removal to Lanivet, therefore, it appears most probable that the crosses (and grave covers) now there are *in situ*, and that together they testify to its status as a place of some religious significance in the late early medieval period.

Of course, substantial numbers of crosses and other pieces of decorated stonework in Cornwall were moved about by antiquarians during the nineteenth century, some to considerable distances from where they were found. Thomas Couch reported that a 'Piscina, or Stoup . . . was found beneath the Font' at Lanivet during the 1864 restoration of the church, and then built into the wall on the south side of the altar (Couch 1865, 80). This stone has been identified as a decorated capital from Bodmin priory (Sedding 1909, 35). The description of it having been found 'beneath the Font' is reminiscent of the tradition of burying redundant fonts under their successors which has been identified elsewhere in southern Britain (Stocker 1997. I am indebted to Ann Preston-Jones for this reference). However, parts of similar capitals (also hollowed out and used as plant containers) were noted in the early twentieth century in the gardens of a house on the site of the priory in Bodmin and of the vicarage there (Sedding 1909, 23, 34–6, pl xi–xiii); parts of two more were at a villa called 'St Nicholas'

in the town, among a collection of architectural fragments made by a former owner who is said to have 'scoured the region for worked stone' (Henderson 1935a, 225; HER MCO 9806). Charles Henderson recorded other capitals 'of the same design' in the churchyard at Warleggan and notably in the garden of a house in Cross Street, Helston: 'the latter was probably taken to Helston in the last century by the Rev. R.G. Grylls, who owned the garden and collected stones from all parts of Cornwall' (Henderson 1935a, 225). Grylls died in 1841 (CRO RH/1/1420) and this distribution strongly suggests that local clerics and antiquaries had been passing around these rather more portable 'relics' from the former priory site since at least the earlier nineteenth century.

## 'The very centre of Cornwall'

Taking a wider view, Lanivet is situated roughly equidistant from the north and south coasts of Cornwall (Fig 1) and, although in fact lying somewhat east of a mid-point, it has historically been regarded as centrally located within the county. In 1838 the church was said to be 'by common repute the centre of Cornwall' and Thomas Couch described it in 1865 as 'popularly held to stand in the very centre of Cornwall' (Wallis 1838, 103; Couch 1865, 75); towards the end of the nineteenth century A G Langdon noted of the cross on the north side of the church an 'old saying that it is in the middle of the county, north and south, east and west' (Langdon 1890, 63; 1896, 295).

Lanivet is also situated close to the meeting point of the north–south and east–west boundaries which divide the early medieval hundreds of Stratton, Powder and Pydar (Fig 10), divisions which may themselves derive from the boundaries of 'tribal' territories dating to at least the pre-Roman period (Padel 2010). Charles Thomas also found a hint of a possible ancient distinction between the block of four western hundreds of Cornwall and those to the east (1994, 217–8, fig 13.2); Lanivet again lies close to the division between these groups.

Oliver Padel has pointed out that, intriguingly, just as the centrally placed Lanivet has a place-name in **neved,* a cluster of Nymet place-names in Devon, also derived from **neved,* is similarly located close to the geographical centre of the historic county. Thus, he asks, could the locations of these **neved* sites, at the centres of historic counties, indicate that those counties themselves represent the extents of former tribal territories? In the case of Cornwall this would indicate a territory extending to (and bounded by) the River Tamar, plausibly that occupied by the tribe known in the Roman period as the *Cornovii*, within the larger area of Dumnonia (Padel 2010).

Julius Caesar referred to a broadly comparable idea of a special 'central place' in his *Gallic Wars*, noting that the Druids of Gaul held an annual gathering on a 'consecrated spot in the country of the Carnutes, which is supposed to be the centre of Gaul' (Caesar 1980, 32). Webster (1995, 460) suggests this as an instance of the 'symbolic importance of centrality to Celtic peoples', noting also the wide distribution of the element *medio*, 'centre', 'middle', in Celtic place-names (citing Rivet and Smith 1979, 415; *cf* Robb 2013, chs 3 and 4). In Ireland, the Hill of Uisneach, in Co Westmeath, is marked by a complex of ceremonial monuments with principal phases of activity in the later Iron Age and early medieval periods. It was held in early Irish literature to be the centre of the island of Ireland and the meeting place of its ancient provinces (Donaghy and Grogan 1997; Schot 2006; 2011).

Padel (2010) further points out that in Devon a henge monument (that is, a ditched enclosure with a bank outside the ditch, usually of Late Neolithic date) has been identified from air photographs between Bow and North Tawton, close to the concentration of Nymet place-names (NHLE no 1015472). It has been suggested that these names may in fact have referenced the prehistoric site (Griffith 1985a; 1985b; 1988, 25). One of Cornwall's few henge monuments is located at Castilly, only 1.75 km south west of Lanivet church but just outside the parish boundary in Luxulyan (HER MCO 6933; NHLE no 1006684). The site is accompanied by a cluster of round barrows and other apparently funerary monuments (HER MCO 2408–11, 2413–6, 4277, 25752, 40962–6, 41011), as is the henge site in Devon. Charles Thomas led a small Cornwall Archaeological Society excavation at Castilly in 1962 (Thomas 1964). This found no certain evidence to confirm the monument as a Late Neolithic henge but did conclude that an earlier earthwork of broadly henge form had been substantially remodelled in the medieval period and may subsequently have been reused during the Civil War.

Could this earthwork (rather than the enclosure in the churchtown) have been the **neved* site

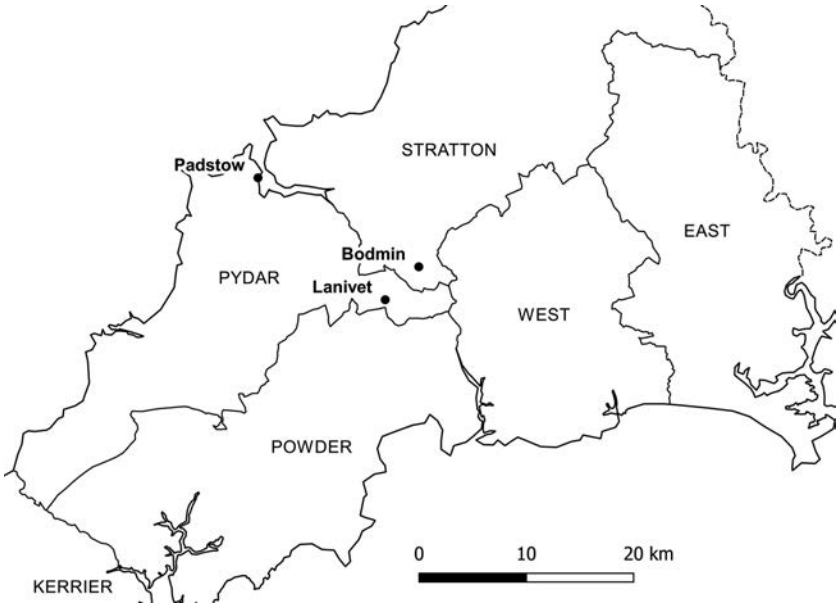


*Fig 10 Mid Cornwall, showing Lanivet, Bodmin and Padstow in relation to medieval hundred boundaries. 'Stratton' (or Trigg) represents the former unit later divided into the three hundreds of Stratton, Lesnewth and Trigg; 'West' was a division of a former territory composed of West and East (Wivelshire) (Picken 2000; Thomas 1994, 216–8, fig 13.2; Turner 2006, fig 44; Padel 2010). (Hundred boundaries based on digital data from Kain and Oliver 2001.)*

referenced in Lanivet's place-name (Padel 2010)? Could it be a further example of an earthwork created or adapted in the later prehistoric period which imitated the form of a monument of a much earlier time, as appears to have been the case with the Hay Close enclosure noted earlier (Jones 2014, 144–7)? The Hay Close site was initially targeted for excavation because it appeared on air photographs to be a classic henge (*ibid*, 115). The excavation at Castilly was limited in scale but frustratingly did not find anything to confirm either a prehistoric or later date for the monument, despite investigating two entrance terminals where any 'special' deposits might have been expected (Andy M Jones, pers comm).

Neither the **neved* place-name element nor henge monuments are frequent occurrences in the south west and for both to occur close to the geographical centres of two adjacent tribal areas is striking (Padel 2010). It seems inherently improbable that these attributes imply the existence of 'territories' centred on these locations as far back as the Late Neolithic and certainly no such suggestion is made here. It is perhaps more plausible that such patterns arose during later prehistory or in the early centuries AD, periods for which there is increasing evidence for both attention to and reuse of earlier monuments and the creation of new monuments resembling earlier ones (Hartgroves *et al* 2006, 103–6; Jones 2010).

An additional component of such an 'explanation', may be that the henges at Bow and Castilly, if both are indeed henges, were in each instance associated with routeways traversing the central areas of topographically defined blocks of landscape (*cf* Loveday 1998; Bradley 2007, 134): Castilly, in central Cornwall, is close to a notional 'crossroads' between routes following the spine of the county on much the same line as the present A30 and those crossing from coast to coast between the Camel and Fowey rivers. (At a later date the new site for St Petroc's at Bodmin may have been selected for very similar reasons of proximity to these routes: Padel 2013, 32.). In Devon, the Bow henge stands close to routes passing west – east to the north of the uplands of Dartmoor and those linking the Exe and Taw–Torridge catchments. The **neved* place-names were perhaps applied to these sites because of their impressive character as standing earthworks located close to the centres of territories and well-used routeways, but perhaps also through their reuse for 'pagan' activities into the early Christian period, although there is currently no direct evidence for this from either site.

## And finally . . .

To conclude. This brief examination of the context of the various Lanivet stones has, as is customary, generated more questions than answers. It may serve as a first small step towards the 'exhaustive surface examination of the whole place and perhaps its immediate environs' which Charles Thomas urged for Lanivet in response to the discovery of the second inscribed stone (Thomas 2016 [this volume]). It has certainly ranged considerably beyond that stone and its early Christian inscription. In that respect, however, it follows a path which Charles himself sometimes trod, taking an apparently narrow topic as a starting point for an exploration which ranges over much broader territory. It is hoped that Charles would have enjoyed this perambulation; regrettably we will not have him either as pathfinder or companion for future excursions.

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*Cornish Archaeology* 55, 2016, 203–216

# The late medieval tile pavement in the chapel of Cotehele

JOHN ALLAN, RACHEL HUNT, LAURENCE KEEN AND ROGER T TAYLOR

*The tiled floor in the nave of the chapel of Cotehele is the only intact example surviving in Britain of a distinctive type of late medieval pavement in which white ware tiles, glazed alternately rich yellow and brilliant copper green, were arranged in a chequer pattern. The occurrence of tiles from this type of pavement on many sites in southern England and Wales is described, and evidence indicating that they were probably made in Normandy is presented. The dating evidence for such tiles on other sites is entirely consistent with that indicated by other features in the chapel, which are attributable to the period 1493–1525.*

The chapel at Cotehele House in the parish of Calstock is one of the most perfectly preserved medieval spaces in the West Country (Figs 1–3). In recent years one component of this beautiful ensemble – its fragile late medieval tile pavement – has shown concerning signs of deterioration, and one of the writers (RH) has been engaged in a programme monitoring the floor's condition. Following a visit by another of the writers (LK) in 2012, which drew the attention of National Trust staff and volunteers at Cotehele to the significance of the pavement, the first writer (JA) was invited to visit the chapel in January 2013, to report on the date, likely place of manufacture, significance and rarity of the pavement, and to discuss options for preserving it.

The report (Allan 2013) highlighted the rarity and interest of the pavement, and recommended that a photogrammetric record should be prepared, accompanied by a detailed line drawing recording all the surviving evidence of the character of the pavement, including the scraps of evidence still visible on some very worn tiles. These tasks were undertaken later in 2013; on this occasion Dr Taylor also undertook an examination of the petrology of a selection of examples of these tiles. The present report publishes the results of the two episodes of recording undertaken in 2013 but excludes the initial report's discussion of the options for caring for the pavement, which are presented elsewhere (Hunt 2016). It may be mentioned here that following the recognition that the Cotehele pavement appears to be the only example now visible in Britain of a particular type of late medieval tile pavement, the decision was made to prevent further wear by excluding the public from this part of the chapel.

## Context

Although a licence was issued for a chapel at Cotehele in 1411 (Berry *et al* 2004, 157), building analysis has shown that the present structure forms part of the second main building phase of the house, attributable to Sir Richard Edgcumbe, who held Cotehele from *c* 1480 until his death in 1489, and his son Sir Piers (1489–1530: *ibid*; National Trust 1991, 5–18; slightly different dates are given in the Listed Building description). The chapel's other datable features are the altar frontal, the glass of the east window, the window

*Fig 1 The chapel in 2012, looking south west, with the early twentieth-century choir floor in the foreground and the medieval nave pavement beyond the screen. (Photograph: John Hammond / National Trust.)*

tracery, the wagon roof and the screen. Both the frontal and the glass bear the arms of Edgcumbe and Durnford, referring to Sir Piers and his first wife Joan; they are therefore datable to the period after their marriage in 1493, and prior to her death between 1521 and 1524–5, when Sir Piers married for the second time, to Katherine, widow of Griffith ap Rhys (Monnas 2003, 339; for corrections to her dates for the death of Joan and remarriage of Piers, repeated here, see Berry *et al* 2004, 161). The window tracery is broadly of late fifteenth- or early sixteenth-century date; the clock dates to the same period, as does the ceiled wagon roof (National Trust 1991, 75). The dating of the screen raises interesting questions, since it contains simple linenfold panelling, a form of ornament which seems to come into widespread use in England only after *c* 1530 (Charles Tracy, pers comm). This may therefore be an important early example of this form of decoration, comparable to examples in a number of Devon churches, which, it has been argued, are the work of foreign craftsmen (Allan 2014, 334–47). While it is possible that the furnishings were added shortly after the chapel was built, the window masonry and accommodation for the clock clearly form part of the original fabric. It is probable that all these features are contemporary, in which case they belong to the years 1493–1524 and perhaps after 1500. As we shall see, this is precisely the period of the floor-tiles.

## Later history

In 1830 the visitor Sophie Dixon described the floor in a manner which suggests that much of the glaze had already been lost: 'The wall is wainscoted half-way up, and the floor paved with rough tiles or bricks' (Dixon 1830, 9–15). A lithograph of *c* 1840 reproducing a Nicholas Condy painting of *c* 1836 seems to be the earliest useful pictorial record; it shows the nave floor exposed, the present arrangement of seats on three sides, and a lectern at the centre of the west end (Fig 4; for the date of Condy's visit, National Trust 1991, 25). By *c* 1900 chairs filled the nave, obscuring the pavement from view, but the medieval floor of the choir seems still to have been in place (Fig 5). A photograph of 1954 in the National Monument Record records the chequerboard arrangement over much of the nave; it was evidently much better preserved than it is today (Fig 6). Various other changes in the furnishing of the nave are also evident from early pictorial records, and some of these (such as the arrival of a heavy stone font bowl, now removed to the kitchen courtyard: Fig 4) will not have been good for the floor, but the retention of the benches around the walls throughout the last 180 years has shielded the edges of the floor against wear.

## Previous studies

It is surprising that, while the other components of this medieval ensemble have come to be regarded as some of the most important features of Cotehele, hardly any attention seems to have paid to the extraordinary survival of the floor. It is unremarkable that it does not seem to have attracted the attention of early students of medieval floor-

*Fig 2 The nave in 2012, looking west. (Photograph: Rachel Hunt / National Trust.)*

*Fig 3 The nave in 2012, looking east. (Photograph: courtesy of Paul Stillman.)*

*Fig 4 Lithograph of c 1840 reproducing a painting by N Condy of the 1830s, showing the bare tiled floor and benches round the walls. (Courtesy of the National Trust.)*

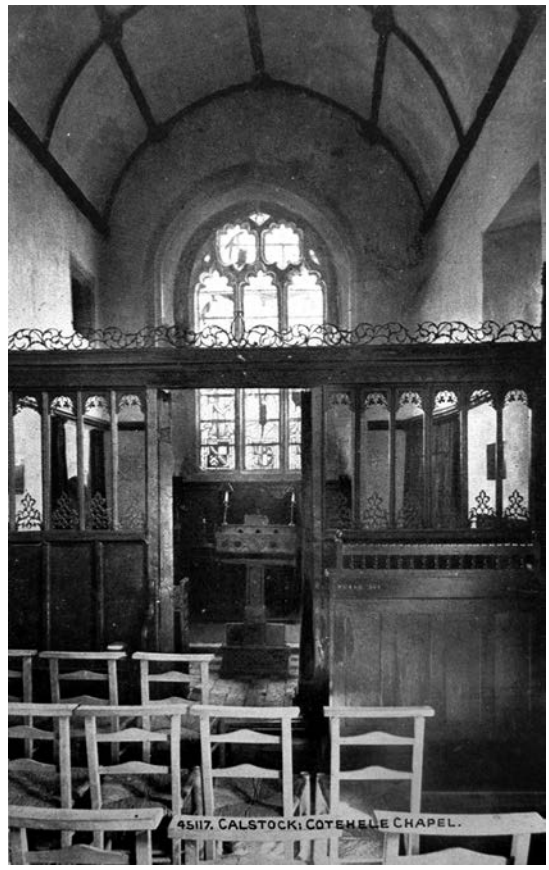


*Fig 5 Postcard of c 1900 with the choir floor apparently in place. (Courtesy of the National Trust.)*

tiles, who were mainly interested in decorated tiles. More surprising is the recent lack of appreciation of the pavement, given the growing literature about this form of decoration. The most detailed guide to Cotehele offers eight words: 'the floor retains some of its medieval tiles' (National Trust 1991, 74). The pavement is not even mentioned in the Listed Building description. Even the very full and detailed description of the chapel provided in the recent historic building assessment offers only the briefest comment: 'The floor at the west end of the chapel is paved with 16th-century glazed tiles, now very worn' (Berry *et al* 2004).

## Description

The floor covers the entire nave of the chapel, abutting the screen to the east and extending to the walls on the other three sides (Fig 7). It measures 4.22 × 5.22m, and each tile is around 162mm square; it is therefore composed of some 840 specimens. The tiles show a range of colours; many are white, but some are white with red streaks and others pink-red with white streaks or lumps. These different clays must surely have a common origin; a detailed petrological description is given below (Appendix 2). In their original state the tiles consisted of alternating yellow-glazed and green-glazed tiles laid in chequerboard, the former having a clear lead glaze, the latter a lead glaze with added copper. This arrangement is still obvious at the edges of the room, especially in the two rows nearest the walls. Detailed inspection of the entire floor has distinguished small scraps of green or yellow glaze in the heavily worn tiles nearer the centre of the room, often on the edges of tiles or in cracks or hollows on tile surfaces

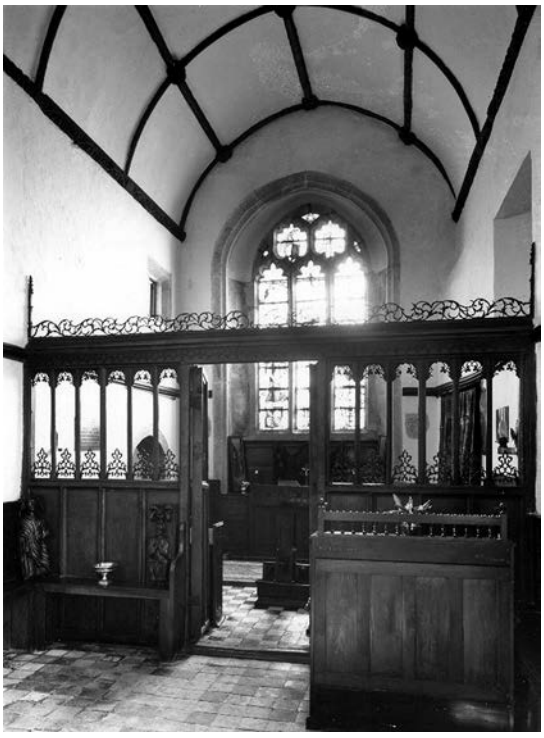

*Fig 6 The chapel in 1954, with chequer tiles in evidence. (English Heritage: NMR archive.)*

(Fig 8). Although the most heavily worn tiles at the centre of the room retain no such traces, there can be little doubt that the entire floor was laid out in a chequer pattern. Where preservation is at its best, the tiles still display the warm clear hue of the yellow glaze and rich brilliance of the copper green, and the simple but very striking effect of the original scheme can be appreciated; this is imitated in a more mechanical form in the replica pavement of the chapel choir (Figs 9a–b).

Most tiles are completely plain, but a number which are laid in an inconspicuous position under the bench near the west wall show diagonal scoring, which would have allowed these tiles to be snapped in half to fill the spaces against the wall edge if the pavement had been laid on the diagonal, at 45 degrees to the wall (Figs 7–8).

The nave floor is laid parallel to the room, and this arrangement is replicated in modern tiles to the east of the screen. By contrast, the modern raised floor around the altar is laid at 45 degrees, with triangular tiles at the junction with the wall. This contrasting treatment is evidently an accurate reflection of an historic distinction between the two spaces, since a few original tiles arranged diagonally, with green-glazed examples alternating with yellow-glazed, survive under the altar skirting.

## Distribution

Tiles of this group have been recorded on at least 66 sites around the coast of southern England, from London to Cornwall, with 10 further findspots along the coast of Wales and outliers at Norwich and St Andrew's, Scotland, and an unconfirmed find from Guernsey (Fig 10). The densest scatter is in south Devon, where no fewer than 44 sites are now known, including several around the estuaries of the Tamar and Tavy, not far from Cotehele, at Buckland Abbey, Stonehouse, Plymouth and Plympton Priory (Appendix 1). At present the most marked concentration of finds is at Exeter, where tiles of this group had already been recorded on 15 different sites by 1980 (Allan and Keen 1984) and further large collections have been excavated in subsequent years, the most recent substantial find consisting of 423 fragments from the site of the city's Dominican friary (Keen forthcoming a). This, however, may reflect the much larger number of excavations at Exeter than, for example, in Plymouth, Totnes or Poole, where finds of this type are also regular occurrences. They are now known from three sites in Cornwall: from Mullion parish church and 9 Fore Street, Fowey, as well as Cotehele (details in Appendix 1). No examples have been noted along the coasts of north Cornwall, north Devon and Somerset, and they do seem genuinely rare or absent from these areas (we are grateful to Cynthia Cramp, Jane Harcourt and David Dawson for advice on this point).

Even in south-west England, where tiles of this group are quite common finds, they are found rather less frequently than plain late medieval redware tiles imported from the Low Countries. They are certainly far less commonplace in south-east England; only a single example from the London area is known to Ian Betts, for example, compared with thousands of examples of Low Countries tiles (Betts *in litt* to JA, 2013). Stopford (2005) noted no examples from northern England, although Norton (1994) recorded two outliers at St Andrews, Scotland. No examples seem currently to have been recorded in Ireland (R Meenan *in litt* to JA, 2015).


*Fig 7 The Downland Partnership's orthophotograph of the pavement. (© The Downland Partnership 2013.)*

## Place of manufacture

The use of white clay for the bodies of many of these tiles makes it unlikely that they were produced in south-west England, where most clays are red-firing, the exceptions being the white-firing ball clays of Tertiary period found at Bovey Tracey and Peters Marland in Devon, and at Dutson near Launceston in Cornwall, which these tiles do not resemble (Brown and Vince 1984; Taylor,

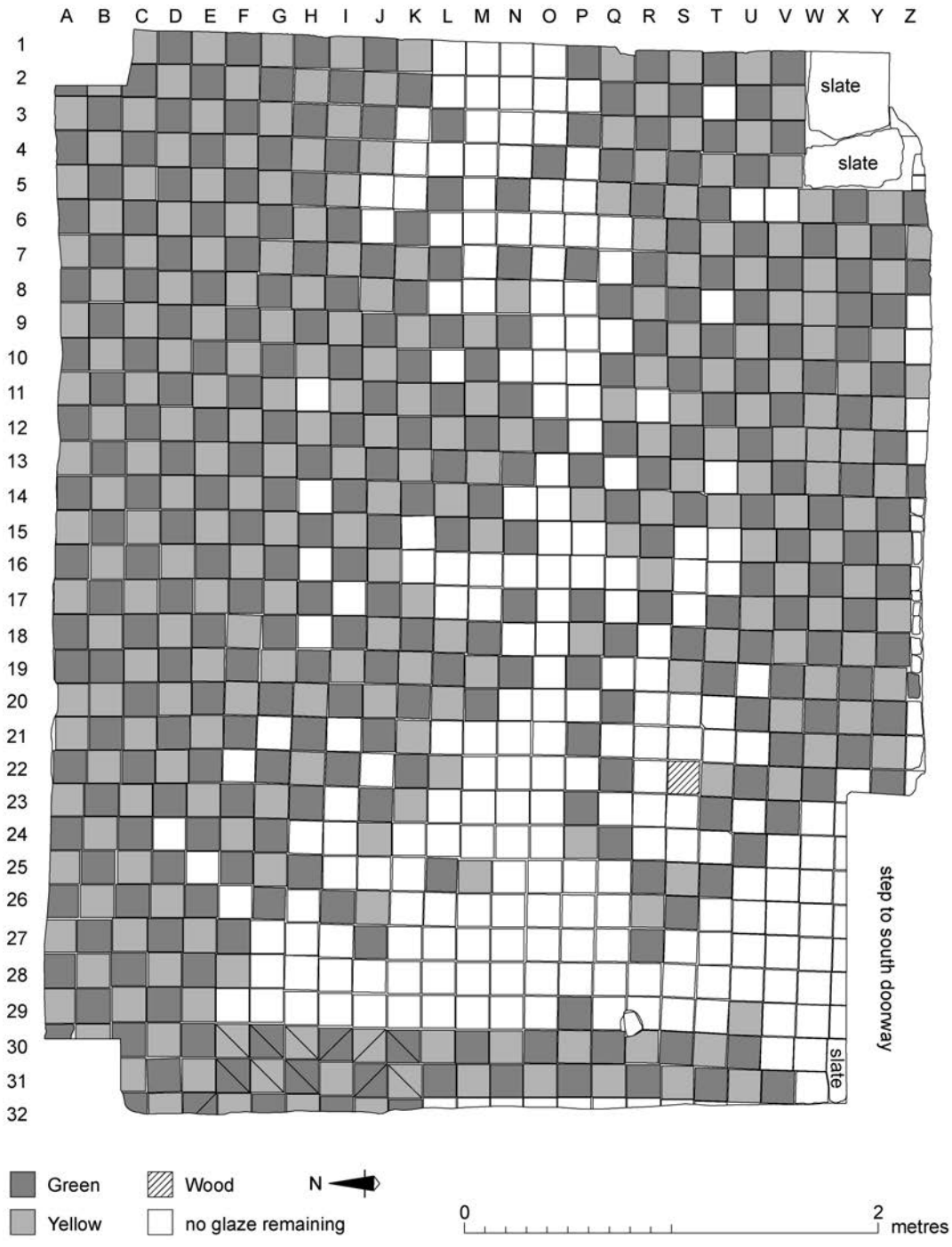


*Fig 8 Line drawing showing evidence for the glaze colours of the tiles. (J Allan and R Hunt; graphic: T Ives.)*


*Fig 9 (a) Well-preserved tiles under the wall-seats on the north side of the nave. (b) Worn tiles at the south west of the room in 2013, showing the pink fabric of many examples. Among the inclusions are crushed recycled tile fragments. (Photographs: J Allan 2013.)*

Appendix 2 below). The group's distribution has a bearing on its likely source. Such a widespread pattern is rarely seen among medieval floor-tiles, which were normally marketed over a distance of about 50 km or at most 80 km; it is however typical of some imported tiles, as Norton (1983, 81, 86) has pointed out. Given their rarity in London and along the east coast of England, where Low Countries tiles are common, a source in France – either in the south-west, such as the Saintonge, or in northern France (both well-established sources of imported ceramics to southern England) – has seemed probable.

With this in mind, a programme of thin-sectioning was undertaken by Dr David Williams of the University of Southampton to establish the source of these tiles (Williams 1991; 1994). It analysed 35 samples from Plymouth, Exeter, Poole and Carew Castle. This provided a petrological description of a series of samples, and noted that four tiles contained small irregular-shaped pieces of calcite and limestone, indicating an origin close to limestone formations, but the author was cautious in coming to any specific conclusions about the likely origin, considering eastern Normandy / the Paris Basin, the Saintonge area of south-west France and even areas of southern England as possible sources.

Of these different possibilities, it seems most likely that the source of these tiles is somewhere in Normandy and probably in the lower Seine valley, close to Rouen. Norton (1983, 93) noted similar tiles from a former early sixteenth-century house at Rouen, and tiles with similar white bodies and streaks of red clay are to be seen, for example, at Honfleur (Fig 11). The Exeter customs accounts of the early sixteenth century record the importation of thousands of tiles from northern France; the precise origins of the ships are not recorded, but there is a strong case for believing that many of them were from Rouen (Allan and Keen 1984, 241). The absence of white mica in the fabric of all samples examined also seems to us to support the conclusion that these tiles are more probably from Normandy than from the Saintonge, since Saintonge white wares normally contain muscovite.

## Dating

Dating evidence from several sites shows that tiles of this type belong to the years 1500–50. Those in the presbytery of Winchester Cathedral were laid in a remodelling carried out by Bishop Fox (1500–28) (Norton 1983, 90); the finds in Exeter Deanery form part of an early sixteenth-century remodelling; many of the finds from Exeter excavations are in early sixteenth-century deposits (Allan and Keen 1984, 241). Quite when importation started is uncertain; one example from Bowhill, Devon, was found in a deposit pre-dating a major building programme of *c* 1500 (Allan 2004, 211–12). The earliest documentary record for the importation of Normandy tiles noted so far comes from an Exeter customs roll of 1490 (*ibid*), and the early sixteenth-century rolls record numerous cargoes of tiles imported from northern France, the highest levels of imports being in the 1520s (*ibid*).

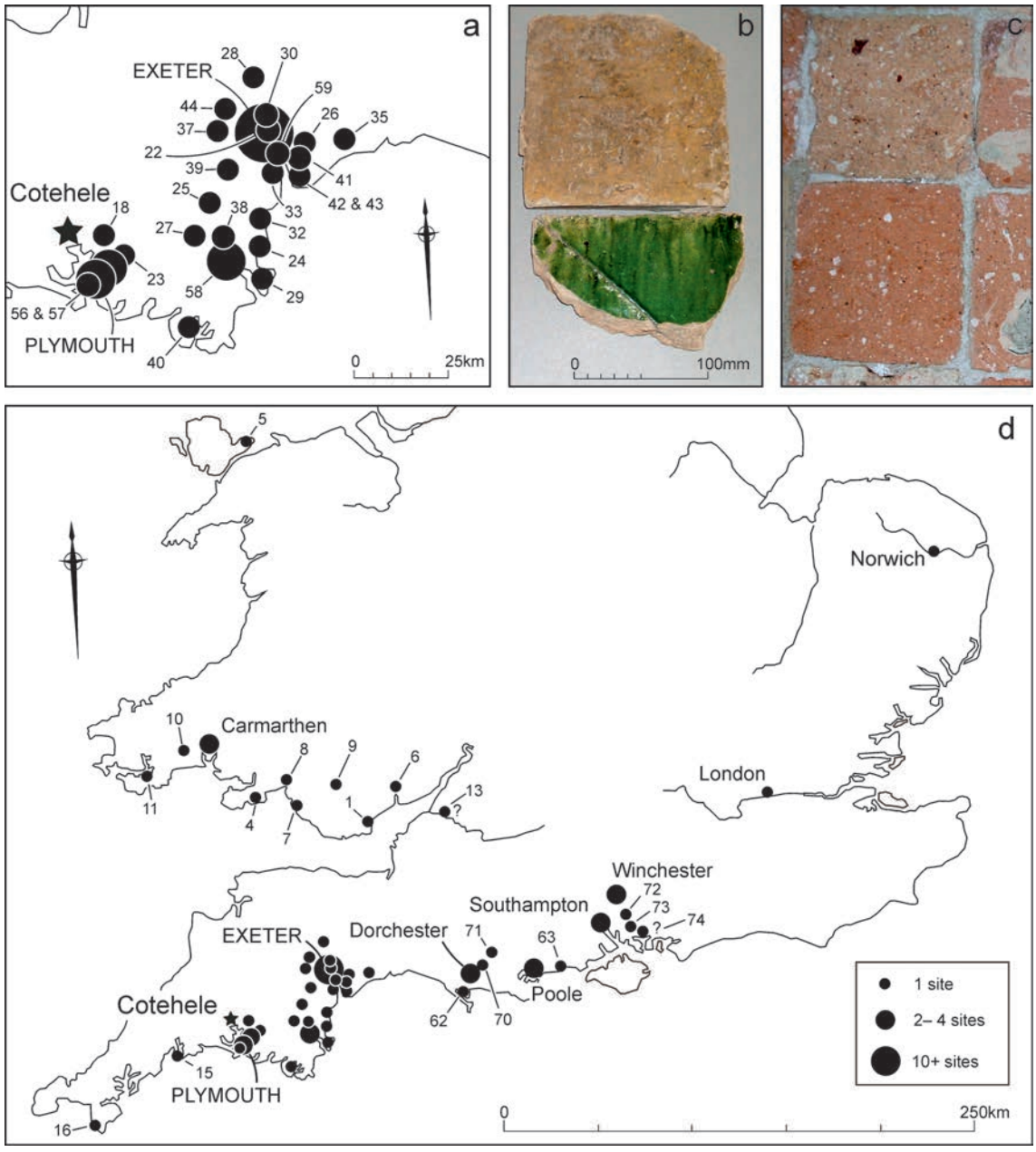


*Fig 10 The distribution of white ware tiles of probable Normandy origin in England and Wales, with (b) examples of yellow-glazed and green-glazed tiles from Exeter Blackfriars; (c) detail of the Cotehele floor showing the pink fabric with white clay inclusions. (Graphic: T Ives.)*

*Fig 11 Tiles relaid outside the Eglise St Etienne, Honfleur. They are mainly smaller than the exported tiles, but show the same mix of white wares, white with red streaks and red wares. (Photograph: J Allan.)*

## Significance

Although the existence of this particular form of architectural decoration was only recognised in the 1980s, it is now clear that late medieval tile pavements composed of imported Normandy tiles were in widespread use along the south coast of England and Wales, with a few on the east coast; additions regularly arise to the list of sites on which finds have been recorded (Appendix 1). When we consider the small proportion of the total number of urban, manorial and ecclesiastical sites which have been excavated, we may presume that by 1550 there were thousands of chequered pavements of this sort in the British Isles.

Such pavements must have been used by quite a wide range of society. Chequered pavements are sometimes depicted in late medieval drawings showing the highest in the land (for example, Marks and Williamson 2003, 215), and some of the households which used them were certainly of high status (for example, the eastern hall of Wolvesey Palace, Winchester; the find at Vauxhall Street, Plymouth, was on the site of the house of a mayor of Plymouth), but the finds on secular sites in towns are simply far too common to represent the homes of the wealthy alone.

Almost all the examples of these tiles described above consist either of relaid fragments of floor, or loose tiles recovered from excavations, or reused fragments embedded in later buildings. Pavements laid in parish churches or monastic houses with burial rights were regularly disturbed by grave-digging before the Reformation; not uncommonly excavation in friaries, for example, shows that almost the entire church floor was packed with burials before the Reformation, and in parishes the process carried on into the nineteenth century. The floor of the chapel of Cotehele survived intact because it had no burial rights. Floors in houses seem usually to have worn away; the only other find of a substantial area of *in situ* pavement being the floor exposed by excavation in the early 1970s in the east hall of Wolvesey Palace, Winchester (Hants), which was heavily worn and repaired on many occasions before the abandonment of the palace in the 1680s (Biddle 1972, 129–30).

It is also clear that these tiles did not wear at all well. The lead glaze on tiles of this type is so vulnerable to wear that many specimens excavated from monastic sites had already lost their glaze by the time of the Dissolution of the Monasteries in the late 1530s. For example, the majority of the finds from the Carmarthen Greyfriars were so worn that no trace of their glaze remained (James and Brennan 1998, 128). They can have been only 50 years old at most, and some pavements of this type

must have been laid only a decade or two before the Dissolution. To the writers' knowledge, the survival of glaze on the protected areas of flooring under the wall-benches and around the fringe of the nave at Cotehele is still more unusual; it is the only example left in the British Isles where the original chequer pattern can be appreciated. Such a situation would arise only in unusual circumstances; it arose at Cotehele with the move of the Edgcumbe family to Mount Edgcumbe and the subsequent limited use of the older house.

The Cotehele pavement appears to us to be the only floor of this type in Britain which remains *in situ*, and is therefore the sole surviving example of a distinctive form of architectural decoration currently visible in the British Isles.

## Appendix 1: Tiles of probable Normandy origin in England, Wales and Scotland

The list is based on personal observation by two of the writers (JA in Devon and Cornwall, LK in Dorset and Hampshire), complemented by published accounts for Wales (Lewis 1999) and Scotland (Norton 1994), and information from colleagues, noted in the individual entries.

The site number preceding each entry is that shown in Fig 10.

### *Wales*

Lewis provides a near-comprehensive list (Lewis 1999, 73, Group 31): **1**, Cardiff, Jones Court; **2**, Carmarthen Greyfriars (for this major find see also James and Brennan 1998, 28, plain type 8, 'Normandy'); **3**, Carmarthen, St Johns Priory; **4**, Caswell, St Peter's chapel; **5**, Llanfaes Friary; **6**, Llantarnam Abbey; **7**, Margam Abbey; **8**, Neath Abbey; **9**, Penrhys Grange; **10**, Whitland Abbey. Williams (1991) added **11**, Carew Castle; P Courtney (*in litt* to JA, Feb 2013) added **12**, Carmarthen town ditch.

### *Bristol*

**13**. Believed to be present, probably on more than one site (M Ponsford *in litt* to JA, Feb 2013).

### *Cornwall*

**14**, Cotehele chapel (reported here); **15**, Fowey, 9 South Street, garderobe group (one, green-glazed, displayed Fowey Museum); **16**, Mullion church 2015–16 (two green-glazed fragments, AC archaeology project ACD 683).

### *Devon*

*Cathedral:* **17**, Exeter Cathedral (three in St Paul's chapel; 26 in repair to upper floor of pulpitum).
*Monastic sites:* **18**, Buckland Abbey (Gaskell Brown 1995, 43, 74); **19**, Exeter Blackfriars (Keen forthcoming a); **20**, Exeter Greyfriars (Allan and Keen 1984); **21**, Exeter, St Nicholas Priory (*ibid*, and more recent finds); **22**, Exeter, Polsloe Priory (*ibid*); **23**, Plympton Priory (coll. on site, 2015); **24**, Torre Abbey (Keen, forthcoming b).
*Parish churches:* **25**, Ashburton (Allan 2016a, 10); **26**, Aylesbeare (three frags, green-glazed: Allan 2016b); **27**, Buckfastleigh (excavations by A Reynolds and S Turner 2002–4, unpub.); **28**, Cadeleigh (one in floor of E16C E Devon tiles); **29**, Churston Ferrers (numerous, reused in blocked features, recorded by South West Archaeology, 2013); **30**, Crediton (Allan and Keen 2010); **31**, Exeter, Mary Major 1971 excavation (Allan and Keen 1984); **32**, Haccombe (a few in floor); **33**, Kenton (one from excavation: Allan and Keen 2007, 99; also a few reset in N choir chapel floor); **34**, Plymtree (one in floor); **35**, Sidbury (one loose in crypt); **36**, Stoke Canon (15–20 pieces from excavations 2009–11; R Taylor petrology report, below); **37**, Tedburn St Mary (Exeter Archaeology find, R Taylor report, below); **38**, Torbryan (about 80 reset in N aisle); **39**, Trusham (149 frags from M Steinmetzer excavation 2013, including 66 green-glazed and 61 yellow-glazed: Allan 2014b); **40**, West Alvington (20 frags from excavations in churchyard: AC archaeology 2011); **41**, Woodbury (at least two among other late medieval tiles from tower clearance: AC archaeology 2010); **42**, Withycombe Raleigh (two reset beside S arcade pier).
*Chapels:* **43**, Exmouth, St Margaret's chapel (26 loose frags: Allan 1986, 136).
*Domestic sites:* **44**, Crediton, Boniface Centre (Allan and Keen 2010, 167: four tiles); **45**, Exeter, Bowhill (Allan 2004, 211–12: at least 143 fragments, one in a pre-*c* 1500 context); **46**, Exeter, Deanery chamber fireplace; **47–52**, Exeter city excavations (fragments from Goldsmith Street sites

1–2; High Street; Trichay Street; Queen Street; Exe Bridge [Frog Street tenement]; Preston Street: all Allan and Keen 1984); **53**, Exeter, George's Meeting, South Street; **54**, Plymouth, Woolster Street (five, all green: Gaskell Brown 1986, 70); **55**, Plymouth, Vauxhall Street 1990; **56**, Stonehouse Quay (Allan 2000, 84); **57**, Stonehouse, Durnford Street (three, all green: unpub.); **58**, Totnes, *The Lamb* (six: unpub.); **59**, Topsham, St Margaret's Dairy (Exeter Archaeology 1970s find during building recording: RAMM collection).
*Domestic or ecclesiastical:* **60**, Exeter, Bishop's Palace garden (gardener's finds 2012); **61**, Exeter, city wall at Lower Coombe Street (Allan and Keen 1984).

*Dorset*

**62**, Chickerell church (eight fragments, two yellow, the others green: report forthcoming by L Keen); **63**, Christchurch Priory (in choir floor); **64**, Dorchester, Greyhound Yard (Keen 1992); **65**, Dorchester, Methodist Church (Williams 1991); **66**, Dorchester, Frome Terrace allotments (noted by Keen); **67**, Poole, The Foundry (Keen 1994); **68**, Poole, Scaplens Court; **69**, Poole, Thames Street (all Keen 1992); **70**, Puddletown church (two fragments noted by Keen 2012); **71**, Milton Abbey (two unpub fragments, Dorset County Museum).

*Hampshire*

**72**, Bishop's Waltham (Keen 1994); **73**, Southampton (*ibid*); **74**, possibly Portchester Castle (*ibid*); **75**, Winchester, Wolvesey Palace (Biddle 1972, 129–30); **76**, Winchester Cathedral, presbytery (Norton 1983, 90).

*London*

**77**, Sugar Loaf Court 1982 (Museum of London: site code SLO82): a very worn green-glazed example, fabric code 3066 (*inf ex* I Betts).

*Norfolk*

**78**, Norwich (Margeson 1993, 165, FT17).

*Scotland*

**79**, St Andrews, probably Blackfriars (Norton 1994, 153).

*Channel Isles*

**80**, Lihou Priory, Guernsey (unconfirmed identification: Keen 1994, 54).

# Appendix 2: Petrological description of plain white ware tiles

*Roger T Taylor*

Tiles in the Cotehele chapel pavement were examined *in situ* with a hand lens. The body fires from off-white to pale pink or terracotta red, with off-white spotting, streaking and patches.

Mineral content:

Quartz: The main mineral content is of translucent to transparent angular to sub-angular grains up to 3mm. Some tiles contain sub-rounded inclusions of off-white, cemented fine quartz sand with a size range of 0.1–0.7mm in largest dimension, some with a degree of concentric structure.
Reddish-brown ferruginous sub-angular fragments, sparser.
Matrix: Clay contains much fine-grained quartz sand.

*Comment:* The Cotehele tiles possess the main compositional characteristics associated with white ware tiles from other sources (below). The presence of the large inclusions is unusual. Some other large lumps embedded in the matrix may be refired lumps of broken tile.

## Comparison with tiles of the same group from Devon

The following descriptions of tiles, identified by the writers as examples of the same group, have been included for comparison with the Cotehele tiles. They were examined with a binocular microscope at 20X magnification.

*1. Stoke Canon church, Devon*

Pale pink oxidised, white-mottled tiles, moderately hard-fired 20–29mm thick. Remnants of rich copper green or translucent pale yellowish glaze on the base and sides. The glaze is worn, from top surface.

Mineral content variable between different tile fragments, approximately 5–15 per cent larger grains.

Quartz: Translucent colourless to white angular to sub-rounded grains, 0.1–1.2mm, rarely 4mm.
Muscovite: Rare cleavage flakes, 0.1–0.2mm.
Matrix: Much fine-grained quartz sand.

*Comment:* This collection of tiles has been made from variably sandy clay. The generally low iron content of the clays accounts for the pale firing and mottled appearance of the body.

*2. Tedburn St Mary church, Devon*

A single tile. Pink and off-white mottled and streaked clay fabric with remnants of copper-green glaze, mainly on the sides. Moderately hard-fired, thickness 22–25mm.

Mineral content: approximately 5 per cent larger grains.

Quartz: Transparent to translucent colourless, sub-angular to rounded grains, some polished some matt surfaced, 0.1–2mm.

Chert/flint: A cream, brownish stained, tabular fragment with angular edges, 3mm.

Matrix: Finely sandy silty micaceous clay.

*Comment:* Fabric very similar to tiles from Stoke Canon and Cotehele described above, and with close match to samples from Exeter in the RAM Museum reference collection.

## Acknowledgements

This research was generously funded by Jean and Geoffrey West of Melbourne, Australia. Ian Betts, †Paul Courtney, Cynthia Cramp, David Dawson, Mike Ponsford, Ben Jervis and Jane Harcourt provided information about floor-tiles of this type in the areas they have studied. Naomi Payne informed us of recent finds of this type by AC archaeology in Devon and Cornwall, and Bryn Morris drew to our attention the find at Churston Ferrers.

The corresponding author is John Allan.

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*Cornish Archaeology* 55, 2016, 217–229

# The changing landscape of the Lizard: analysing a pollen archive from the edge of Goonhilly Downs

G G GARBETT, J D SCOURSE AND C TURNER

*As part of a wider investigation of the palaeoecology and environmental history of the Lizard peninsula plateau, a palynological investigation is presented of a 125cm core from a sediment-filled mill pool close to Erisey Barton farm on the south-west edge of Goonhilly Downs. Radiocarbon dating suggests that the core consists of sediments deposited over the past approximately 800 years. Four distinct pollen assemblage zones have been identified that may be explained by changes of land use resulting from socio-economic changes in Cornwall. During the early part of the period represented there are sustained changes in the spores and herbaceous pollen that are consistent with changes in the grazing and arable regimes in the vicinity of the sample site. These are associated with a period of rapid population growth. Coincident with the expansion of coniferous plantations in the nineteenth century are indications of a reduction of arable agriculture followed by evidence of management of rough ground by burning. The filling of the mill pool with water and then sediment is clearly demonstrated by the rise and fall of the pollen of aquatic species in the core.*

The Lizard peninsula is one of the most important botanical areas in the British Isles. It is designated under the EC Habitats Directive as a Special Area of Conservation (JNCC 2011) and approximately 25 per cent of the peninsula is managed for conservation. It also contains much important archaeological evidence dating back to at least the Mesolithic period (for example, Smith and Harris 1982). An understanding of the palaeoecology and environmental history of the peninsula is desirable as a tool to inform conservation decisions and archaeological reconstructions. At the time of the inception of this study two pollen diagrams from the peninsula had been constructed (French 1996; Tinsley 1999); both are from coastal river valley sites on the west coast. Fragmentary evidence from palaeosols and buried peat was also available from the plateau (Staines 1977; Crabtree reported in Bell 1984; Smith 1984; Balaam 1984; Straker 1996). In order to provide more comprehensive evidence of the environmental history of the plateau and the development of the heathland, palynological investigations of three sites have been conducted as part of a PhD project (Garbett 2012).

## The study site

This paper describes the palynological evidence from the site of a sediment-filled mill pool (NGR SW 713 187) close to Erisey Barton farm in Ruan Major (Figs 1, 2). The farm itself is situated on an area of granite gneiss (BGS England and Wales sheet 359), within a much larger area of serpentine rock. The mill pool and its dam are on the serpentine in a narrow valley about 15m below the 80m plateau to its east and west and 35m below

the 100m plateau of Goonhilly Downs 0.5km to the north east.

Benney (1972, 101) notes Erisey mill as being among manorial mills in Kerrier listed by Charles Henderson, but no dates are known for the construction or active life of the mill. The Cornwall and Scilly Historic Environment Record entry (MCO 23569) notes a reference to 'Erisey Mill tenement' in 1757 (Courtney Library, Royal Institution of Cornwall, HK/10/4) and this tenement formed part of lands advertised for lease with the barton and farm of Erisey in the 1810s and 1820s, although no mention was made of the mill (*Royal Cornwall Gazette*, 28 May 1814, 19 April 1817, 29 May 1824). The Ruan Major tithe apportionment of 1843 (Cornwall Record Office) recorded 'Old Mill Pool and Leat' (TA 40a) with an area of just over 1½ acres (0.6 ha) within a parcel named 'Mill Pool Croft' (TA 41). 'Erisey Mill Field' (TA 147) lay immediately to the south. The pool and leat are shown on the 1841 tithe map (Cornwall Record Office) but no mill building is depicted, suggesting that it was no longer standing at that date. The tithe survey recorded 'Erisey Mill Field' as arable but the 'Mill Pool Croft' was recorded as 'furze'. Crofts were parcels of 'rough ground', the current term for 'downs' or 'moor', enclosed in the post-medieval period and often used, as in this instance, for growing furze (gorse) for use as domestic fuel (Dudley 2011, 107–8, 139–43).

The 1840 tithe map identifies three farm settlements within a few hundred metres of the pool site. Erisey itself was first documented in 1337 with 'John de Eresy' holding 1 parcel of land at 'Goeneyly' (Hull 1971, 85). Trewoon and Trewetho have the Cornish *tre* place-name prefix which indicates an early medieval origin (Padel 1985, 223–32). They all had adjacent field systems in which the land would have been managed under a convertible husbandry regime (below) together with, in the post-medieval period, numbers of crofts. The cultivation ridges visible in the aerial photograph fall within the bounds of individual crofts and appear to be spade dug (rather than created by ploughing) as they continue right up to the boundaries of the crofts (Fig 3). They may derive from short-term episodes of cultivation in the Napoleonic War period (Dudley 2011, 106–7) or from later nineteenth-century attempts to improve the land: a number of the former crofts in the vicinity of the mill pool site were shown as improved land on the 1st edition Ordnance Survey 25in: 1 mile (*c* 1880). There is currently no agricultural activity in the vicinity.

*Fig 1 Erisey mill pool: location.*

The pollen catchment of what was initially a boggy valley bottom and subsequently for a period an elongated mill pool would have derived from the immediate environment, from airflows bringing pollen from further afield and from pollen borne by water from the catchment area of the stream feeding the pool. This has its origins on Goonhilly Downs, 2.5km to the north east. Andersen (1970) suggests a 20–30m pollen catchment area in a closed forest canopy but the open vegetation indicated by the high herbaceous pollen count from the mill pool site (below) would have resulted in a very much larger catchment, extending from the centre of Goonhilly Downs and along the full length of the feeder stream.

The wider regional element in the pollen rain would have been greatest when there was open water before the pool had silted up (Twiddle 2012). The rise and fall of the aquatic *Myriophyllum* (water-millfoil) pollen in the pollen diagram (Fig 6) provides a reference point for this. Open water would also have resulted in greater homogeneity of pollen deposition than the bog surfaces that pre- and post-dated the pool (Sugita 1994). The tree pollen, particularly of the coniferous *Pinus* (pine) and *Abies* (fir) with their air sacs, would have a larger catchment resulting from long-distance transport.

It is unfortunate that the chronology of the construction of the mill and thus of the mill pool

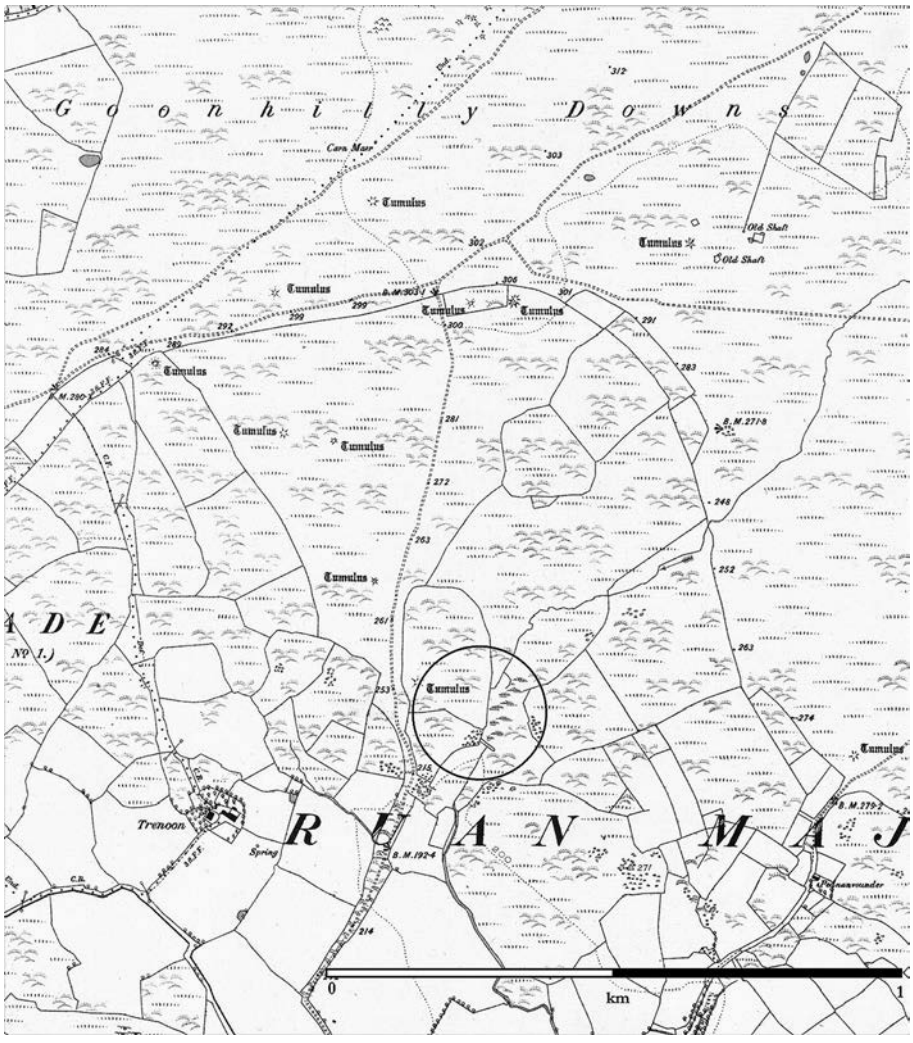


*Fig 2 Erisey Barton mill pool location (circled), south of Goonhilly Downs. (Based on the Ordnance Survey 6in: 1 mile sheet LXXX SE (1888). Reproduced by permission of the National Library of Scotland.)*

is unclear. The mill tenement was documented between the late 1750s and early 1840s (above) but the Ruan Major tithe apportionment of 1843 recorded 'Windmill Common' (TA 39) and 'Windmill Croft' (TA40) in the near vicinity of the 'Old Mill Pool and Leat'. No physical remains of a windmill in this area are known but it has been suggested that it was located on the mound of what has been interpreted as a Bronze Age barrow in Windmill Croft (HER MCO 2655), about 100m north west of the mill pool. The evidence from the field names suggests that the Erisey water mill and its pool are likely to have been a post-medieval replacement, perhaps short-lived, for the earlier windmill.

## The investigation

The Erisey Barton mill pool was sampled in the spring of 2006. The sampling point was situated approximately 40m upstream of the *Salix cinerea* (grey willow) scrub directly behind the dam. A Russian corer was used to extract

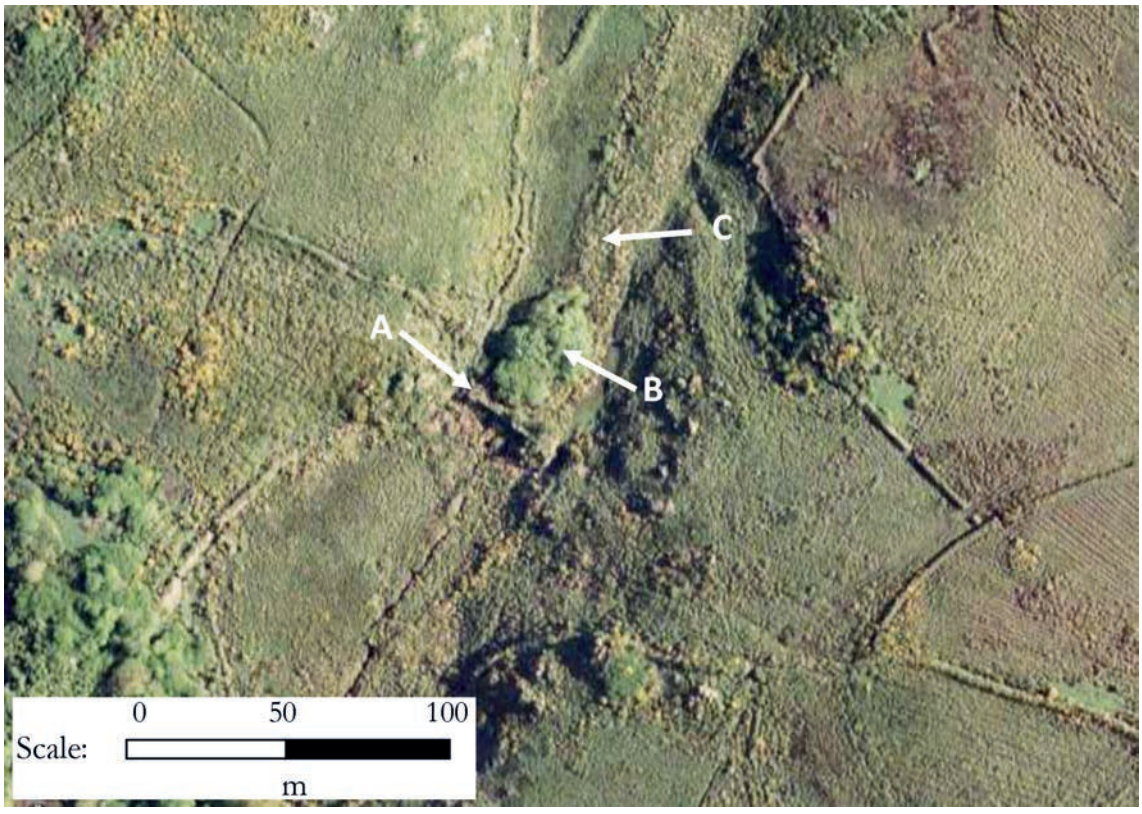


*Fig 3 Aerial photograph of Erisey Barton dam (A) with Salix cinerea scrub behind the dam (B). The sampling point is indicated by arrow C. (Photograph: Google Earth © Infoterra Ltd and Bluesky.)*

overlapping core sections to a depth of 125cm. The sediment consisted of humified herbaceous material, predominantly Cyperaceae, the degree of humification increasing with depth. Coarse sand appeared in the basal 25cm of the core with gravel at the base.

The core was sampled for $^{14}$C dating at 120cm, 100cm and 30cm. The absence of macro fragments of wood, charcoal or similar carbon-containing materials contemporaneous with surrounding sediment necessitated the use of bulk material for dating. Although roots were removed from these samples some root material would have contributed to the $^{14}$C date so these must be considered as minimum dates. The basal date (120cm) was produced by standard radiometric dating of 44g of material at the University of Waikato Radiocarbon Dating Laboratory, New Zealand. This is therefore an 'average' date for the bottom 10cm of the core. The 100cm and 30cm samples were AMS $^{14}$C dated at the $^{14}$CHRONO laboratory of Queens University, Belfast, using 0.05g and 0.03g of material. All the $^{14}$C ages were calibrated using the OxCal online facility v4.2 (Bronk Ramsey 2009) and are cited at the 95.4 per cent confidence level.

The core was sampled for palynological investigation at 5cm intervals from 0cm to 120cm, producing a total of 24 levels. In order to calculate the pollen concentrations tablets of *Lycopodium* spores were added to each sediment sample before they were then prepared by means of standard acetolysis and hydrogen fluoride treatments (for example, Moore *et al* 1991). These latter procedures removed most of the non-pollen matrix from the sediment and the resultant concentrated pollen samples were mounted in silicone oil in preparation for pollen and spore identification and counting. A total land pollen count (TLP) of an average of 320 terrestrial pollen grains per level (excluding the abundant Cyperaceae pollen) was used for 22 of the 24 levels. The 105cm sample was abandoned due to very poor pollen preservation

and the 115cm sample was abandoned at a TLP count of 63 due to pollen scarcity. Charcoal fragments at each level were counted separately. They were separated into two size categories, 10–50µm and >50µm, and their number per gram of sediment calculated using the *Lycopodium* exotic spore count as an indicator of absolute frequencies (Stockmarr 1971).

Pollen and spore identification were facilitated by the use of keys within, for example, Moore *et al* (1991), a small reference collection and the 'PalDat' online palynological database. Ericaceae (heath) pollen was separated into species, including the very distinctive pollen of the endemic *Erica vagans* (Cornish heath), using the keys of Oldfield (1959). The identification of putative cereal grains (Poaceae >40µm) was informed by the work of Andersen (1979), Küster (1988) and Beug (2004). This takes into account the dimensions of the grain, its pore and annulus, and the surface sculpturing. The pollen diagram was constructed using the C2 software as described by Juggins (2010).

## The pollen diagram

The pollen data are presented here in the form of a percentage diagram in which the total land pollen less Cyperaceae (TLP) is 100 per cent. The sediment description column uses the Troels-Smith (1955) convention. The diagram has been divided visually into four local pollen assemblage zones: EB1, EB2, EB3 and EB4, based upon changes in the representation of key taxa. A key to the sediment descriptors and the colour coding of the taxa is provided in Figure 4. The trees, shrubs, herbs, charcoal, $^{14}$C date and sediment descriptor are set out in Figure 5 and the spores, remaining herbs, aquatics and indeterminate are set out in Figure 6.

### Zone EB1 (120cm–100cm)

This zone forms the base of the diagram with a $^{14}$C date of the basal sediments of 810 ±136 BP, cal AD 970–1414 (Wk-19884). This large standard deviation means that this basal date cannot be confidently used in the interpretation of the diagram other than in indicating a broadly early medieval / medieval date prior to that represented by zone EB2. The zone has the highest *Corylus* (hazel), *Calluna* (ling heather), Asteraceae (Lactuceae) and *Pteridium* (bracken) counts and low aquatic pollen counts. There is no cereal type (>40µm Poaceae) pollen and *Calluna* dominates the Ericaceae pollen. The small charcoal fragments are occasional to frequent and large fragments occasional.

### Zone EB2 (100cm–30cm)

The base of this zone has a $^{14}$C date of 832 ±22 BP, cal AD 1167–1256 (UBA-20269). The top of the zone has a $^{14}$C date of 138 ±21 BP, cal AD 1673–1943 (UBA-20268). The uncertainty arising from the large standard deviation of this second date, however, is also too great for it to contribute reliably to the interpretation. The zone is characterised by a gradual increase in Poaceae (grass) pollen corresponding to a drop in Asteraceae (Lactuceae) and *Corylus* pollen, and a rise in *Plantago* (plantain) spp. and *Erica vagans* pollen. The aquatic *Myriophyllum* pollen reaches its peak of >100 per cent of TLP in the middle of this zone, then drops back rapidly to 0 per cent. There is a consistent 1 per cent of TLP of cereal type pollen throughout the zone, rising briefly to 8 per cent at 85cm. The occurrence of charcoal fragments is similar to the previous zone, EB1.

### Zone EB3 (30cm–10cm)

This zone is characterised by a large increase in the *Pinus* pollen, a gradual increase in Poaceae and a gradual fall in *Erica vagans* pollen. The *Plantago* and cereal type curves fall back slightly and there is a steep rise in *Osmunda* (royal fern) spores through the zone. Aquatic pollen is very rare and there is an increase in both large and small charcoal fragments.

### Zone EB4 (10cm–0cm)

In this final thin zone there is a small drop in the *Pinus* and Poaceae pollen and a slight rise in the Ericaceae. There is an increase in the exotic conifer *Abies* and a sharp rise in charcoal fragments, particularly the larger ones (>50µm).

## Interpretation of the pollen diagram

The interpretation of the pollen diagram has been informed by an understanding of historic land use practices. Rackham (1987, 335) estimates that at

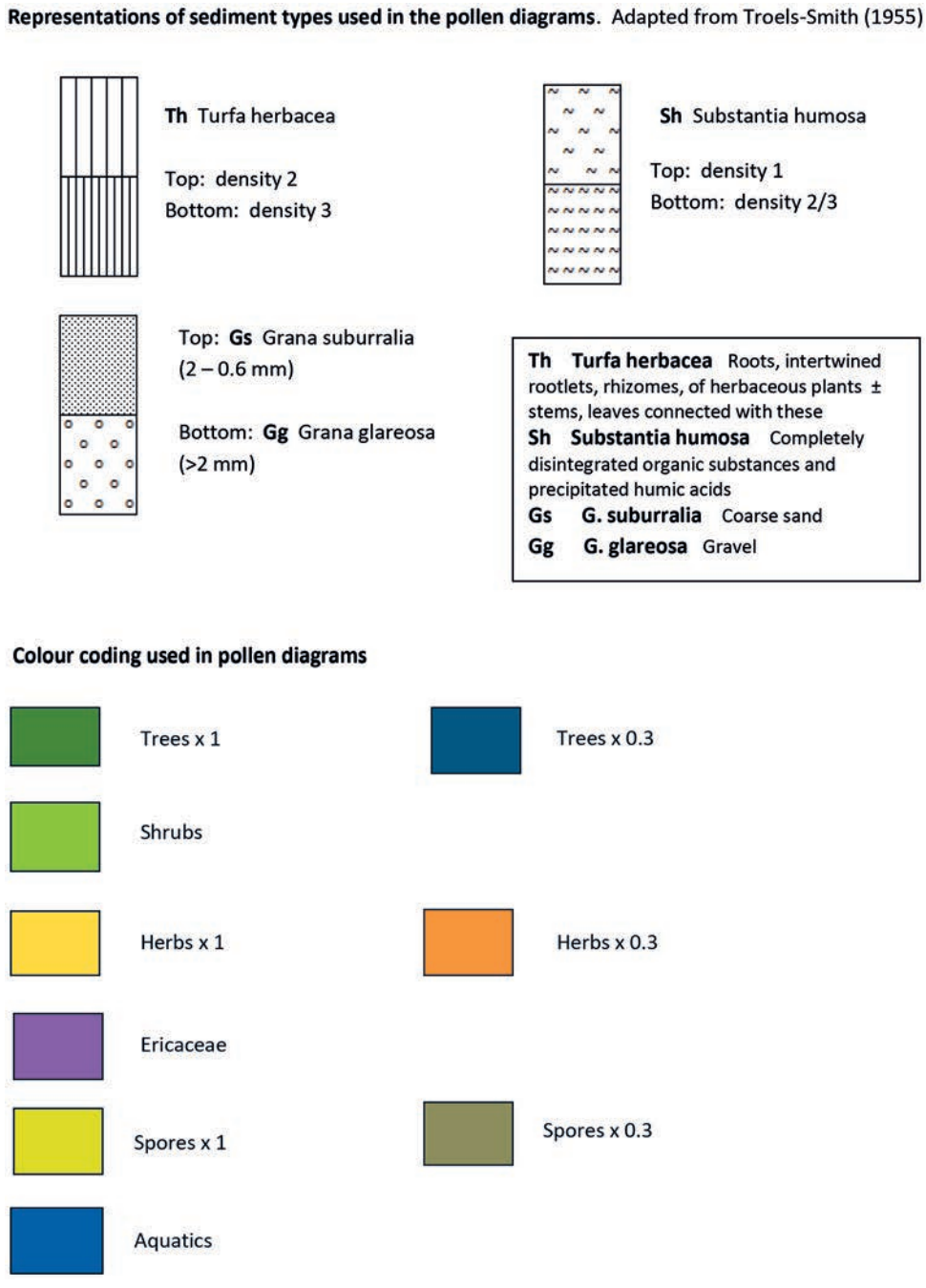


*Fig 4 Key to sediment codes and colour coding of pollen diagram*

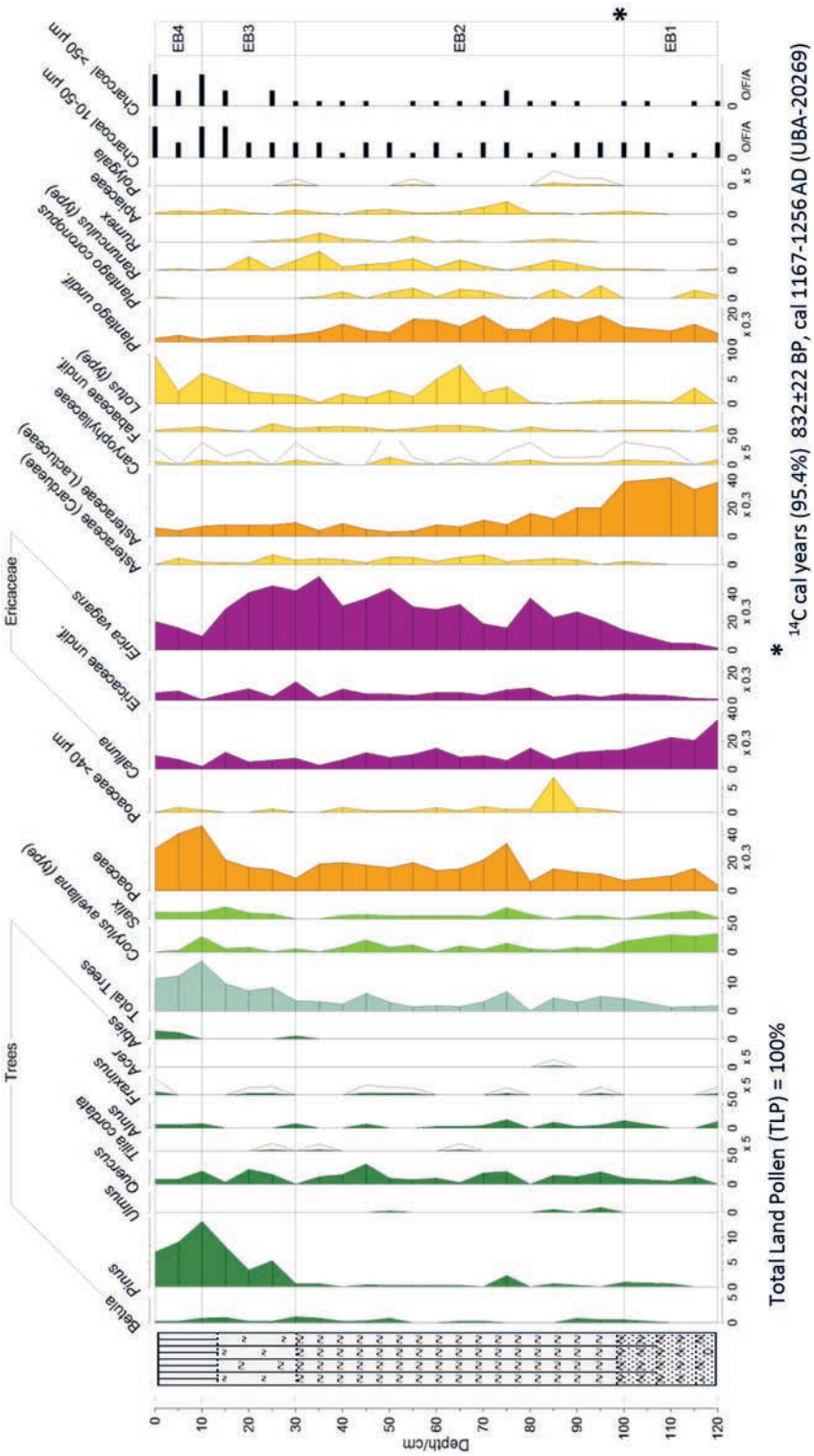


*Fig 5 Pollen diagram: trees, shrubs, selected herbs and charcoal.*

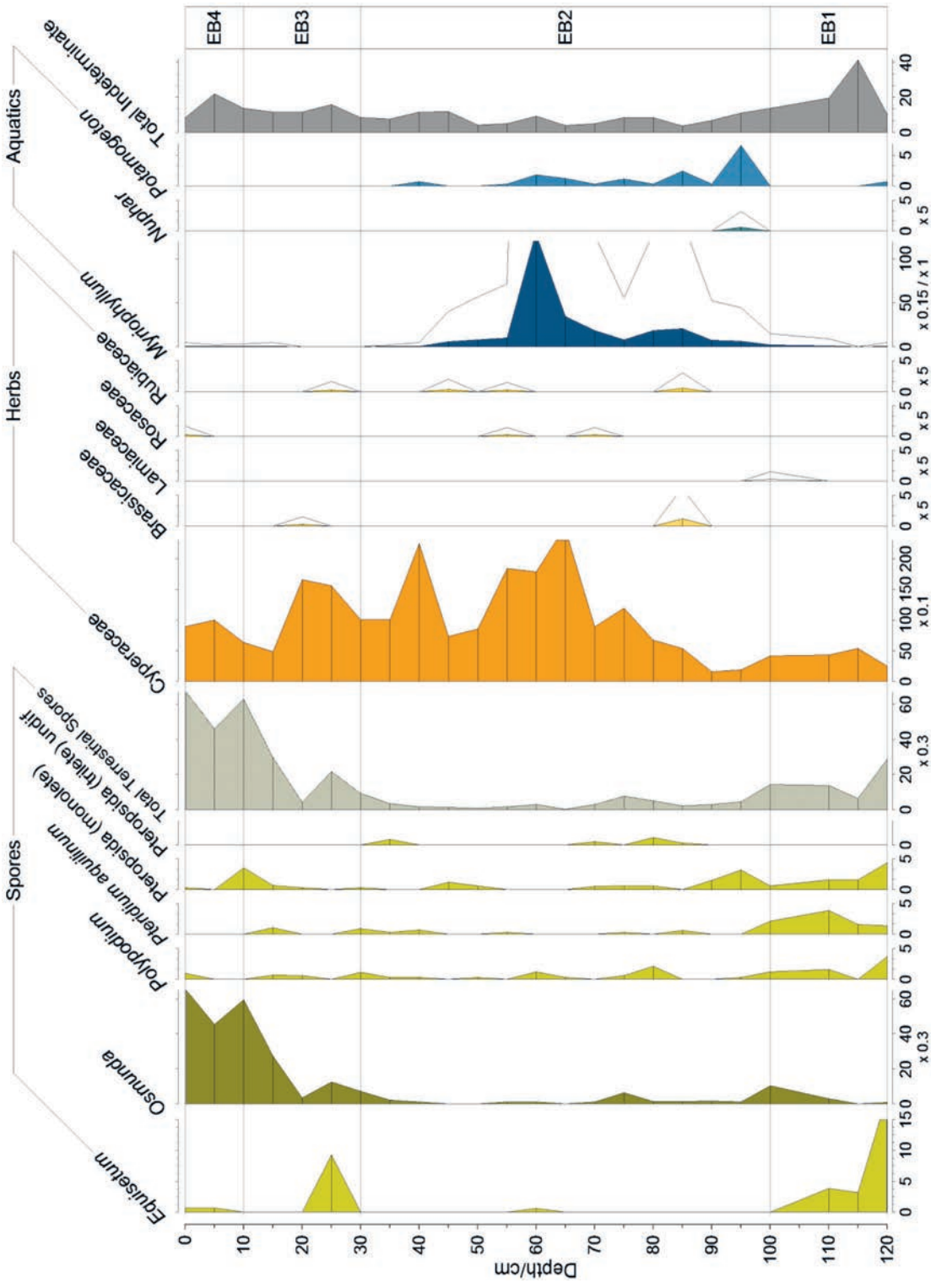


*Fig 6 Pollen diagram: spores, herbs, aquatics and indeterminate.*

the time of Domesday (1086) approximately one third of Cornwall was 'pasture', which equates to rough ground. A similar figure for the later medieval period has been derived from historic landscape characterisation, with the proportion in west Cornwall rather higher for the same period at more than 40 per cent (Herring 2011a, 289; 2011b). A return made to the Crown in 1583, 'The Certificate of the Parkes and Commons in the Countie of Cornwall', recorded Goonhilly as the largest parcel of rough ground in Cornwall (Fox 1971, fig 4.1; Dudley 2011, fig 47).

A detailed description of the convertible husbandry system operating throughout most of the period under investigation is provided in Dudley (2011, 44–6, 107–9). Under this regime fields close to farm settlements, the 'in-ground', were worked under a rotation of approximately ten years, with two to three years under crops and the remainder a longer ley period under grass. Households within farm hamlets around an area such as Goonhilly had grazing and fuel collection rights on the rough ground, in common with neighbouring hamlets (*ibid*, 60–1). Livestock grazed the commons during the summer and autumn but returned to the in-ground in winter. From the twelfth to the fourteenth centuries new holdings were sometimes created by enclosing and improving rough ground and during the post-medieval period many smallholdings and new farms were established on rough ground. From the seventeenth century, but particularly during the eighteenth and nineteenth centuries, substantial areas were also enclosed as crofts, former commons taken into individual hands and held as part of farms, enabling closer management of fuel supplies and grazing; these were only occasionally cultivated (*ibid*, 107–12).

## Zone EB1

The pollen assemblage in this zone is indicative of an open, lightly grazed area of rough ground in an open valley in which the dammed mill pool was not yet established but sediment was being deposited in the valley bottom. This can be inferred from the high levels of 'cultural' pollen, including *Plantago* which is associated with disturbed habitats, particularly paths (for example, Moore *et al* 1991, 189), and Asteraceae pollen. Much of the latter is probably derived from *Taraxacum* (dandelion) spp., producing the very high 'Lactuceae' representation, this taxon being particularly associated with grasslands subject to grazing (Behre 1981). *Pteridium aquilinum* spores are also in greater abundance here than in the rest of the diagram and this species is associated with intermittently grazed pastures (Tansley 1968, 181–3). The raised levels of *Corylus*-type pollen, almost certainly hazel, compared to zone EB2 would tend to support the interpretation of the area being less intensively used than in the subsequent zone. The very low *Myriophyllum* pollen count indicates a near absence of the aquatic habitat associated with a mill pool but the presence of small pools, probably temporary, on the valley floor.

## Zone EB2

This zone extends over approximately 600 years, from the twelfth or thirteenth century to the nineteenth, the latter date indicated by the rise of *Pinus* pollen in Zone EB3 (below). The dating of Zone EB2 encompasses both the medieval and post-medieval periods and so covers the climatic cooling and storminess associated with the Little Ice Age (LIA) of 1300–1850 (Fagan 2001), the Black Death of 1348–1350 and the establishment of croft enclosures from the seventeenth century. The pollen evidence, however, remains largely constant throughout the zone.

An important change from zone EB1 to EB2 is the appearance of a continuous cereal-type pollen curve (Poaceae >40µm) that extends throughout the EB2 zone with a spike at 85cm. These large Poaceae grains are confidently identified as cereal grains, probably *Triticum* sp. (wheat). Cereals are low pollen producers and the pollen is usually poorly dispersed (Vuorela 1973), so adding significance to this shallow curve. Its presence, coupled with the drop in Asteraceae (Lactuceae) pollen, *Corylus* type pollen and *Pteridium* spores, points to a more intensive use of the land with perhaps a larger area under cultivation within the convertible husbandry cycle (Dudley 2011, 44–6). The slight rise in *Plantago* pollen and the appearance of *Ranunculus* and *Rumex* pollen are consistent with continued grazing on the rough ground commons (Behre 1981). Another important feature of the EB1/EB2 boundary is the start of a gradual replacement of *Calluna* as the dominant heath species by *Erica vagans*. The cooling associated with the Little Ice Age would not have benefitted the Mediterranean species *E. vagans* over the hardier *Calluna*, so a non-climatic explanation for the shift seems more

likely. The Cornish heath has been observed to re-establish rapidly after soil disturbance at the expense of other heather species (Ray Lawman, Natural England, pers comm), so more intensive land use may therefore explain this change.

The rapid rise in the pollen of aquatic species, particularly *Myriophyllum*, that reaches a peak of >100 per cent of TLP at 60cm, indicates the filling of the mill pool with water. The replacement of a partially minerogenic depositional environment with a wholly humic and plant-derived one at the start of the zone is closely linked to this rise of *Myriophyllum* pollen, implying the deepening of the pools on the valley floor. The distinct spike in cereal-type pollen before the filling of the (probably) post-medieval mill pool which is indicated by the rapid rise of the *Myriophyllum* suggests that this was a late medieval episode possibly resulting from temporary outfield cultivation of grain crops somewhere close to the pool site. It therefore provides useful pollen evidence for the phenomenon of occasional medieval enclosure and cultivation of outfield sites found elsewhere on rough ground in Cornwall (Dudley 2011, 45, 106–7).

An explanation for the differences in the pollen record between zones EB1 and EB2 may be sought in socio-economic changes in Cornwall in the thirteenth and fourteenth centuries, not least a rapid increase in population. Halliday used the Domesday survey of 1086 to estimate a total population of Cornwall at around 20,000, and proposed a tripling of the total by the establishment of the Duchy of Cornwall in 1337 (Halliday 1959, 117, 148). The tin industry in Cornwall expanded rapidly during the thirteenth and early fourteenth centuries, with the quantity of tin presented for coinage doubling between 1301 and 1324 (Hatcher 1973, 156). It is unclear whether this development drew in workers from outside Cornwall, almost certainly it did, but it would have contributed to an economic base favourable to population growth. The expansion of tinworking, and of a workforce which was at least partly dependent on market purchases for food (Hatcher 1970, 93–4), occurred alongside the rise of towns. These were established by major landowners keen to stimulate economic activity, with the number of urban centres in Cornwall increasing from the two recorded in Domesday to at least 30 by *c* 1300 (Fox 1999, map 51.1; Kirkham and Cahill 2011). This expanding urban population was at least as dependent on markets as the tinworking community, and the creation of new markets and fairs in the towns also undoubtedly stimulated agricultural production. Unsurprisingly, these developments were paralleled by rising demand for land. One consequence was that numbers of households on existing farm holdings multiplied, developing the typical farm hamlet of Cornwall (Hatcher 1970, 99–100; *cf* Fox and Padel 2000, lxxxviii), and new farms were established through colonisation of rough ground (for example, Herring 2006). High prices for grain also encouraged farmers to expand production through short-term cultivation of patches of waste (Hatcher 1970, 82–4).

The catastrophic mortality of the Black Death in the late 1340s had clear short-term impacts on Cornwall's economy, indicated by a crash in the receipt of tin for coinage between 1342 and 1351, followed by a very slow recovery (Hatcher 1973, 156). In addition, during the second half of the fourteenth century, there was a further drain on manpower through demands for military service, as, for example, when in 1363 the Black Prince visited Cornwall to raise men for his forthcoming Spanish war (Hatcher 1970, 145). However, Hatcher (*ibid*, 146–7) points out that the Black Death brought about no long-term slump in the demand for land and suggests that there is much evidence for increasing demand for foodstuffs in the half century after the Black Death. He also notes that the expansion of non-agrarian activities stimulated demand for land and often an expansion in the land area under cultivation, and that a 'substantial market for foodstuffs in medieval Cornwall' was created by the non-agrarian work force and provision of victuals for shipping (*ibid*).

Documentary evidence for these developments in the local area around Erisey is lacking, but it is notable that demand for land was particularly marked on the Duchy manor of Helston-in-Kirrier on the northern margins of the Lizard (Hatcher 1970, 89, 93–4). While this demand showed signs of having peaked in the decade immediately prior to the Black Death (*ibid*, 95–6), it seems probable that similar patterns of multiplication of households on existing farms, creation of new holdings on rough ground and temporary cultivation of waste to take advantage of rising prices were also experienced on the Lizard peninsula. While there was no medieval tin industry in the immediate area, demand is likely to have come from the tin production area focused on the coinage town of Helston, relatively minor

in the early fourteenth century but of growing importance subsequently (Gerrard 2000, 58–9), and from the urban centres and ports around Mount's Bay and the Fal.

The change in the pollen assemblage between zones EB1 and EB2 may therefore be understood in terms of major economic and social transformations which took place in Cornwall during the thirteenth and fourteenth centuries. The fact that the palynological record in zone EB2 shows so little change throughout the remainder of the medieval and early post medieval periods is an indication of the stability of the convertible husbandry regime (Dudley 2011, 44). It is not until around the early nineteenth century that changes in land use patterns were sufficient to be recorded in the pollen archives of the Erisey Barton mill pool site.

### Zone EB3

The rise in *Pinus* pollen at the start of this zone can be linked to reports of the establishment of plantations in the wider area around the site in the first half of the nineteenth century. The Bonython estate, 2.5km north of Erisey Barton was '. . . surrounded by considerable, thriving plantations' consisting of beech and Monterey pine, planted in the late 1830s by Treseders' nursery (Pett 1998, 58–9). A small conifer plantation within a croft enclosure near the mill pool is indicated on the 1st edition Ordnance Survey 25in: 1 mile map (*c* 1880). It also shows the mixed plantation around Bonython manor, the Dobnas plantation a further 2 km to the north and several small mixed plantations around Goonhilly Downs. Phillips (1967, 14) reports an Exmouth gentleman seeking wasteland on Predannack Downs for growing trees in 1870. These historical records therefore provide a date for the start of Zone EB3 in the early to mid-nineteenth century.

Cornwall's farming landscape was changing significantly in the decades around the mid-nineteenth century, with the small, mixed family farms whose convertible husbandry methods had survived for hundreds of years becoming more specialised and responding to changes in distant as well as local markets. Arable farming, particularly grain, declined as a result of cheap and superior wheat imports from Europe, Australia and the American prairies, while the coming of the railways in 1859 and the introduction of new and more productive breeds of dairy cattle caused a shift to pastoral agriculture and the establishment of a dairy industry by the end of the century (Rowe 1993, 258–61; Halliday 1959, 335). There were also changes in local demand. Mass outmigration from Cornwall began in the 1840s in response to the lure of new labour markets, particularly in the Americas and South Australia (Deacon 2007, 162). In the 1860s the price of copper crashed (due largely to the new areas opened up by emigrating Cornish miners) and by the 1870s Deacon (*ibid*) estimates a population fall in Cornwall of 9 per cent. Halliday (1959, 328) records a drop in the population of Gwennap parish, just north of the Lizard, from 11,000 in 1841 to 6,000 by 1881 and Deacon (2007, 162) describes a state of 'social paralysis' in the mining town of Redruth with 200 empty houses and the inhabitants surviving with the help of soup kitchens.

Data from Mawgan-in-Meneage for 1867–1894 (Rowe 1996, 173–4) demonstrate the change in agricultural activity clearly and at Erisey the shift from arable to pastoral land use is evident in the pollen record of EB3 with a fall in cereal type (>40µm Poaceae) and *Plantago* pollen and a rise in the remaining Poaceae. This rise in Poaceae occurs at the expense of the Ericaeae pollen, almost certainly indicating some loss of rough ground in the area during this period (*cf* Dudley 2011, 57).

*Salix* pollen and *Osmunda* spores rise throughout this zone, and the aquatic *Myriophyllum* pollen has almost completely disappeared. These observations are consistent with local changes at the mill pool, with *Salix* pollen indicative of the willow carr establishing just behind the old dam on the silted-up surface and *Osmunda* establishing along the banks of the stream that runs through the centre of the feature. The increase in charcoal fragments towards the end of the zone may be related to management changes evident in the final zone.

### Zone EB4

The fall in the Ericaceae pollen and the rise in small Poaceae pollen that occurred through zone EB3 reverses at the start of zone EB4. This, coupled with the further rise in charcoal fragments, is consistent with modern heathland management practices on Goonhilly Downs in which burning and grazing are used to encourage the growth of Ericaceae (Ray Lawman, Natural England, pers comm). Also significant is the presence throughout

this zone of *Abies* pollen indicating the increasing introduction of exotic conifers into the plantations.

## Conclusions

The relatively high resolution of this pollen diagram, with 23 samples over a time span of approximately 800 years, reveals detailed changes in the pollen production of the local vegetation. These can be divided into four distinct zones with differences between them which may be explained by changes in agricultural practice. These can be closely linked to socio-economic changes occurring in the region. Thus, the pollen archive of the Erisey Barton mill pool site holds a record not only of changing land use by the people of the Lizard plateau since the medieval period but also of change in the wider world.

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# A Bronze Age pit and amber bead from Trevassack Hill, Hayle, Cornwall

ABIGAIL BROWN, HENRIETTA QUINNELL AND PAUL RAINBIRD
with a contribution from WENDY CARRUTHERS

*An archaeological excavation at Trevassack Hill, Hayle, Cornwall revealed a large pit containing sherds of Bronze Age pottery with, at the base, beneath a flat stone, a charcoal-rich deposit containing an amber bead and a probable pebble hammer, artefacts which are unusual in Cornwall. This note presents the findings from the pit, including analysis of the plant remains and a radiocarbon date of Middle to Late Bronze Age date.*

In February 2016 a phased series of archaeological works conducted by AC archaeology for Bovis Homes (South West) Ltd at Trevassack Hill, Hayle (NGR SW 56791 37537) culminated in a 60m by 40m open area excavation (Fig 1). Close to the southern (upper) end of this area was a large pit containing Bronze Age pottery with an amber bead and a perforated stone in a charcoal-rich basal deposit. The pit was located on a north-facing slope at approximately 33m above Ordnance Datum with views across the tidal Copperhouse Pool to Phillack. This note presents the findings from the Bronze Age pit; further features on the site, including boundary ditches of later date (shaded light grey on Figure 1) are discussed briefly and are further described along with the detail of the project elsewhere (Brown and Rainbird 2016).

## The Bronze Age pit [136]

Large pit [136] was revealed beneath a topsoil (120) and subsoil (121) and cut a natural subsoil (122) which consisted of pale yellow silty clay with abundant sub-angular stone inclusions. It measured 2.5m long by 1.6m wide by up to 0.44m deep and was irregular in shape (Fig 2). The sides were gradual and straight except on the south-east side which was almost vertical. The base sloped gradually to the west side where it became flat. The pit contained two fills, (133) and (135). The upper fill (133) was up to 0.3m deep and consisted of brownish-yellow silty clay. It contained 58 sherds of pottery dated to the Bronze Age and a piece of coloured stone, possibly curated or deliberately selected. The basal fill (135) was up to 0.1m deep and consisted of moderately compact dark brownish-grey clayey silt with abundant charcoal flecking. The primary fill contained an amber bead and a perforated worked stone or pebble hammer (Quinnell, below). Charred plant remains from this layer included cereal grains and cereal processing waste, and produced a radiocarbon determination of Middle to Late Bronze Age date (see below). The horizon between basal fill (135) and upper fill (133) was marked by a flat stone 134, measuring 0.6m long by 0.44m wide by up to 0.09m thick. The pit was cut to the south east by a later boundary ditch [132].

## Pit [139]

Approximately 1.5m to the west of pit [136] was a smaller pit [139] which contained 27 sherds of

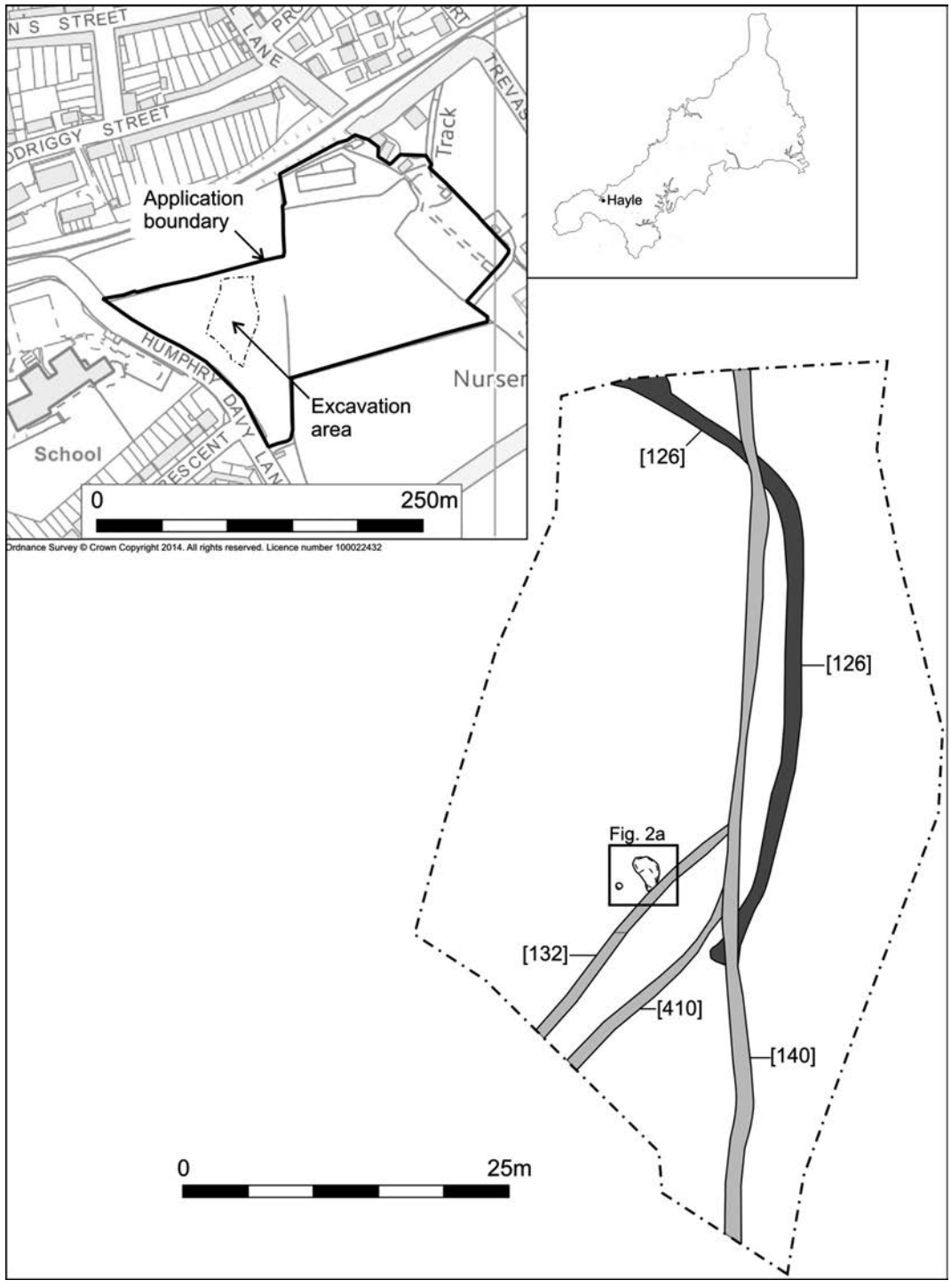


*Fig 1 Trevassack Hill: location.*

pottery dated to the Bronze Age in its upper fill (137). It measured 0.48m in diameter by 0.07m deep and was bowl shaped. The upper fill (137) consisted of dark brownish-grey clayey silt with common small charcoal flecks; the basal fill (138) consisted of greyish-brown silty clay with no finds.

## Ditches

Ditches [132], [140] and [410] can be regarded as the remnants of former land divisions dating to a period prior to the beginning of historic mapping in the mid-nineteenth century. Ditch [140] is primary to this pattern of enclosure as both ditches [132] and [410] terminate at [140], indicating that [140] was an extant feature at the time they were dug. [140] runs parallel with an extant field boundary to its east and it is probable that this pattern of land division dates to the early post-medieval or medieval periods.

Ditch [126] pre-dates the pattern of land division discussed above. It measured 0.9m wide by 0.6m deep with steep irregular sides and rounded base. Unfortunately it is undated, but the possibility that it is contemporary with pit [136] is discussed below.

## The finds

*Henrietta Quinnell*

### Bronze Age pottery

The Bronze Age pottery assemblage from pits [136] and [139] consists of 86 sherds (1130g). All fabric is gabbroic but the material from the fill (137) of pit [139] contains 27 sherds (237g) of gabbroic

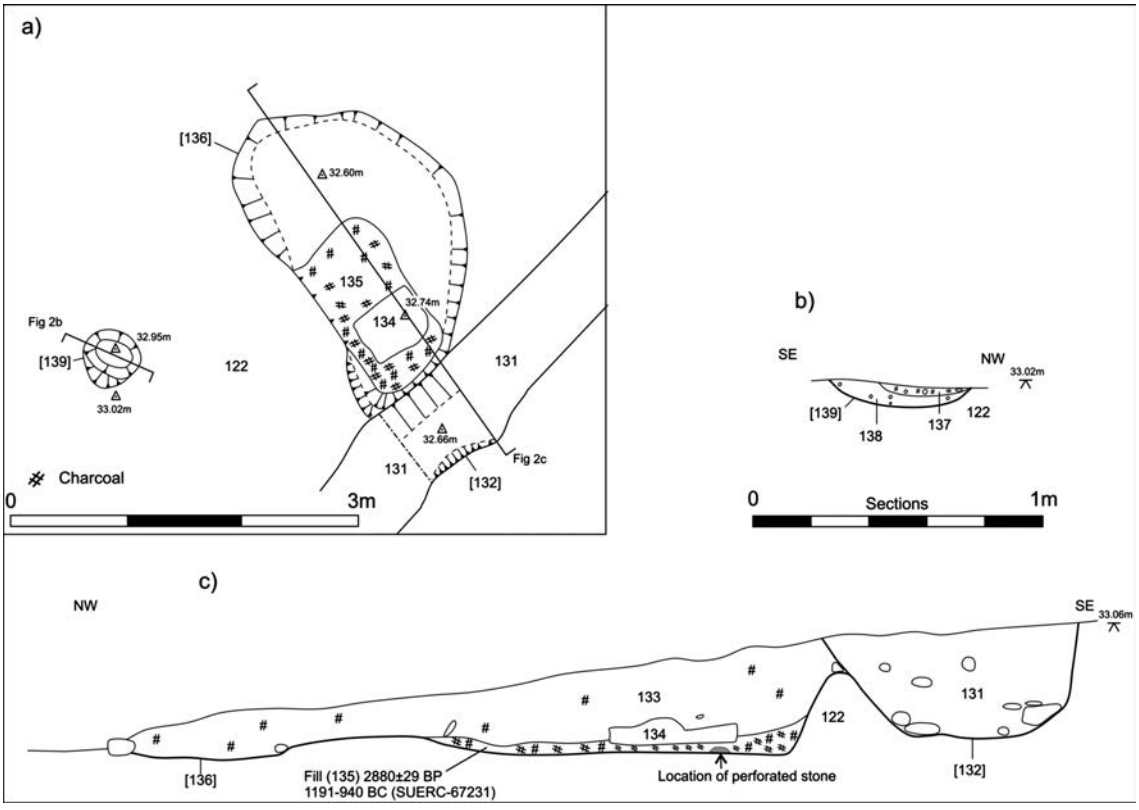


*Fig 2 Plan and sections: a) plan of Bronze Age pits [136] and [139]; b) section of pit [139]; c) section of pit [136] and later ditch [132].*

admixture; that is, with non-gabbroic inclusions added to gabbroic clay. The material from (137) has also suffered badly from bioturbation and is either formless or comes from a vessel base or bases.

Upper fill (133) of pit [136] contained 58 Bronze Age sherds (889g) from at least three vessels:

(a) Everted rim and girth of decorated vessel, two adjoining sherds (Fig 3, right). Rim diameter approximately 280mm. Short everted rim with, unusually, two narrow concave grooves running around its interior. Decoration neatly incised and consists of three horizontal lines immediately below the rim above a zone covered by adjacent triangles infilled by close-spaced parallel lines in alternate directions; there are three horizontal lines below these triangles and below again another band of infilled triangles.

(b) Girth sherd from small vessel, extremely fine incised decoration surviving from the lower part of a decorative scheme as (a). (Fig 3, left.)

(c) Thick sherds from lower wall and base from one or more vessels.

Primary fill (135) of pit [136] contained one Bronze Age sherd (5g).

Fill (131) of ditch [132] contained one Bronze Age sherd (59g). This is the upper part of a jar with a flat-topped, slightly everted rim and a band of decoration around the shoulder; this decoration is of narrow incised lines with a horizontal line above a row of tidy chevrons.

*Comment*

The general affinities of the sherds are with Trevisker ceramics of the Early and Middle Bronze Age in Cornwall. The decorated vessels from pit [136] are unusual if not, so far, unique. There appears to be no close parallel for either the rim form or the decoration of (a). A few examples of close-spaced lines infilling triangles are known but these all use impressed cord and lack the double panel effect (see, for example, the vessel from Harlyn Bay, Patchett 1944, 30, no B2).


*Fig 3 Decorated Bronze Age pottery from (133), upper fill of pit [136]: left, pot (b); right, pot (a) (Photograph: AC archaeology.)*

However, two small sherds with adjacent incised infilled triangles come from a layer over a largely unexcavated Bronze Age roundhouse at Tremough, Penryn (Quinnell 2015, fig 3:3, P11); the layer otherwise contained Late Bronze Age Plain Ware, residue on a sherd of which provided a date of 1051–902 cal BC (SUERC-47299), although this is only loosely associated with the Trevisker sherds. There is also part of a vessel from Tolgarrick Farm, Truro, with flat cordons typical of Middle Bronze Age Trevisker but with incised triangles infilled with lines (Quinnell 2016 [this volume]).

A sherd from a residual context in ditch [132] is a neat version of a decorative Trevisker motif frequent in Middle Bronze Age assemblages such as Trethellan Farm, Newquay (Woodward and Cane 1991, fig 51, no. 65).

## Amber bead

An amber bead was found in the basal fill (135) of pit [136]. The bead is annular, nearly circular, 8.13 × 8.06mm in diameter with a maximum height of 5.39mm (Fig 4). The perforation is large, parallel sided, 3.4 × 3.2mm. The bead has an asymmetric profile, with one face sloping from 5.39 to 3.23mm which should group it with beads of Type 4 (Beck and Shennan 1991, fig 4.1), a type which has been considered 'particularly Late Bronze Age' (*ibid*, table 4.14).

Amber artefacts, especially beads, are not uncommon in the Late Bronze Age of southern Britain (Beck and Shennan 1991, 101). However, the only other definite amber beads known from Cornwall are from Early to Middle Bronze Age contexts associated with cairns. The damaged example from pit [30] adjacent to the site 2 cairn at Stannon Down, St Breward (Sheridan 2004–5) was associated with hazel charcoal which gave a radiocarbon determination of 1615–1451 cal BC (OxA-13386) and pottery from the pit was of unusual Group 5 Trevisker material probably only current from the seventeenth to fifteenth centuries BC (Jones 2004–5). At Chysauster (Gulval) an amber bead was found in material overlying the upper part of a small cairn thought to have been in use *c* 1750–1500 cal BC (Smith 1996, 196–7, fig 19; 212). A small number of other amber objects from Cornwall were also associated with Early Bronze Age cairns or barrows (Sheridan 2004–5). Prior to the Trevassack Hill find there was only one amber object of later Bronze Age date from Cornwall, the amber mount on a bronze pin from the Fowey river which probably dated to the end of the Middle Bronze Age (Beck and Shennan 1991, 99) and was therefore broadly contemporary with the Trevassack Hill bead.


*Fig 4 Amber bead from Bronze Age pit [136] (Photograph: AC archaeology.)*

## Stonework

A perforated stone was recovered from basal fill (135) of pit [136]. Its maximum dimensions are 83 × 80 × 19mm (Fig 5). It is a water-worn piece roughly trimmed into an irregular polygonal shape which has become very worn, with a centrally-placed hourglass perforation 10mm across. This perforation clearly shows grooves from the boring process around its perimeter. There appears to be no wear as these grooves survive so clearly. The stone used is a fine-grained muscovite granite, possibly burnt.

It is probable that this was a pebble hammer (Roe 1979). If so, it may have reused a roughly trimmed and rolled disc. Pebble hammers occur occasionally in Cornwall and have a wide distribution in Britain and a date range from the Mesolithic through the Bronze Age and even into the Iron Age and Roman


*Fig 5 Perforated stone from Bronze Age pit [136] (Photograph: AC archaeology.)*

periods (*ibid*, 36). A number of these have been illustrated by Ransome (1993). They always have an hourglass perforation but are usually otherwise unworked: it is not known whether those used at the end of this sequence were made and used with the same function as those of earlier dates, or whether they were deposited as artefacts with some perceived meaning on account of their antiquity.

A sample of 'burnt' stone was retained from upper fill (133) of pit [136]. This is a broken fragment of rock of unusual colour (5YR 4/6 yellowish red) of ferruginous composition with quartz veins, possibly from a mineral vein. Possibly it was collected for provision of ochre-type pigment. Such material is occasionally found on Cornish Bronze Age sites, including, for example, at Scarcewater, near St Stephen-in-Brannel (Quinnell 2010, 116–7).

## The charred plant remains

*Wendy J Carruthers*

Zohary and Hopf (2000) has been used for cereal nomenclature and Stace (2010) was followed for the nomenclature and habitat information for the remaining taxa.

Food remains dominate the assemblage from the charcoal-rich fill (135) in pit [136], comprising cereal grains, cereal processing waste (or possibly emmer wheat still in spikelet form or ears prior to burning) and gathered nuts and berries from hedgerows or scrub. Emmer wheat (*Triticum dicoccum*) was the most frequent food item represented, identified from chaff fragments (23 glume bases and 10 spikelet forks). A single emmer / spelt wheat grain and three barley grains were very poorly preserved. The chaff fragments, however, were reasonably well preserved, and the survival of a rather delicate unidentified berry suggests that this material had been recently charred when deposited. The weed seeds comprised very general weeds of cultivated and disturbed land, including redshank / pale persicaria (*Persicaria maculosa / lapathifolia*) and dock (*Rumex* sp.). Non-cereal food items included small traces of hazelnut shell (*Colylus avellana*), a probable hawthorn stone (*cf Crataegus monogyna*) and possibly the unidentified berry. Charcoal was frequent in the sample, most of which had the appearance of oak, although microscopic examination was not undertaken.

### Comments

The presence of a single spelt glume base (*Triticum spelta*) suggests that the deposit is likely to date to the Middle Bronze Age at the earliest. The earliest direct dates from sites in the British Isles come from Monkton Road, Minster, Isle of Thanet, Kent (Barclay *et al* 2011) where a large mixed hulled wheat deposit was dated using spelt glume bases to 1884–1695 cal BC (SUERC-32886). The Trevassack Hill date spans the Middle to Late Bronze Age which fits in well with the dominance of emmer wheat but also with the beginning of spelt cultivation in Cornwall. The Middle Bronze Age settlement at Trethellan Farm, Newquay, produced cereal assemblages that were dominated by barley,

but also contained emmer wheat in addition to a few fragments of spelt chaff (Straker 1991).

## Radiocarbon dating

A grain of emmer wheat from basal fill (135) in pit [136] was chosen as suitable short-lived material and submitted to the Scottish Universities Environmental Research Centre. The Accelerator Mass Spectrometry radiocarbon determination of 2880 ±29 BP (SUERC-67231) returned a calibrated date of 1110–1012 cal BC (68.2 per cent), or a series of dates within the range 1191–940 cal BC (95.4 per cent). Calibration of the result used the data set published by Reimer *et al* (2013) and was performed using the program OxCal4 (on-line at: c14.arch.ox.ac.uk).

The calibrated result indicates a date for the material in the basal deposit of pit [136] at the end of the Middle Bronze Age or more probably within the Late Bronze Age.

## Discussion

The finds in pit [136] appear to represent a deliberate placing of burnt food remains and selected objects beneath a flat stone slab. Above this a backfill contained the sherds from at least three Bronze Age vessels. Although the pottery has general affinities with Trevisker ware of the Early and Middle Bronze Age, the particular style at Trevassack Hill is better placed at the end of this tradition, and, on the basis of the radiocarbon determination, probably at the beginning of the Late Bronze Age, which on metalwork styles is considered to start *c* 1150 cal BC (Quinnell 2011, 231). In Cornwall this is a transitional phase, with an overlap between Trevisker pottery, which continued in the eleventh and tenth centuries (Quinnell 2011, 231), and Late Bronze Age Plain Ware, which began at the end of the eleventh century (Quinnell 2011, 233; 2014); elsewhere in Cornwall some contexts have been found to contain both types of pottery (Quinnell 2012, 166).

An amber bead of this date is a unique find in Cornwall and shows affinities with Late Bronze Age activities much further to the east in southern Britain (Beck and Shennan 1991, chapter 11 corpus).

The Trevassack Hill pit joins a small number of Late Bronze Age sites in Cornwall where evidence for structured deposition has been recognised; for example, several examples are discussed from the excavations at Tremough (Jones, Gossip and Quinnell 2015, 219–22). Although structured deposition may be regarded as more typical of the earlier Bronze Age and Neolithic (see, for example, papers in Anderson-Whymark and Thomas 2012) it is increasingly recognised that in later prehistory symbolic activity had moved from more explicitly ceremonial locations, such as henge monuments, to taking place in domestic contexts (for example, Bradley 1998, 160). For Cornwall this issue has been discussed in detail in relation to the Middle Bronze Age settlement at Scarcewater (Jones 2015) and at Trethellan, where a pair of 'ritual hollows' were located within the settlement (Nowakowski 1991, 86–96). That the radiocarbon result presents a very late date for the Trevisker ware has been discussed, and although a continuation for this pottery tradition into the Late Bronze Age is certainly not out of the question there is a possibility, which would be appropriate in the context of the structured deposition, that the pottery was an heirloom which had been curated through the generations and thus accentuated the importance of this pit. Such an argument has been made for a later Bronze Age ritual structure at Callestick where pottery was retained for 'ritual deposition' at the closing of the structure (Jones 1998–9a, 48). In regard to this such practices could be responsible for slightly earlier looking pottery than expected being deposited in the upper fill of pit [136].

The domestic, or otherwise, context of pits [136] and [139] was difficult to establish, although the remains of cereal and cultivation indicated that a farming settlement was probably located within the near vicinity, if not within the excavation area itself. Despite the size of the open area excavation and widespread trial trenching across the application area no further activity of this date could be definitely established. It may be instructive that the much smaller pit [139] which contained fragments of Bronze Age pottery and a charcoal-rich backfill had suffered badly from bioturbation and been damaged by later plough truncation indicating that only the deepest cut features on the site are likely to have survived. A possibility is that ditch [126] represents the remains of an enclosure ditch within which the Bronze Age pits are located (Fig 1). Entering the excavation area from the north west, ditch [126] curves to the east before terminating to the south

west. It is cut twice by a medieval/post-medieval field boundary ditch. Unfortunately, no dating evidence was found during the excavation phase, although two sherds of very abraded undiagnostic prehistoric pottery conjoining to a single sherd were recovered from it during the evaluation trial trenching phase. Bronze Age enclosure ditches have been identified in Cornwall at Liskeard School (Jones 1998–9b) and in Devon at Colaton Raleigh (Farnell and Quinnell 2015).

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The finds, paper and digital archive are currently held at the offices of AC archaeology under the unique project code of ACD1100. Agreement will be reached with the Royal Cornwall Museum, Truro, concerning their deposition and long-term storage.

The corresponding author is Dr Paul Rainbird.

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# A Mesolithic pit at Penans Farm, Grampound, Cornwall

ANDY M JONES

with a contribution from DANA CHALLINOR

*In 2016 an archaeological watching brief was undertaken by Cornwall Archaeological Unit at Penans Farm, Grampound. The fieldwork led to the discovery of a pit which was notable because it contained charcoal and pieces of quartz. In the absence of artefacts, it was anticipated that the pit would probably prove to be of Neolithic or Bronze Age date. However, the resulting radiocarbon determination, 6563–6428 cal BC, fell in the later Mesolithic period. Securely dated Mesolithic sites are extremely rare in Cornwall, and this paper considers the wider context of the pit and its significance.*

In July 2016 Cornwall Archaeological Unit was commissioned by Qila Energy to undertake an archaeological watching brief at Penans near Grampound, in advance of construction of an anaerobic digester / gas injection plant. A single significant archaeological feature was uncovered, which is reported on here.

## Location and background

The phase 1 project area, which covered 0.4 hectares (Fig 1) (centred at SW 95263 49210), is located in the parish of Grampound with Creed. Prior to the development the area was a ploughed field, and there were no known archaeological features within it. The pit was situated approximately 64m above OD.

The site is part of a long-settled area, being ringed by settlements of both medieval and later prehistoric date. Penans Farm, first documented in 1326, lies approximately 200m to the south, the settlement of Trewinnow Meor, first recorded in 1337 is approximately 500m to the north east, and Tybesta, first recorded in 1086, lies 500m to the south west (Cornwall Historic Environment Record reference numbers MCO16036; MCO18058; MCO11670). In addition, 500–700m to the west, the National Mapping Programme has identified enclosed settlements and field systems of later prehistoric or Romano-British date (MCO8881; MCO21626; MCO30043), which are visible as cropmarks on aerial photographs.

Penans Farm (formerly Pennans) includes a large early eighteenth-century house, and the project area falls within the former ornamental landscape associated with it; the field boundary south of the development area marks the line of an avenue leading to the house (MCO40755; Pett 1998, 141–2, fig 54).

## Results from the watching brief

A geophysical survey was carried out by TigerGeo in advance of the archaeological watching brief (Roseveare 2016). The survey revealed indications of at least one ploughed-out field boundary, as well as a number of parallel, slightly curving features aligned roughly north–south, which were interpreted as likely to be evidence for medieval ridge and furrow.

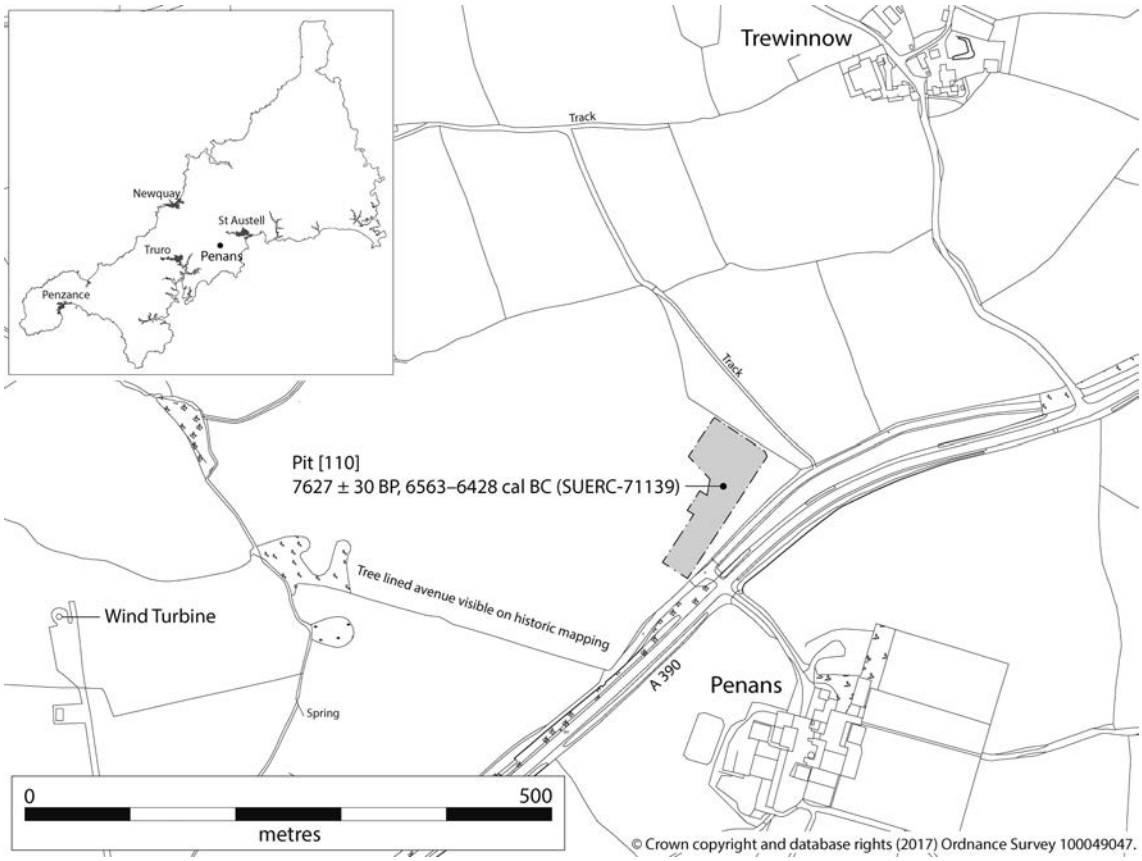


*Fig 1 Location.*

These geophysical anomalies were subsequently identified by the archaeological watching brief, which recorded removed field boundaries and traces of what may have been ridge and furrow. These are described in the archive-level report produced by Cornwall Archaeological Unit (Britton 2016) and are not discussed further here. No artefacts were recovered. This paper reports upon a single pit, [110], which has been dated to the later Mesolithic period by a radiocarbon determination.

**Pit [110]**

Pit [110] was located in the central part of the stripped area. It had initially been identified as a layer of quartz stones (Fig 2) placed into a dip in the natural subsoil. More detailed investigation, however, revealed them to be within the fill of a pit. The cut was sub-circular in plan with shallow sloping sides and a flattish base. Its edge definition, however, was very poor and it had probably been truncated during the topsoil stripping. The approximate dimensions of the pit cut were 0.7m by 0.5m wide and 0.15m deep. The pit was filled by layer (108), a mid-yellowish-brown silty clay with frequent fragmented fist-sized vein quartz pieces, some of which could have been deliberately used to line the sides of the cut and others which covered it. The fill also contained a large amount of charcoal, especially in the central part of the pit. No artefacts were recovered but a radiocarbon date was obtained from charcoal from fill (108): 7627 ±30 BP, 6563–6428 cal BC (SUERC-71139).

*Fig 2 Pit [110] viewed from the south, half sectioned, with quartz pieces and charcoal layer visible inside it.*

## Charcoal

*Dana Challinor*

A single sample of charcoal taken from pit [110] was submitted for the selection of suitable material for radiocarbon dating and characterisation of the assemblage. Standard identification procedures were followed using identification keys (Hather 2000; Schweingruber 1990) and modern reference material. The charcoal was fractured and examined at low magnification (up to ×45), with representative fragments examined in longitudinal sections at high magnification (up to ×400). Classification and nomenclature follow Stace (1997).

The charcoal was generally well preserved, with some large fragments (>20mm in length), and a clear anatomical structure. Two taxa were positively identified: *Quercus* sp. (oak) and *Corylus avellana* (hazel). The identification of thirty fragments was sufficient to characterise the assemblage, when it was apparent that no other taxa appeared to be present; moreover, all of the larger fragments were identified. The majority of the oak appeared to be from heartwood (with tyloses present), while the hazel exhibited moderate to strong ring curvature, indicating roundwood. Some of this roundwood was relatively mature, with up to 20 rings visible. The oak also included some very slow grown (with little or no latewood growth) fragments of >15 years. No complete stems (with preserved pith and/or bark) were recorded, but a suitable piece of hazel roundwood was reserved for dating purposes. Charred fungal hyphae were observed in a couple of hazel fragments; this suggests some decay in the wood (use of old wood, either collected from deadwood or deliberate seasoning) had occurred at the time of burning.

**Table 1** Charcoal identifications, pit [110], fill (108)

| *Taxa* | *Maturity* | *Quantity* |
|---|---|---|
| *Quercus* sp. (Oak) | Heartwood | 10 |
| | Indeterminate maturity | 8 |
| *Corylus avellana* L. (Hazel) | Roundwood | 12 |

The charcoal does not offer any insight into period or function. Oak-hazel woodland was dominant in Cornwall in prehistory (Wilkinson and Straker 2008) and these taxa are commonly recovered from charcoal assemblages in the central part of the county (for example, Lawson-Jones and Jones 2016 [this volume]).

## Radiocarbon dating

Given the complete absence of artefacts, the key aim was to obtain secure dating evidence for pit [110].

**Table 2** Radiocarbon date from pit [110]

| *Feature* | *Lab. no.* | *Age BP* | *Material* | *Calendrical years 95.4%* |
|---|---|---|---|---|
| Pit [110], (108) | 71139 | 7627 ±30 | Charcoal: *Corylus*, Hazel | 6563–6428 cal BC |

The charcoal sample from fill (108) was submitted for accelerator mass spectrometry dating (AMS) at the Scottish Universities Environmental Research Centre (SUERC). It was on *Corylus* (hazel) charcoal, which is a short-lived species (Table 2).

The probability distribution has been calculated using OxCal (v4.3) and all radiocarbon determinations are quoted at 95.4 per cent probability throughout this paper unless otherwise stated.

### Results

The radiocarbon determination (Fig 3) fell in the later Mesolithic period. This is a period for which there are few radiocarbon dates in the south-west region as a whole, and even fewer are associated with cut features such as pits. The significance of the dating will be discussed below.

## Discussion

Although the archaeological watching brief did not lead to the discovery of any major archaeological sites, one feature, pit [110], is of particular importance as a very rare instance of a securely dated Mesolithic feature being found in Cornwall. The contents of the pit are also of interest as they appear to be more typical of pits which have been radiocarbon dated to the Neolithic and Early Bronze Age periods.

The following discussion will briefly consider the wider regional context for the pit.

### The Mesolithic background in Cornwall

There has been very little development in Cornish Mesolithic studies since 1985 when the last major period review took place (Berridge and Roberts 1985). This was at a time when various flint-scatter projects (for example, Smith and Harris 1982; Smith 1987; Johnson and David 1982) led to significant improvements in our understanding of Mesolithic settlement activity in Cornwall. However, neither of the recent overviews of Cornish archaeology included chapters on the Mesolithic (Jones and Quinnell 2011; Herring *et al* 2016). This situation contrasts with the very major recent advances in knowledge of the later prehistoric periods, especially Neolithic and Bronze Age, which have resulted from larger-scale developer funded projects, undertaken in the last 25 years (for example, Nowakowski and Johns 2015; Jones *et al* 2015). Projects which have the potential to develop our understanding of the Mesolithic are therefore particularly valuable.

The radiocarbon determination from pit [110], 7627 ±30 BP, 6563–6428 cal BC (SUERC-71139), fell in the later Mesolithic period. This date is significant for two reasons.

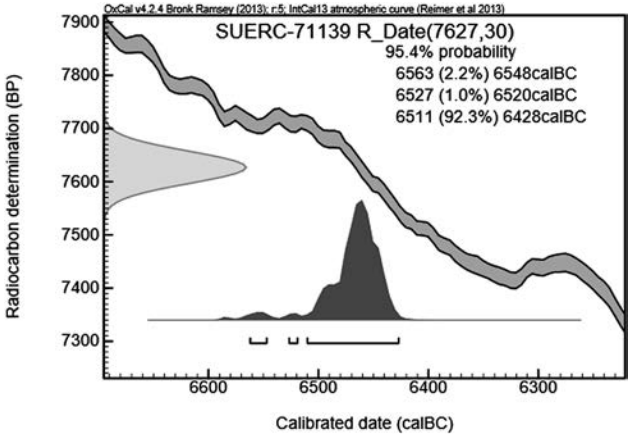


*Fig 3 Results from the radiocarbon dating.*

Firstly, there is little recorded evidence for Mesolithic activity in this part of Cornwall (for example, Wymer 1977), and the site lies far beyond the extensive flint scatters that are found along the west and the north Cornish coasts (Harding 1950; Norman 1977; Johnson and David 1982; Lawson-Jones 2013; Jones *et al* 2013). The only recorded Mesolithic find in the near vicinity is a backed flint blade (Fig 4), which was recovered during a watching brief during the construction of a wind turbine, approximately 600m to the south (Thorpe 2016). The discovery of the pit is therefore significant because it adds to the picture away from the main concentrations.

The second point of significance resides with the character of the feature itself. Pits filled with charcoal and / or quartz are well-documented for later Neolithic and Bronze Age periods (Gossip and Jones 2007, 6–12; Jones and Thorpe 2014; Jones and Smith 2015) but to date pit [110] is almost without parallel in a Cornish context. Wider comparanda for the pit will therefore be discussed below.

**The wider context for pit [110]**

Pit [110] was a discrete feature that had been infilled with selected vein quartz stones, some of which were used to line the pit and cover a deposit of charcoal. The deposit has the hallmarks of what is often termed a 'structured deposit', that is to say material which had been collected and placed intentionally into the open pit cut, as opposed to a day to day mundane action, which is likely to have resulted in a much more jumbled deposit (see Thomas 1999, 64–74; Pannett 2012; Garrow 2012).

The current evidence for pit digging and for the formal deposition of stone artefacts in Mesolithic Cornwall is extremely sparse, with only three sites providing even slightly comparable evidence for this type of activity.

Two later Mesolithic pits have been found during separate improvements to the A30 in mid Cornwall. At Penhale Moor (St Enoder), two Late Mesolithic radiocarbon determinations, 5769 ±40 BP, 4716–4523 cal BC (NZA-32934) and 5846 ±40 BP, 4825–4591 cal BC (NZA-32936), were obtained on charcoal found in a hearth pit (Nowakowski and Johns 2015, 283, 322). The second pit was located 230m north west of Castilly henge (Luxulyan). It was 1.2m in diameter by 0.36m deep with nearly vertical sides and a flat base: In common with pit [110] it was devoid of artefacts but contained a charcoal-rich deposit which had not been burnt *in situ*. A radiocarbon date of 7687 ±20 BP, 6589–6470 cal BC (NZA 29357) was obtained from a fragment of oak heartwood charcoal. However, the oak heartwood may have been of considerable age before it was burnt and deposited, and the date can only be regarded as providing a *terminus post quem* for the pit (Clark and Foreman, forthcoming).

At Poldowrian, St Keverne (Smith and Harris 1982) three pebble tools had been deliberately placed together as a group, and another feature, pit 106, produced a Late Mesolithic / Early Neolithic date, 5180 ±1500 BP, 4350–3650 cal BC (HAR-4323). However, a bulked charcoal sample was used to date the feature, and this is likely to have made it look older than it actually was, as the pit also contained sherds of Early Neolithic pottery and a leaf-shaped point.

Although evidence is exceptionally scant in Cornwall, some writers have suggested that in some respects there is evidence that later Mesolithic communities undertook ritualised practices which showed an attachment to place and prefigured those of the Neolithic period, and that actions such


*Fig 4 Photograph of the backed blade found 600m south of Penans Farm, an example of the occasional Mesolithic flints found widely across Cornwall, beyond the main western and coastal concentrations (Thorpe 2016).*

as the structured deposition of stones and artefacts may provide a strand of continuity between the two periods (Allen and Gardiner 2002; Thomas 2014, chapter 6; Ray 2015, 29).

Deliberately infilled pits and tree-throws containing lithics, which have been dated to the Mesolithic period, have been recorded elsewhere in Britain and Ireland (Allen and Gardiner 2002; Chatterton 2006; Lawton-Mathews and Warren 2015). Well-known examples of large-scale features include the deeply cut pits recorded in the car park at Stonehenge (Thomas 2014, 179–80) and a pit alignment at Warren Field in Scotland (Murray *et al* 2009). A deeply cut pit has also been found at Little Dartmouth farm in Devon (Tingle 2013). Here a large pit measuring nearly 3m across and 2m deep revealed a complex sequence comprising several episodes of recutting. Radiocarbon dating suggests that the feature is of later Mesolithic date. Unlike many other Mesolithic pits there was only a small assemblage of worked flint and chert, and it is possible that at one stage it could have accommodated a substantial upright post (*ibid*).

The majority of Mesolithic pit sites are, however, much smaller in size (Chatterton 2006; Lawton-Mathews and Warren 2015), and include, for example the Late Mesolithic pits found beneath the Stanwell cursus, several of which contained flints (Lewis *et al* 2006, 41–4). As was found at Stanwell, flints are often the most frequently deposited artefacts, and these can occur in large numbers, which, as Chatterton (2006) points out, defies a functional interpretation.

Other types of stone may also have been significant. At Culverwell in Dorset, for example, a large slab of limestone was recovered from a pit containing Mesolithic flints, shell beads and bone (Palmer 1999, 91). On Mendip, in Somerset, several small Mesolithic pits at Langely Lane were found to have been filled with placed deposits which included flint, fossils, coloured stones and balls of tufa (Lewis 2011, 106–7). Tufa is composed of calcium carbonate, it forms naturally around limestone springs, and is white in colour (Davies 2011). It may therefore have been considered to be a magical substance, suitable for marking a place in the landscape (Lewis 2011).

Distinctly coloured stones are quite likely to have been considered to be magical or even animate by hunter-gatherer communities (for example, Vitebsky 1995, 12, 82). In particular, it has been suggested that the luminescent qualities of quartz would have been discovered and interpreted as having supernatural properties by early human communities (for example, Whitley *et al* 1999, 236; Lewis-Williams and Pearce 2005, 256–60). It is likely that these perceived 'supernatural', or 'magical' qualities led to it having significance long before the onset of the Neolithic period, and could have made it appropriate for burial in pits.

Although Mesolithic features are, as discussed above, rare in Cornwall, by contrast pits and other ceremonial contexts dating to the Neolithic and Bronze Age periods containing quartz, charcoal and other artefacts are well documented in Cornwall and beyond (for example, Darvill 2002; 2012; Cole and Jones 2003–3). In Cornwall quartz has been found in Early Neolithic pits at Tregarrick (Roche) and Portscatho (Gerrans) (Cole and Jones 2002–3; Jones and Read 2006) and is most frequently found in association with Early Bronze Age barrows and other ceremonial monuments (see for example, Jones 2005, chapter 5; Jones, in preparation). In fact the presence of charcoal and quartz led to pit [110] initially being identified as Neolithic or Bronze Age in date (Britton 2016). However, the evidence for the selection of charcoal and quartz pieces for inclusion within pit [110] suggests that these practices may have had distant antecedents in the later Mesolithic period.

## Conclusion: the significance of the quartz filled pit

The excavations at Penans Farm were interesting as they provided the first evidence for the gathering of selected vein quartz stones and charcoal to form what can be considered to be a structured deposit, akin to those found in pits of very much later prehistoric date. The close similarity in pit type and the materials buried within it hint at potential connections with much later activity, and whilst direct continuity cannot be proven on the strength of a single dated feature, the implied fascination with quartz may have been passed on down the generations.

The radiocarbon dating of pit [110] is therefore a very significant development as it provides an exceptionally rare glimpse of ritualised activity dating to the Mesolithic period in Cornwall. This evidence suggests that prior to the Early Neolithic period, vein quartz stones may have been considered to be a supernaturally charged material and they could be used to fill pits and mark places

in the landscape. It may also hint at continuity of symbolic associations which persisted into the Neolithic period with the deployment of quartz in other contexts. However, given the absence of artefacts, only comprehensive programmes of radiocarbon dating of similar features are likely to identify how widespread this activity was.

## Acknowledgements

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*Cornish Archaeology* 55, 2016, 249–253

# A second Romano-British salt production site near Coverack, St Keverne

MARGARET HUNT †

*Small-scale excavations in 2000 on National Trust coastal land at Ebber Rocks, St Keverne, produced a quantity of briquetage, apparently similar to material excavated in 1969 at a Romano-British saltworking site nearby at Trebarveth. The Ebber Rocks site is likely to be a second example of a salt production site in the Coverack area.*

Between Coverack and Black Head, on the east coast of the Lizard peninsula, a length of raised beach lies below the serpentine cliffs (Flett 1946, 170). The site considered in this report is located on this geological feature near Ebber Rocks (SW 780 166) (Figs 1–3). At Ebber a stream runs down a small valley and into the sea. A short way up this valley on the north side of the stream there is an 11m length of walling, possibly of prehistoric date, which runs diagonally down the valley side from the old cliff line to the edge of the stream. On the south side of the valley the land rises to the site


*Fig 1 Ebber Rocks: location.*

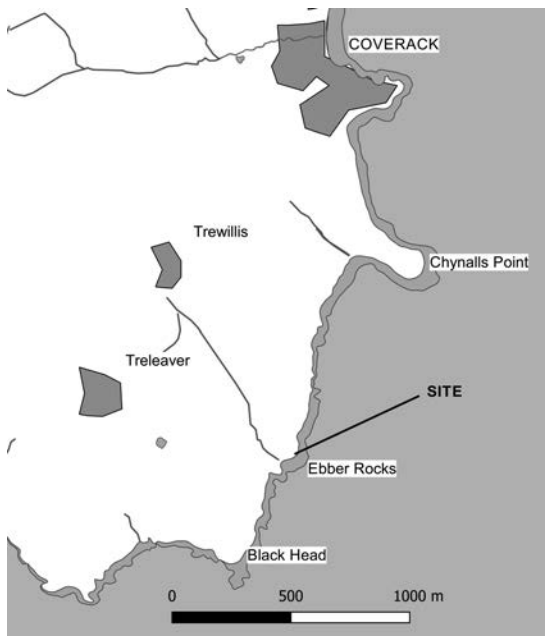


*Fig 2 The location of Mrs Hunt's excavations.*

*Fig 3 The former saltworking site at Ebber Rocks in April 2018, viewed from the coastal slope above. Margaret Hunt's trenches and spoilheaps can be seen on the edge of the shoreline cliff, centre foreground. (Photograph: Graeme Kirkham.)*

of the former Coast Guard watch houses at Black Head (Johns 2001, 23–4).

Over a number of years ceramic sherds have been found in the eroding shoreline cliff face and on the beach at Ebber (Cornwall and Scilly Historic Environment Record (HER) MCO 6646). The material is similar in shape, form and fabric to the briquetage excavated by David Peacock in 1969 at a site at Trebarveth, west of Lowland Point, 3 km along the coast to the north (Peacock 1969). (Briquetage is a distinctive form of thick pottery used from the prehistoric to the Roman period for the manufacture of salt; it consists mainly of flat-bottomed trays of varying depths and shapes.)

It had been speculated that a group of rocks lying 4m behind this portion of the shoreline cliff may have been the location of a salt production site similar to the one near Lowland Point. In the hope of verifying this, permission for a small-scale excavation was successfully sought from the National Trust and help obtained from Cornwall Archaeological Unit. Four small trenches were opened in 2000 in an area just behind the cliff edge centred on SW 78072 16637. (A trench plan is held in the HER.)

Trench A (1m by 1m) was dug on the edge of the cliff to ascertain whether the pottery scatter extended inland. Here, within 0.17m of the present-day topsoil, a layer of soil containing pottery sherds was revealed.

Trench B (2m by 1m) was excavated on the east side of the group of rocks previously mentioned. A layer of briquetage was found, again 0.17m below present-day topsoil. This was present across the whole of the trench in a single layer. This layer could be seen in the section and lay on a layer of fine loam similar to the soil above the briquetage. The stones at the western end of the trench did not resemble a structure and there was no evidence of burning.

Trench C (1m by 1m) was excavated on the west side of the group of rocks in trench B to a depth of 0.17m. No briquetage was noted.

Trench D (2m by 1m) lay closer to the stream to the west and was excavated to a depth of 0.17m. A scatter of small- to medium-sized rocks was

uncovered which was interpreted as tumble from the ancient cliff line. There was no briquetage or any evidence of a structure or of burning.

## The briquetage

A total of 23 kg of briquetage was retrieved (Figs 4–6). It appeared identical in style and fabric to the briquetage excavated at Lowland Point, with thick bases with rounded corners. It was therefore almost certainly made from the local gabbroic clay.

Two rim forms were identified among the material. One group totalling 26 pieces has a thin line marked just under the top of the rim. A second group, without decoration, totalled 29 pieces. Could these types possibly reflect the work of different potters?

Bases have rounded corners and are extremely thick in comparison with the rims. Two sherds were found with a small rosette type of decoration pressed onto the straight side of the vessel.

## Conclusion

The topographical situation and the type and fabric of the briquetage suggest that the site at Ebber Rocks closely resembles David Peacock's site at Lowland Point and is therefore likely to be a

*Fig 4 Briquetage rims from Ebber Rocks. (Photograph: Cornwall and Scilly Historic Environment Record.)*

*Fig 5 Briquetage rims showing fingertip moulding. (Photograph: Cornwall and Scilly Historic Environment Record.)*

*Fig 6 Briquetage excavated at Ebber Rocks, showing the distinctive impressed texture on some of the outer flat surfaces. (Photograph: Cornwall and Scilly Historic Environment Record.)*

second Romano-British salt production site in the parish of St Keverne.

## Editorial note

The late Margaret Hunt submitted an initial draft of this brief note to *Cornish Archaeology* more than ten years ago but did not subsequently revise her text. The note has now been prepared for publication by Graeme Kirkham with the help of comments by Henrietta Quinnell.

In 2007 Steve Hartgroves took photographs for the HER of selected pieces of briquetage from the finds assemblage from Ebber Rocks then stored at Mrs Hunt's home at Higher Polcoverack (Figs 4–6). The locations of Mrs Hunt's trenches were also surveyed for the HER; the resulting plan suggests that trench B, from which most of the briquetage came was probably 3m by 2m, rather than the 2m by 1m stated in the text, and that the unproductive trench D to the west of the rock outcrop was, at 7.5m by 0.75m, also larger than noted.

Mrs Hunt provided 16 sherds of the briquetage from Ebber Rocks to Lucy Harrad for her postgraduate research at Oxford on prehistoric ceramics in Cornwall (Harrad 2003). Harrad characterised these as 'Typical Gabbroic' within the typology she developed for gabbroic fabrics; they are described as 'fairly coarse, with visible plagioclase feldspar inclusions up to 0.3mm set in a red iron-rich clay matrix (*ibid*, II, 354). The sample material included several rims, 'including some with an incised line. The base sherds are mainly very thick and crudely made, showing signs of fingermarks (below). None of the pottery seems to have been finished by smoothing or burnishing the surface, instead the sherds seem to have been quickly produced only for immediate use and discard rather than for trade' (*ibid*, II, 353). Thin-sectioning indicated that all the sherds came from the same local gabbroic clay source, the nearest location for which would have been at Higher Polcoverack (*ibid*, I, 228).

Examples of briquetage from Ebber Rocks were also inspected by Sarah-Jane Hathaway as part of her Bournemouth University PhD thesis on Iron Age and Roman-period salt-production in southern Britain (2013). She dated the site to the early to mid-Roman period and noted that some fragments of the briquetage found 'had the impression of wood on one side, most likely resulting from the use of wood as a hard surface while the briquetage was made' (Hathaway 2013, site gazetteer; ch 3, appendices) (Fig 6). Similar impressions were noted on briquetage bases from another salt production site on the Lizard, at Carngoon Bank (Morris 1980, 51). It is suggested (GK) that at Ebber Rocks these impressions might alternatively derive from working surfaces created using surface rocks in the vicinity of the site, many of which have flat faces with a distinctive 'grain'.

Mrs Hunt noted that pottery from Ebber Rocks was also being used for research at Birmingham University, but no relevant literature references have been identified.

She also reported recovering flint pebbles and possibly worked flint from the site (HER MCO 6646; Harrad 2003, II, 353), but made no reference to finding ceramics – which she would have been well able to recognise (Henrietta Quinnell, pers comm) – other than briquetage. This may indicate that the Ebber Rocks site is rather different in character to that at Lowland Point, where there was a considerable Roman-period pottery assemblage in addition to the briquetage (Peacock 1969).

Photographs of the Ebber Rocks briquetage and Margaret Hunt's rough sketches of sample pieces (HER information file) show that some sherds carried impressions of fingertips around the rims and of fingers on flat surfaces, presumably made when the vessels were being moulded (Fig 5). Finger impressions were also noted on briquetage from both Trebarveth and Carngoon Bank (Peacock 1969, 58; Morris 1980, 51). Henrietta Quinnell notes that the only other Cornish ceramics which have the small rosette stamps noted by Margaret Hunt among the Ebber Rocks briquetage occur in a level over the salt production site at Carngoon Bank (Smith 1980, fig 18, nos 55–57).

No material from the Ebber Rocks site is now at Mrs Hunt's home at Higher Polcoverack (Sally Ealey, pers comm). A quantity is currently held by Cornwall Archaeological Unit but will eventually be deposited in an appropriate archive. Two bags of pottery / tile and a bag of flint described as coming from 'top of cliff above Ebber' are held by the Royal Cornwall Museum, finder unknown, under the accession number TRURI:2006.121.

The editors are grateful to the following for help in bringing this note to publication: Henrietta Quinnell, Charlie Johns (Cornwall Archaeological Unit), Francis Shepherd (Cornwall and Scilly Historic Environment Record), Angela Broome (Royal Institution of Cornwall) and Sally Ealey.

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*Cornish Archaeology* 55, 2016, 255–266

# Recent work in Cornwall

## Cornwall Archaeological Unit

**2016**

*St Buryan churchyard cross*

The churchyard cross at St Buryan (SW 40910 25700) is a monument of considerable significance. It consists of a four-holed cross carved with a Crucifixion and five bosses, set in a granite base-stone and mounted on a four-stepped square pedestal. The cross-head may date from the tenth century and the steps possibly from the later medieval period. The condition of the steps had deteriorated, to the extent that the monument had been placed on the Historic England Heritage at Risk register. A grant was arranged to help restore the steps.

Recording was made difficult by the method used for repair, which involved stones being

*Inspecting St Buryan churchyard cross prior to renovation work. (Photograph: Cornwall Archaeological Unit.)*

removed and replaced singly, rather than along a whole side, as had been envisaged. Nonetheless, the findings were of interest in revealing that the present stepped pedestal is effectively a shell, created in the first half of the nineteenth century, entombing the remains of earlier steps. As it was not necessary to dismantle these steps, it was not possible to provide a date for this hidden element of the monument; it therefore remains intact for future investigation. Pieces of one certain and two possible early grave slabs were identified among the quarried stone of the nineteenth-century shell. The definite grave slab had mouldings on it suggestive of an eleventh-century date.

- Project Officers: Ann Preston-Jones, James Gossip, Ryan Smith.

### *Reading the Hurlers*

*Reading the Hurlers* is part of a Heritage Lottery Fund-supported project hosted by the Saltash U3A geology group. It comprises a multi-discipline study of the geology of Bronze Age monuments on south-east Bodmin Moor, with a particular focus on the ceremonial sites centred on The Hurlers on Minions Moor (SX 25850 71370).

Archaeological fieldwork in 2016 evaluated a potential fourth 'circle' within the vicinity of the Hurlers complex. While the stones forming this putative fourth circle were found to be naturally occurring moor stones, the investigations identified a former standing stone. This was confirmed by archaeological and geological data which demonstrated that the stone had once stood erect in a socket and that it had been moved to that location from some distance away.

The location of this former standing stone is of great interest. It shares the same alignment as the stone pavement found between the central and northern circles of The Hurlers in 1938. It also stood in a position where the midsummer sun has been observed to set below the distant peak of Brown Willy, 13 km to the north west. This suggests that the positioning of the stone was not random and that it could have marked a natural viewing point to witness such solar events. The presence of a standing stone in this landscape shows a definite link to the Hurlers and the nearby Pipers and it is highly probable that at one time in prehistory all these sites were inter-visible.

Initial results of the geological analysis have significance for our current understanding of the prehistoric sites on this upland area. It appears that the stones which make up the various parts of The Hurlers complex come from a variety of sources in the vicinity, possibly including Stowe's Hill, Caradon Hill, Craddock Moor and from the area of Goldiggings quarry. The fact that none of the stones in the Hurlers complex match the stones of the immediate underlying geology, and that all appear to have been brought to the site, suggests that there was deliberate selection of material for various parts of the monument. This in turn suggests that the various granites in this moorland landscape had a social significance and value at the time when the monuments were built. As there appears to be a different type of granite present in each individual element of the complex it may also imply that each circle was erected by a different community. This might further suggest that the monument complex was built sequentially over time and not in a single event or enterprise.

Alongside the discovery of an entirely new prehistoric monument, the geological study is indicating the purposeful sourcing and selection of stone for the construction of the prehistoric monuments on this part of Bodmin Moor. New insights on the way prehistoric communities actively sourced stone and built sites within these ritual landscapes are now emerging.

- Project Officers: Jacky Nowakowski, James Gossip.

### *Chapelfield, St Mabyn*

Cornwall Archaeological Unit undertook a programme of archaeological evaluation trenching at Chapelfield, St Mabyn (SX 04280 73390), in advance of a residential development.

Geophysical survey by AB Heritage in 2016 identified a number of clearly defined linear features, pit-like anomalies and two adjoining enclosures. The archaeological evaluation confirmed the survey results and also revealed additional features. There appears to have been a tightly focused area of Romano-British activity located within parts of the adjoining enclosures, both of which were defined by a ditch and bank. The most intensive activity occurred in the north-eastern portion of the eastern enclosure, but it also extended around the inner periphery of the enclosure, possibly suggesting an open space within its central area. This enclosure produced evidence for a probable small, gully-defined house.

The western enclosure appeared to show a different pattern of activity, including probable field divisions in its eastern half (reflecting a different phase of activity, of uncertain earlier or later date) and a focus of small features in its north-western corner, which form evidence for at least one probable structure.

Artefacts recovered show that most of the activity was of Romano-British date, and that it was broadly domestic in character. Finds included imported pottery, slate game pieces and a copper-alloy brooch. Earlier prehistoric activity is indicated by the presence of occasional worked flint and later (medieval) activity included a number of linear field boundaries.

It would seem most likely that the Romano-British activity was associated with a small-scale, possibly extended family farming unit of moderately comfortable means. This is suggested by the unusual brooch find and imported fine ware pottery, including a sherd of Samian ware from Gaul.

- Project Officers: Anna Lawson-Jones, Ryan Smith, Graham Britton.

*Enys Farm, Penryn: historic building recording*

Proposals to renovate and convert a group of Grade II Listed farm buildings at Enys, Penryn (SW 79130 36420), prompted a programme of survey and recording in advance of alterations.

The farm buildings are shown on historic estate plans and the oldest range dates from the late eighteenth century. An elaborate two-storey barn was added around 1800 and very soon afterwards three other building ranges were completed to create a large quadrangular farmyard. The north-west range within the farmyard was originally built with an open-fronted linhay as an imposing central block with three pigsties on each side. The other ranges included spaces to accommodate other farm animals, including cattle and working horses.

With the exception of the oldest range all the principal buildings incorporate very high quality ashlar masonry and other fine architectural details. The close contemporaneity of the main ranges indicates that this is a rare surviving Cornish example of a model farm, where wealthier landowners were able to create exemplar farmsteads incorporating the latest agricultural developments.

Before the 1840s a horse-engine house had been added to the barn (to power mechanised threshing and processing equipment) and the central block of the north-west range had been converted to become a cow-house. By the later nineteenth century the oldest range was refitted as a specialised stables and coach house block.

The Enys estate was requisitioned by the Admiralty during the World War II and was temporarily used by the Royal Netherlands Navy as a training establishment. A group of Nissen huts were constructed in the adjoining rickyard, within the centre of the farmyard, and parts of the barn appear to have been converted to a mess and shower block.

After the War the farm buildings appear to have gradually fallen into disuse and many were used for storage.

- Project Officers: Nigel Thomas, Peter Dudley.

*St Michael's Mount*

Cornwall Archaeological Unit was commissioned to undertake a watching brief during trenching works across St Michael's Mount village (SW 51500 30020). The trenching ran from west to east and was divided into four areas. Each area had a different character and setting, and produced correspondingly different results.

**Area A** ran through the main western part of the village. It showed the clearest evidence for the early twentieth-century redevelopment of the village. Here, demolished walls, lime making, cobbled surfaces, well-preserved pilchard oil vats, the coal yard deposits, bake house oven waste and a more recently removed building were recorded. Finds ranged from a small canon ball and probable fifteenth-century lead weight, through butchered animal bones, ink jars, pottery, clay tobacco pipes and glass, to a large pilchard press weight.

**Area B** ran through the village garden. Trenching here uncovered the earliest identifiable built remains in the form of an early culvert system underlying all later building works. In this area walls, cobble and bitumen floors and former cellars were found. Finds were frequent and varied, including occasional prehistoric flintwork and some late medieval pottery forms.

**Area C** ran along the main island track from the lych-gate north towards the Change House near the causeway. It produced clear evidence for repeated trackway build-up and repairs, as well as

an unexpected sunken building or cellar in front of the lych-gate, and the hint of buildings in front of the Steward's house.

**Area D** produced a further unexpected former building in front of the cemetery and beneath the track. A large pilchard press weight was found within its associated tumbled walls. At the eastern end, in front of the present café, a series of large sunken features was found, probably associated with the former laundry.

- Project Officer: Anna Lawson-Jones.

*Leadenwell, Leadenhill Wood, Lanlivery*

A small well house was discovered at SX 09643 61503 during forestry operations in Leadenhill Wood, near Lostwithiel, on the Duchy of Cornwall's Restormel Manor. Cornwall Archaeological Unit was asked to undertake an assessment and provide recommendations for future management of the site.

The well house is a small rectangular stone-built chamber set into a slope; an open channel conducts the water away downhill. The front of the structure, which is semi-ruined, appears to have once had a doorway. Although it has no architectural features to aid dating, documentation and place-name evidence combine to suggest that this humble structure was the source of water which fed a lead conduit, recorded from the fourteenth century, which carried water into the castle at Restormel. The line of the water pipe within the castle has been established by geophysical survey; unfortunately the precise route of the conduit between the castle and the well remains uncertain.

Because of its medieval documentation and association with Restormel Castle, this is an unusually important monument whose rarity is increased by the fact that medieval castles were only exceptionally supplied with water from sources arising outside the castle walls. It is therefore thought appropriate for it to be additionally protected through designation.

- Project Officer: Cathy Parkes.

*Beehive hut, Garrow, St Breward, Bodmin Moor*

The nineteenth-century beehive hut at Garrow, St Breward (SX 14580 77980), was surveyed prior to its consolidation as part of the Ivey and Hawkstor Historical and Archaeological Protection project. The beehive hut was visited on two occasions: initially pre-clearance, to record its condition prior to the work taking place and secondly once stone rubble had been cleared from the interior. The survey comprised digital photography, field measurements, written notes and digital survey (using GPS/GNSS), recording a plan of the three uppermost courses of walling visible prior to clearance and rebuild

At the time of the initial inspection the beehive hut was a semi-derelict structure constructed from granite rubble stones laid in irregular horizontal courses, with walls built up to its north and south faces to form a boundary on the west side of the yard in front of Garrow farmhouse. The flanking yard walls are believed to be late post-medieval in date. The roof had collapsed into the building resulting in a pile of rubble almost filling the interior, hindering interpretation and recording. The interior faces of the walls were largely vertical with only a hint of corbelling in the uppermost courses. The basic method of construction was rather rudimentary, with poorly tied-in walls and trig stones used here and there to fill spaces between stones. There were no drill marks evident on the walling stones apart from those in the doorway for the door hanging.

A return visit after clearance of the collapsed material revealed an internal height of approximately 1.4m and diameter of about 2m. Externally the structure stood approximately 1.3m high on its north-west side where the level of the field was higher than the ground level to the east; there it was about 1.2m high to the top of the doorway lintel. Its southern side was formed by a large grounder and two courses of granite block above, and its northern side by a tall, narrow slab 1.1m high. The door opening was on the south-east side and a boulder slab formed the lintel over the doorway. The grounder to the south held an iron pin-tail door hanger while the upright slab to the north had a drilled hole to take a bolt. No door was present. Clearance revealed that the floor of the hut was compacted growan with some rounded granite stones.

Subsequent consolidation work resulted in the successful rebuilding of the beehive hut roof, with corbelled stones capped with turf. A wooden door was re-hung with an information panel attached.

- Project Officer: James Gossip.

*The North Cliffs project*

Cornwall Archaeological Unit undertook a project funded by Historic England to catalogue and

archive lithics from four scatters in the North Cliffs area of the parish of Camborne (centred on SW 6075 4285). The assemblages were collected between 1950 and 2015 by the late Professor Charles Thomas as part of the Gwithian project, and were briefly described by him in *Cornish Archaeology,* volume 46 (2007). Together, they form one of the largest Mesolithic collections from Cornwall.

The first stage of the project provided an opportunity for volunteers to become involved in a lithics archive project. By the end of July 2016 more than 21,000 flints and 2000 pieces of stone had been catalogued, boxed and details added to the project spreadsheet. The archiving was followed by a review of the data catalogued by the volunteers. A sample of the flint and stonework (approximately 20 per cent of the assemblages) from the two largest scatters which had been gridded out (sites HU/NE and CM) was assessed by lithics specialists. Significant results have already arisen from this study.

In total, the project catalogued 21,457 pieces of flint, the vast majority of which had been collected from local beaches before being knapped on site. Site HU/NE produced 13,544 pieces, which is almost entirely of later Mesolithic date. The assemblage includes 1540 cores and 129 microliths. There is in addition a huge range of other large and small flaked pieces, well-worked scrapers and many minimally retouched miscellaneous pieces which suggest a combination of cutting and scraping functions. Significantly, there are over 500 burnt pieces, indicative of hearths and settlement activity. Site CM, by contrast produced a smaller assemblage of 3929 flints. Late Mesolithic pieces were identified including pyramid cores and 17 microliths. In addition, there were at least two probable later Neolithic arrowheads, including one large transverse and one triangular form. Neither appeared used, and both were finely made.

The worked stone assemblage is also revealing interesting patterns. For site HU/NE, 335 pieces were rapidly examined. Of these, 250 show no modification but 85 have clearly been used. This means that large numbers of greywacke stones had been collected from a beach and brought to the site but only a proportion of these showed further use. Of the used pieces, 67 were bevelled pebbles. By contrast, at site CM 39 pieces had been modified but 60 had not. The proportion of utilized pebbles at site CM is therefore far higher than at site HU/NE. The proportion of bevelled pebbles is similar, however, with 29 being of this type.

Other types of wear have also been identified. Some bladed pebbles have flakes removed from their ends and also show anvil pitting or other signs of use; one has a pronounced ‘chisel’ end. Other pebbles have abraded sides or have anvil marks on one or both faces, and a few pieces have been roughly flaked for use as knives. In addition, there are a few special pieces, including a cupped pebble and broken perforated pebbles, which would have been hafted and could loosely be described as ‘pebble hammers’.

The North Cliffs project highlights what can be achieved with a relatively simple level of recording and demonstrates that well-organized archive cataloguing projects can make large lithic assemblages easily accessible for future detailed analysis.

- Project Officers: Andy Jones, Anna Lawson-Jones.

### *Tintagel Castle Research Project*

In summer 2016 English Heritage initiated a five-year research programme at Tintagel. A team from CAU was commissioned to work with a range of specialists, beginning with investigations on two locations on Tintagel Island (SX 049 891) which have never been wholly examined by excavation before. CAU staff and a team of volunteers opened four evaluation trenches, two on the upper eastern terrace and two on the southern terrace. In all four trenches well-preserved buried archaeology was uncovered, with remains dating to both the post-Roman settlement and contemporary with the medieval occupation at Tintagel Castle. The archaeology found in each location was, however, entirely different in overall character.

#### The upper eastern terrace

On the upper eastern terrace, no clear evidence for a building of post-Roman date was found in either of the two trenches (named, appropriately, Tristan and Isolde). The topography and make-up of the terrace was found to be part natural and partly artificial. Trench Tristan cut across the terrace and revealed a stepped profile made up of an upper, middle and lower terrace. The upper terrace was very narrow, but the two lower terraces potentially offered space for the accommodation of buildings.

A robust and substantial stone revetment wall

was found demarcating the edge of the middle and lower terraces in trench Tristan. However, this wall does not appear to be that of a roofed building but was instead a terrace wall of later medieval date, perhaps defining an area set aside for small-scale cultivation (a notable quantity of cultivated oat grains was found in related contexts), and may therefore be contemporary with the thirteenth-century castle. It appeared to be built upon an earlier wall-line which may have defined the western edge of an earlier rectangular building and which was defined, on its eastern side, by a poorly-preserved low stone wall. If the slate floor found within is *in situ*, then interpretation of these features as two surviving sides of a rectangular building just over 3m wide is feasible. The date of this potential building has not been established, although a post-Roman date cannot be ruled out. Some time may have elapsed between the abandonment of the building and construction of the revetment wall as a dark humic layer formed over the interior and from this, fragments of medieval Somerset Chert-tempered ware were found as well as post-Roman imported pottery.

While no definitive evidence for a building was found in trench Isolde, a made-up surface or narrow pathway shadowed by a very poorly preserved slate wall was uncovered.

### The southern terrace

Work on the southern terrace presented an opportunity to evaluate a number of apparently closely related buildings, which, on survey evidence, formed a coherent planned complex. Two evaluation trenches (Geraint and Mark) confirmed the good preservation of remarkably intact buried structural evidence for buildings and potential roofed (and perhaps unroofed) structures: substantial stone walls, slate floors and pavements and a slate staircase, as well as at least two middens. The discovery of well-preserved middens is exceptional for Tintagel. They incorporate imported Mediterranean wares and also pottery and glassware imported from the Atlantic seaboard of Gaul, apparently dating to the post-Roman occupation, together with good ecofactual data in the form of cereal grains, wood charcoal and animal bone.

The good preservation of the buried archaeology here may in large part be due to a systematic demolition and abandonment episode. Dating evidence at this stage indicates that this event or series of events took place between the seventh and eleventh to twelfth centuries AD. Evidence for the apparent deliberate demolition of buildings has not been recorded so comprehensively on Tintagel Island to date and these ideas require further investigation.

The architectural character of this complex of stone structures and / or buildings is unlike that seen elsewhere on the Island. Further investigation will contribute to a more detailed understanding of their form, function and history. The evidence revealed to date is tantalising and the suggestion that these may well be residential buildings of high status requires verification.

### Overall significance

The discovery in the two trenches excavated on the southern terrace of sealed and intact structural remains, together with a large quantity of artefacts, represents entirely new archaeological evidence from Tintagel headland. These discoveries have

*A slate floor in trench 'Geraint' on the southern terrace at Tintagel. (Photograph: Cornwall Archaeological Unit.)*

the potential to contribute new knowledge on the character, function and status of settlement during the fifth to seventh centuries AD as well as the history of buildings: their 'life-cycles' and final abandonment, ruination and perhaps deliberate demolition. In addition, the results on the southern terrace offer an opportunity for finding out more about activities beyond the seventh century up to the period of the construction of the medieval castle on the headland.

- Project Manager: Jacky Nowakowski. Project Officers: James Gossip, Carl Thorpe, Ryan Smith, Graham Britton, Megan Val Baker, Richard Mikulski, Brett Archer.

*Powder Magazine, The Garrison, St Mary's, Isles of Scilly*

English Heritage commissioned CAU to carry out a watching brief during groundworks associated with the installation of an electrical earth mat in the garden of the property known as White Horses adjacent to the Powder Magazine on The Garrison (NGR SV 9003 1062). The Powder Magazine with its Blast Walls, dating to the seventeenth and eighteenth centuries, is a Grade I Listed and Scheduled Monument (National Heritage List Entry no 1014553).

Several pieces of limestone were recovered during the work, providing further corroboration for the location in what is now the garden of White Horses of an eighteenth-century limekiln recorded in historic sources and indicated by earlier fieldwork (Cornwall and Scilly Historic Environment Record (HER) MCO 30722). Documentary and cartographic research for the project also identified another limekiln in the area of Town Beach between Hugh Town and the Quay, which was not recorded on the HER.

- Project Manager: Charles Johns. Project Archaeologist: Katharine Sawyer.

## AC archaeology

### 2014

*Phase 2, Gwel-an-Mor, Portreath*

An archaeological evaluation was carried out by AC archaeology on land forming phase 2 of the Gwel-an-Mor site, Portreath, during November and December 2014. The proposed development area occupied a single pasture plot covering an


*Part of a Roman flue tile and a soapstone spindle whorl from the Gwel-an-Mor site, Portreath. (Photograph: AC archaeology.)*

area of approximately 1 ha and lay some 600m to the south of Portreath (SW 65704 44628). The evaluation comprised machine excavation of five trenches with a total length of 145m, with each trench 1.7m wide. These were positioned to investigate anomalies interpreted from an earlier geophysical survey.

The evaluation exposed a series of Romano-British features dating from the second to fourth centuries AD. These comprised an area occupied by a probable stone structure positioned within a broadly contemporary arrangement of plot boundaries and drains. Finds associated with these features, included a quantity of Roman pottery, iron slag, a box-flue tile and a stone spindle whorl, indicating that the occupation is likely to have been domestic.

- Project Supervisor: Paul Jones.

**2015**

*Morwenstow to Aldercombe Barton 11kv cable*

An archaeological watching brief was carried out by AC archaeology in May 2015 on a section of trenching for an 11kv cable between Morwenstow and Aldercombe Barton in north Cornwall (centred on SS 25457 14245). The route passed close to a known prehistoric barrow cemetery at Bottaborough. No features related to the barrow cemetery were observed but several ditches related to former field boundaries known from historic mapping were recorded, together with a modern pit. No pre-modern finds were observed or collected.

- Project Supervisor: Abigail Brown.

*Land at Binhamy Farm, Bude*

An archaeological watching brief was carried out by AC archaeology in March 2015 on land at Binhamy Farm, Bude (SS 21903 05808). The works involved the excavation of a 125m long trench for an underground high voltage electricity cable, which passed close to the Scheduled medieval moated site at Binhamy. Archaeological features included a metalled surface aligned on the entrance to the moated site, a demolition layer, and undated ditches and pits. The finds assemblage consisted of a small collection of medieval ridge tile, some early post-medieval pottery and a lead shot.

- Project Supervisor: Abigail Brown.

*Land at Northmoor, Whitstone*

An archaeological watching brief was carried out by AC archaeology in March 2015 at Northmoor, Whitstone (SX 27787 97533). The work was undertaken as a planning condition during construction of a solar park. Features identified included three post-medieval field boundary ditches, three probable natural drainage hollows and a hollow way for a track recorded on historic mapping. No finds were recovered and the archaeological evidence confirmed a pattern of hedge removal identified previously on historic mapping.

- Project Supervisor: Abigail Brown.

*St Leonard's Sewage Treatment Works, Launceston*

An archaeological trench evaluation was undertaken by AC archaeology in July 2015 at St Leonard's Sewage Treatment Works (STW), Launceston (SX 35002 84882). The proposed development area covered approximately 1500 sq m in the west side of the STW. The area was considered to have potential for surviving archaeological deposits related to a medieval chapel and leper hospital. The evaluation comprised machine excavation of three sample trenches totalling 18m in length, with each trench measuring 1.5m wide. The evaluation found that the area had been significantly disturbed by construction works, beginning in the late nineteenth or early twentieth century, associated with the sewage works. All the finds observed and collected were of nineteenth or twentieth century date; no evidence for medieval activity was found.

- Project Officer: Ben Pears.

*Land at Holmbush Road, St Austell (SX 04240 52580)*

An archaeological watching brief was carried out by AC archaeology in August 2015 on land at Holmbush Road, St Austell. The watching brief was carried out during a geotechnical investigation ahead of construction of a mixed use development.

Most of the features identified related to post-medieval mining activity. This included five mine shafts, one of which was previously unrecorded, and ten surface working pits, the majority following the lines of lodes. Several small pits of unknown function, but clearly related to the mine workings, were also identified. Two former hedge boundaries

known from historic mapping were also recorded. Prior to and subsequent to the mining activity the area had been agricultural fields. No finds were recovered.
- Project Supervisor: Abigail Brown.

**2016**

*Langarth Farm, Threemilestone, Truro*

An archaeological trench evaluation on land at Langarth Farm, Threemilestone, Truro (SW 7707 4576), was undertaken by AC archaeology during January 2016. The work followed an earlier geophysical survey, which identified a series of linear anomalies, thought to indicate land divisions of unknown date. The evaluation comprised machine excavation of 37 trenches, with 36 of the trenches 50m long and one trench 100m long by 1.8m wide. The main features identified corresponded well with the survey anomalies. The linear features appeared to relate to agricultural field boundaries and drainage works of medieval, post-medieval and modern date. A very small collection of finds was recovered and reflected the agricultural history of the site.
- Project Officer: Ben Pears.

*Wheal Martyn Upper Processing Plant, Carthew, St Austell*

Archaeological recording was undertaken by AC archaeology in April 2016 at the site of mica drags, settling pits and tanks surviving at the edge of the Wheal Martyn china-clay pit, Carthew, near St Austell (SX 00101 55486). The work was undertaken in advance of the extension of the working clay pit. Map evidence indicates that the features recorded at the Upper Processing Works were constructed between 1879 and 1906, at a time when the clay works were developed by John Lovering and Co. The site was incomplete but three well-preserved settling pits were of particular interest.
- Project Officer: Peter Stanier.

*Former Lloyds Bank, Fore Street, Fowey*

An historic building appraisal of the former Lloyds Bank, Fore Street, Fowey (SX 12632 51769), was prepared by AC archaeology in June 2016 to inform proposals for the redevelopment of the derelict Grade II Listed bank. The building was constructed in 1906 for the Devon and Cornwall Banking Company. It was designed by the Cornish architect Silvanus Trevail, who also designed a number of other commercial and institutional buildings in the town. The building contained banking facilities on the ground floor, with a service wing to the rear and residential accommodation for a single family on the upper two floors. The bank remains relatively unchanged, although later twentieth-century alterations, mainly on the ground floor, included an extension to the vault, and enlargement of the banking hall which had removed some of the original partitions.
- Project Manager: Andrew Passmore. Project Supervisor: Stella De-Villiers.

*St Petroc's Church, Egloshayle*

An archaeological watching brief was carried out during excavation of a pit in the churchyard of St. Petroc's Church, Egloshayle (SX 00084 71910), during August 2016. The works exposed four partial adult inhumations, one neonate inhumation and charnel material. These were recorded before reburial in another location in the churchyard.
- Project Officer: Alex Farnell.

*Tamar Canal, Gunnislake*

Archaeological recording and monitoring was carried out by AC archaeology in September 2016 during repairs to the northern lock on the Tamar Canal (SX 43592 70974). The canal is a Scheduled Monument. It was opened in 1801 as the Tamar Manure Navigation and closed in the 1940s. The repairs comprised drilling holes into the masonry to inject resin behind and into the bonding of the lock walls. This caused minimal damage to the monument and has left no visible evidence of the repairs. The lock walls contain rebates for stop planks, but unusually are also partially recessed between these rebates, creating a wider waterway. The function of this space is unknown, but it could represent a winding hole or turning space for vessels.
- Project Manager: Andrew Passmore.

*Land at Porthpean Road, St Austell*

An archaeological watching brief was carried out by AC archaeology during October and November 2016 on land at Porthpean Road, St Austell (SX

*The northern lock on the Tamar Canal during repair work. (Photograph: AC archaeology.)*

0274 5196). The site lay in an area of historical mining activity, which included a shaft depicted on historic mapping. Monitoring of groundworks was carried out alongside a specialist mine search contractor and exposed a series of features principally associated with mining activity. These included the previously identified shaft, a series of prospecting pits, possible evidence for surface working and a partially exposed sunken structure which probably related to nineteenth-century workings bordering the site. No finds were recovered from these features, but the surface workings and prospecting pits appear to represent evidence for limited post-medieval attempts to exploit the tin resource. Other recorded features included a post-medieval field boundary and a posthole alignment delineating plot subdivisions.

- Project Supervisors: Abigail Brown and Paul Jones.

## Context One Archaeological Services

### 2016

*College Farm, Penryn*

Context One Archaeological Services carried out an archaeological field evaluation through trial trenching on land south of College Farm, Penryn (centred on SW 78379 33935). Previous geophysical survey had indicated that archaeological features, in the form of sub-oval and sub-rectangular anomalies possibly representing large pits and ring ditches, may be present on site. Despite this potential, the evaluation trenching revealed only evidence for low-key agricultural activity. This comprised five ditches, two pits and two spreads of mixed materials. Three ditches were probably post-medieval, one containing clay pipe and china sherds, while a medieval jug handle was recovered from another ditch. The rest of the ditches and the pits remain undated. One of the spreads dated to the late medieval period. Evidence of post-medieval quarrying, in the form of large cut granite blocks, was identified in the western half of the site. The quarrying activity is likely to date to the Victorian period and may be related to the building of the nearby railway viaduct.

- Project Officers: Orlando Prestidge and Stuart Milby.

*Rock Mill, Prideaux, St Blazey*

Context One Archaeological Services carried out a programme of historic building recording and archaeological monitoring and recording at Rock Mill, Prideaux, St Blazey *(SX 05711 56968)*, in mitigation of the conversion to holiday accommodation of two small ruinous cottages on

the eastern bank of the River Par, opposite Rock Mill; the work followed a desk-based assessment. The historic building survey added considerably to understanding of the cottages, which started life as two buildings, present by 1839, and occupied by two different families. The discovery of a single sherd of late medieval to early post-medieval pottery suggests an earlier presence in the immediate environs. By 1851 it appears that one cottage was no longer habitable, while the larger and slightly grander cottage underwent expansion with the addition of an extension, an outbuilding, and boundary walls enclosing the rear yard and front garden. This dwelling was contemporary with a further cottage to the south-east, now known as the Cider House. By 1905 the buildings were unoccupied, although by 1969 the extension was re-occupied, probably as some form of outbuilding.
• Project Officer: Cheryl Green.

## Cotswold Archaeology

### 2016

*Bodmin Jail, Bodmin*

A watching brief by Cotswold Archaeology at Bodmin Jail (SX 0649 6744) identified extensive truncation associated with the demolition of the Old Gaol and construction of the replacement New Gaol in the 1850s. Masonry footings dating to the nineteenth-twentieth centuries were revealed, together with an undated ditch.
• Project Officer: Martin Gillard.

*Trecarrack Road, Camborne*

A watching brief by Cotswold Archaeology on land at Trecarrack Road, Camborne (SW 6609 4001), revealed three post-medieval ditches.
• Project Archaeologist: Jacopo Cerasoni.

*Middle Point, Falmouth*

An evaluation at Middle Point, Falmouth (SW 8245 3216), targeted the potential location of a Pendennis Castle tower. No remains were found and the tower either lay beyond the investigated area or has been completely removed.
• Project Archaeologist: George Gandham.

*Higher Nansloe Farm, Helston*

An evaluation by Cotswold Archaeology at Higher Nansloe Farm, Helston (SW 65897 26703), revealed a ring ditch and three small pits, all dating to the Middle Iron Age. Undated ditches, potentially part of a field system pre-dating the post-medieval period, were also identified.
• Project Officer: Jonathan Orellana.

*Carloggas Grove St Columb Major*

A watching brief at Carloggas Grove, St Columb Major (SW 9021 6306), identified undated ditches and pits. These included ditches defining part of a rectangular enclosure which might be of Roman date, as well as boundary ditches parallel to the extant field boundaries and probably of post-medieval date.
• Project Officer: Jonathan Orellana.

*Roseland Parc, Tregony*

A strip, map and sample investigation at Roseland Parc, Tregony (SX 9276 4498), by Cotswold Archaeology identified a Roman-period ditch and the remnants of a medieval field system. The foundations of a nineteenth-century garden wall were also present.
• Project Officer: Martin Gillard.

*Tresawls Road, Gloweth Barton, Truro*

A watching brief on land off Tresawls Road, Gloweth Barton, Truro (SW 7973 44980), revealed no archaeological remains.
• Project Officer: Martin Gillard.

## Wessex Archaeology

### 2015

*Premier Inn, Helston Business Park, Helston*

Archaeological mitigation was carried out over an area of 0.3 ha in advance of the construction of a new extension and car park at the Premier Inn, Helston (SW 67029 27352). A previous excavation by Foundations Archaeology in 2009 identified a dispersed group of pits dating to the Neolithic and later prehistoric – Romano-British periods, as well as medieval and post-medieval field boundaries. A

small pit contained two small undiagnostic sherds of later prehistoric pottery in the upper fill, and a flint blade core of Mesolithic – early Neolithic date in the lower fill. Charred plant remains (mainly hazelnut shells) were present in the lower fill, and a cereal grain was recovered from the upper fill. The unabraded high-quality worked flint blade core appears to be a deliberately placed deposit. The upper fill may have accumulated slowly. Given the relative rarity of such Neolithic remains in Cornwall, radiocarbon analysis and publication of a note in this journal has been recommended.

- Project officer: Benjamin Cullen.

*Cornish Archaeology* 55, 2016, 267–277

# REVIEWS

*The Lyonesse Project: a study of the historic coastal and maritime environment of the Isles of Scilly*, by Dan J Charman, Charles Johns, Kevin Camidge, Peter Marshall, Steve Mills, Jacqui Mulville, Helen M Roberts and Todd Stevens, 2016. Cornwall Archaeological Unit, Cornwall Council: Truro. ISBN 978-0-9933929-0-0. Pb £41.50, 286 pages.

This important volume reports on a multi-institutional project carried out between 2009 and 2013 to study the evolution of the historic coastal and marine environment of the Isles of Scilly. For more than a century it has been recognised that the islands were once larger and that encroaching sea has reduced the land area creating the archipelago we see today with the extensive inter-island tidal flats. In the late twentieth century this was most

*Lyonesse Project team members surveying on Par Beach, St Martin's in 2010. (Photograph: Cornwall Council.)*

extensively and evocatively examined in Charles Thomas' *Exploration of a drowned landscape*, published in 1986, but earlier commentators borrowed from the poetic fancies of the legendary drowned land of Lyonesse, an appellation that was revived for this project.

Cornwall Archaeological Unit was responsible for leading the project through to its final publication and have done a fine job of liaising with multiple contributors and in presenting through this volume the detail and interpretation of the findings. At first glance, it seems odd that a glossary should include definitions of simple archaeological terms such as 'roundhouse' and 'burial cairn', but some individual chapter headings, namely, 'peat audit, intertidal survey and GIS', 'marine fieldwork' which includes geophysical survey, 'scientific dating' and 'palaeoenvironmental analysis', show that this volume will also appeal to environmental historians with less of an archaeological background. The lead author, Dan Charman, is not an archaeologist, but professor of geography at Exeter University with a specialist interest in past and future climate change. Many readers of this journal may be tempted to skip beyond the colourful tables, charts and graphs, which fill the results chapters of this volume, to the three chapters, 'Sea-level change on the Isles of Scilly', 'Lyonesse revisited' and 'Recent and future sea-level rise in Scilly', where the results are put in context.

It is important to state, for those who live on the islands and others who are worried for their future, that the predictions (plural as multiple scenarios of climate change need to be considered) show that no catastrophic change to current available land is predicted over the next 100 years. The biggest impact will be to the current inter-tidal flats which will gradually be more completely submerged; this will presumably be good news for the boat operators who are currently reliant on the tides for access to some of the quays on the outer islands. The new sea-level curve has allowed the mapping of the fragmentation of a single island which existed at the end of the last ice age and its transformation to the archipelago we are familiar with today – the presentation of this data through a series of dated maps is particularly effective.

Of course, the key issue for this reader is what the interpretation of the varied data and its interpretation means for understanding the archaeology of Scilly and this is presented in the 'Lyonesse revisited' chapter where, led by Cornwall Council archaeologist Charles Johns, we are taken through the history of human occupation of the islands in chronological order beginning with the Mesolithic and ending with the present day. This chapter is not the result of the current project alone and benefits significantly from other recent projects on the island, in particular Cardiff University's 'Islands in a Common Sea' and the 'Neolithic Stepping Stones' project's recent excavations on St Martin's led by Duncan Garrow and Fraser Sturt. Some of the findings that caught this reviewer's eye are presented below, but there are many more nuggets to find.

Although Mesolithic visitors used what was a basically a single large island, taking in all of the current islands, rocks and reefs, no shell middens of this period have been located and have probably been lost to sea level rise. Episodes of burning in what was a forested environment have been identified by charcoal peaks in the pollen record. The evidence for 'visits' obviously provides proxy evidence for maritime technology at this time, as the later prehistoric use of Scilly does, but this issue is not discussed in this volume. By the beginning of the Neolithic, sea level rise was starting to create an archipelago that starts to resemble the pattern of the islands as seen today – the maps produced for each of the periods with relevant sites marked are very useful indeed. The ceramics in this period show that contacts were being maintained with the mainland and by the earliest part of this period may have continued to be visits only, but in the Middle Neolithic the evidence for land clearance presumably indicates that a permanent settled community had been established. By the end of the Neolithic the topography of the islands was such that sea level rise was so rapid that it is estimated that significant changes to the coastline would have been seen within a single lifespan, which, it is noted by the authors, must have played an important role in cultural development. It may be no accident then that the Early Bronze Age sees the rise of the Entrance Graves and 'one of the densest concentrations of megalithic monuments in Western Europe'. The detailed mapping shows that the current apparent coastal bias to these monuments was not so skewed at the time of their construction, meaning that closeness to the open sea was not as significant for their locations as might previously have been suspected. The famous submerged field systems may date to this period,

*Exposed peat deposits at Crab's Ledge, Tresco, September 2009. (Photograph: Cornwall Council.)*

but could be earlier (Neolithic) or later (Iron Age), the project was unable to provide a definitive answer to this issue.

The general paucity of settlement sites for the Neolithic and Bronze Age communities who appear to have been extremely active on the isles is noted, and the landscape modelling shows that those few sites that are known would not have been coastal, as they are now, but would have overlooked inter-tidal flats; this would have given the residents access to a variety of environmental zones – saltmarsh and arable fields – but shows little concern for access to the open sea. An issue that once again, in my mind, raises issues of maritime technology and connectedness to the mainland. The account of prehistory is usefully followed by a discussion of Scilly's place in the Romano-British world, which largely surrounds a consideration of the finds from Nornour – a site it is noted that has yielded probably more Roman non-pottery finds than the whole of the rest of Cornwall and Devon! The landscape modelling finds little to support Thomas' proposed location of a harbour to the north of Nornour. This chapter continues to more familiar ground with a useful review of Scilly from medieval to modern times.

There is an uneasy balance in this volume between presenting the detailed findings, producing an attractive volume and making it accessible enough for readers of all backgrounds and prior knowledge. It is also clear that the contributors are keen on showing the funders that this was money well spent and that a requirement to disseminate the results to a wider public is being met. This latter issue is perhaps the reason for the lavish use of colour which makes the volume aesthetically pleasing and potentially more attractive to those perhaps less interested in the detailed results of each of the scientific studies. For those with some knowledge of the islands there is a, presumably unintentional, opportunity for having a bit of fun as each chapter begins with a full-page colour photo, most commonly an aerial view, which is without caption so you can play a game and try to identify the place and significance of the view – this becomes much harder (for extra points?) when the view is underwater! I do not, however, wish to end on a frivolous note as this volume will undoubtedly provide the standard reference work, probably for a good while, until new applications or techniques allow for the next revision of the sea level curve.

*Paul Rainbird*
*(Honorary Fellow, University of Exeter)*

*Archaeology and landscape at the Land's End, Cornwall – The West Penwith surveys 1980–2010*, by Peter Herring, Nicholas Johnson, Andy M Jones, Jacqueline A Nowakowski, Adam Sharpe, and Andrew Young, 2016. Cornwall Archaeological Unit, Cornwall Council: Truro. ISBN 978 0 9933929 2 4. Hb £29.00. v + 346 pages.

This is another impressive volume from essentially the same stable as Dudley *et al* (2011), *Goon, hal,*

*cliff and croft: the archaeology and landscape history of west Cornwall's rough ground*, and Kirkham *et al* (2011), *Managing the historic environment on west Cornwall's rough ground*. There is inevitably some overlap between these, but the three together make a hugely valuable contribution to west Cornish studies.

The present volume documents, and puts in archaeological context, three decades of more than 270 pioneer landscape surveys of some 4,000 hectares of West Penwith, in response to very real threats of destruction due to changes in land management. It tells an extraordinary tale of lack of awareness and of damage, followed by a gradual cultural awakening and, generally, safeguarding of a precious resource. It is a wonderfully inclusive work combining culture, nature and response, and is constantly stimulating. The continuity of skilled archaeological personnel is remarkable – Cornwall is lucky to have had this consistent level of expertise for so many decades.

The cover illustration of ancient fields at Bosigran is stunning, and there is a splendid foreword by Philip Marsden who describes Penwith as 'the snout of some questing beast, eternally snuffling at the mystery of the ocean'.

The reader is taken through previous archaeological work, the imperative need for, and story of, the surveys, the character of the cultural landscape, and chronological accounts, with case studies, from prehistory to the present day. Six chapters cover the Neolithic and Early Bronze Age ceremonial landscape (4000–1500 BC), roundhouses and fields of the 2nd to 1st millennia BC, late prehistoric and Romano-British field systems, the medieval period (AD 400–1540), the post-medieval period (AD 1540–1750), and industrialisation.

The story of human presence is told through the landscape rather than artefacts and one is left with an overwhelming sense of brilliantly kaleidoscopic cultural diversity.

There are many superb illustrations and plans (see, for example, figures 7.7, 7.8 and 7.15), although the occasional use of colour-shaded distribution maps with coloured dots can be confusing in terms of definition (for example, fig 5.10) – fine grayscale would have given greater clarity.

The gradual process of increasingly protective designation is well told. In the 1970s and 1980s Agricultural Improvement Grants wreaked havoc on many ancient landscapes, even around Chysauster, when there was little appreciation of their significance, even within the archaeological world. By the early 1980s some 40ha of moorland were being 'improved' each year through grant schemes, and this led to the West Penwith Survey (1983–1990). Designation of an Environmentally Sensitive Area for West Penwith in 1987, which comprised some 9000 ha by 1991/2, brought a 'near-complete halt' to the loss of ancient boundaries of late prehistoric and Romano-British fields.

The National Trust is singled out for special praise as a pioneer in 'total landscape' surveys on its land. These required new methodologies of recording to be developed and for new map conventions to be agreed upon.

Chapter 4 is a wonderful case study of Bosigran and Bosporthennis – this is well worth reading early on. Every student of archaeology should read Peter Herring's 'guide' to field survey and analysis of boundary types (pp 58–64). The section (pp 65–77) on Historic Landscape Characterisation is of more recondite academic and specialised interest – see figure 3.26 (p 72) for its complexity. I also recommend that everyone should read aloud the description (p 23) of Zennor Quoit given to Robert Hunt in the nineteenth century.

The emphasis on the potential significance of Lescudjack hillfort on the edge of Penzance is revelatory, not least for its possible influence on medieval landscape, with a boundary 26 km in length defining what has been named 'Lescudjack land' (see figure 8.1), which 'both links and separates prehistory and modernity'.

Quite properly, the landscape influence of nineteenth- and twentieth-century industry (mining, quarrying and china-clay) is included. Between 1801 and 1871 the population of St Just rose by 400 per cent to 9000. Approximately 250 steam engines are known to have operated in West Penwith, mostly around St Just. Not to be forgotten are the 77 million pilchards landed at St Ives in 1846 – see figure 10.36 for the extent of fish cellars there. Welcome attention (p 27) is given to milk churn stands which were in use for only 40 years (1933–1972).

The volume is splendidly designed, and is to be commended for its 15–page index, 21–page bibliography and 11–page glossary. There are perhaps rather too many, mostly minor, typographic errors (for example, Busullow for Bosullow, Courtenay for Courtney, Stephens for Stevens, and

other misspellings). Rarely, there is a lapse into planning jargon; for example, 'scoping' (pp 143, 146, 173, figure 6.2), and the term 'polygon' (pp 69,70, 76) is not in the glossary.

The book is not intended as a total story of human presence in West Penwith, although it nearly achieves this very well. Despite the range and wealth of detail described, West Penwith still has many elements to be explored – for example, features relating to early tinworking. Few of the tin streamworks (those in the lower Lamorna valley are hugely impressive) have been surveyed in detail, but were presumably not considered significantly at risk, apart from being obscured by vegetation. And where is the evidence for medieval tin smelting? The role and age of corn mills seems rather neglected (for example, Bosigran), and the significance of churches appears to be relatively lightly covered. Nor is there a summary of known vegetation history: assumptions are made for prehistory of an unwooded landscape, despite evidence of an oak-hazel woodland at Chysauster (p 132). It is perhaps surprising that the remarkable Table Maen at Sennen does not receive mention (it has possible cupmarks on its upper surface).

Chapter 11 by Nicholas Johnson looks at 'Future Challenges'. He rightly talks of the 'vital importance of regular grazing' but, from this reviewer's experience, such a target is far from being achieved on the West Penwith moors, which have suffered grievously from the demise, for about a century, of traditional seasonal grazing. His belief in National Park status is misplaced, as it is no guarantor of protection unless the park is staffed by high-quality officers and has members with access to the greatest range of information.

His observation (p 295) that there have been unexpected consequences of 27 years of ESA designation – the lack of repair and maintenance of boundary features, as well as a marked decline in grazing – is a reminder that thinking about landscape, cultural heritage, protection and management is a dynamic process that still needs refinement.

Vocabulary is important in shaping perceptions, and the term 'monument' does not help. In this reviewer's opinion, there should be an overarching protective designation for most if not all of West Penwith as a special Ecocultural Zone, supported by high-quality data (both ecological and cultural) stored in a parish-based format, accessible to local residents.

This would be a fitting endorsement of this wonderful book which is deeply-layered, like the landscape it describes. It admirably sets the scene for, hopefully, a new era of sensitivity towards the cultural riches of West Penwith. A stated aim of the book (p 70) is to ensure that 'decision-making is as thoughtful as society would wish it to be'. As long as both the local community and decision-makers read and absorb what this fine book contains, the results should be life-enhancing.

*Tom Greeves, Tavistock*

*Bypassing Indian Queens. Archaeological excavations 1992–1994: investigating prehistoric and Romano-British settlement and landscapes in Cornwall*, by Jacqueline Nowakowski and Charles Johns, 2015. Cornwall Council: Truro. CD £9.99, xxxvii + 389 pages.

Whereas earlier work by the Cornwall Archaeological Unit, in the 1980s, concentrated on the upland areas of West Penwith and Bodmin Moor, the A30 Fraddon to Indian Queens bypass project in the 1990s presented the first major opportunity to investigate a slice through lowland Cornwall. Two key sites on the 7.4 km road line were already known to need recording, namely a later prehistoric round at Penhale and a Bronze Age barrow at Little Gaverigan, both in St Enoder parish. But the research objectives for the road scheme were also influenced by new ideas about how to understand the historic character of the landscape. One of the key characteristics in Cornwall is the distinction between the patterns of fields and settlements of predominantly medieval origin, which have come to be known as 'Anciently Enclosed Land' (Cornwall County Council 1996), and the areas of former heathland, downland or rough ground, mostly enclosed in the eighteenth and nineteenth centuries, for which the term 'Recently Enclosed Land' has been coined. The new road line ran through 40 per cent Anciently Enclosed Land and 60 per cent Recently Enclosed Land, so underpinning the A30 project were questions about these two distinct landscape types. When did this distinction develop, and are the histories of the two areas reflected in a differing range of archaeological sites?

The fieldwork ran from 1992 to 1994 and was followed by a very detailed assessment of the data (1995–1998), but the project more or less stalled

for a decade while responsibility for funding shifted from English Heritage to the Highways Agency, before a programme of analysis and publication was agreed. Systematic sampling during the fieldwork meant that detailed archaeobotanical studies and comprehensive scientific dating could be an important aspect of this programme. Consequently, a valuable aspect of the publication is its presentation of evidence about the changing environment, land use and crops from the Neolithic through to the early medieval period. There was also a comprehensive study of pottery fabrics of all periods by analysis of thin sections. This showed, for example, that at most periods, including the Early Neolithic, some pots were made by bringing in gabbroic clay from the Lizard and mixing it with local material.

One of the most exciting discoveries only became apparent when the excavation plans and finds were studied after fieldwork had ended. Hidden among the much later ditches of Penhale Round were the postholes of a large rectangular timber building, 7m wide and at least 20m, possibly even 27m long, dating to the Early Neolithic. To put this into perspective, the medieval great hall at Launceston Castle measures 22m by 7m. The scale of the building suggests that it was communal or ceremonial rather than purely domestic. It was associated with 362 sherds of Early Neolithic pottery, representing a minimum of 10 vessels, one of the largest collections from this period in Cornwall. The radiocarbon dates place the structure very early in Cornwall's Neolithic, and earlier than the tor enclosures at Carn Brea and Helman Tor; Bayesian modelling suggests an estimated start date of 4030–3715 cal BC and an end date of 3800–3530 cal BC. Cereal crops were also identified at this early date at Penhale, suggesting cultivation here. The structure is so far unique in Cornwall, although others are known elsewhere in Britain. (For those familiar with the new A30 landscape, the site is under the highway just west of the Premier Inn and McDonald's.)

The picture from the next major site, the Early Bronze Age barrow at Little Gaverigan (*c* 2000–1700 BC), is very different. This site is on higher ground 2.4 km to the east of Penhale, now under one of the slip roads of the Highgate Hill interchange. The excavations showed how the barrow developed as an area enclosed by a post ring and then a ditch, before being sealed by a turf mound. Significant environmental evidence, from pollen and charred plant remains, was recovered from this site and from the neighbouring Highgate 'ritual enclosure', showing that there was rough grassland and heathland here from at least the Early Bronze Age. There were no remains of cereals. Having been established at this early date, it is likely that the grassland or heathland character of this area remained largely unchanged until the land was enclosed in the eighteenth or nineteenth century.

From the Middle Bronze Age onwards there is evidence for settlement on the lower ground around Penhale, suggesting that the distinction between the historic settled, farmed areas and the rough ground or heathland was becoming apparent by this date (around 1500–1100 cal BC), if not earlier. There is an impression here that the road line was cutting through the remains of a near continuous farming landscape, with one Bronze Age house at Penhale Round, a pair at Penhale Moor 600m to the west, another possible site 60m to the east of them, and hints of a ditched field system. The buildings may have served different functions; for example, the large assemblage of Trevisker pottery from the house at Penhale Round was from medium-sized vessels for food preparation, whereas the sherds from Penhale Moor represented the full domestic range, including small cups and large storage vessels. Cereal remains were infrequent on both sites, in spite of thorough sampling, so it is likely that livestock formed a major part of the farming economy.

There was also activity in the Penhale Round area in the Late Bronze Age and Early Iron Age, suggested by a few scattered sherds and a four-post structure.

The road line cut across the southern edge of the round, with only a small part of the interior being investigated in 1993. Most of the evidence from the round is from the Roman period but it was probably established in the Iron Age, judging from a considerable amount of residual pottery dating from the fourth or third centuries BC onward, and the subsequent discovery of a fogou inside the round. A field system associated with the round probably also has its origins in the Iron Age. The enclosure was univallate up to around the third century, when an outer ditch was added. The meticulous excavations recorded a complex sequence of phases around the enclosure's entrance, with evidence for infilling and recuts of the ditch, successive layers of cobbling, and changes to the

gateway – widening, narrowing and moving it to the east. Occupation may have continued as late as the fifth century AD, and there is post-Roman Gwithian Style and Grass-marked pottery from the latest fills and deposits. Residue on a Grass-marked sherd gave a date of cal AD 540–660, the earliest known date for this ware (although a similar date has recently been published: Jones 2015). There was more evidence for cultivation and crop processing in the Romano-British period than for previous periods, and analysis of 47 samples showed how the crops changed in the different phases, with, for example, an increase in oats in around the third century, at the expense of hulled wheat, and, in post-Roman layers overlying the occupation of the round, evidence for an increase in barley as well as oats, the crops perhaps being grown together. There was also evidence for post-Roman cereals from a corn-drying oven at Crugoes Farm near Black Cross (on the improved A39) – a large deposit almost entirely of oats with a radiocarbon date of cal AD 420–660.

The publication gives details of a wide range of finds from Penhale Round: local Cornish pottery; stonework including parts of bowls and the mould for a tin or pewter plate; a small collection of iron tools; a single coin and a small bell. Subsequent excavations in 1995 and 2006 investigated more of the interior of the round, including the surprising discovery of a fogou, and the results are helpfully pulled together in figure 7.2 of the report.

Having been involved in some stages of this project I can't offer this as an altogether impartial and independent review, but publication of its results, summarised only in outline here, is clearly important for Cornish archaeology. Although the report is a well-presented and well-illustrated account of important sites and significant data, it is unfortunate that it is only published digitally in PDF form (as a CD available from the Cornwall Archaeological Unit). While this format has its benefits, I found it cumbersome and difficult to work with compared to thumbing through a book.

*Peter Rose*

## References

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*A gazetteer of ancient bench ends in Cornwall's parish churches*. Todd Gray, 2016. The Mint Press: Exeter. ISBN 978–1–903–35669–2. Pb £10, 94pp.

This is more a spiral-bound report than a printed publication. Its strength is that it contains an accurate list of the 81 Cornish churches containing ancient, by which it means pre-1714, bench ends. This is a most useful thing to have. Its weakness is in the limited scope of the information provided about them.

The report is a product of the West Country Late Medieval Bench Ends Project, based at the University of Exeter and funded by The Pilgrim Trust. The primary object of this is to compile information on surviving bench ends in the south west and bring together what has been said about them in printed sources. The project – through the individual county gazetteers – is aimed at providing local churchwardens and others with responsibilities for church fabric with an indication

*Bench ends re-used in the pulpit at St Cuby's church, Tregony. (Photograph: Graeme Kirkham.)*

of what is present in their churches and its significance, and thus 'to reduce the unnecessary destruction of this ancient woodwork' (University of Exeter website: Centre for Early Modern Studies).

The majority of the text in each entry is historiographical: an account of what has been written about the bench ends in a given building, rather than an assessment of the benches themselves. These accounts mix secondary, potentially dubious, sources (such as Arthur Mee's *Cornwall* and local newspaper reports) with historical sources such as Davies Gilbert's *Parochial history of Cornwall* (1838), local studies of various dates, and the much more recent Listing descriptions. They include a sprinkling of references to primary sources (but, for example, the contract for the bench ends at Bodmin, a critical document, is noted only via secondary reports).

All this reflects huge research effort on the part of the author, but for the reader it is hard going, with a fair amount of material, some of it uncritically created in the first place, equally uncritically recycled from one source to another. To make matters worse, source-checking means constant to-ing and fro-ing to the 917 notes at the back of the book. There are also various typesetting oddities: 'Bench' and 'End' are consistently capitalised; all the open-quote marks are in a different format from those which close quotations.

Discussion of the benches themselves, by contrast, is brief. For example, the entry for Altarnun fills almost two pages of text, but the description of the famous bench ends there takes up just 16 lines of this. Overall, we are told precisely how many survive in each building (there are an impressive 1800 in total), and where in each church they can be found, but only a little about their design. Gothic motifs are distinguished from Renaissance ones, and benches featuring tracery designs from those without, but only in a generalised way. Subject matter is treated equally vaguely: so, at Braddock, we learn nothing more than 'subjects include saints, Instruments of the Passion, initials, Father Time and heraldry. One is dated 1634' (p 15). Apparently 'representations of Mary' are particularly common (p 7), but presumably the author means Marian symbols, which is rather a different thing. (It is striking how *emblematic* this art form is in Cornwall: going by current patterns of survival, representational / narrative carving was heavily biased towards non-religious subjects, such as the famous moor-grazing sheep at Altarnun). There are no illustrations, however, although three benches are depicted on the cover. In other words, the opportunity has not been taken to systematically itemise bench-end carvings and describe and compare their iconography.

This is therefore not an analytical study, but rather a preparation for one, in which locations are listed and sources collated. Anyone wanting to make an assessment of relative significance, or speculate about patterns of workshop, patronage and design would still have to visit each church themselves.

Still, the information gathered here does provide a benchmark, especially given that the ends themselves are often not in obvious locations, having been recycled into a later pulpit or lectern, for example, or placed in a corner. Libraries of Cornish studies should purchase copies of this book, and individual churches, church officials and church enthusiasts may also find it useful. I am not aware of another single source that lists each church with bench-ends, and to that extent the title *Gazetteer* is warranted, and the material more widely valuable. We can hope that its publication will hasten a Cornish equivalent for Dr Gray's comprehensive and richly illustrated *Devon's ancient bench ends*, published in 2013.

*Jon Cannon*

*The tinworking landscape of Dartmoor in a European context: papers presented at a conference in Tavistock, Devon, 6–11 May 2016*, edited by Phil Newman, 2017. Dartmoor Tin Research Group. ISBN 978-0-9529442-4-9. Pb £18, 153 pp.

The Dartmoor Tinworking Research Group (DTRG) was formed in 1991 to promote research into all aspects of Dartmoor's tin working and tin mining heritage, and in order to celebrate its 25th anniversary it organised a conference at Tavistock in May 2016. The lavishly-illustrated conference proceedings have now been published, thanks to sponsorship from the Devon Archaeological Society and the Northern Mine Research Society.

The 11 papers it contains are wide ranging, both in the subjects they address and geographically. Although the majority focus on tin working on Dartmoor from prehistory to the present day, the volume also includes papers discussing aspects of early tin mining in Cornwall, the Czech Republic

and north-western Iberia; two further papers set out the geological background to tinworking on Dartmoor while another focuses on recent work in the study of tin isotope fingerprints in both ore deposits and ancient bronzes.

The first paper, by Tom Greeves, one of the founding members of the DTRG, explores the world of Dartmoor tinners from the twelfth century to the present day. Working largely from historical sources, but also drawing in some artefactual evidence, Tom explores the world of the men and women who worked in the tin industry over the centuries, including the ways in which they were organised and the operation of the Stannaries from their formation during the medieval period until their dissolution following the Civil War. Tom introduces us to some of the individuals concerned, drawing on legal papers which describe a world which was sometimes dangerous and where instances of unruly or illegal behaviour seem to have been relatively commonplace. He explains how the term 'tinner' encompassed the owners and operators of tinworks as well as the men labouring in them, the lives of the latter being, at times, miserable affairs – even during the nineteenth century, conditions at Dartmoor's mines remained inherently dangerous. As archaeologists we perhaps tend, too often, to concentrate on our sites, but as Tom shows here, it can be equally important and enriching to focus on the men, women and children who, through their efforts, created them.

Richard Scrivener's short paper focuses on the geology and mineralogy of Dartmoor, describing the physical context within which so many centuries of industry took place. Eschewing the complex technical terms which are usually employed in geological papers, his concise and readable description of the formation of the Dartmoor granite and its mineral lodes sets them in the context of the wider south west of Britain and the greisen tin deposits of continental Europe. In conclusion he explains how the nature of the local geology influenced (and continues to influence) the ways in which black tin was concentrated from the parent ore from the earliest days to the present.

The third paper, authored by Henrietta Quinnell, sets out the artefactual evidence for pre-medieval tinworking on Dartmoor, her earliest dated example coming from the Middle Bronze Age settlement on Dean Moor. Henrietta also references ingot finds from prehistoric shipwrecks off the South Devon coast and highlights the potential for geo-archaeological sampling of river valley sediments to assist in locating sites which would help us arrive at a better understanding of early tin working on Dartmoor. Henrietta synthesises the available evidence concisely, describing what is currently understood in relation to the introduction and development of metal winning and working in prehistory through the artefactual evidence available not only from Cornwall and Devon, but also much further afield, considering how local tin might have been both traded and valued. Focusing on Dartmoor itself, Henrietta considers to what degree archaeological evidence can help us understand the degree to which local tin deposits might have been exploited from the Bronze Age into the post-Roman period. While she concludes that the evidence is somewhat sparse at present, Henrietta identifies some of the avenues of research which could be undertaken to rectify this.

Phil Newman's paper considers the landscape legacy of tin mining on Dartmoor between the eighteenth and twentieth centuries. DTRG has been particularly keen to survey Dartmoor's tinworks, and Phil (together with Sandy Gerrard) was instrumental in training society members in the survey techniques which have allowed a considerable number of its tinworking sites to be recorded. His paper is a substantial one, copiously illustrated, showcasing a small part of the impressive body of work undertaken by the Group's members over the past two and a half decades. He sets out to show that while a survey in itself is valuable, it is its analysis which is most important. There is insufficient space in this review to describe the evidence which he presents, but it is compelling. Through aerial and ground photographs, graphs and copious surveys of tinworks, mines and dressing floors, Phil presents the range of evidence for tinworking on Dartmoor from the medieval period onwards, accompanying this with a discussion of how the various aspects of tinworking are to be found in physical form on its sites, his paper concluding with comprehensive lists of its later mines and dressing floors.

The following paper, by Tom Greeves, considers the current state of knowledge concerning the places where labouring tinners lived on Dartmoor, the places where they hid ore and tools from prying eyes, and the places where ore was stamped and dressed. The paper is a short one, though highly informative and well illustrated, and points up the value of recording or investigating apparently

innocuous and easily overlooked small earthworks on the moor. It is accompanied by a comprehensive table listing the locations and details of Dartmoor's tin mills, and another detailing tin smelting houses in Devon *c* 1750–1890.

The last of the papers focusing on Dartmoor's tin industry brings us right up to date, as Simon Hughes of AC archaeology describes the results of archaeological work undertaken in advance of the re-opening of Hemerdon wolfram mine near Plympton by Wolf Minerals. Given the scope and scale of the development proposals, their study area was large and AC Archaeology's fieldwork project included extensive surveys, evaluations and excavations on sites as varied as prehistoric cairns, medieval tinworks and a redundant china clay works, and a building survey of the derelict Hemerdon Mine complex.

From Dartmoor we move, inevitably, to Cornwall, with Peter Herring's paper summarising 'Tinworking in the Cornish landscape', within which Peter describes how this particular industry has affected not only the landscape of the Duchy, but also the history, character and identity of its inhabitants and how more than three decades of investigation by Cornwall's archaeologists have demonstrated the nature of the relationships between the two. Peter uses a wide range of sources to illustrate his understanding of what the impacts of mining have been on both landscape and psyche, drawing on landscape studies, historical accounts, the founding ethos of the Trevithick Society and the inscription of the Cornish Mining World Heritage Site, together with the modern archaeological surveys and research which have allowed us to better understand site formation. Peter uses Godolphin as a case study, bringing together many of these strands and then returning to the larger picture, showing how the economic and other impacts of tinworking spread far beyond streamworks and mines to influence almost all of Cornwall's landscape and the character of its inhabitants.

The final four papers move beyond the south west of Britain to consider the wider context for historical tinworking. The first of these, authored by Brügmann, Berger, Frank, Marahrens, Nessel and Pernicka, considers current knowledge concerning the scientific study of tin isotopes from south-west Britain and from the Erzgebrige mining district spanning Germany and the Czech Republic and the analysis of tin isotope signatures from prehistoric bronzes. The paper is necessarily technical and includes a mathematical formula which many will find daunting. The methodology of the study is explained and variation between the two orefields considered. Both central European and Mesopotamian artefact analyses are included. While no firm conclusions are presented about the role of the south west in Europe-wide tin trade in prehistory, the paper demonstrates that several sources of this key metal were being exploited and that extensive trade networks were in place during this period.

Providing comparison with some of the archaeological evidence from Dartmoor, Petr Rojik's paper considers the evidence for tin streamworks and water supplies in the part of the Erzgebirge falling within the Czech Republic. Following a description of the orefield, its geology and summary mining history, Rojik explains how much of the potential for archaeological and other evidence within this region to illuminate early mining activity was lost through sweeping changes within the region during the twentieth century, but how information can be retrieved through analysis of historical documents and modern archaeological survey.

Michael Rund's paper considers the history and archaeology of the Czech national monument of the Jeronym (Hieronymus) Mine near Rovna. Already in operation by 1548, this mine gave rise to a town dedicated to tin mining and smelting. Rund demonstrates how, perversely, the mine was, at times, run for the principal purpose of sustaining the town, even when being run unsuccessfully. It was worked from the sixteenth century until abandoned in the mid-twentieth century, but the discovery of unaltered early sections of the early underground workings has led to work to make some parts of the mine publicly accessible. The survival of post-medieval underground workings is shown to be archaeologically important, detailed mapping of accessible underground sections of the mine providing important insights into the technologies such as fire-setting which were used in their development and exploitation.

The final paper in the volume was collaboratively authored by Rey, Meunier, Figueiredo, Lackinger, Fonte, Fernandez, Lima, Mirão and Silva, members of the Iberian Tin Research Group, and considers the range of evidence for tin mining from prehistory to the modern period in north-western Iberia, a mining region which, CAS

members may be surprised to learn, is much larger than the Cornubian orefield. In contrast to its early gold-mining industry, research into the mining of tin within this region has been relatively thin on the ground. It had previously been felt (erroneously, as Dartmoor and Cornwall have so amply demonstrated) that the working of alluvial tin deposits would have left few archaeological traces. Following a description of the orefield as a whole and a summary of previous research, the authors present the evidence via a series of case studies which suggest that if further archaeological research could be undertaken, the results might considerably change our understanding of the role of this part of Europe in the production of and trade in tin during prehistory.

This volume is a valuable addition to the currently small corpus of publications addressing the topic of early tin mining in south-west Britain and beyond and, as is appropriate for a volume celebrating 25 years since the formation of the DTRG, summarises many of the changes in our understanding of this topic which have taken place over that period. For anyone wishing to broaden their knowledge of south-western British archaeology and who are unfamiliar with the archaeology of early tin mining it should be essential reading, particularly the papers presented by Greeves, Newman and Herring.

I would have appreciated a short introduction to the aims and achievements of the DTRG, given that this is a celebratory volume produced by a society made up predominantly of amateur enthusiasts who have collectively produced so much in the way of new surveys and research into the early tinworking industry of Dartmoor. Also missing was a paper synthesising the results of what was presented at the conference and how, collectively, we might target our research efforts to better understand the ways in which this one industry has shaped not only the landscape and culture of south-west Britain, but, in the words of the Cornish Mining World Heritage Site strapline, ‘shaped your world’.

*Adam Sharpe*

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# Obituary

## GEOFFREY JOHN WAINWRIGHT MBE

19 September 1937 – 6 March 2017

Geoff Wainwright, who was President of the Cornwall Archaeological Society from 1980 to 1984, was one of Britain's most influential archaeologists. Results from his excavations at prehistoric sites across southern England and Wales form the backbone to the story of British prehistory, while in later life he was instrumental in shaping the development of professional archaeology. Intolerant of dithering, pomposity, or incompetence, he was well respected for his experience, insights, and wise counsel based on pragmatism and listening to the arguments. He instinctively knew when to go with the flow, when to fight, when to hold back, and when to tactically withdraw.

Geoff was born in the small seaside village of Angle, Pembrokeshire, in south-west Wales. His father, Frederick, was a miner and farm labourer while his mother, Dorothy, was the village school teacher. A happy and carefree childhood despite financial hardships and the austerity of war-time Britain led to a place at Pembroke Dock Grammar. He played rugby for the school, developing a life-long interest in the game. From school he went on to read archaeology at University College Cardiff, played rugby for the university, and graduated with first class honours in 1958. During his undergraduate years he excavated a number of Mesolithic sites on the Pembrokeshire coast within striking distance of his childhood home. These set him off on the idea that good archaeology means listening to the evidence, and provided raw material for research on the Mesolithic of south-west Britain which he undertook at the Institute of Archaeology, University of London, completing his PhD in 1961. His supervisor Fred

*Geoffrey Wainwright, when President of the Society of Antiquaries (with permission from the Society of Antiquaries of London).*

Zeuner spotted Geoff's talent for archaeology and offered him the opportunity to help set up a new department of archaeology in the University of Baroda, Gujerat, India, something Geoff jumped at and was promptly appointed Visiting Professor of Environmental Archaeology there. While in India he travelled extensively with his faithful driver and manservant, sometimes camping in the bush for weeks on end while recording sites.

Returning to England in 1963, he joined the Ministry of Works as a field archaeologist and spent more than a decade in a continuous campaign of innovative and rewarding excavations at prehistoric sites, including: Tollard Royal, Wiltshire (1965–6); Durrington Walls, Wiltshire (1966–68); Walesland Rath, Pembrokeshire (1967–8); Marden, Wiltshire (1968–69); Mount Pleasant, Dorset (1970–71); Gussage All Saints, Dorset (1972); and Balksbury Camp, Hampshire (1973). All were promptly published, and the reports on Durrington Walls and on Gussage All Saints in particular are amongst the most cited works in later archaeological publications. They have become the model that others have followed.

Managing these investigations on a piecemeal basis became increasingly difficult, and in 1975, with the support of what had become the Department of the Environment, Geoff established and led a rapid-response excavation team known as the Central Excavation Unit. By the mid 1980s they were undertaking more than 20 excavations a year across England. The skills and exploits of this team became legendary, not least their unstinting support for hostelries near every site investigated.

Promotion to senior inspector of Ancient Monuments in 1980 and then Chief Archaeologist at the newly formed English Heritage in 1984 took Geoff out of the trenches and into the office. Here he quickly became the lead player in sorting out the problem of Stonehenge where the inadequate visitor facilities and intrusive roads had been recognised as a 'national disgrace'. Some high profile problem cases where development projects brought to light far more archaeological remains than was expected demanded new ways of working, and the team that Geoff led came up with a document fondly known as PPG16 that effectively embedded archaeological work in the planning system. It changed the course of professional archaeology in Britain and had repercussions across Europe.

Geoff's experience and contributions were widely recognized. He was elected a Fellow of the Society of Antiquaries in 1967, a Member of the Institute of Field Archaeologists in 1984 (Hon. Member in 1999; now Chartered Institute for Archaeologists), and a Fellow of the Learned Society of Wales on its foundation in 2010. Among many prizes and awards he was appointed MBE for services to archaeology in 1991, and was awarded the Grahame Clark Medal by the British Academy in 2006. He held numerous offices in professional and academic bodies, amongst them: President of the Prehistoric Society (1982–86); membership of the Royal Commission on the Ancient and Historical Monuments of Wales (1987–2000); President of the Society of Antiquaries (2007–10); Chairman of the Board of Wessex Archaeology (2004–11); and President of the Cambrian Archaeological Association (2002–03). European in outlook, he was one of the driving forces behind the creation of the Europae Archaeologiae Concillium and an honorary member from 1999, and a corresponding member of the Deutsches Archäologisches Institut from 2009.

Retirement did not diminish his enthusiasm for archaeology and after moving back to Pembrokeshire he and I began a new project to explore the sources in the Preselis of the famous bluestones that ended up inside Stonehenge. We surveyed and excavated more than a dozen sites in Preseli, and in 2008 excavated a small trench inside Stonehenge. Publication of that work is well advanced, but was temporarily put aside to make space for working up a chapter for one of Geoff's most cherished ambitions: the first volume of the Pembrokeshire County History. We worked on that chapter for over a year, and the book was launched in November 2016 with Geoff in good form, negotiating with the publishers about how many free copies the authors should get.

The world of professional archaeology owes Geoff a huge debt of gratitude for leading our discipline into the age of enlightenment that we now enjoy, a story told in his own words in the aptly titled paper 'Time please' (*Antiquity* 74 (2000) 909–43). He died at home after a long battle with cancer just a few months short of his 80th birthday, and is survived by his wife Judith, his children Rhiannon, Sarah, and Nick, and three grandchildren.

*Timothy Darvill*

# GEOFF WAINWRIGHT, CAS PRESIDENT 1980–1984

As President of the Cornwall Archaeological Society Geoff was part of a sequence of eminent archaeologists who had experience of archaeology in south-west Britain but who were not generally locally based: his immediate predecessor was Paul Ashbee and his successor Charles Thomas.

Geoff had long been familiar with the area, his first contribution being a study of the Mesolithic assemblage from Dozmare Pool on Bodmin Moor (*Proceedings of the Prehistoric Society* for 1960) arising from his Doctoral thesis. His position as Inspector of Ancient Monument made him a key figure in the 1970s in the establishment of both the Devon and the Cornwall Committees for Rescue Archaeology. He served on both of these in their formative years and was a forceful influence in the development of the computer-based Sites and Monuments Records for both counties. He was also a major influence in ensuring appropriate finance for rescue excavations such as Trethurgy in 1973 and was himself running the major series of excavations at Shaugh Moor on western Dartmoor which took place annually between 1978 and 1980. In Cornwall the Central Excavation Unit (CEU) of the then Department of the Environment, under Geoff's direct management, was excavating with Fachtna McAvoy at Carngoon Bank in 1979 (*Cornish Archaeology* for 1980) and George Smith at Poldowrian in 1980 (*Cornish Archaeology* for 1982) and Goonhilly (*Cornish Archaeology* for 1982). The rapid publications of these reflected Geoff's no-nonsense management style. These excavations became part of a joint CAS/CEU enterprise, the Lizard Project, which, as CAS President and with responsibility for the CEU, Geoff encouraged and facilitated; CAS members were closely involved in the excavations and ran a major fieldwalking programme, published by George Smith (*Cornish Archaeology* for 1987).

Geoff took a close interest in the developing landscape crisis in West Penwith, when in 1980 the Cornwall Committee for Rescue Archaeology with our current President Nicholas Johnson embarked on the first of a series of surveys, which were to develop into the pioneering and extensive landscape study eventually published in 2016. In 1984 Geoff despatched the CEU and George Smith to excavate at Chysauster where the field system had been smashed by ploughing (*Proceedings of the Prehistoric Society* for 1996). Again in 1986 he encouraged CCRA to construct a bid for the whole of Zennor Parish to be made a scheduled monument. Whilst the bid was not taken up, it did provide a crucial part of the evidence base for the designation of the West Penwith Environmentally Sensitive Area the following year. It was a daring move and typical of his vigorous approach to problems.

Geoff as President chaired the Society's Committee and business was dispatched in an exemplary fashion but he also made time to get to know the amateur members then running the Society, especially the Secretary Mary Irwin and Membership Secretary Daphne Harris. He invariably was present in Cornwall to chair the three yearly Committee meetings and the AGMs and sometimes for other events, and was always accessible to Committee members. In 1982 the AGM coincided with the beginning of the Falklands crisis. Geoff had arranged to meet a group of Committee members that morning to sort out minor matters, and made a stringent comment about heads (political) being about to roll in consequence! Looking back at the complex and diverse membership of the Committee in those years, Geoff's Presidency, backed by his detailed understanding of the rapidly changing structure of archaeology in England and of its operation in Cornwall, was a very fortunate episode in the Society's history.

*Henrietta Quinnell*