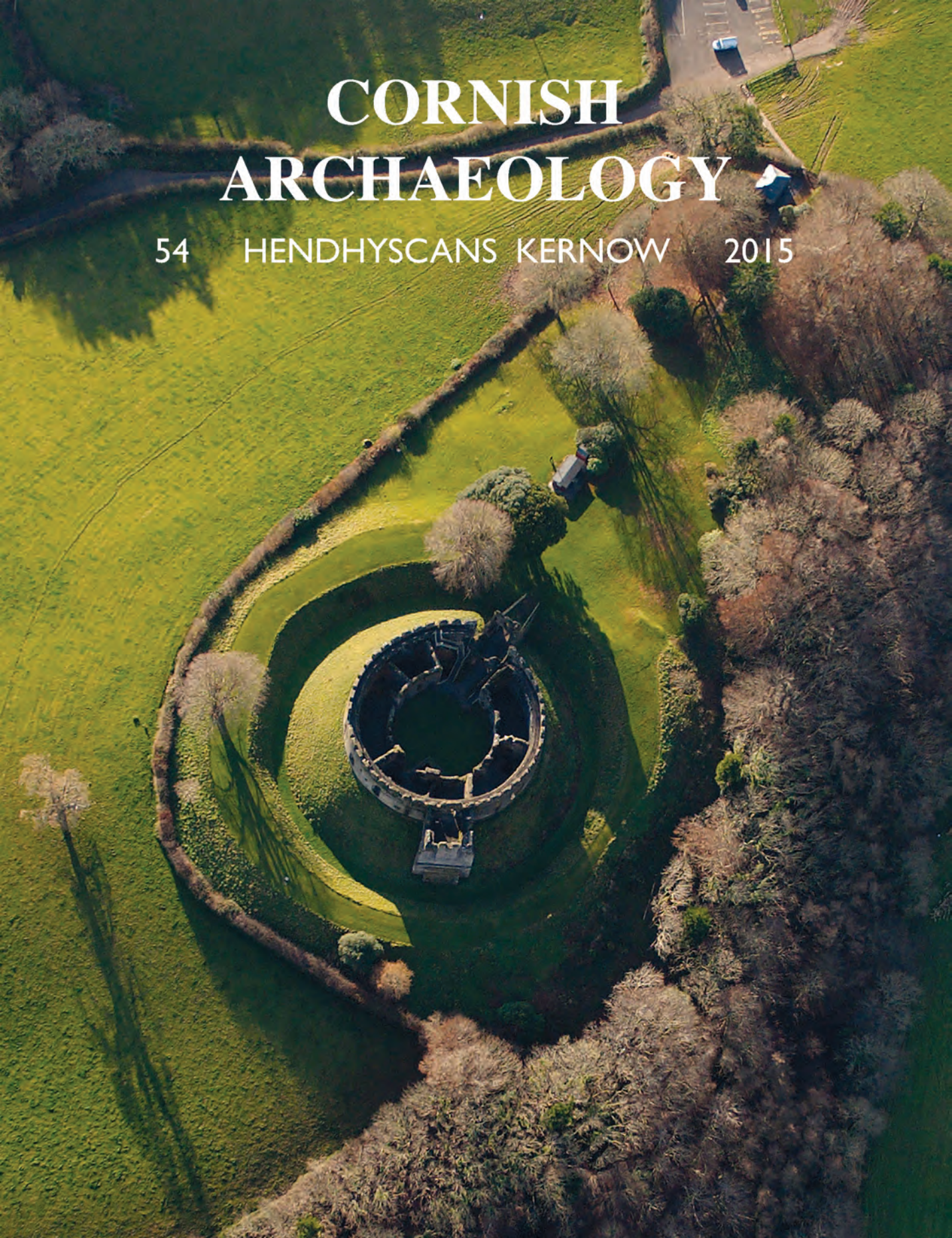

CORNISH ARCHAEOLOGY

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Cornwall Archaeological Society in 2015

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Front cover: Restormel Castle, near Lostwithiel, with the bailey upper right, viewed from the north east under a wintry sun in 2008. See S R Taylor and C Johns, Restormel Castle, Cornwall: archaeological recording 2006–2008, this volume. (Photograph: © Historic Environment Record, Cornwall Council; F88–148, 10 December 2008.)

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EDITORS

GRAEME KIRKHAM AND PETER ROSE

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Editorial

This volume of *Cornish Archaeology* is the first to appear since the death in April 2016 of the journal's founding editor and long-standing contributor, Professor Charles Thomas. Charles held the editorial chair from volume 1 in 1962 to volume 14 in 1975.

Through his efforts and vision Charles established the early direction of the journal, not least, as he noted in an editorial in volume 3 (1964), in making it a 'centralised oversight of our various field activities, a framework specifically intended to keep archaeological work in Cornwall along the most up-to-date British (which is to say European) lines'. Subsequent editors, including the present ones, have endeavoured to maintain this direction.

It is a fortunate happenstance that one of Charles' stimulating contributions was in preparation for this volume, a paper highlighting the significance of a tiny fieldwalking find as a link between west Cornwall and the wider literate Christian community in the British Isles in the early medieval period. One further brief paper by Charles is in preparation for a future volume.

The year has also seen the death of another former editor of *Cornish Archaeology*, Sarnia Butcher, who held the post for volumes 31 to 33 (1992–4). Sarnia was probably best known for her excavations on Nornour, Isles of Scilly – her magisterial study of the brooches deposited there as votive items appeared in *Cornish Archaeology* 53 (2014) – but she was active in archaeological work in Scilly over a period of almost 50 years.

In her editorial in volume 31 of *Cornish Archaeology* (1992), which included an obituary for Vivien Russell, Sarnia wrote, 'we should perhaps avoid the inclusion of obituaries as a matter of course, but the record of its characters is part of the history of archaeology'. Obituary tributes to both Charles Thomas and Sarnia Butcher appear in this volume.

Cornish Archaeology 54, 2015, 1–87

Archaeological investigations of Late Iron Age settlement at Sir James Smith's Community School, Camelford, Cornwall, 2008–9

ANDY M JONES AND SEAN R TAYLOR

with contributions from DANA CHALLINOR, JOHN CROWTHER, JULIE JONES, THÉRÈSE KEARNS, ANNA LAWSON-JONES, HENRIETTA QUINNELL, CLARE RANDALL, ROGER TAYLOR and TIM YOUNG

Archaeological investigations in advance of the construction of new playing fields at Sir James Smith's Community School Camelford, focused on a group of ceremonial enclosures and settlement-related structures which have been dated by radiocarbon determinations and pottery to the Late Iron Age. Evidence for Early Bronze Age and Middle Bronze Age activity was also found.

In 2008 Historic Environment Projects (now Cornwall Archaeological Unit), Cornwall Council, was commissioned by Planning Transportation and Estates, Cornwall Council, to undertake a programme of archaeological excavations in advance of the construction of playing fields at Sir James Smith's Community School, Camelford. The school site lies on the western edge of a broad ridge of high ground (215–230m OD) above the market town of Camelford (SX 1023 8384) (Fig 1). It has a south-facing aspect and uninterrupted views of Rough Tor and the edge of Bodmin Moor 4 km to the south east. Six kilometres to the west is the Atlantic coastline of north Cornwall. The project area is underlain by the slate of the Tredorn formation which supports soils of the Denbigh 2 classification, well-drained loamy soils over slate or slate rubble with some associated very fine loamy soils affected by groundwater.

The potential for the proposed development to contain buried archaeological remains had been shown by a geophysical survey and archaeological assessment. The geophysical survey (Fig 2; GSB Prospection 2007) identified a number of anomalies potentially of prehistoric date, including a rectangular ditched enclosure ('enclosure 3' on Fig 4), two smaller circular enclosures (enclosures 1 and 2), two ring-gullied anomalies (structures 4 and 5, interpreted as possible roundhouses) and elements of a field system ('field system north'). These components were thought to be associated with a potential prehistoric settlement and field system identified by an earlier geophysical survey (GSB Prospection 2003) on the western side of the B3266 Boscastle road, which forms the west side of the school site. The 2007 geophysical survey had also indicated that comparable archaeological features were located within an area referred to as the 'northern fields' (Figs 2 and 4); however, no significant remains were subsequently identified in this area. Geophysical survey to the south of the school indicated another field system of potentially prehistoric or Roman date ('field system south').

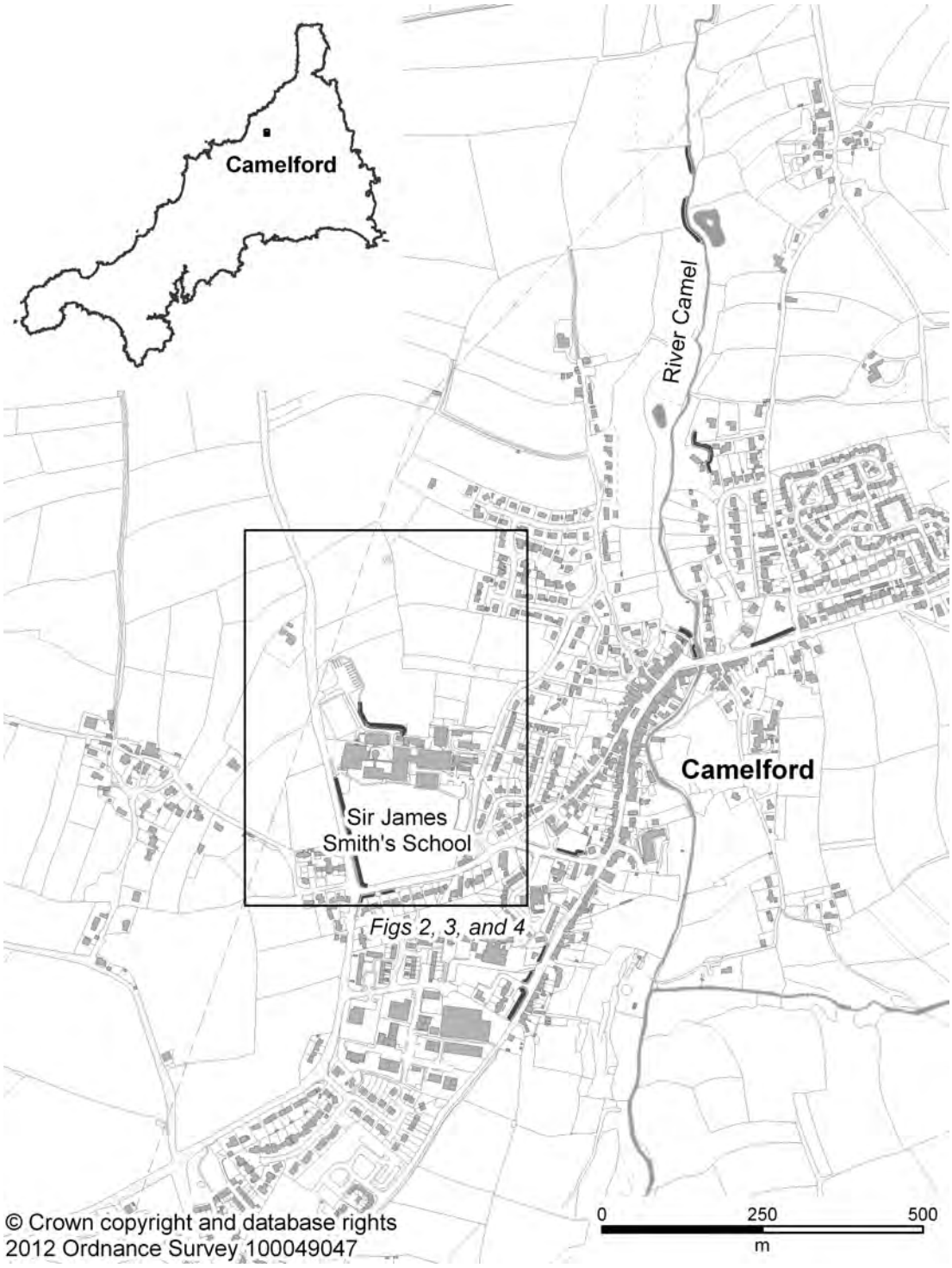

Fig 1 Camelford: location.

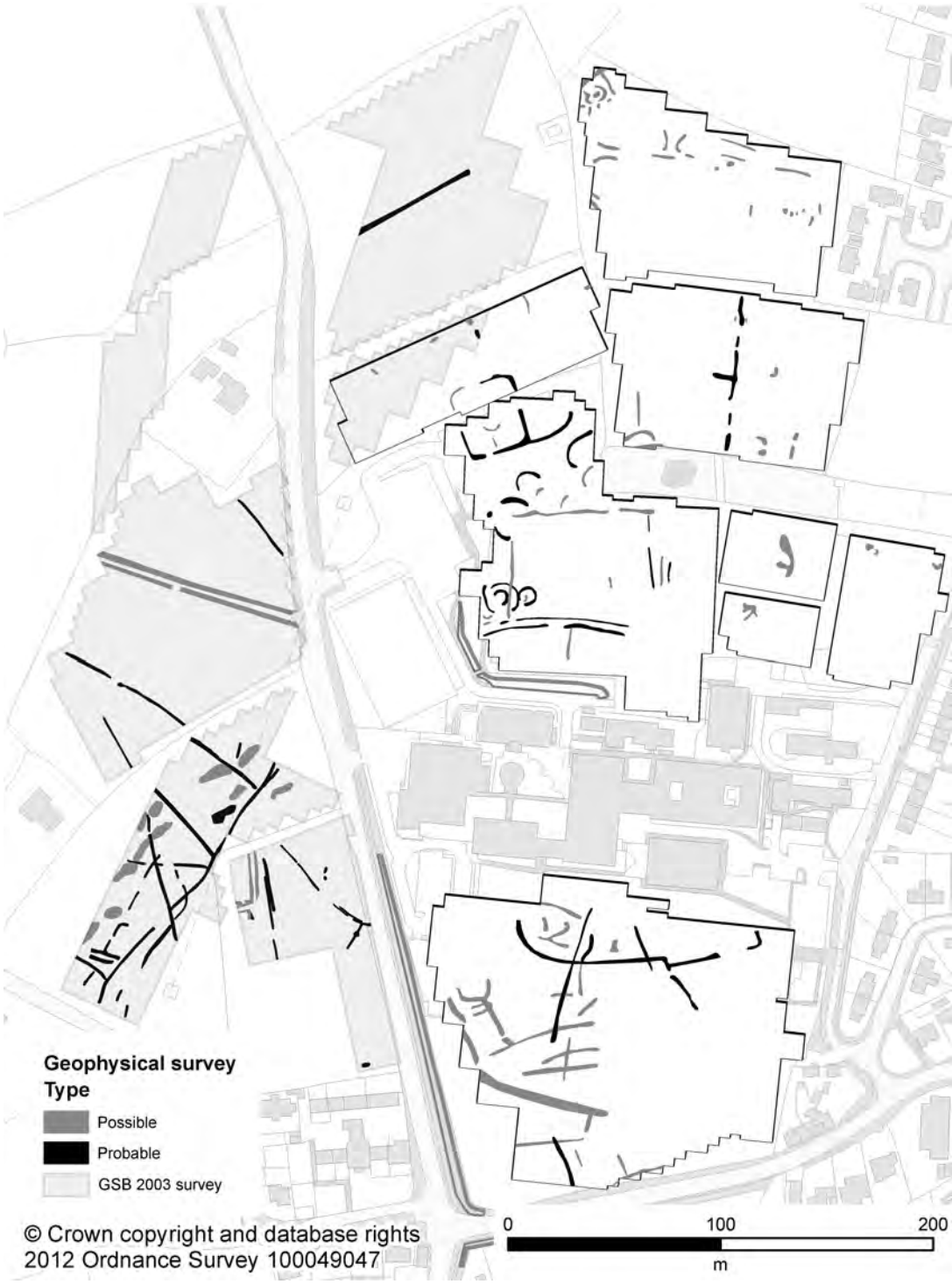

Fig 2 Geophysical survey: location and extent. (Based on GSB Prospection 2007.)

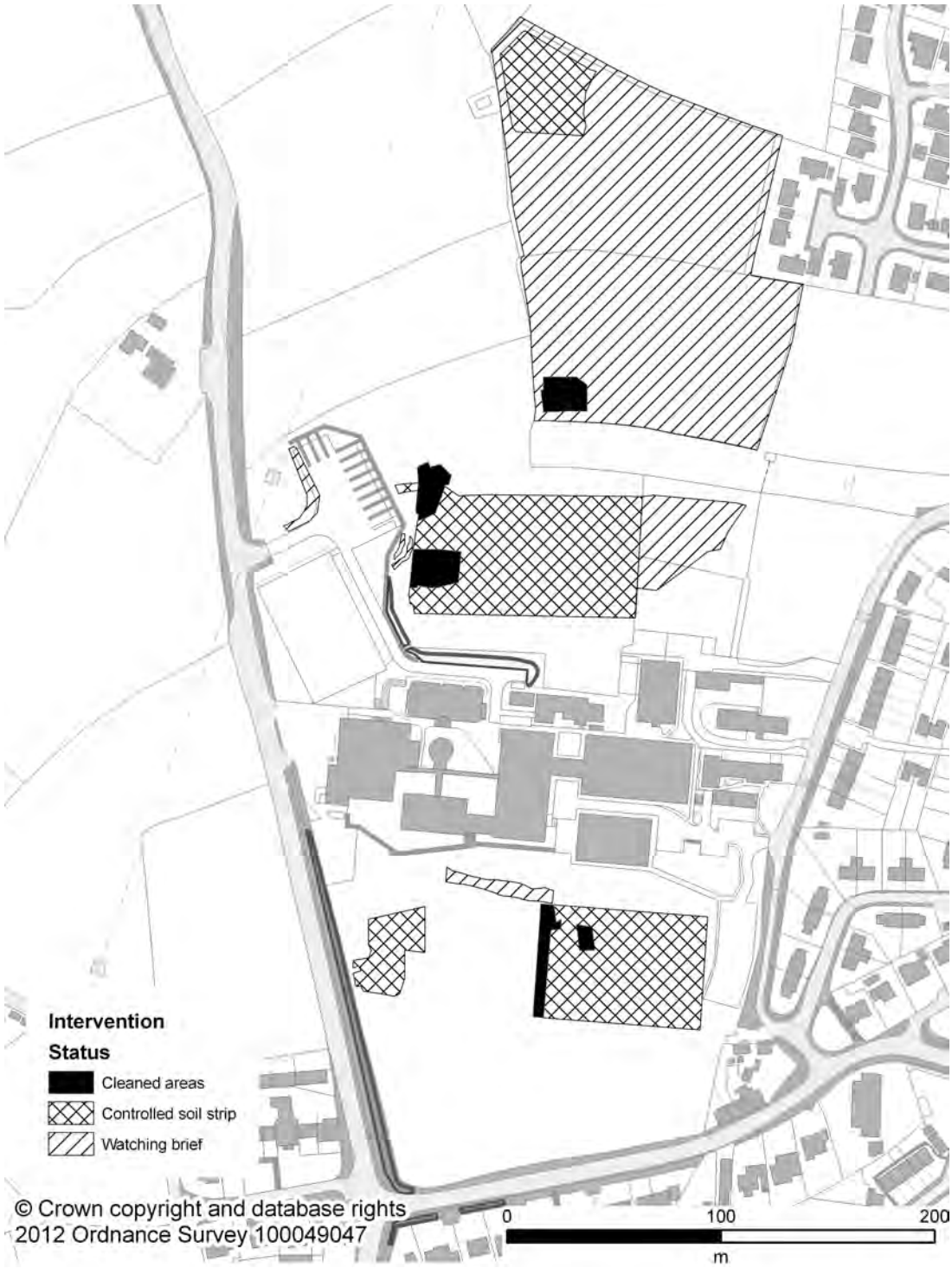

Fig 3 Location of excavated areas, showing the level of archaeological intervention.

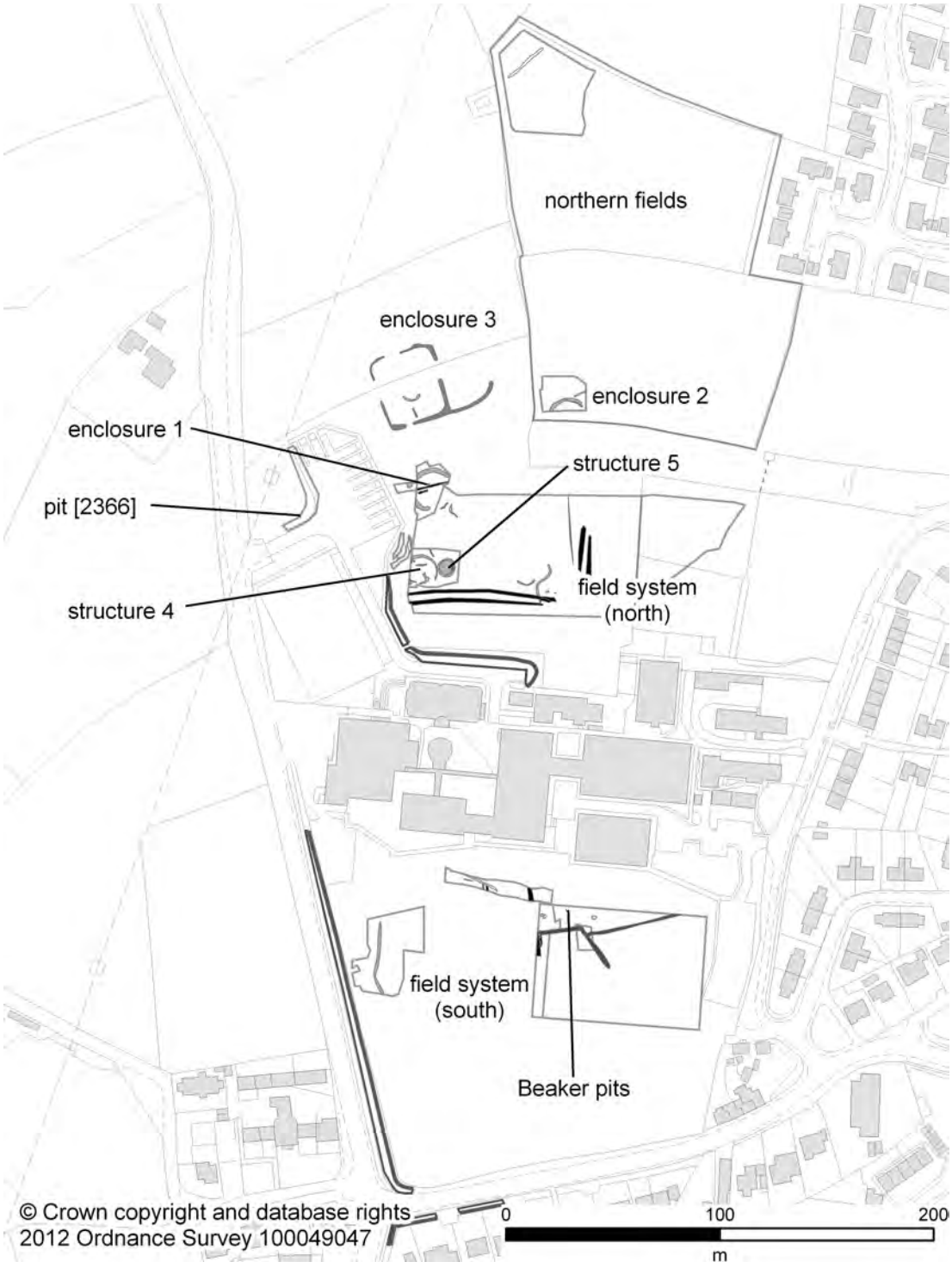

Fig 4 Location of major sites discussed in the text.

It was agreed that the area around the rectilinear enclosure (enclosure 3) would not be disturbed by the works and therefore no archaeological work was carried out in this area.

The area north of the school (the 'field system north' area on Fig 4) had been landscaped and levelled during the creation of the playing field in the 1960s and many features in this area, including enclosure 1 and structures 4 and 5 have suffered varying degrees of truncation. This is especially true of those features which were located at the northern end of the site, where a greater depth of excavation was required to create a level playing field.

Methodology

Various methodologies were employed across the site appropriate to the level of archaeological recording required (Fig 3). Soil stripping was carried out under archaeological supervision using a machine fitted with a toothless bucket across much of the development area. When significant features were encountered, their location was recorded and highlighted as an area requiring further investigation. These areas were then fenced off by the contractors to prevent them being damaged prior to excavation.

Areas of archaeological interest were cleaned using hoes; targeted areas were then cleaned more carefully with trowels. Pits and ditches were excavated in section using hand tools. Postholes and smaller features were excavated in their entirety. Detailed recording was carried out during every step of the excavation process.

In the following descriptions of excavated features context numbers for cut features (pits, ditches, gullies) are shown in square brackets, [1031], and layers, fills and deposits in round brackets, (2282). Structures are numbered without brackets; for example, wall 1002. Radiocarbon dates are cited at 95 per cent confidence level unless otherwise stated.

The Bronze Age

Stratigraphical evidence

Beaker pits

Two small pits or postholes, [1025] and [1027], were identified to the south of the school (Fig 5). They were of similar size with identically coloured fills, and were situated in close proximity to each other. The slightly smaller and shallower of the two pits was [1025], 0.27m wide and 0.1m deep. It contained two fills, (1026) and (1040). Fill (1026) contained abundant charcoal, a fragment of burnt bone, a small waste flint flakelet, and two abraded sherds of Beaker pottery decorated with fingernail impressions. The lower deposit (1040) was possibly just the interface between natural and (1026).

Pit [1027] was a shallow sub-circular feature 0.29m in diameter and 0.12m deep. It was cut deeper into the natural to the east, the base rising up to the west, and was filled by (1028). This contained abundant charcoal, one piece of burnt bone, a leaf-shaped flint arrowhead (**L1**, Lawson-Jones, below; Fig 32), and sherds of Beaker pottery including **P1** (Quinnell, below; Fig 22).

To the east of postholes [1025] and [1027] was a large shallow pit, [1029]. On excavation it was found to be almost circular with gently sloping sides and a concave base (2.25m by 2m and 0.22m deep). The pit was filled by (1030), which contained frequent charcoal inclusions. Several quite large angular quartz pieces of up to 0.12m in diameter were found towards the centre of the fill. Some moderately abraded rusticated sherds of Beaker pottery and two fragments of burnt clay or daub were found on the surface of (1030) but there were no other finds.

An abraded Beaker sherd found in medieval ditch [1031], to the south of pit [1029], is further evidence for Beaker activity in this area.

Middle Bronze Age activity within structure 4

Several features within the Iron Age structure 4 (Fig 15) contained Trevisker pottery and can therefore be assigned to the Middle Bronze Age (*c* 1500–1000 cal BC), and others contained residual Bronze Age pottery and flint, indicative of more widespread activity in the area. It is also possible that some of the features which did not contain finds may also belong to this period. A considerable amount of evidence is likely to have been removed or disturbed during the Iron Age occupation and through the creation of the playing field in the 1960s.

A posthole, [2057], in the north-west part of structure 4, was filled by three layers. The upper, (2058), contained a sherd of Bronze Age Trevisker

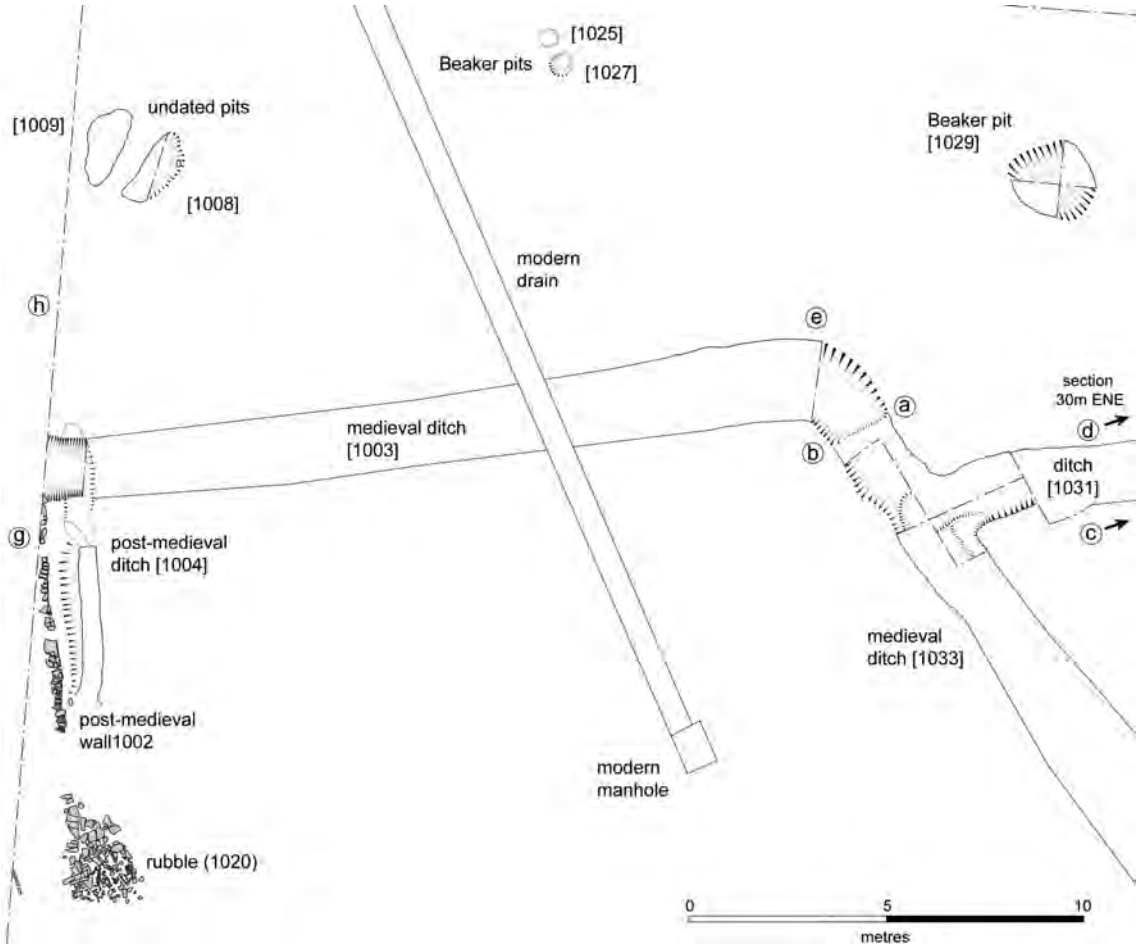

Fig 5 Area of Beaker pits and field system to the south of the school (section c–d across field ditch is shown on Figure 21). For all plans, north is to the page top as viewed.

ware, **P2** (Fig 22; Quinnell, below), perforated slates, and a notched slate. A lower fill, (2282), contained a large number of notched slates, and the feature is thought to be of Iron Age date. The posthole lay to the south of linear gully [2051], which protruded from the western baulk for 1.8m, was 0.4m wide, and 0.2m deep. It contained two fills, secondary (2052) and primary (2268), separated by an iron pan. Fill (2052) contained sherds of abraded Trevisker ware (which may therefore be residual; Quinnell, below). Possibly associated with this feature were two groups of stakeholes, [2053] and [2055], situated to the north and south of it; however, these features are not securely dated and could be later. Two other postholes produced fresh Trevisker body sherds: [2092] produced sherds from both of its fills, including **P3**, and a single sherd came from [2086].

Another pit, [2049], contained sherds of Trevisker ware in its upper fill, (2050), but Iron Age sherds too, and an Iron Age radiocarbon date from its primary fill, (2262) (below). Other features within structure 4 contained abraded Trevisker sherds, including the upper fill of gully [2035], levelling fill (2064), (2080) the layer over path 2081, possible floor deposit (2106), and layer (2114), the latter two also containing Iron Age Cordoned ware sherds. Several features and deposits within structure 4 contained flints,

including **L3** in (2064) and **L4** (in (2067); the former is likely to be of Early to Middle Bronze Age origin, the latter probably Late Neolithic to Early Bronze Age. One piece came from a context in the adjacent structure 5. The concentration of flint artefacts within this area, all or some of which are likely to be in residual contexts, increases the evidence for Bronze Age (or earlier) activity in this area without indicating what form that activity may have taken or over what time span it occurred.

Very few plant macrofossils can be linked to Bronze Age activity. One oat grain came from posthole [2057], and single wheat grains were recovered from each of the fills of gully [2051]. Posthole [2092] produced a weed seed in the form of a ribwort plantain (Julie Jones, below).

Discussion

The three pits with Beaker pottery are comparable with other known sites in the county. Similar decorated sherds from west Cornwall have associated radiocarbon dates in the twenty-second / twenty-first centuries BC (Jones and Quinnell 2006) and pits [1025], [1027] and [1029] are therefore likely to date to the earlier part of the Bronze Age (*c* 2500–1900 BC).

Middle Bronze Age activity (*c* 1500–1000 cal BC) within structure 4 was represented by three postholes and possibly by two gullies. A cup-marked stone, **S13**, found within the structure may also be of Bronze Age date. Residual sherds of Trevisker ware and flint were found in several features which also contained Iron Age ceramics, and it is possible that some of the undated features may also be of Bronze Age date. The limited evidence suggests that structure 4 was constructed over an earlier occupation or activity area (see discussion, below).

The Iron Age to Roman period

Stratigraphical evidence

Four ring-ditched or ring-gullied features were investigated by excavation. Two of these, enclosures 1 and 2, were of comparable size and form, while the others comprised two intersecting ring-gullies, structures 4 and 5. Traces of a field system were recorded to the east of the enclosures and the structures.

Enclosures 1 and 2

Enclosure 1 (Figs 6–9)

This feature comprised four sections of what appears to be a ring-ditch, open to the east and disappearing beneath a baulk to the west, located in the north-west corner of the playing field to the north of the school. It was positioned above and below a break of slope created during the levelling of the field in the 1960s. Thus any part of the feature located on the terrace formed at the base of the break of slope had been more truncated than that found towards the top of the bank.

Three sections of the ring-ditch forming the enclosure, ([2324], [2017] and [2389]), had considerably more depth than the fourth and will be discussed together. The fourth section, [2019] is discussed below under 'Phase 4'. Up to four phases of activity were identified and although these were not visible in all areas of the feature, depositional similarities enabled direct comparisons to be made. Overall the sections of ring-ditch formed an enclosure 17m in diameter, slightly flattened so that the distance from east to west was slightly longer that that from north to south, and with an area of 230 sq m. The enclosure appeared to be open to the east with a gap of 16.3m between the terminals.

PHASE 1: PRE-ENCLOSURE

The earliest feature identified was part of a truncated gully or posthole, [2379], on the northern side of ditch section [2324] (Figs 6 and 7). It contained two light yellowish-brown clay fills, (2377) and (2378), which were sealed by spread bank material (2346). Patches of similar material were observed following the outside edge of the northern section of ditch, [2324], but were not excavated. A notch in the natural slate-rich clays on the southern exterior side of ring-ditch [2017] was recorded against the baulk; this may represent a similar feature although it was recorded as having been filled by one of the ditch deposits. If these features are associated with the enclosure they should more properly be assigned to the construction phase. They may represent a ring-groove or post-ring representing an external

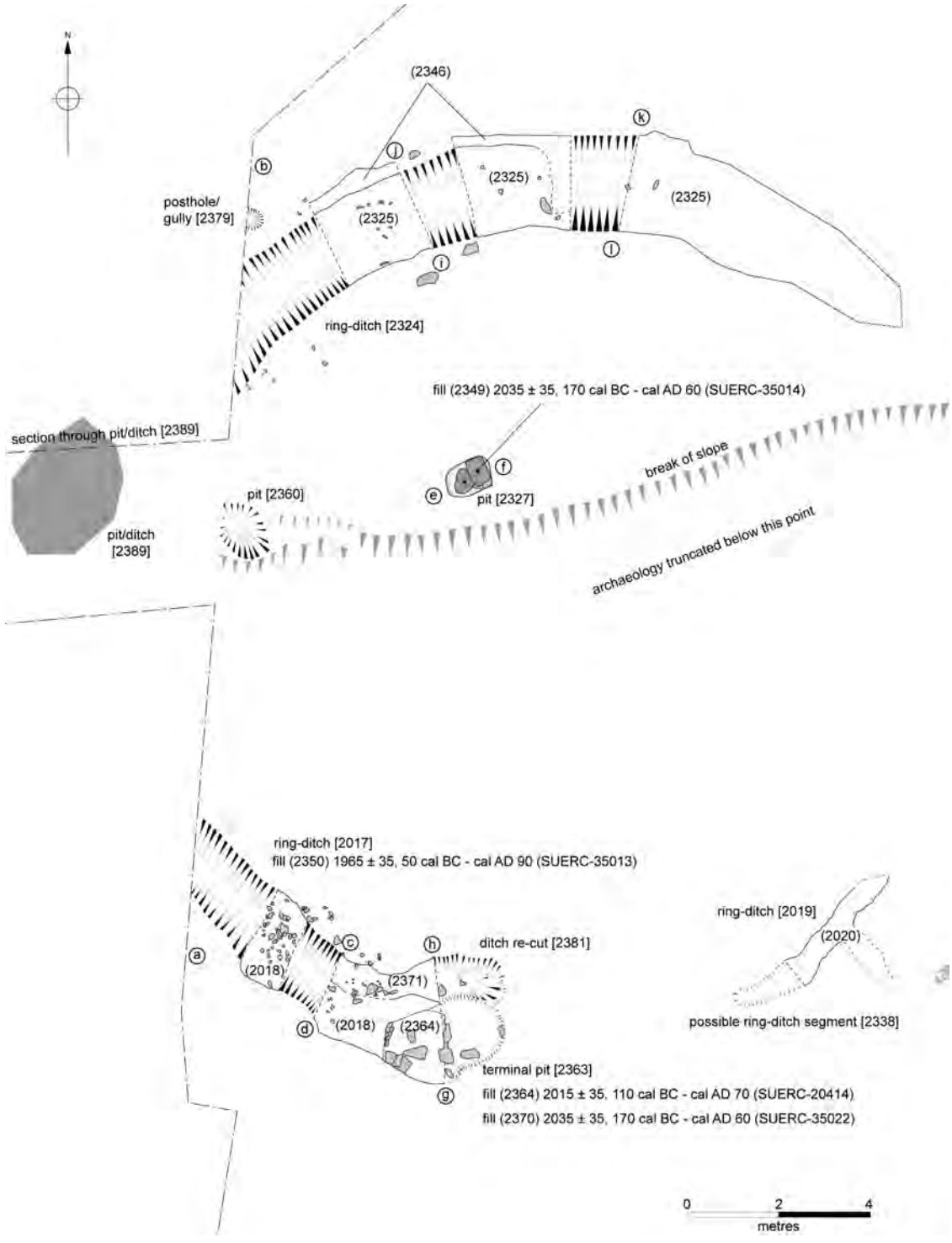

Fig 6 Plan of enclosure 1, showing excavated area and geophysical anomaly [2389].

fence or perhaps a wooden revetment supporting the internal face of an external bank.

Phase 2: construction and primary infilling of the ditch sections

The excavation of the ditch sections [2017], [2324] and [2389] marks the first phase of activity associated with the enclosure. The southern section of ditch, [2017] (Figs 6 and 7), ran east–west for a distance of 7.25m from the western baulk, ending in a rounded terminal to the east. It was 1.8m wide and 0.7m to 0.85m deep with slightly convex sides and a rounded base. Comparison with the geophysical survey reveals that this section of ditch might terminate 1.3m beyond the baulk to the north west.

Ditch section [2324] enclosed the northern side of the feature and ran for nearly 16m to the east from the western baulk. Unfortunately, the eastern end of the ditch section was disturbed during the works before it could be investigated, although not before its extent was planned. The extent of the ditch matches the feature plotted by the geophysical survey, suggesting that either the feature was open to the east or that a large amount of truncation had removed any evidence for the ditch in this area (but see Phase 5, below). The ditch was 2.05m wide at the top, tapering to 0.5m at the base with steep, convex sides, particularly to the south (interior), and a flat base. The extra depth of the feature in comparison to [2017], 0.9m to 1.2m compared to 0.7m to 0.85m, is likely to be entirely due to the truncation of the latter during levelling for the school playing field in the 1960s.

The geophysical survey indicated that this section of the ditch terminated just beyond the western baulk with an additional discrete anomaly, perhaps a large pit, forming part of the circuit of the ring-ditch to the west. An opportunity to investigate this feature, [2389], arose during the cutting of an access track through it. Although its extent could not be discerned a partial section was obtained through it revealing three fills, (2390), (2391) and (2392), that corresponded to fills (2345), (2346), and (2347) in [2324] (below). It seems likely that this feature was an extension of ditch [2324] and that they formed a continuous circuit to the north west.

The ditch sections contained a number of primary fills that are likely to be the result of activity during this phase of the enclosure (Figs 7 and 8). Ditch section [2324] contained a thin primary deposit, (2362), of a similar nature to the matrix of the natural weathered slate and it was likely to have been a layer of trampled natural. Lying on top of this, and slumped into the ditch from the southern (interior) side, was a deposit of mid-yellowish-brown clay, (2348). This is likely to be contemporary with a deposit of slumped material on the exterior side of the ditch, (2326). Fill (2348) contained a notched slate. Ditch section [2017] contained a primary fill, (2350), a light yellowish-grey clay up to 0.35m thick with frequent large slates, a Late Iron Age South Western Decorated body sherd and a small holed slate, **S11**. This was much thicker than the primary fills of [2324] indicating that different depositional processes were at work. A radiocarbon date of 1965 ±35BP, 50 cal BC – cal AD 90 (SUERC-35013), was obtained on gorse charcoal from this deposit.

In the period immediately following the construction of the ditch a large amount of distinctive yellowish-brown silty clay appears to have slumped into it from the exterior. This material, (2342) in [2017] and (2346) in [2324], was probably derived from an external bank thrown up during the initial excavation of the ditch (Fig 9). Deposit (2342) contained several sherds of Type D Cordoned ware jars (Late Iron Age) and a notched slate. There also appeared to be evidence of an internal deposit in the form of layer (2358), a compacted iron-rich deposit to the south of ditch [2324]. The interface between this deposit and layer (2359) which lay to the south was unclear. This was up to 1.9m wide and 0.26m thick.

The upper part of the ditch sections showed evidence of having been backfilled, [2324] with (2345), [2017] with (2337). Both deposits were of a similar stony nature. There was little indication of the direction from which the material derived although the stone in (2345) was concentrated on the interior side to the south. Both deposits contained a small quantity of Iron Age potsherds, including Type D neck and jar sherds, a Cordoned ware Type H/J storage jar neck sherd, and a small incised sherd (**P8**), and larger amounts of stone artefacts including notched slates, a perforated slate, fragments of burnt granite and elvan or greisen, and a flint pebble chopper. Fill (2345) also contained a fragment of burnt cattle bone. Subsequently the ditches were recut, to the south by [2381], possibly to the north by [2393]. A fragment of unidentified mammal bone was found in fill (2365), which was located beneath pit [2363].

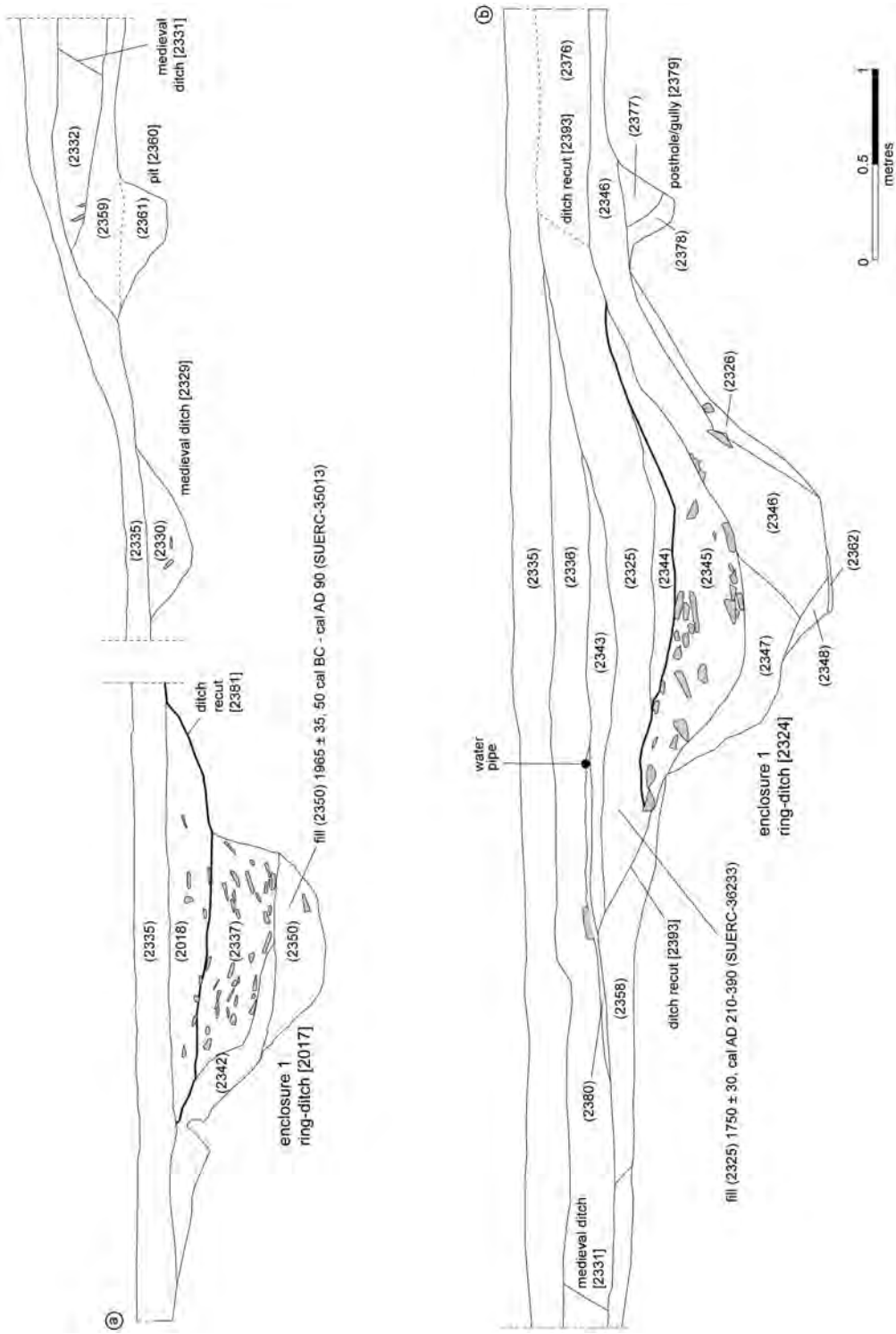

Fig 7 Section a–b across enclosure 1.

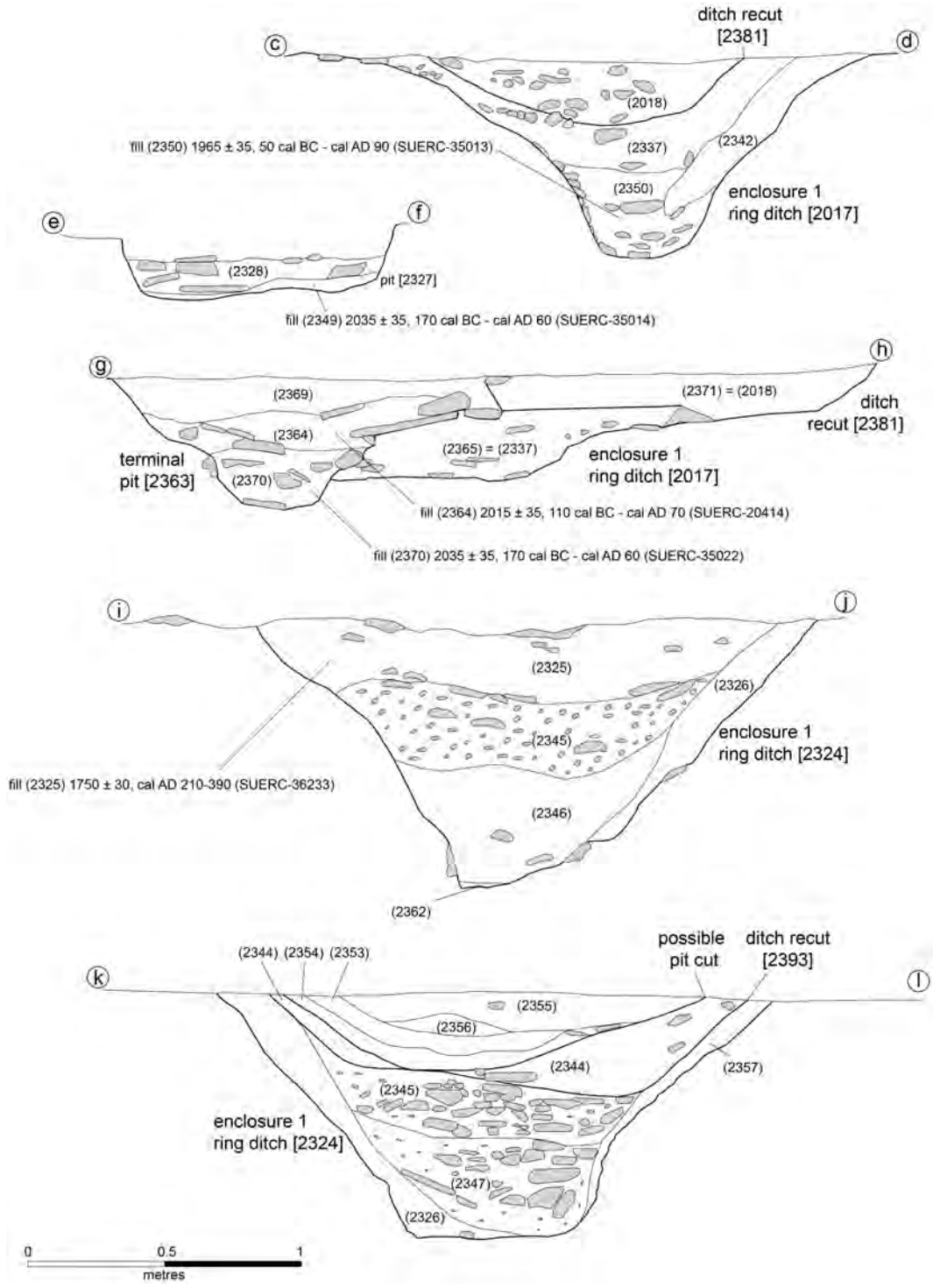

Fig 8 Sections across enclosure 1.

Fig 9 East-facing section through ditch [2324], enclosure 1 (see Fig 7; note lighter clay (2346) to the right, derived from an outer bank).

Terminal pit

The eastern terminal of southern ditch section [2017] was recorded as having been cut by a small oval pit, [2363], measuring 1.04m by 0.79m that had been cut into the bedrock, (2010), to a depth of 0.35m (Fig 8). The pit contained two deposits. Primary fill (2370) contained some Late Iron Age potsherds and a notched slate. Charred grain from this layer produced a radiocarbon date of 2035 ±35BP, 170 cal BC – cal AD 60 (SUERC-35022). Upper fill (2364) contained frequent pieces of charcoal, a large number of Late Iron Age Cordoned ware sherds including parts of several Type D jars (**P6**), a hand-forged nail, a water-worn pebble, a notched slate and quantities of burnt stone. The pit also contained a large amount of burnt mammal bone fragments and a smaller amount of unburnt bone; the majority of both came from the upper fill, (2364). One fragment was identified as coming from a sheep or goat and skull, vertebral, rib and long bone fragments were all present. The quantity and treatment of the bone suggests that it was a special deposit (Randall, below). A radiocarbon determination of 2015 ±35BP, 110 cal BC – cal AD 70 (SUERC-20414) was obtained on pot residue from this fill.

Although there is a large overlap in the radiocarbon dates from pit [2363] and the ditch which it appeared to cut, [2017], the earlier part of the radiocarbon date ranges from pit [2363] could place it earlier than the ditch. More probably, if the pit dates are considered to be earlier this might mean that material in the terminal deposit was derived from older midden material which had been stored nearby.

Phase 3: interior features

Within the enclosure formed by the ditch sections only two features could reasonably be assigned to a phase contemporary with its use. It is, however, uncertain whether they were dug at the same time as the phase 2 ditch sections, with the phase 4 recutting, or between these events. Phase 3 is therefore not a well-defined horizon in the sequence and merely reflects activity within the enclosure.

Pit [2327], which lay north of centre within the enclosure, was rectangular, measuring 0.98m by 0.75m, shallow, 0.25m deep, with steep sides and a flat base. It contained two deposits, primary fill (2349) and a charcoal-rich upper fill, (2328). The latter contained several abraded sherds of undiagnostic pottery and two large holed slates, **S9** and **S10**, which overlay a piece of burnt granite. The deposit also contained a white quartz beach pebble. Charred plant macrofossils from fill (2349) produced a radiocarbon determination of 2035 ±35BP, 170 cal BC – cal AD 60 (SUERC-35014). The determination from the pit was very similar to that from fill (2370) within pit [2363] (SUERC-20414) (above).

Pit [2360], identified in the western baulk, was 0.25m deep, and had a visible extent of 1.2m by 0.8m. It was steep-sided to the north, less so to the south, and contained a single fill, (2361), a reddish-brown clayey silt containing some mottled charcoal. This fill was sealed by a colluvial deposit (2358).

Phase 4: recutting

Both the ring-ditch sections ([2324] and [2017]) showed signs of later recutting. Ditch [2393] possibly recut [2324]. It contained three fills, (2344), (2325), and (2343). The upper fills were likely to have derived from ploughing over the enclosure following its abandonment. Fill (2325) contained sherds of Late Iron Age pottery, including rim and body sherds of a Type D jar (including **P7**), notched slates, a burnt granite hammerstone, and fragments of granite, both burnt and unburnt, while (2344) contained two Type D potsherds. A radiocarbon determination of 1750 ±30BP, cal AD 210–390 (SUERC-36233) was obtained on one of the sherds of Cordoned ware from (2325); however, this was too late for the ceramic style and it has been discounted.

A different sequence of upper layers was recorded in one slot in the northern section of ditch [2324] (Fig 8). Deposits (2353), (2354), (2355), and (2356) may represent the fills of a pit unidentified in plan or merely localised depositional differences within the tertiary filling of the ditch. Fill (2354) contained a notched slate.

The recut of ditch [2017], cut [2381], contained a single fill, (2018). This fill contained a Late Iron Age South Western Decorated decorated sherd, a large number of Type D jar sherds, a broken whetstone, **S6**, a fragment of a granite hammerstone, a white quartz beach pebble, fragments of burnt granite, and notched slates. At the eastern terminal of the ditch this recut could be seen to cut the northern side of the terminal and fill (2365) (probably = (2337)). The recut was filled by (2371) at the terminal but towards the baulk it was filled by (2018). It was unclear whether these were the same deposit but it seems likely.

To the east of the terminal a short curving length of shallow truncated ditch, [2019], ran for a length of 4.3m. It was 0.7m wide but only 0.08m deep. It therefore seems likely to relate to the recut ditch [2381] rather than to the original ditch [2017] / [2324]. Its fill, (2020), contained a body sherd of Late Iron Age pottery.

Phase 5: post-enclosure activity

Layer (2336) sealed most of the northern ditch fills and internal layer (2359). This deposit contained a broken iron nail shank of Late Iron Age or Roman date. Cut into this were several other linear features of later medieval or post-medieval date ([2331], [2002] / [2329] and [2333]), which cut through the enclosure (Fig 7).

Ditch [2338]

This ephemeral feature was represented by a single shallow curvilinear ditch section, [2338]. This cut lay 2m to the south-east of [2019], a component of enclosure 1. The cut was similar to [2019] in terms of length (6.1m), width (0.72m), and depth (0.11–0.17m). The cut arced from the south-east through west to north but was interrupted in its central section by an area of disturbance, possible pit [2015]. The feature was also cut by a modern field drain, [2340]. A short length of ditch, given the same number, [2338], appeared to link the curvilinear feature with [2019]. This area had been subject to a good deal of levelling for the creation of the original school playing fields in the 1960s and had also been tracked over by heavy machinery prior to recording, and hence preservation was poor and interpretation proved problematic. Fill (2339) contained Iron Age potsherds.

Environment

Plant macrofossils recovered from deposits associated with this enclosure came from the upper fills of the ring-ditch, including a hazelnut fragment and a wheat grain. The fills of central pit [2327] contained a small amount of wheat and weed seeds, and a quantity of gorse spines. The primary fill contained bracken leaves. However, a much larger assemblage came from terminal pit [2363]; upper fill (2364) produced an assemblage of cereal grain, mostly oats but with some wheat and barley, and a large quantity of gorse; a similar, though smaller, assemblage came from primary fill (2370) (J Jones, below; Challinor, below).

Enclosure 2 (Figs 10–14)

In field 5 to the north of field 2, another partial ring-ditched feature was identified. The feature was identified by the geophysical survey, forming an arc extending north from an extant field boundary, with (if the feature was roughly circular) only about a quarter of it within field 5. If it was circular the

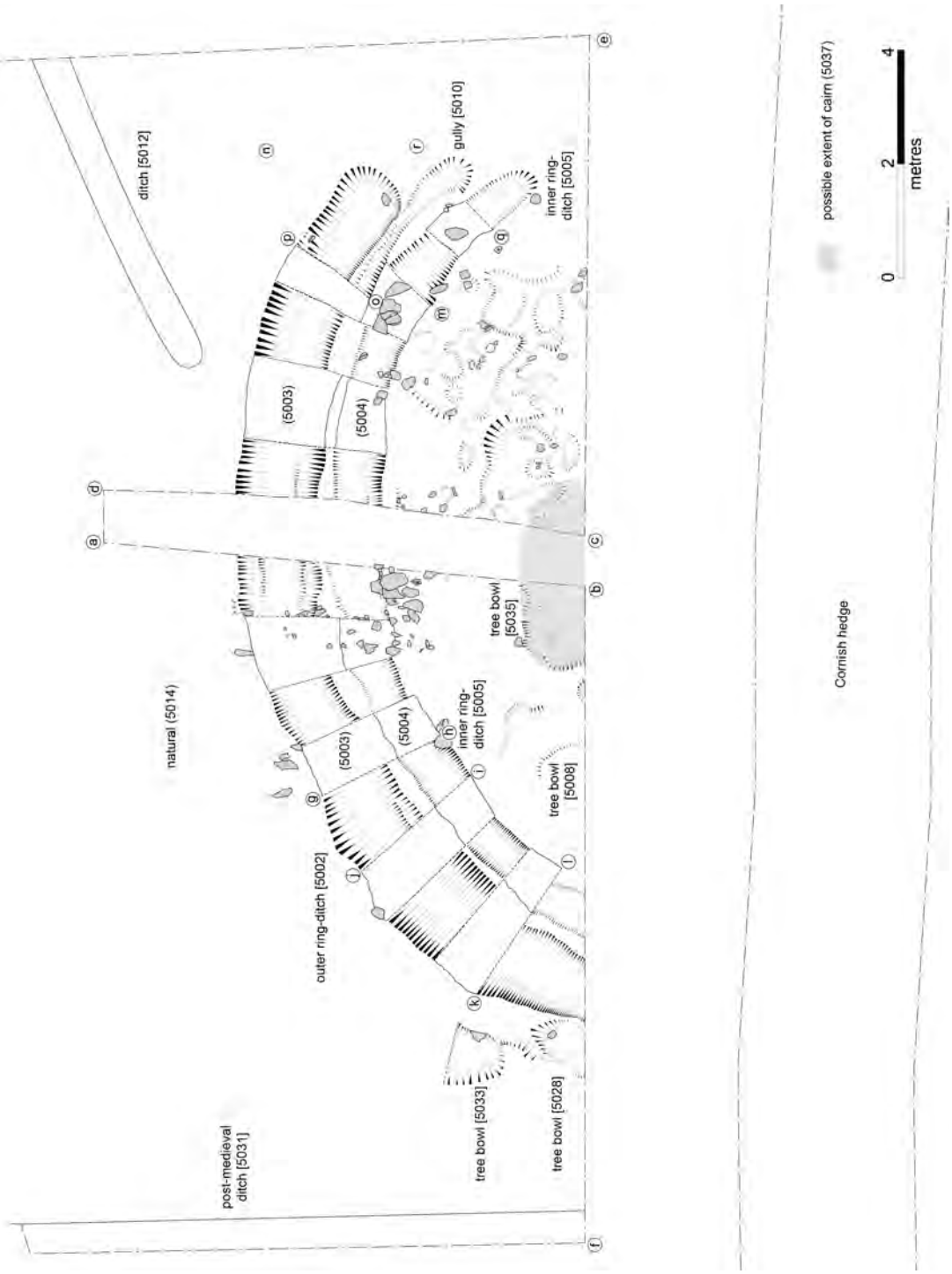

Fig 10 Plan of enclosure 2, showing ditch circuits, tree bowls and spread of cairn material (5037).

enclosure would have been approximately 16m in diameter internally enclosing an area of 200 sq m.

The enclosure was formed by up to three concentric ditches ([5005], [5002] and [5010]), all of which terminated on the eastern side of the feature. At least two phases of activity could be inferred from the stratigraphy.

Phase 1: first enclosure construction

The first phase of the enclosure comprised the innermost ring-ditch [5005]. This measured 0.8–0.9m wide and 0.35–0.43m deep with concave sides and base. The ditch, if circular, would have a diameter of 16.8m.

Ring-ditch [5005] contained two deposits, upper fill (5004) and primary fill (5024), except in one area where a thicker deposit, (5038), lay beneath an iron pan at the base of (5004) and above (5024) (Fig 13, section i–j). Fill (5004) contained a rim sherd from a Type D jar. The fill of [5005], (5006), contained pottery sherds, fragments of burnt bone, and a large block of quartz with a piece of iron set into it (**S14**). Three unidentified mammal bone fragments were recovered from the fill. The upper fill of [5005] was cut by outer ditch [5002] in a number of places.

A small gully, [5010] between ditches [5005] and [5002], was visible in plan 0.15m to the north of the eastern terminal of [5005]. The ditch was visible for a length of 1.6m, and was 0.6m wide and 0.2m deep. In places the cut of this earlier ditch was apparent even though its fill had been removed by the digging of ring-ditch [5002]. It seems likely therefore that this ditch once formed a continuous feature, at least to the southern baulk. Its relationship with [5005], however, remained unknown and it is unclear whether the two features formed contemporary concentric ring-ditches.

Ring-ditch [5010] had a single fill, (5011), which contained a piece of possibly worked granite (Fig 13, sections o–p and q–r). A radiocarbon determination of 2035 ±35BP, 170 cal BC – cal AD 60 (SUERC-35008), was obtained on gorse charcoal from this deposit. In both section and plan it was apparent that the ditch and its fill were cut by the larger later ditch [5002].

Phase 2: re-enclosure

A large outer ring-ditch, [5002], was 2.3m wide and 0.7–0.95m deep with steep stepped sides and a concave to flat base. It cut the upper fill of ditch [5005]. Much of the ditch contained a single primary fill, (5020). Gorse charcoal from this deposit produced a radiocarbon determination of 2025 ±35BP, 120 cal BC – cal AD 60 (SUERC-35003).

The bulk of the ditch contained a straightforward sequence of secondary fills, (5019), (5018), (5017), and (5016) (Fig 11), though there were two further fills in the north-western part of the ditch, (5023) and (5022) (Fig 12; Fig 13, sections i–j and k–l). Two of the fills, (5016) and (5018), were very dark although lacking in charcoal. It was assumed that the colouring was a consequence of high organic content. The ditch fills, topsoil, subsoil, and natural were all sampled with a view to conducting loss on ignition (LOI) and phosphate analyses on the dark fills, which concluded that these fills had a high organic and phosphate content, perhaps as the result of animal manure or midden material being incorporated within the fills (Crowther, below). Fill (5016) contained three body sherds, including one with an incised line that is probably from a South Western Decorated vessel, and a notched slate. Fill (5017) contained notched slates and an L-shape headed iron nail, which might imply a Roman date (Quinnell, below, 'Ironwork'). Layer (5018) contained a sherd from a Type D jar, and (5019) a large granite slab and a fragment of greisen or elvan. A radiocarbon determination of 1990 ±35BP, 60 cal BC – cal AD 90 (SUERC-35004), was obtained on gorse charcoal from fill (5018).

Several of the sections recorded indicated primary filling occurring from the exterior edge of the ditch and evidence from tip-lines visible in some of the sections suggest that the bulk of stony material in the secondary fills occurred from this direction also (Fig 11). This evidence is consistent with the partial collapse of an exterior bank to the enclosure ditch, following both the initial construction and the subsequent infilling of the ditch.

Terminal pit?

At the eastern terminal of [5002] the sequence of deposits below tertiary deposit (5003) was replaced by a single dark secondary fill, (5039), which lay over a deposit of large stones, (5041), lining the terminal over primary fill (5040) (Fig 13). The change in deposition at this end of the ditch might be explained by the presence of a pit in the terminal that was not identified in plan. Fill (5039) was comparable to the dark fills (5016) and (5018) in the rest of the ditch and similarly exhibited high values for LOI and phosphate

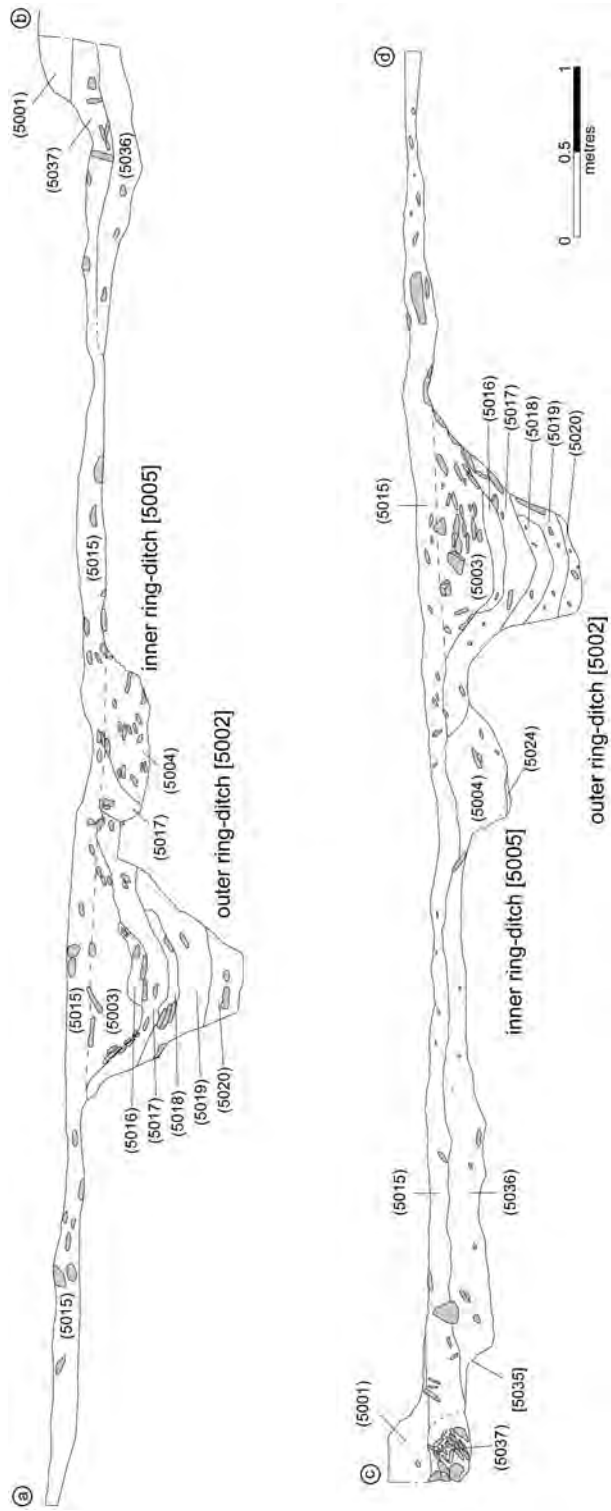

Fig 11 Sections, enclosure 2.

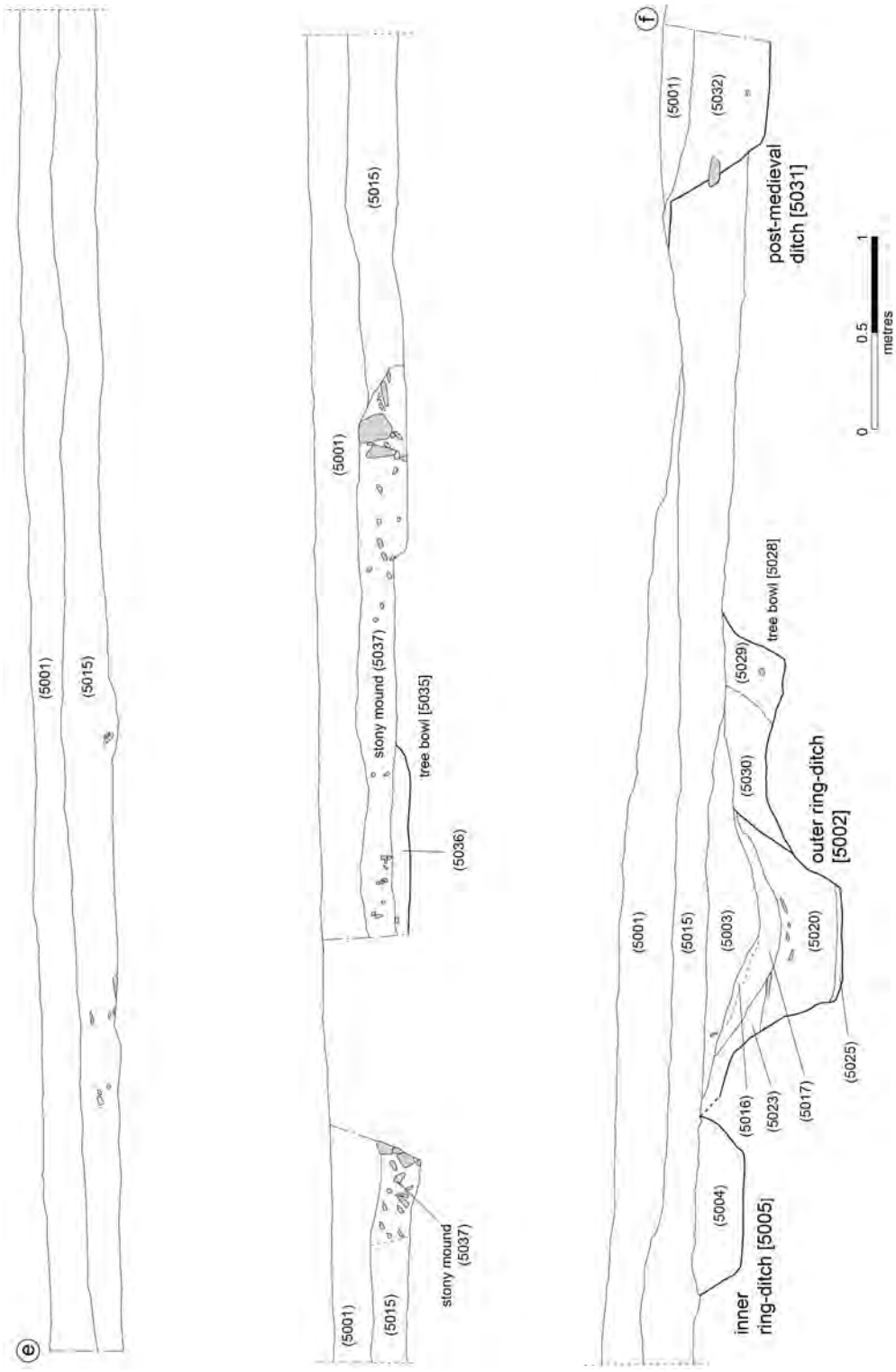

Fig 12 Sections, enclosure 2.

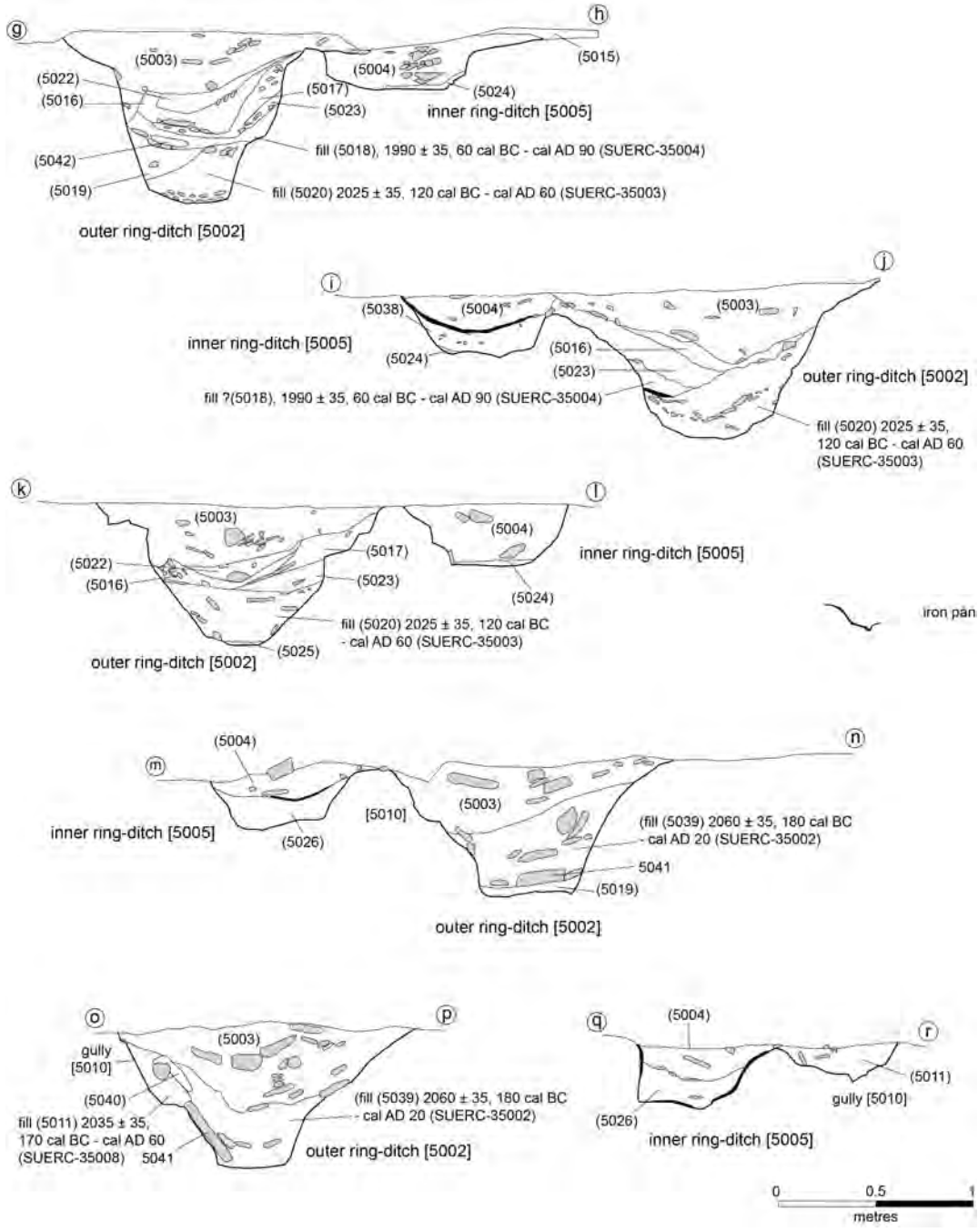

Fig 13 Sections, enclosure 2.

Fig 14 View from the north-west showing enclosure 2 fully excavated.

(Crowther, below). It contained sherds from a Type D jar, pieces of granite, and a large slate. A radiocarbon determination of 2060 ±35BP, 180 cal BC – cal AD 20 (SUERC-35002), was obtained on charred grain from this deposit. The determination may be anomalous if it does indeed represent a pit cutting the fills of the ditch, since the radiocarbon determination from the upper fill of ditch [5002] could be later. It may be that, as with enclosure 1, the stratigraphy has been misinterpreted and the terminal 'pit' was in fact an earlier pit or section of ditch that had survived the later (re)cutting of ditch [5002]. More likely, as with enclosure 1, it is possible that that earlier midden material was placed into a terminal pit.

Interior features

Within the area enclosed by the ring-ditches were a large number of amorphous hollows and pits. Most of these were not given numbers but the largest, [5008] to the west, and [5035] in the centre, were recorded. They were likely to be tree bowls and [5035] was up to 4.5m across and 0.11m deep. The fill of this feature, (5036), was sealed by deposit (5037), which appeared to form a stony cairn or platform up to 0.24m high in the southern part of the excavated area (shown in section on Fig 12). This deposit was only recorded in section but it measured around 3.5m long and extended for approximately 1m into the excavated area to the north of the southern baulk.

Exterior features

A linear ditch, [5012], ran north east to the baulk for 6m from a point 1m from the north-eastern edge of [5002]. It was 0.66m wide and 0.17m deep. The ditch shared no alignment with any known features, extant, excavated, or geophysical. The fact that it appears to respect enclosure 2 may suggest that it was contemporary with or later than the enclosure.

To the west of the enclosure ditch were two amorphous hollows, [5028] and [5033]. The former, with two fills, was cut by ditch [5002]. Both features are likely to be tree bowls.

Abandonment

The tertiary fill of [5002], (5003), contained a number of potsherds including some from two thin Type D jars and two with an incised girth line that may come from a Romano-British Trethurgy Type 4 jar, a broken spindle whorl of Iron Age – Romano-British date, a rotary quern fragment, **S1**, which had been broken and placed face down

into the ditch, two notched slates, a quartz beach pebble, and a fragment of greisen stone.

Lying above the ditch fills and cairn material (5037) was subsoil horizon (5015), which covered much of the site. This layer contained two granite cobbles, including a muller, **S5**.

Later activity

Field ditch [5031], which ran parallel to the east of the field boundary to the west of the enclosure, cut deposit (5015). Its fill, (5032), contained glazed red earthenware of seventeenth- to eighteenth-century date, and it and all other deposits and features in the area were sealed by topsoil (5001). This deposit contained a quantity of pottery of Iron Age, medieval, and post-medieval date, an iron object, a copper alloy plate fitting, a slag fragment with burnt bone attached, and shards of nineteenth- to twentieth-century glass.

Environment

Apart from the charcoal-rich deposit (5039), which contained a number of hulled wheat glume bases, some hulled grain and arable weeds and gorse spines, and stems, few plant macrofossils were recovered from enclosure 2. The remains were limited to a single barley grain and a small weed assemblage from the fills of the outer ring-ditch.

Enclosure 3

This feature, a rectilinear ditched enclosure identified by the geophysical survey (Figs 2 and 4), was not affected by the works and was not excavated. The enclosure, as defined by the geophysics, has an interior measuring 32m by 28m. The exterior ditch is potentially 1–2m wide, thinnest to the west and the corners of the feature appear to be rounded. Gaps in the ditch anomaly occur on all four sides of the feature, 3.2m wide on the southern edge, 7.5m on the northern. However, the gaps on the eastern and western sides are probably explained by the field boundary that bisects the enclosure and the fact that the geophysical survey could not survey up to the hedge line.

Two anomalies were located within the enclosure: a short linear ditched anomaly perpendicular to the southern ditch section and just to the north of this a curvilinear anomaly that may be interrupted by the field boundary. This may represent a central structure or roundhouse.

Outside enclosure 3, a 25m long curvilinear ditched anomaly extended from the south-eastern corner of the enclosure and curved to the north, giving the impression that the enclosure may be located within a field system or, alternatively, may have an external annexe.

Structures 4 and 5

Structure 4 (Figs 15–18)

Structure 4 was a roundhouse defined by a ring-gully, [2035], which had an internal diameter of 14.4m. The western edge was unexcavated, but it is likely that the line of [2035] was continued by [2117] in the south west, leaving a 10.6m wide opening or entrance to the south. However, comparison with the geophysical survey suggests that there may be a separate north – south aligned linear feature on the western side of the structure. It is therefore possible that [2117] was part of the linear anomaly or that shallow gully [2115] was. Within the enclosed area were a group of postholes that appeared to be structural, and several gullies and pits. Structure 4 was adjacent to structure 5, which lay to the east. A total of nine slots were excavated through the main ring-gully.

Phase 1: Bronze Age activity

Residual Bronze Age activity within this feature was confined to the north-western part of the structure (above).

Phase 2: Construction

There were no stratigraphic relationships between the ring-gullies ([2035] and [2117]) and the internal features and therefore both are described together in this phase.

Ring-gully [2035] was 0.65–0.75m wide, 0.45m deep, and had a terminal at its south-eastern end. The majority of the ring-gully was filled by three deposits: primary (2158), secondary (2157) and tertiary (2036) (Fig 16). Ring-gully fill (2158) contained a notched slate. Fill (2157) contained two fresh Cordoned ware sherds, a quantity of vitrified clay, indicative of metallurgical activity, possibly from a furnace or hearth (Young and Kearns, below), and some notched slates. It produced a radiocarbon determination of 2095 ±35BP, 210–20 cal BC (SUERC-35011), from pot residue. Fills (2157) and (2026) were divided by an iron pan in most sections of the ring-gully, and in one section

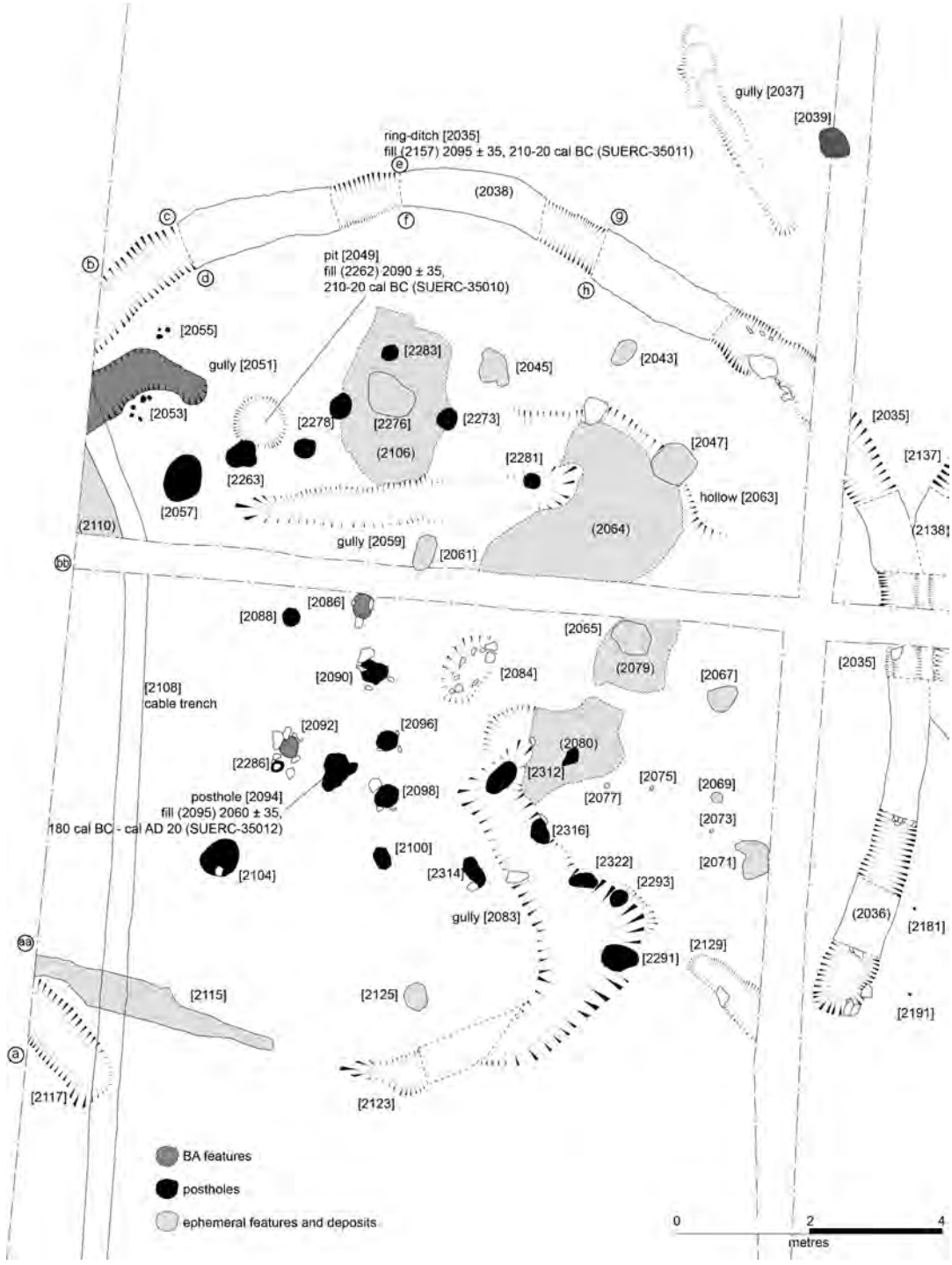

Fig 15 Plan of structure 4, showing Bronze Age features and Iron Age structural features and floor deposits.

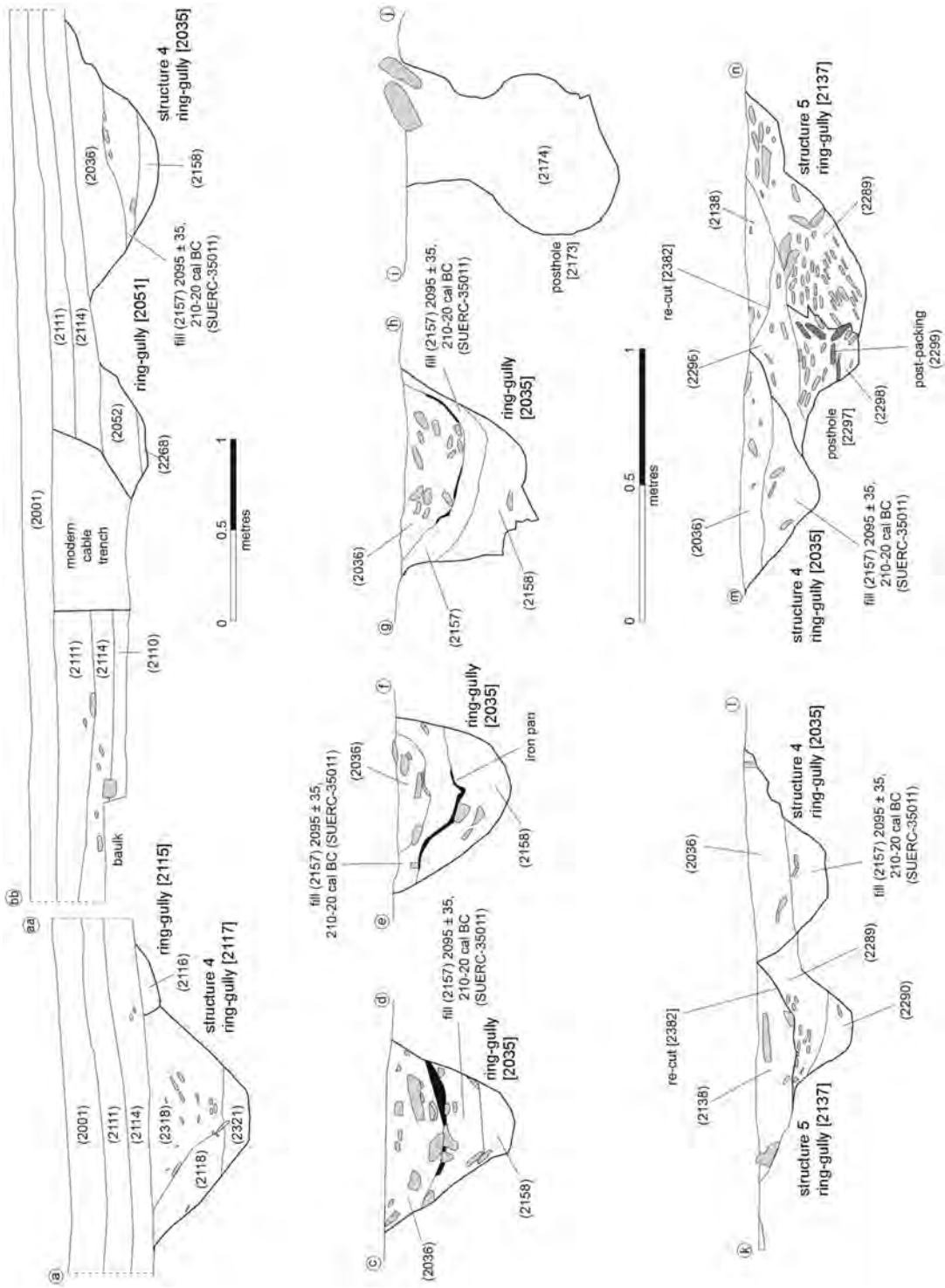

Fig 16 Sections across structure 4 and structure 5.

an iron pan divided fills (2157) and (2158). Tertiary fill (2036) contained abraded sherds of Trevisker ware including **P5**, a polished sandstone breccias beach pebble, and a number of notched slates.

Where it intersected [2137], the ring-gully around structure 5, ring-gully [2035] was shallower and only the upper two fills were present. Ring-gully [2035] cut all fills of ring-gully [2137], although not fill (2138) of recut [2382]. This implies that structure 4 was later than the first phase of the adjacent structure 5 but may have been earlier than the second phase (below).

A short section of ditch or a linear pit, [2129], ran perpendicular to the terminal of [2035] for 1.4m back into the area enclosed by the ring-gully. The fill of feature [2129], (2130), contained a notched slate.

Cut [2117] extended 1.7m from the western baulk to the south-west of structure 4. The cut, probably a section of ring-gully, was 0.8m wide and 0.67m deep and terminated at its south-eastern end, beneath modern pipe trench [2108]. Ring-gully [2117] contained a primary fill, (2321) and a secondary fill (2118). The southern part of the structure appeared to be open although a shallow gully, [2123], almost linking [2117] and [2129], was recorded. The fill of gully [2123], (2124), contained an abraded body sherd of Cordoned ware and a residual flint core.

Internal features

Within the area enclosed by the ring-gullies was what appeared to be a levelling cut, [2063]. This was up to 0.18m deep, cut into natural slatey clays, and could only be discerned in the north-eastern part of the structure for a distance of 3.9m.

A number of postholes were identified within the enclosed space. However, few could be interpreted as forming part of a structure, and as recorded above it is possible that some features belong to an earlier Bronze Age phase of activity. Postholes [2263], [2273], [2278], and [2281] formed an arc in the northern part of the site, each feature being of similar dimensions and lying equidistant from each other at 1.55–1.65m apart. The arc formed part of a circle 5.9m in diameter and the next posthole on the arc on either side would have been under the baulk section if a post-ring continued. On the southern side of this possible post-ring another two postholes, [2092] and [2098] were of similar dimensions to the northern group and also lay 1.6m apart. However, posthole [2092] contained fresh Trevisker sherds and can probably be discounted from this phase. Assuming the five remaining postholes formed a circular post-ring lying equidistant from each other with two additional postholes remaining beneath the baulk, there were two postholes missing to the south west and two to the south east. The postholes ranged in size from 0.2m to 0.34m in diameter and 0.26m to 0.48m deep. Two of the postholes, [2273] and [2278], widened towards their base, an indication that the posts had been rocked prior to removal. Posthole [2263] appeared to cut, and thus postdate, pit [2049]. It seems more likely that the postholes represent some internal structure, or division of space, such as partitioning, than a traditional post-ring for supporting the roof. Three of the postholes contained two fills while the other three contained only one. The fill of [2263], (2264), contained a notched slate, as did the primary fill (2275) of [2273]. The upper fill (2279) of [2278] contained the rim of a Type J storage jar.

One of the postholes, [2281], lay in the base of a linear gully, [2059], which ran across the northern part of the structure and was 4m long, 0.7m wide, and 0.21m deep. The stony fill of the gully, (2060), was indistinguishable from the fill of the posthole and no stratigraphic relationship was established. It contained Cordoned ware potsherds, including the neck of a Type D jar, a piece of oxidised burnt clay (Young and Kearns, below), and two flints, a waste flake and a possible borer. A deposit, (2107), identified prior to excavation at the edge of [2059] adjacent to the position of [2281] may represent the upper fill of the feature. It contained four abraded Cordoned ware sherds.

Two groups of stakeholes, [2053] and [2055], lay to north and south of gully [2051]. These may date to the Bronze Age; however, they are not securely dated and could belong to this phase of activity. Pit [2049] contained both residual Trevisker ware and Cordoned ware sherds. A radiocarbon determination of 2090 ±35BP, 210–20 cal BC (SUERC-35010), was obtained on charcoal from its primary fill, (2262). This pit appeared to be cut by posthole [2263], and may therefore belong to a slightly earlier phase.

More ephemeral posthole-type features were also found within structure 4. Two small postholes, [2086] and [2088], lay towards the centre of the structure. Neither contained finds. Between postholes [2092] and [2098] lay posthole, [2094] which was oval, 0.56m by 0.42m, and only 0.14m

deep. Charred grain from the fill, (2095), produced a radiocarbon determination of 2060 ±35BP, 180 cal BC – cal AD 20 (SUERC-35012). Postholes [2096] and [2100] were of similar dimensions and depth, while a larger posthole or pit, [2314], lay on the western side of gully [2083]. Another larger but truncated posthole, [2104], was located to the south west of the possible post-ring.

Gully [2083] ran south east from the south-eastern edge of the post-ring, and was 4m long, 1.5m wide, and up to 0.2m deep. The base of the gully was irregular and its north-eastern edge was cut by a series of five posthole or pit bases, [2291], [2293], [2312], [2316], and [2322]. At the north end it contained a charcoal rich spread (2313). The gully then turned to the south west and continued for another 3.5m as [2123]. Gully [2083] contained a number of flat-laid slates, 2081, up to 0.5m across, lying in a matrix of dark brown silty clay, (2082) (Fig 15; beneath (2080)). This deposit contained a Late Iron Age potsherd and a piece of waste flint. At the base of the gully was layer (2320), consisting of burnt fragmented slate and quartz in a small spread. This contained two Late Iron Age potsherds. As the gully turned to the south west and blended into [2123], the fill, (2124), became lighter and lacking in large slates, but with no distinct edge between the two. A possible continuation of the gully to the west, [2115], was identified during the pre-excavation planning but disappeared following cleaning. However, this feature was recorded in the western baulk section, where it appeared to cut ring-gully section [2117] and its upper fill, (2118). If this was the case this feature must belong to the occupation; or to a later phase if [2117] was part of the same ring-gully as [2035].

Several other features were recorded during pre-excavation planning but disappeared following further cleaning. At least some of these, including [2084] are likely to be truncated pits and / or shallow postholes associated with the structure. The fill of scoop [2047], (2048), contained Cordoned ware potsherds; feature [2067] contained a flint scraper, **L4**. The fill, (2091), of a disturbed posthole or pit towards the centre of structure 4, [2090], contained five Cordoned ware sherds.

Phase 3: occupation

Three small patches of a possible floor layer were recorded surviving in slight hollows, deposits (2064), (2079), and (2106). It was unclear whether they represented a single deposit, later truncated, or three separate contexts. Deposit (2064) contained abraded Trevisker sherds and a flint core tool, **L3**, (2106) an abraded Trevisker sherd and a Cordoned ware sherd. All of these deposits had features assigned to the construction phase visible in them. Whether this was due to these layers being cut by the features or a floor surface which was laid or formed during the occupation of the structure was not completely clear but on balance the latter seems most likely. A fourth deposit, (2080), lay over 2081 and may also be part of the same surface. This contained a large cup-marked slate, **S13**, of possible Bronze Age date and a Trevisker sherd. All of the deposits were recorded as reddish-brown silty clays. Another layer, (2110), was only recorded in the north-western corner of the structure, lying on top of the natural shillet. It contained four Cordoned ware sherds. The presence of residual Bronze Age material within the floor material is interesting as it indicates that an artefact-rich deposit was used as a source of material for the floor.

Exterior features

A linear feature, [2037], 3.5m long, 0.54m wide, and 0.22m deep, followed a north west to south east alignment 1.4m to the north of the structure. Its fill, (2038), contained a rotary quern fragment, **S2**, which had been placed face down, abraded Cordoned ware sherds, a fragment of vitrified burnt clay indicative of metallurgical activity (Young and Kearns, below), and some notched slates. A pit or posthole, [2039], lay 1m to the north east of this. It contained three fills, the upper of which, (2040), was charcoal-rich and contained an iron object, possibly a knife blade.

Phase 4: later deposition and activity

The base of a posthole or pit, [2276], was visible within the possible floor deposit (2106), but not beneath it.

All of the above features and layers were sealed by a compacted layer, (2114). This may be related to the construction of the playing fields in the 1960s. It and another layer above, (2111), were cut by an electricity cable trench, [2108], connecting the lights around the car park, which are likely to date to the same period. Any truncation of features belonging to the Iron Age sites occurred prior to the deposition of these layers. Deposit (2114) contained a redeposited Trevisker sherd,

two Cordoned ware sherds, and a copper-alloy button of eighteenth- to nineteenth-century date. A posthole, [2102], contained fragments of wood and was probably associated with the 1960s playing field. Sealing all layers and features was the topsoil, (2001), which contained a large amount of post-medieval pottery and glass dating from the eighteenth to twentieth centuries.

ENVIRONMENT

The fills of gullies [2059] and [2083] produced charred oat and possible wheat grains, and occasional weed seeds. The charcoal-rich spread (2313) at the north end of gully [2083] included a few hulled wheat grains and chaff, with a willow bud and gorse spine. The fill of postholes [2094] and [2100] each contained a single wheat grain, the latter also containing bindweed and clover seeds. Exterior features associated with the occupation phase produced small assemblages from linear feature [2037] and the burnt upper fill of pit / posthole [2039], but this was limited to just a few wheat grains and weeds. The fill of pit [2276] contained single oat and wheat grains and a spine of gorse.

Structure 5 (Figs 4, 5, 16, 17 and 18)

A second ring-gullied building, structure 5, lay to the immediate east of structure 4. The ring-gully defined an area measuring 7m by 6.5m, with a central area of disturbance containing evidence of burning and a single large posthole in the south west of the structure. Ten 1m-wide slots were excavated through the ring-gully with the baulks in the south-east part of the circuit being subsequently removed in a search for an entrance.

PHASE 1: CONSTRUCTION

Ring-gully [2137] was up to 1m wide and 0.4m deep. The ring-gully contained two fills, primary (2290) and secondary (2289). Fill (2289) contained a large number of notched slates. The terminals to [2137] were not identified and may have been located beneath the baulks between slots, although it is also possible that the ring-gully may have been a single continuous feature but cut much shallower to the north allowing drainage to the south, which would have been slightly downslope. Alternatively, the ring-gully could have been made continuous at the end of the building's use (below).

Internal features were limited to three distinct features, two amorphous hollows and the base of a truncated posthole. A number of features that were recorded during the pre-excavation planning had disappeared or were too shallow to record following cleaning.

A large posthole, [2173], 0.56m by 0.48m and 0.77m deep, was located in the south west of the structure. The sides of the posthole were undercut by up to 0.15m on all sides, but particularly to the south west, suggesting the possibility that the post had been rocked prior to removal. The feature contained a single fill, (2174).

A linear feature, [2149], 3m long, 0.8m wide, and 0.02–0.13m deep, following a north–south alignment, was situated just inside the eastern edge of the structure. The feature was deeper to the north where an arrangement of stones suggested some sort of lining prior to excavation; the results of the excavation were inconclusive on this point. The feature may have been the base of an ore-roasting pit similar to those found at Trevelgue (Newquay) (Nowakowski and Quinnell 2011, 223–4) but if so there has been a considerable degree of truncation over the site, and its interpretation is uncertain because the fill, (2150), was not a charcoal-rich deposit. Alternatively it is possible that this feature represents the line of a recut of the ring-gully, [2382] (described below, 'Phase 3'), deviating from the circuit of the original ring-gully and forming an enclosure more flattened on its eastern side. However, the fill, (2150), did contain fragments of oxidised burnt clay, possibly, but not exclusively, indicative of a metallurgical hearth or furnace (Young and Kearns, below), along with Cordoned ware sherds including a Type D jar rim, and some notched slates.

Two irregular shallow pits, [2167] and [2171], were located towards the eastern side of the structure. Fill (2168) of [2167] contained three fragments of oxidised burnt clay, possibly indicative of a metallurgical hearth or furnace (Young and Kearns, below). Fill (2172) of [2171] contained 13 Cordoned ware body sherds, three fragments of iron slag and some flake hammer-scale, indicative of smithing processes (Young and Kearns, below). Neither feature had any appreciable depth; pit [2167] was up to 0.05m deep and [2171] no greater than 0.03m deep. These may have formed beneath a hearth for iron smithing.

Slightly south east of centre were two amorphous hollows, [2163] and [2165]. Both had appeared as discrete features prior to excavation but their fills

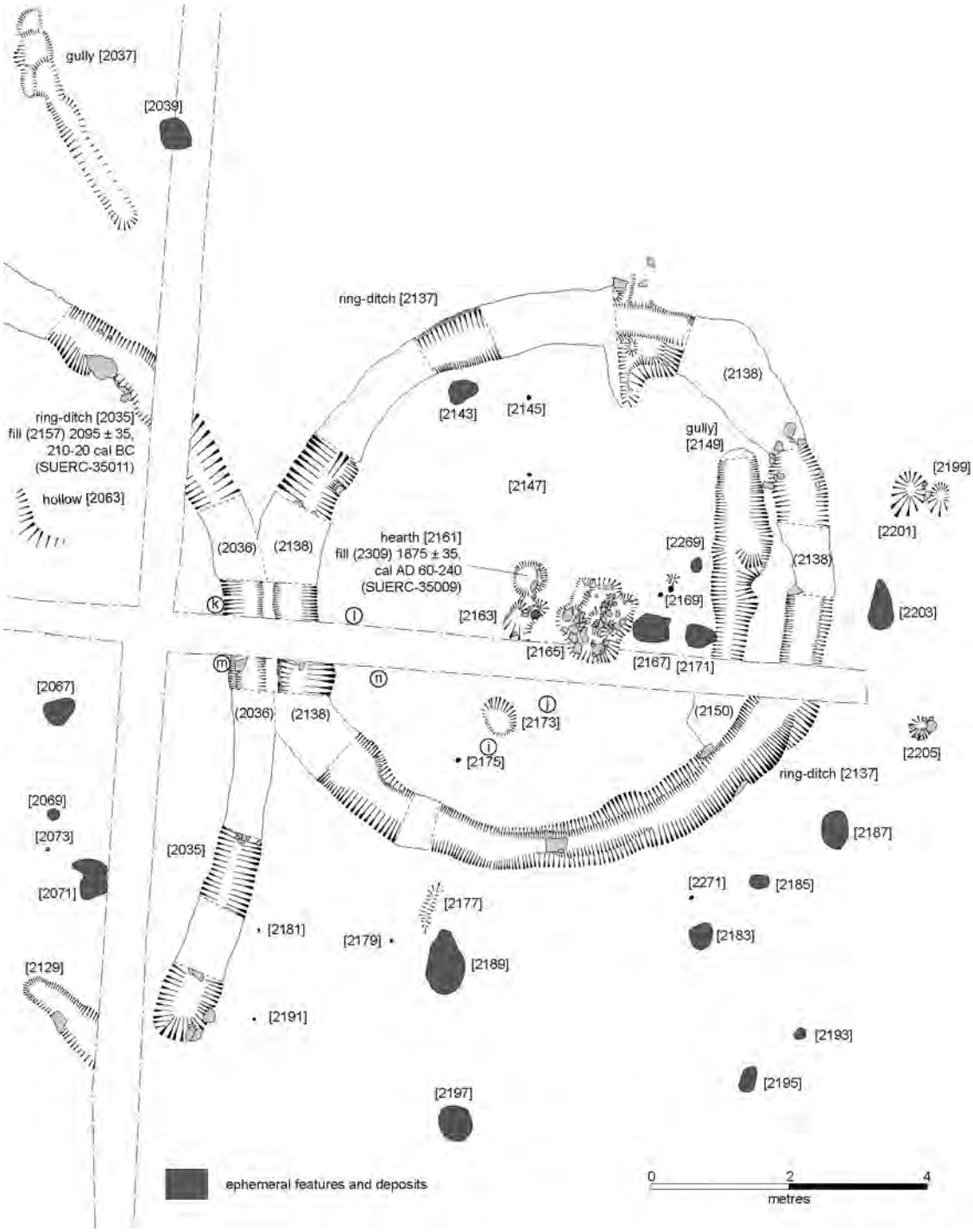

Fig 17 Plan of structure 5, showing structural features and external features.

Fig 18 Structures 4 and 5 from the west prior to excavation.

were indistinguishable from one another. It was unclear whether the features were tree throws or bowls, animal burrowing, or geological features.

Several other features were recorded during pre-excavation planning but disappeared following further cleaning. At least some of these are likely to be truncated pits and / or postholes, and stakeholes associated with the ring-gully and its internal structure if it had one.

Exterior features

Outside of the ring-gully, to the east and south, a group of features appeared to form two concentric rings. The inner comprised features [2183], [2185], [2187], [2189], [2199] / [2201], and [2205], the outer [2193], [2195], and [2197]. Most of these features disappeared upon cleaning; only [2199] / [2201] and [2205] had sufficient depth and definition to be recorded. The fill of [2201], (2202), contained a sherd of Cordoned ware. The inner ring followed the circuit of the ring-gully at a distance of 1.04–1.3m from its perimeter, the outer at 3.5m. The features may represent the truncated remains of two concentric external post-rings or pit circuits.

Phase 2: posthole

A posthole, [2297], 0.4m by 0.2m and 0.28m deep, appeared to have been cut into the base of ring-gully [2137] at its intersection with [2035] (Fig 16). The posthole contained stone packing, (2299), and a fill, (2298). The latter contained notched slates and some large slate blocks.

Phase 3: Romano-British reuse

The secondary fill of ring-gully [2137], (2289), appeared to be recut by [2382], which formed a continuous circuit and was filled by (2138), which contained Cordoned ware sherds, a fragment of oxidised burnt clay (Young and Kearns, below), a fragment of an elvan disc, **S8**, notched slates, and a flint.

This later episode of recutting may be coeval with at least one of the features inside the structure. A central hearth-pit, [2161], 0.5m in diameter, 0.15m deep, with concave sides and a flat base contained a layer of oxidised natural, (2311), around its base and sides indicating a considerable amount of heating. The feature contained two fills, (2162) and primary (2309), the latter containing a considerable amount of charcoal and a large block of slate. A radiocarbon determination of 1875 ±35BP, cal AD 60–240 (SUERC-35009) was obtained from oak charcoal from this fill.

All the fills of the earlier ring-gully were cut by [2035], the ring-gully around structure 4, indicating that structure 5 was earlier than structure 4. However, the fill of recut [2382] was not. It therefore seems possible that structure 5 was rebuilt or refurbished after structure 4 had gone out of use.

PHASE 4: ABANDONMENT?

The ring-gully [2137] appeared to be continuous, although it is possible that the ditch terminals lay beneath the baulk. However, it is also possible that the gap between the terminals had been removed and the ditch had been made continuous as part of an act of abandonment.

ENVIRONMENT

A large amount of charcoal was recovered from the ditch fills of this structure. Fill (2150) of the linear pit [2149] contained a single gorse spine and two weed seeds.

Field system(s) and miscellaneous features

Field system (north) (Figs 19 and 20)

This group of features was situated towards the eastern end of the stripped area and consisted of two curvilinear ditches, an amorphous pit, and a number of pits and / or postholes.

The biggest feature was a sinuous section of ditch, [2022] and [2261]. The northern part, [2022], was, 13.4m long, 0.43–1.08m wide, and 0.15–0.53m deep, with a profile varying from steep to vertical sides and a flat to V-shaped base. The ditch may have come to a terminal at its southern end where it was cut by another section of ditch, [2239] / [2261], extending the overall length of the feature by at least 6.8m before it continued beneath a baulk. To the north the feature petered out. Two stakeholes, [2234] and [2236], were identified on the eastern edge of the 'terminal'.

Ditch [2022] contained two fills, (2023) and primary (2230), only the upper fill being found in the shallower sections. The base of the ditch contained two possible cuts (not numbered) that may conceivably have held the bases of posts in a beam slot. A third posthole, [2232], was identified on the eastern edge of the ditch. Ditch fill (2023) contained a number of Cordoned ware sherds, including rim sherds from at least two Type D jars, a pebble whetstone, **S7**, two river-worn pebbles, one of quartz one of sandstone, notched slates, and a flint piercer, **L2**. Fill (2230) contained a Cordoned ware sherd and a fragment of burnt bone from an unidentified mammal of medium size.

The extension to the ditch to the south, [2261], contained a flat-laid stone revetment, 2229/2238, mostly slate but with some granite, along the western side. The former survived up to three courses to a height of 0.25m, the latter two courses to a height of 0.16m.

To the south and east of ditch [2022] / [2261] / [2239] were a number of cut features. Pit [2220], 1.13m by 0.73m and 0.26m deep, contained a single fill, (2221), which contained an Iron Age – Romano-British sherd and a notched slate. Three small probable postholes, [2241], [2244], and [2247], were clustered together to the east of [2220]. All three contained dark charcoal-rich upper fills and yellowish-grey clay primary fills and all contained small quantities of charred hazelnut fragments.

To the west of [2022] was a short length of curvilinear ditch, [2207], 9.2m long, 0.29–0.76m wide, and 0.08–0.21m deep. This feature ended in a terminal to the north east but petered out to the west. The feature contained three fills, (2222), (2208), and primary (2223). Fill (2208) was found throughout the feature but (2222) was only found at the terminal indicating truncation had removed this deposit to the west. Primary fill (2223) lay beneath an iron pan, also only in the terminal. The ditch terminal also differed from the rest of the ditch by having a stone packing, 2231, consisting of two slates and one piece of granite lying around a hollow in the secondary fill, (2208). This may have been associated with a posthole within the ditch terminal. Fill (2222) contained Cordoned ware sherds and (2208) also contained Cordoned ware sherds, including **P8**, **P9**, and body sherds from a Type D jar, notched slates, a perforated slate, **S12**, and a struck flint pebble.

To the north and east of the ditch was an amorphous pit, [2209], 3.24m long, 0.58m wide, and 0.25m deep, within which was a possible stone lining for hearth 2211, consisting of three upright slates forming a box 0.68m by 0.48m. This was set within a deposit of compact baked clay, (2210), that appeared to have been heat-altered. The deposit was cut by three truncated pits and / or postholes, [2212], [2214], and [2216], to the south east. The baked clay (2210) from hearth 2211 also contained burnt hazelnut fragments as well as a single weed seed. Possible stakeholes (unnumbered) were also found in the area of [2209] but their relationship with the pit is unknown.

A subsoil horizon, (2228)/(2250), which lay across a large area in the vicinity of the field system, contained sherds of Iron Age – Romano-British, medieval and post-medieval date.

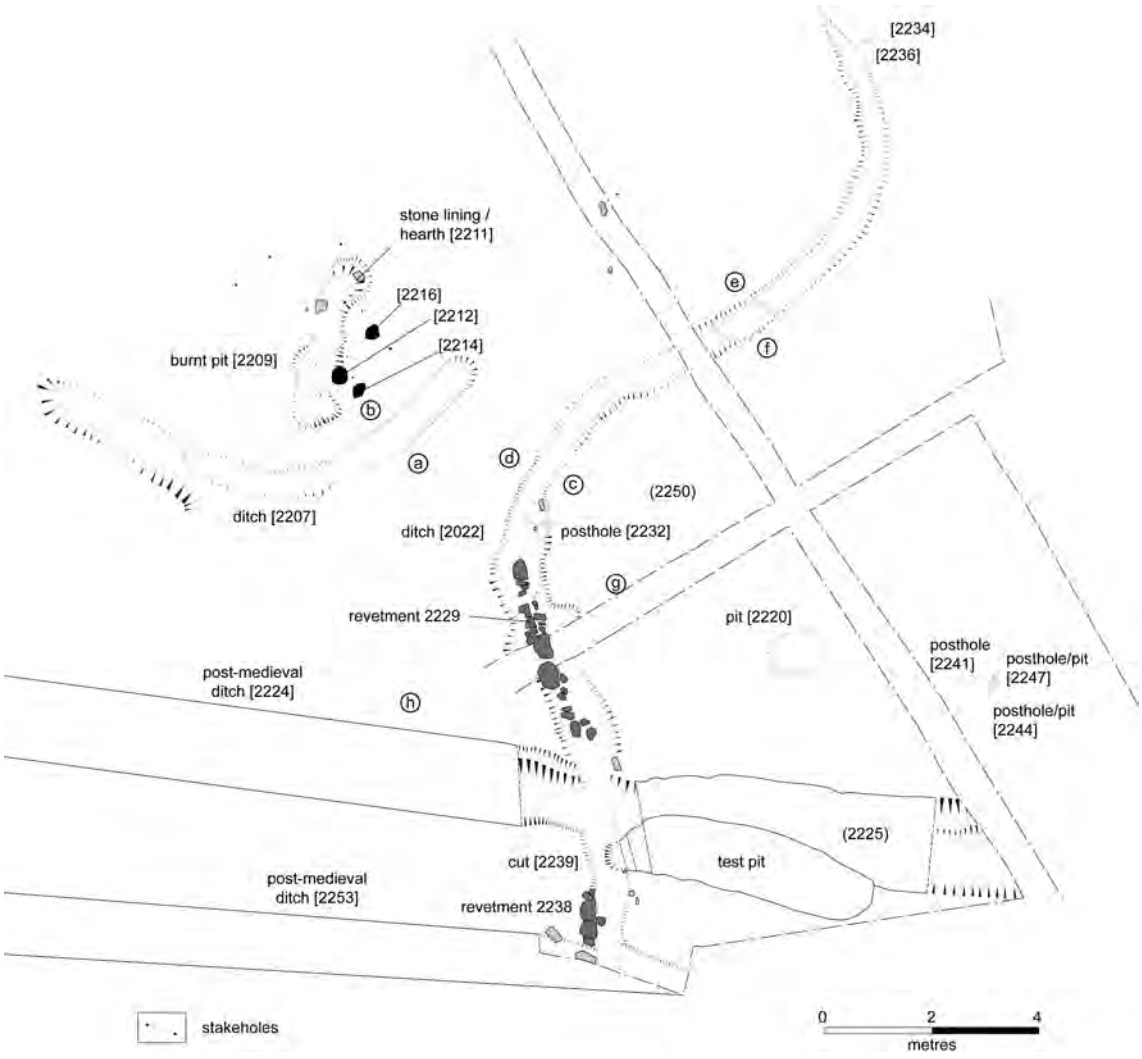

Fig 19 Plan of field system (north) and excavated features (possible stakeholes shown as dots).

Miscellaneous features (Fig 4)

A rectangular pit, [2366], was identified during the digging of a trench through the western side of the car park, to the west of the main area of excavation. It measured 0.94m by 0.62m and 0.18m deep and contained two fills, (2367) and (2368) and a deposit of altered natural, (2374) in its base. Fill (2367) contained a fragment of a granite muller, **S4**, a quartzitic sandstone beach pebble, some pieces of quartz, a Late Iron Age sherd and a flint pebble. The fill also contained a small quantity of charred wheat grain and chaff, and a few weed seeds and gorse spines.

Medieval and post-medieval features

Field system (north) (Fig 4)

The ditched remains of removed field boundaries of medieval and post-medieval date were found crossing enclosure 1, to the west of enclosure 2, and to the south and east of the Iron Age / Roman field system. A full description and discussion of these features appears in the archive report (Taylor 2010).

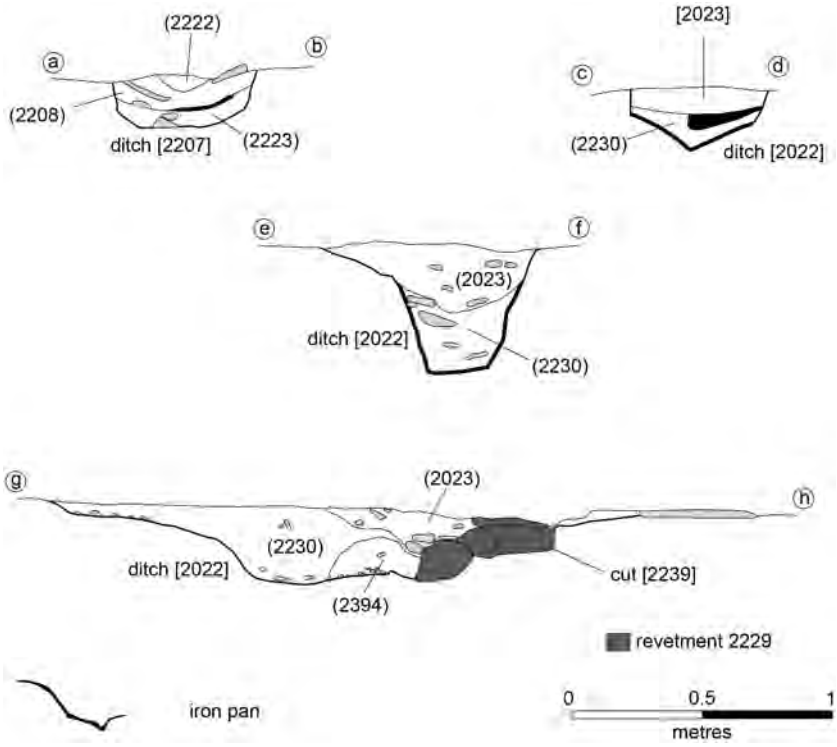

Fig 20 Sections across field system (north).

Field system (south) (Figs 5 and 21)

A number of linear features to the south of the school were identified by the geophysical survey (Fig 2). The majority were not confirmed by excavation, and of those that were, most contained medieval or post-medieval finds (below). However, one section of ditch, [1031] (Fig 5), contained a neck sherd from a Type D Cordoned ware jar from an upper fill, (1032), while a secondary fill, (1041), produced an abraded sherd of Beaker pottery (Beaker pit [1029] is 7m to the north). Other finds from the upper fill included a sandstone beach cobble muller, **S3**, a water-rounded pebble, and an iron tack of Late Iron Age or Roman date. The lack of any later artefacts within these fills suggested that this feature was of later Iron Age or Romano-British date. However, ditch [1031] cut through ditch [1033], the extension or recut of [1003] to the north and west, and this contained finds of medieval date. The earlier artefacts in the fills of [1031] are therefore residual and the ditch was of medieval or later date. It is probable that a Late Iron Age or Roman feature was disturbed during the construction of the ditch and that material from it was redeposited into the ditch.

Cut [1003] was a large ditch measuring 1.7m wide by 0.8m deep, which ran east–west across the area to the south of the school. Prior to excavation its dimensions and position underlying later wall 1002 and ditch [1004], were suggestive of a late prehistoric or Roman date. The ditch was found to contain five fills (1024), (1022), (1023), (1006) and (1007). Excavation revealed a medieval or post-medieval horseshoe in fill (1022), deep within the feature. It is therefore likely to have been of a medieval or later date, although the horseshoe was directly below later wall, 1002, that ran from north to south over it and may have been deposited within a burrow. Wall 1002 was in the right position to be a field boundary shown on the 1880 OS map. The fill of an associated ditch, [1004], was found to contain a sherd of Cornish medieval coarseware and post-medieval glazed red earthenware pottery of seventeenth- to eighteenth-century date.

Cut [1033], which was cut into the southern end of ditch [1003], measured 1.1m wide, 0.8m deep, and was filled by (1034), a light reddish-brown silty clay that contained five bodysherds of Cornish medieval coarseware dating from the thirteenth to

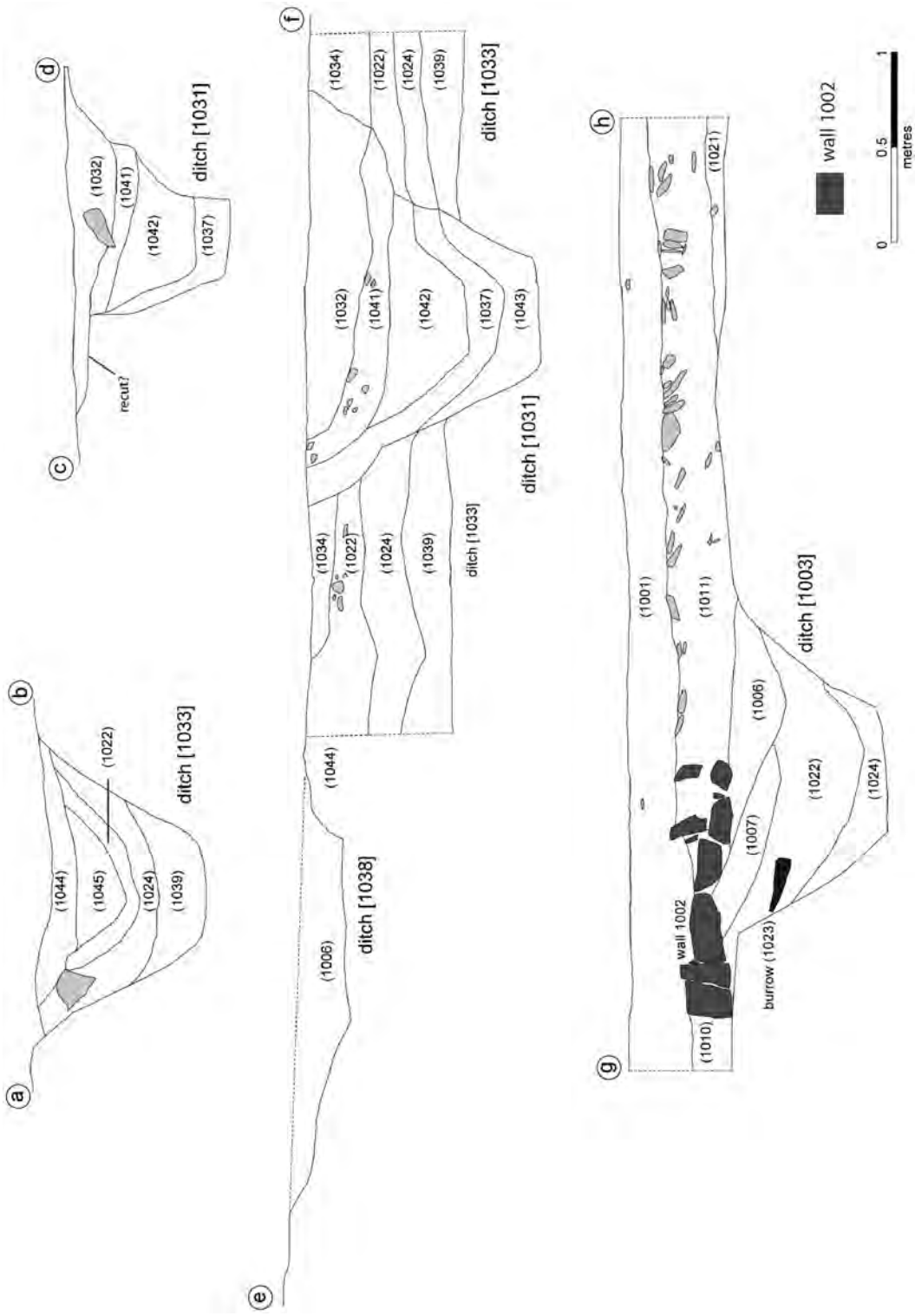

Fig 21 Sections across field system (south) (see also Fig 5).

fourteenth centuries. It terminated just to the north of an intersection between it and [1031].

Ditch [1031] ran from the eastern end of the northern baulk, to where it intersected ditch [1033]. It cut natural grey slate clays and solid slate 0.2m above its base, was stepped on its north-western side and straight to the south east. It contained five fills (1037), (1041), (1042), (1043), and (1032). The primary fill (1037) appeared slumped from the south-eastern side possibly indicating bank material, but grey natural clay appears as upstanding in the baulk section on its north-west side, perhaps indicating a bank there. The ditch was deep (0.8m) and steep sided with a flat base. Ditch [1031] was found to cut ditch [1003], and the base of [1031] was 0.4m deeper than the base of [1003]. Both ditches contained similar layers, particularly a soft red clay (1042) in [1031] and (1024) in [1033], that must have formed under similar conditions.

Undated features

Two pits were found in the north west of the area to the south of the school, near to the intersection of wall 1002 and ditch [1003] (Fig 5). The first of these, [1008], was excavated and was found to contain a single fill (1036). The pit had good edge definition, and was fairly deep (0.45m) with a concave base. It appeared to be similar to the adjacent pit [1009], which was not excavated. The fill of pit [1008] was dark reddish-brown silty clay, plastic with occasional angular quartz inclusions; these were all gravel sized and different from the larger pieces found in Beaker pit [1029] 20m to the east.

Artefact analyses

Ceramics

Henrietta Quinnell with petrological comment by Roger Taylor

Fabrics

Slate / aplite (SL.APL) Soft fabric with common coarse inclusions of slate and aplite.
Petrology: rock fragments – aplite as soft white altered angular fragments, some containing biotite flakes as phenocrysts, 0.05–2.5mm; rock fragments – micaceous slate, sparse light grey fragments, 1–2.5mm; mica – biotite, as brown cleavage flakes, some with hexagonal crystal outlines, and probably derived from the aplitic rock fragments, 0.05–0.8mm; quartz – a scatter of transparent angular grains, 0.2–1mm; matrix – micaceous clay with many white fragments less than 0.05mm.
Comment: the matrix and slate fragments are similar to those in **SL** with some slate fragments from the granite aureole. It seems likely that the aplitic fragments have been crushed and deliberately added, releasing biotite flakes in the process. As there are no directly derived granite minerals it is unlikely that the aplite has been directly sourced from within the Bodmin Moor granite. *Beaker.*

Slate (SL) Soft fabric with very common coarse inclusions of slate.
Petrology: rock fragments – slate, micaceous silvery and grey rounded and variably weathered buff fragments, 0.2–4.5mm, some fragments containing biotite mica; quartzitic fragments – white, fine grained angular, 1–5mm; quartz – transparent to translucent colourless angular and white angular vein quartz grains, 0.5–1.5mm; matrix – finely sandy micaceous clay.
Comment: a rock-tempered fabric. The range of slate fragments and their degree of rounding points to a locally derived stream-sourced assemblage of sandy gravelly clay. The source area of the stream extends into the metamorphic aureole of the Bodmin Moor granite but not onto the granite itself. *Beaker.*

Gabbroic (GA) Soft fabric with moderate coarse inclusions.
Petrology: **P2** Feldspar – white altered and some angular cleaved fragments, 0.5mm–2mm; amphibole – greyish green cleaved grains and fibrous aggregates, 0.3–2mm; magnetite – sparse black glossy sub-angular to sub-rounded magnetic grains 0.5mm; quartz – sparse off white sub-rounded, 0.02–0.5mm; matrix – grains of the main tempering minerals less than 0.05mm common.
Comment: a standard Lizard gabbroic fabric. Note, petrological description of **P3** is in the project archive. *Trevisker.*

Gabbroic admixture (GA.AD) Gabbroic clay with moderate coarse dolerite inclusions.
Petrology: **P4** Rock fragments – dolerite and fine-grained gabbro with soft white weathered feldspar and dark pyroxene, and darker fragments angular, 0.5–4.5mm; feldspar – sparse white altered grains, 0.05–1mm; some probably derived from the igneous rock fragments; magnetite – rare black glossy sub-angular grains, 0.4mm; matrix – smooth clay with some fragments of the main tempering minerals.
Comment: a gabbroic clay fabric with a sparse content of original gabbro-derived minerals and added doleritic rock. The geological survey map shows doleritic intrusions some 5.5 km

south-south-west of the site and other occurrences follow the general line of the River Camel to the south and west.

Sherd from (2052): rock fragments – dolerite and fine-grained gabbroic, with altered white feldspar and dark pyroxene, angular to sub-angular fragments, 1–5mm; brown weathered igneous rock fragments, 1–3.5mm; micaceous slate – a silvery tabular fragment, 0.5mm; feldspar – soft white altered angular grains, 0.1–0.8mm; some probably derived from the igneous rock fragments; ?pyroxene – dark sub-angular grains possibly derived from the igneous rock fragments, 0.1–1mm; limonite – dark brown soft glossy rounded grains, 0.1–1.2mm; quartz – rare transparent to translucent colourless angular grains 0.5–0.1mm; magnetite – rare black glossy angular magnetic grains, 0.2–0.3mm; mica – rare muscovite cleavage flakes up to 0.2mm; matrix – predominantly smooth clay.

Comment: a gabbroic clay fabric with a sparse content of original gabbro derived minerals and with added doleritic rock and other fragments: one fragment of micaceous slate noted. Note, petrological description of **P5** is in the project archive. *Trevisker.*

Well-made gabbroic (WMG) Well-made gabbroic fabric with sparse inclusions over 1mm. External surfaces usually burnished. Identical to well-made gabbroic (GA.2) extensively used in the Iron Age at Trevelgue Head (Quinnell 2011a, 7.2.2). Gabbroic fabric confirmed by archived petrology report. *Late Iron Age*.

Standard gabbroic (STG) Gabbroic fabric, with moderate inclusions many over 2mm, surfaces wiped not burnished. See GA.4 at Trevelgue Head (Quinnell 2011a, 7.2.2). *Late Iron Age*.

Aplitic granitic (AP.GR) Soft fabric with common medium inclusions.

Petrology: feldspar – soft white altered angular grains, 0.05–0.7mm, rarely 1mm and 3mm; quartz – translucent colourless, 0.05–0.6mm, larger grains probably composite; mica – muscovite, a scatter of cleavage flakes, 0.05–0.3mm, biotite, sparse brown cleavage flakes, 0.05–0.2mm; composite – quartz / feldspar, a scatter of angular fragments, 0.3–1.2mm; matrix – abundantly finely sandy / silty with feldspar quartz and mica grains less than 0.05mm.

Comment: an unusual fabric apparently derived from a fine-grained aplitic granite source. It would seem likely that the rock, probably softened by weathering, has been prepared by crushing to give a very fine-grained uniform fabric. This process may have provided the complete potting body as much of the feldspar is substantially altered. The Bodmin Moor granite some 1.5 km south west of the site is a likely source area. *Late Iron Age*.

Abrasion

Recording of abrasion on sherds is based on the system devised by Sørensen (1996) for Bronze Age midden material at Runnymede with some modifications.

Fresh	1/2; colour of core slightly patinated but unaltered surfaces with sharp corners and edges;
Moderate abrasion	2; core colour patinated, some definition in the sharpness of corners lost;
Abraded	2/3; core colour patinated, slight rounding of corners and slight erosion of surfaces;
High abrasion	3; core colour patinated, rounding of corners and of sherd outline, surfaces somewhat eroded.

Beaker material

This assemblage of 17 sherds weighing 89g is generally in poor condition. The sherds are in two related fabrics sourcing to the aureole of the Bodmin Moor granite within a few kilometres of the site. Both the use of non-gabbroic local fabrics (Parker-Pearson 1990) and the general character of the sherds are appropriate for the coarser, 'domestic' version of Beaker ceramics (Gibson 1982). Both rustication and fingernail decoration occur regularly in domestic Beaker assemblages (*ibid*, *passim*). **P1** comes from a large vessel with coarse comb-stamping forming a design of infilled triangles; the decoration is of the same character as the coarse comb-stamping on P3 from the burnt mound at Lower Boscaswell (St Just) (Jones and Quinnell 2006, fig 8); this site also has sherds with fingernail impressions (*ibid*, fig 9) as well as those in long-necked style. The Lower Boscaswell site has radiocarbon dates in the twenty-second – twenty-first centuries BC. The abraded and rusticated sherd from (1035) has probably split from the rim of a vessel with a slight horizontal cordon beneath similar to that on some Beaker vessels; for example, P1 and P2 from Sennen (Quinnell 2012b). Parts of several vessels with similar below-rim cordons and fingernail decoration come from the domestic Beaker assemblage from pits at Castle Hill, Honiton, in Devon (Quinnell 2003, plate 1).

Table 1 Details of Beaker pottery from field system (south) by sherd numbers and weight in grams

Context	*Description*	*SL (sherds/weight)*	*SL.APL (sherds/weight)*	*Comment*
(1026)	Fill of pit [1025]	2/5		Soft abraded body sherds with parts of finger nail impressions
(1028)	Fill of pit [1027]	1/9	8/46	All SL.APL abraded from **P1**, SL sherd has split down sherd length
(1030)	Fill of pit [1029]	4/9		Moderately abraded body sherds with modelled rustication
(1035)	Subsoil		1/16	Abraded rusticated sherd
(1041)	Lower fill ditch [1031]		1/4	Abraded body sherd
Totals		7/23	10/66	

ILLUSTRATED SHERD

P1 (Fig 22) (1028) fill of pit [1027]. Fabric SL.APL. Abraded sherds with coarse comb-stamped decoration. Internally reduced 5YR 4/1 dark grey, externally oxidised 5YR 6/6 reddish-yellow but one sherd very unusually almost white 5YR 7/2 pinkish grey.

Trevisker material from the area of structure 4

The Trevisker assemblage consists of 21 sherds weighing 164g. These are both in gabbroic fabrics and in gabbroic fabrics with non-gabbroic rock inclusions, commonly known as gabbroic admixture. This mixture of gabbroic and gabbroic admixture fabrics is not uncommon on Middle Bronze Age settlement sites, most notably at Trethellan (Newquay) (Williams 1991). The presence of micaceous slate noted in a sample microscopically examined from (2052) together with the broadly local dolerite in all the gabbroic admixture sherds provides a strong indication that gabbroic clay was transported to the area around Camelford before potting. This movement of gabbroic clay before potting has been noted on a range of Middle Bronze Age settlements studied by the author together with Dr R Taylor, including Carnon Gate (Feock), Scarcewater (St Stephen-in-Brannel), Penhale Round and Penhale Moor (St Enoder), and at ceremonial sites of Middle Bronze Age date at Stannon (St Breward), on Bodmin Moor, and at Tremough (Penryn). References to all these sites are given in Quinnell (2012a). While all the examples quoted are of Middle Bronze Age

Table 2 Trevisker pottery from structure 4 by sherd numbers and weight. Iron Age material present in a context indicated in 'Comment' column. Full details of all Iron Age sherds from structure 4 in Table 6

Context	*Description*	*GA.AD (sherds/weight)*	*GA (sherds/weight)*	*Comment*
(2058)	Fill of posthole [2057]		1/7	**P2**
(2093)	Upper fill of posthole [2092]		2/31	**P3** some residue
(2285)	Primary fill posthole [2092]		3/25	Fresh body sherds
(2087)	Fill of posthole [2086]	1/5		Body sherd, fresh
(2052)	Fill of gully [2051]	2/24		Rim, body sherd, both with traces of cord impressed decoration. Abraded
(2050)	Upper fill posthole [2049]	3/41		**P4**, another Trevisker rim abraded and fresh body sherd; Iron Age sherd present
(2036)	Upper fill gully [2035]	2/20		**P5** and body sherd both moderately abraded
(2064)	Fill of levelling [2063]	4/3		Abraded body sherds
(2080)	Over path 2081	1/2		Body sherd, abraded
(2106)	Deposit in structure 4	1/1		Abraded body sherd; Iron Age sherd present
(2114)	Deposit over structure 4	1/5		GA.AD abraded rim sherd; Iron Age sherds present
Totals		15/101	6/63	

date, no chronological significance is claimed as little Trevisker material of Early Bronze Age date has been recently examined.

No radiocarbon determinations are associated with this Trevisker assemblage. Most sites consisting of pits and postholes which have Trevisker pottery are of Middle Bronze Age date and broadly domestic in character. However, on these sites the majority of vessels tend to belong to Parker-Pearson's Style 3/4 (1995, 91), slightly biconical buckets with incised, grooved, comb, or stamped decoration varying in height between 0.12m and probably 0.40m and in rim diameter between 0.11m and 0.41m. **P2**, **P3** and **P5** from Camelford fall at the very smallest end of this range of Style 3/4, and are likely to have been used for serving food. No other site is known on which all the incised vessels are of this small size. Vessels of this small size are generally cord-impressed (Parker-Pearson's Style 5) or plain (Style 6). **P4** with a cord-impressed design, and the abraded cord-impressed rims from (2050) and (2052), is likely to have come from a vessel either of Style 1 or Style 2 (Parker-Pearson 1995; Woodward and Cane 1991, fig 53). Good arguments can be made that these styles continued through the Early Bronze Age but became disused at a date in the Middle Bronze Age, perhaps around 1400 cal BC (Parker-Pearson 1995; Woodward and Cane 1991, fig 53; Quinnell 2012a; 2013a). It therefore is possible that Trevisker ceramics from the site belong somewhere in the second millennium BC before *c* 1400 cal BC and that activities which took place involved the serving of cooked food in an unusual style of Trevisker ceramics. There may be a hint here that the pottery does not relate to domestic activity but to some more formal and ritualised practice.

Date of features with Trevisker sherds

From the condition and character of sherds, postholes [2057], [2092], and [2086] could well be of Trevisker, Middle Bronze Age, date. The radiocarbon determination SUERC-35010 is appropriate for the small Iron Age sherd in pit [2049] and indicates that the Trevisker sherds in this fill are redeposited. The abraded condition of the Trevisker sherds in gully [2051] and deposit (2114) make it likely that they are redeposited in Iron Age contexts. The sherd in (2036), upper fill of gully [2035], is moderately abraded and almost certainly residual, as are those in contexts (2080), (2106), (2114), and (2064).

Illustrated vessels

P2 (Fig 22) (2058) fill of posthole [2057]. Fabric GA. Slightly everted rim with internal bevel, internal diameter 110mm, fine incised chevron design. Fairly fresh breaks.

P3 (Fig 22) (2093) fill of posthole [2092]. Fabric GA. Flat-topped rim with external extension and

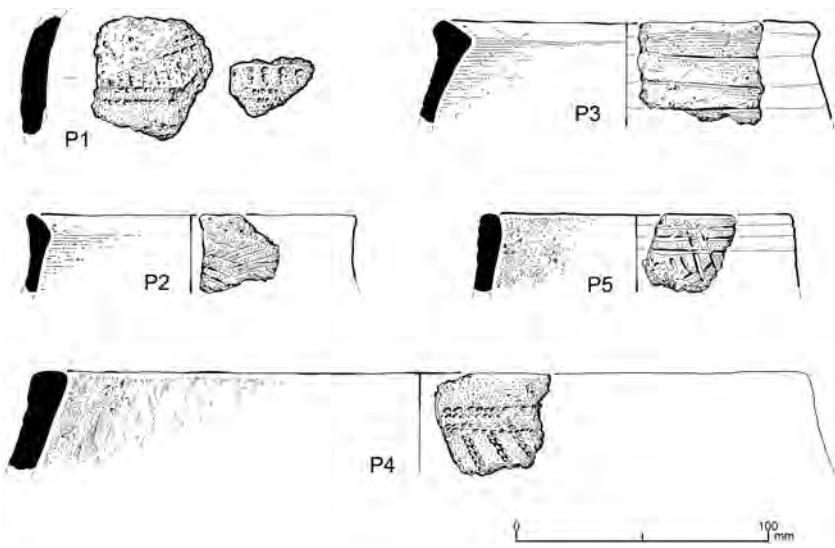

*Fig 22 Bronze Age pottery. Beaker **P1** from [1027]. Trevisker vessels from area of structure 4: **P2** from [2057], **P3** from [2092], **P4** from 2049] and **P5** from [2035]. (Drawing: Jane Read.)*

internal bevel, internal diameter 125mm, exterior decorated with regularly spaced horizontal incised lines. Fresh breaks.

P4 (Fig 22) (2050) probably redeposited in pit [2049]. Fabric GA.AD. Flat-topped rim with slight expansion, internal diameter 280mm, impressed cord decoration made by a double line of parallel twist. Moderately abraded.

P5 (Fig 22) (2036) probably redeposited in gully [2035]. Fabric GA.AD. Simple slightly rounded rim, internal diameter 110mm, three horizontal incised lines below, below these criss-cross incised lines, probably the top of a complex overlapping chevron pattern. Moderately abraded.

Late Iron Age Cordoned ware and its use into the early Roman period

The introduction of Late Iron Age Cordoned ware has until recently been dated to the first century BC: its origins relate to French styles which are found as imports in Dorset and in Devon (Quinnell 1986, 119). An alphanumeric type series was established by Threipland (1956) in the publication of her excavations at a small hillfort at Carloggas (St Mawgan-in-Pydar) which still works well. Cordoned ware has frequently been found in association with South Western Decorated ware but only recently have excavations revealed the complicated relationship between these Cornish styles (Quinnell 2011c).

Recent work on the settlement at Higher Besore (Kenwyn) (Quinnell, forthcoming) has greatly increased our knowledge of Cordoned ware. Here a group of houses with multiple radiocarbon dates produced both Cordoned and South Western Decorated ware. Cordoned ware storage jars, Types H and J (Quinnell 2011c, fig 5), and serving / drinking vessels, Types F/G (*ibid*, fig 5) were introduced here in the late second century cal BC. Neither storage vessels, nor specialised serving / drinking vessels were present in South Western Decorated ware, in which the universal form BD6 (*ibid*, fig 4) was multi-purpose. South Western Decorated ware was present throughout the use of the Higher Besore settlement, which lasted until a date in the first century cal BC. It seems highly probable that the new Cordoned ware forms were introduced to meet changing needs and social practises, more storage of grain and more elaborate service in meals and drinking. The new forms show an awareness of ceramic trends in northern France.

At Higher Besore South Western Decorated vessels appear to have been used for general culinary purposes. At the adjacent round of Threemilestone (Kenwyn) (Schwieso 1976) undecorated versions of basic cooking vessels, Cordoned ware Types D/E (*ibid*, fig 5, D) appear; these tend to be taller and less bowl-like than South Western Decorated form BD6 and had no decoration. The amount of South Western Decorated present at Threemilestone is small and, although there are no radiocarbon dates from this site, it appears to belong to the end of the settlement sequence in the immediate area.

The Cordoned ware used during the Late Iron Age has been described as First Phase Cordoned ware with Second Phase Cordoned ware, showing some copying of Roman forms, in use after the arrival of Rome until around the middle of the second century AD (Quinnell 2004, 110). The gradual introduction of Cordoned ware as now understood suggests that First Phase Cordoned ware divides into two: early, from the late second

Table 3 Late Iron Age fabrics by sherd numbers and weight in grams. Mean sherd weights are given in brackets

	WMG (sherds/weight)	*STG (sherds/weight)*	*AP.GR (sherds/weight)*	*Totals (sherds/weight)*
Enclosure 1	174/ 920 (5.3)	1/8 (8.0)	34/158 (4.6)	209/1086 (5.2)
Enclosure 1 (gully [2338])	2/4 (2.0)			2/4 (2.0)
Enclosure 2	22/85 (4.0)	15/144 (9.6)		37/229 (6.2)
Structure 4	17/66 (3.9)	16/32 (1.8)		33/98 (3.1)
Structure 5	25/21 (0.8)			25/21 (0.8)
Field system (north)	29/177 (6.1)			29/177 (6.1)
Field system (south)		1/1 (1.0)		1/1 (1.0)
Miscellaneous	3/12 (4.0)			3/12 (4.0)
Totals	272/1285 (4.7)	33/185 (5.6)	34/158 (4.6)	339 /1628 (4.8)

century BC until a date late in the first century BC; and late, from the late first century BC, until the Roman conquest. The principal difference is the use of South Western Decorated vessels for cooking in the first part of the phase and of undecorated Type D vessels in the second part.

Higher Besore is unusual in that it had a comparatively short life, confined to the Late Iron Age. There are very few other Cornish sites which were so confined. Most sites either had continued occupation from the Middle to the Late Iron Age, such as cliff castles like The Rumps (St Minver Highlands) (Brooks 1974), or started in the Late Iron Age and continued through into the Roman period; for example, the settlement underlying the courtyard house at Goldherring (Sancreed) (Guthrie 1969). The few sites known so far with occupation restricted to the Late Iron Age have had minimal investigation and have produced small assemblages, most notably the enclosed settlements at Trevinnick (Fox and Ravenhill 1977) and at Tregilders (Trudgian 1977) (St Kew). At present the sequence from Higher Besore may be used as guidance for the development and chronology of Cordoned ware but confirmation from other sites with similar extensive assemblages and good stratified groups is badly needed. It is not, for example, possible to state at present that ceramic development was the same in all parts of Cornwall or indeed on all types of site irrespective of function or status.

The range of vessel forms present at Camelford is very restricted. Almost all are from forms interpreted as cooking vessels, most commonly Cordoned ware Type D which probably was current from the later first century BC until the early second century AD. There are a few examples of its predecessor, South Western Decorated BD6, in enclosure 1 and in the field system; this was certainly still current in the first century BC and its terminal date, for use if not for curation, remains to be established. Its successor, at some date in the second century AD, is Trethurgy Type 4 (Quinnell 2004, 113–4) and only occurs in a late context in enclosure 2. The only non-cooking pot form is the storage jar Type J, occurring in enclosure 1, structure 4, and field system (north) (**P8**). This type has a long life, beginning in the late second century BC and continuing until probably the early second century AD. The limited range of forms may simply be due to the small amount of pottery lost or deposited on the site. Alternately it may indicate the activities of a ceramically conservative community or restricted activities in which the use of drinking vessels represented by Cordoned ware Types F/G and individual serving vessels represented by Type R were not involved.

The use of gabbroic fabrics in Cornwall became widespread in the Middle Iron Age and was almost universal by the start of the Roman period. Here the data from Camelford conforms to the pattern generally known. A detailed study of the chronology of Well-made gabbroic and of Standard gabbroic fabric appears in the report on the Trevelgue assemblage (Quinnell 2011a, chapter 7) and here, as at Camelford, Standard gabbroic fabric was used for Cordoned ware as well as the better made and burnished Well-made gabbroic (*ibid*, 7.10.1). The local Aplictic Granitic fabric occurs in one feature, pit [2363] in the ditch terminal of enclosure 1 and comes from one or more Cordoned ware vessels: [2363] has radiocarbon determinations indicating a date range from the first century BC into the first century AD. Very occasional instances of small quantities of local, non-gabbroic, fabrics have been found on a few sites on which petrography has been carried out. These are Trevelgue (Newquay) (Quinnell 2011a, 191), Shortlanesend Round (Kenwyn) (DF Williams in Harris 1980, 71), Little Quoit Farm enclosure (St Columb Major) (R Taylor in Lawson-Jones and Kirkham 2009–10, 42) and Penlee House (Tregony) (Quinnell and Taylor 2012). They occur at various dates in the Roman period and have one feature in common with each other and the Aplitic Granitic fabric at Camelford, a visual similarity to gabbroic fabrics.

Comment on the 'fit' between the radiocarbon determinations obtained from Camelford and the chronology suggested by the pottery is provided in the discussion of each structure (below). Overall the range indicated by radiocarbon is greater than that provided by the ceramics. This discrepancy can be explained if there were periods in which no pottery (from the samples of features examined) was deposited and that the fills of some gullies had been redeposited so that the apparent earliest fills contain charcoal of earlier date than the ceramics. However, it is also possible that in some cases the wide range of the standard deviations associated with the determinations may mean that the true date of the features lie at the latest end of the range. In these cases, the dates and the pottery need not be incompatible.

Enclosure 1

Comment: the presence of Type D jars in primary gully fills suggests that either these were not cut until a date in the later first century BC or that these lowest fills are in fact redeposited from recuts with charcoal indicating a rather earlier date. The presence of a single South Western Decorated sherd in the basal fill of gully [2017] is consistent with the dates indicated by the Type D jars. Unfortunately the small sherds from central pit [2327] are not chronologically diagnostic. SUERC-36233 from a ditch recut indicates possible activity in the third or even fourth centuries AD but this is not supported by the ceramics. The presence of an iron nail (below) is indicative of some activity in the Roman centuries.

Illustrated sherds

P6 (Fig 23) (2364) upper fill of terminal pit [2363]. Fabric WMG. Rim and upper body of Type D jar with good burnish. Internal rim diameter 150mm. Interior residue. Fragment of a 'rivet', a small iron clamp designed to repair breaks, *in situ* on neck. The vessel is as close as Type D gets to the form of the earlier South Western Decorated bowls. A rim sherd from another vessel in this context also has a hole from a metal clamp. A number of Cordoned ware vessels from The Rumps cliff castle preserve evidence of metal clamps (Brooks 1974, figs 24, 25, 27): the use of metal clamps to join ceramic breaks in the Cornish later Iron Age is fully discussed in the publication of the assemblage from Trevelgue (Quinnell 2011a, 7.9.7).

P7 (Fig 23) (2325) upper fill of gully [2324]. Fabric WMG. Joining sherds from rim and upper

Table 4 Late Iron Age pottery from contexts in enclosure 1, by sherd numbers and weight in grams

Context	*Description*	*WMG (sherds/weight)*	*STG (sherds/weight)*	*AP.GR (sherds/weight)*	*Comment*
(2364)	Upper fill of pit [2363] in ring-ditch [2017] terminal	3/38			**P6** Type D jar with clamp
(2364)	Fill of pit [2363] in gully [2017] terminal	40/229			Parts of several Type D jars, one clamp hole, possible burnish
(2364)	Fill of pit [2363] in gully [2017] terminal	34/121		18/71	Fresh body sherds
(2018) or (2364)	In terminal of gully [2017] or in the pit [2363]	8/42	1/8	16/87	AP.GR cordoned neck, WMG Type D jar sherds
(2370)	Primary fill pit [2363] in east terminal gully [2017]	4/8			Body sherds, fresh, one abraded
(2365) = (2337)	Primary fill in east terminal gully [2017]	10/81			Type D jar sherds, neck sherd from Type H/J storage jar, small incised sherd as **P8** (SWD)
(2337)	Fill of [2017] under (2018)	1/3			Type D neck sherd
(2350)	Basal fill [2017]	1/2			Body sherd with line probably from SWD design
(2342)	Basal fill gully [2017]	6/17			Type D jar sherds
(2018)	Main fill gully [2017],	25/145			Type D jar sherds, one girth sherd in incised SWD decoration as **P8**
(2020)	Fill gully [2019] on main gully circuit	1/15			Body sherd
(2325)	Upper fill gully [2324]	8/84			**P7**: rim and upper part of Type D jar
(2325)	Upper fill gully [2324]	19/106			Type D jar sherds
(2345)	Fill of [2393] recut of gully [2324]	1/2			Neck sherd
(2344)	Fill of [2393] recut of gully [2324]	2/19			Type D sherds
(2328)	Fill of pit [2327] with holed slates	9/7			Abraded scraps
Totals		174/ 920	1/8	34/158	

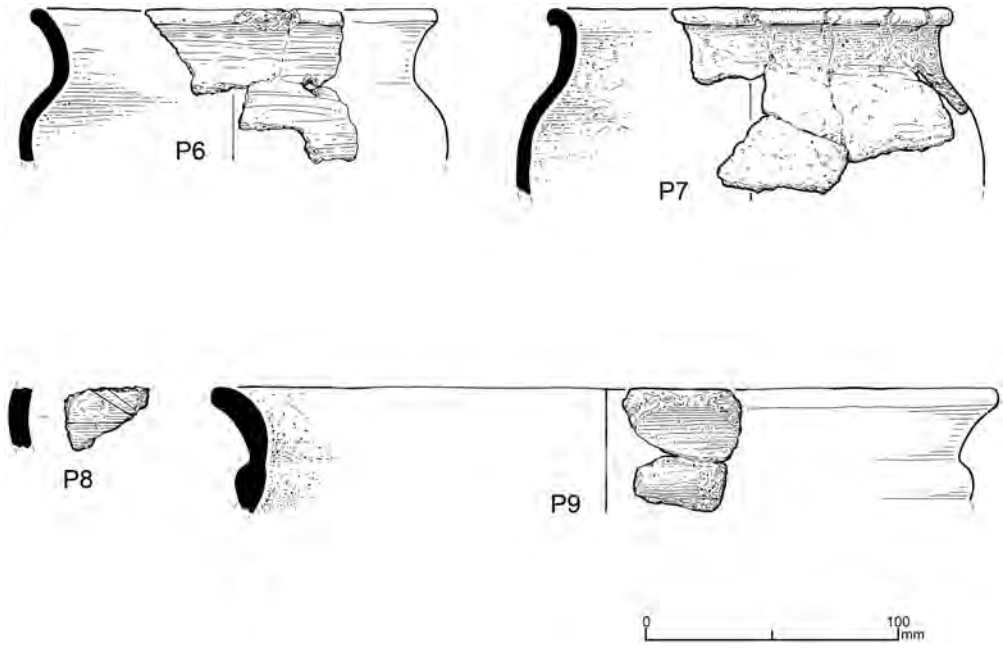

Fig 23 Iron Age pottery. ***P6****, Type D, pit [2363] enclosure 1;* ***P7****, Type D, gully [2324] enclosure 1;* ***P8****, South Western Decorated jar, gully [2007] field system (north);* ***P9****, Type J, gully [2007]. (Drawing: Jane Read.)*

part of Type D jar. Internal rim diameter 150mm. Not burnished, interior and exterior residue.

GULLY [2338]

Two body sherds weighing 4g. Well-made gabbroic fabric from the neck of a Type D jar came from (2339) fill of gully [2338]. There is no radiocarbon dating. The very limited ceramics indicates activity in the later first century BC and the first century AD.

ENCLOSURE 2

The four radiocarbon dates from enclosure 2 could suggest a slightly earlier date range than the ceramics indicate. Only the radiocarbon date of 90 cal BC to cal AD 90 (SUERC-35004) from the upper fill of gully [5002] really fits the ceramic dates: the other three start in the second century BC. The probable South Western Decorated sherd in the middle fill of gully [5002] might indicate some redeposition; alternatively it could derive from the same period as the Type D jar sherds. The upper fill of [5002], (5003) has a few sherds from Trethurgy Type 4 jars which, on current evidence, do not appear before around the mid-second century AD (Quinnell 2004, 113–4) and therefore are rather later than the radiocarbon determinations suggest. The presence of an iron nail in fill (5017) of gully [5002] (below) suggests an element in the fills dating to after Roman influence made itself felt in the area, a date which cannot be closely defined.

STRUCTURE 4

Comment: SUERC-35011, 210–20 cal BC, from (2157), fill of gully [2035], suggests possible activity before the use of Type D vessels. The other dates, SUERC-35012 from pit [2049] and SUERC-35012 from posthole [2094], again are rather earlier than the ceramics would suggest.

STRUCTURE 5

Comment: the only distinctive piece is the rim from (2150), fill of inner gully [2149], from a thin-walled version of a Type D jar. This suggests some activity rather earlier than that related to central hearth [2161] with SUERC-35009, cal AD 60–240.

Table 5 Pottery from enclosure 2 by sherd numbers and weight in grams

Context	*Description*	*WMG (sherds/weight)*	*STG (sherds/weight)*	*Comment*
(5004)	Upper fill of gully [5005]	2/10		Rim Type D jar, body sherd
(5006)	Fill of [5005]	7/24	1/48	Base angles in WMG and STG
(5018)	Middle fill gully [5002]		1/4	Shoulder from Type D jar
(5039)	Middle fill east terminal gully [5002]	3/4		Thin burnished shoulder from Type D jar
(5016)	Middle fill gully [5002]	3/30		Body sherds, one with incised line probably from SWD jar
(5003)	Top fill gully [5002]	7/17	13/92	WMG includes rim fragments from two thin Type D jars; STD body sherds: two with incised girth line may come from Roman Type 4 jar
Totals		22/85	15/144	

Table 6 Late Iron Age pottery from contexts in structure 4, by sherd numbers and weight in grams. Redeposited Trevisker material indicated in 'Comment' column. See Table 2

Context	*Description*	*WMG (sherds/weight)*	*STG (sherds/weight)*	*Comment*
(2050)	Upper fill posthole [2049]	1/1		WMG Type D ,
(2157)	Fill of gully [2035]	1/6	1/5	Fresh body sherds
(2060)	Fill of gully [2059]	3/12	2/2	Neck Type D jar, body sherds, mixed abrasion
(2038)	Fill of gully [2037]	2/9		Abraded body sherds
(2124)	Fill of gully [2123]		1/1	Abraded body sherd
(2279)	Fill posthole [2278]	1/25		Rim of Type J storage jar, fresh
(2107)	? upper fill posthole [2281]		4/9	Abraded body sherds
(2048)	Fill of ?posthole [2047]	2/2		Fresh body sherds
(2091)	Fill around stakehole [2090]		5/6	Fresh body sherds
(2320)	Burnt deposit within gully [2083]	2/1		
[2081]	Paving over gully [2083]		1/5	Body sherd
(2106)	Deposit in structure	1/1		Abraded body sherd; redeposited Trevisker sherd
(2110)	Deposit in structure	4/9		Fresh body sherds, residue
(2114)	Deposit over structure		2/4	GA.AD abraded rim sherd, body sherds. Redeposited Trevisker sherd
Totals		17/66	16/32	

Table 7 Pottery from structure 5 by sherd numbers and weight in grams

Context	*Description*	*WMG (sherds/weight)*	*Comment*
(2138)	Fill of recut ring-gully [2382]	4/7	Body sherds
(2150)	Fill of small gully [2149] inside ring	7/8	Body sherds, Type D jar rim
(2172)	Fill of ?posthole [2171]	13/4	Body sherds
(2202)	Fill of pit [2201] outside ring-gully	1/2	Body sherd
Total		25/21	

Table 8 Late Iron Age pottery from contexts in the field system (north and south), by sherd numbers and weight in grams

Context	*Description*	*WMG (sherds/weight)*	*STG (sherds/weight)*	*Comment*
(1032)	Top of ditch [1031]		1/1	Neck sherd from Type D jar
(2230)	Upper fill gully [2022]	1/3		Body sherd
(2023)	Main fill [2022]	15/67		Body sherds, rim sherds from at least two Type D jar rims
(2222)	Upper fill gully [2007] in east terminal	2/16		Body sherds
(2208)	Main fill gully [2007]	1/6		**P8**: SWD jar
(2208)	Main fill gully [2007]	3/35		**P9**: Type J storage jar rim
(2208)	Main fill gully [2007]	7/53		Body sherds from Type D jar, good residue
Total		29/177	1/1	

FIELD SYSTEM (NORTH)
Comment: there are no radiocarbon determinations. The presence of **P8** suggests a date probably before the first century AD.

ILLUSTRATED SHERDS
P8 (Fig 23) (2208) fill gully [2007]. Fabric WMG. Body sherd with good burnish, geometric decoration incised with a very narrow-pointed tool, from lower girth of South Western Decorated jar.
P9 (Fig 23) (2208) fill gully [2007]. Fabric WMG. Rim and cordoned neck from Type J storage jar. Internal rim diameter 280mm.

FIELD SYSTEM (SOUTH)
A small piece from ditch [1031] in field system (south) belongs with the main Late Iron Age use of the site.

MISCELLANEOUS
(2367) fill of pit [2366] in the car park produced one WMG sherd 8g and topsoil in field 5 two sherds WMG 4g.

Stonework

Henrietta Quinnell, with petrological comment by Roger Taylor

Sources of materials

Pieces described as 'slate' are of the local Upper Devonian slates upon which the site is situated and could have been obtained very locally, in some cases as water-worn cobbles or boulders from the River Camel or feeder streams. **S8**–**S10** and the numerous notched slates were all locally sourced. The remainder of the stone artefacts were sourced within some 6–7 km from the site, the distance of the nearest beaches (**S3**, **S5**) and of the Tintagel volcanics (**S6** and **S7**). **S1** is probably from Stannon on the edge of Bodmin Moor some 4 km away, much the same distances as **S4**, **S11** and **S12** from the granite aureole. This very local sourcing of stonework is a pattern emerging from recent studies of Middle and Late Iron Age material in Cornwall, where Dr R Taylor has had input on petrology. The large collection, mainly Middle Iron Age and Roman periods in date, from Trevelgue cliff castle was mostly from a few kilometres around the site although a few pieces were around 15 km from source (Quinnell 2011b, 11.4). The smaller collection from the Middle to Late Iron Age settlement at Higher Besore, near Truro, generally sourced from slightly further away, perhaps 12 km or so (Quinnell, forthcoming): the slightly greater distance is probably due to the distance from nearest beaches and the high desirability of beach cobbles for artefacts such as mullers, rubbers and whetstones.

Description of enumerated items

QUERNS AND CEREAL PREPARATION EQUIPMENT
S1 (Fig 24) (5003) SF36 upper fill of gully [5002] enclosure 2; the accompanying pottery indicates a date probably in the mid-second century AD, rather later than the radiocarbon dates suggest (above). Fragment of upper rotary quern, upper surface damaged, grinding surface much worn: damage may relate to deliberate breakage. The groove around the circumference may have held

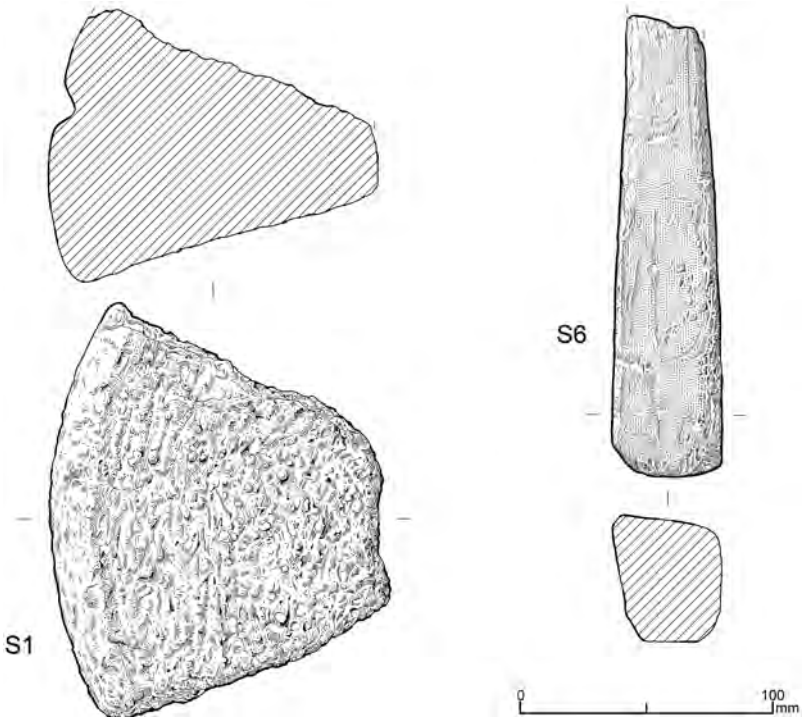

*Fig 24 Worked stone objects. **S1**, upper rotary quern fragment from (5003) upper fill of gully [5002] enclosure 2, **S6**, whetstone from (2018) in terminal of [2017] ring gully enclosure 1. (Drawing: Jane Read.)*

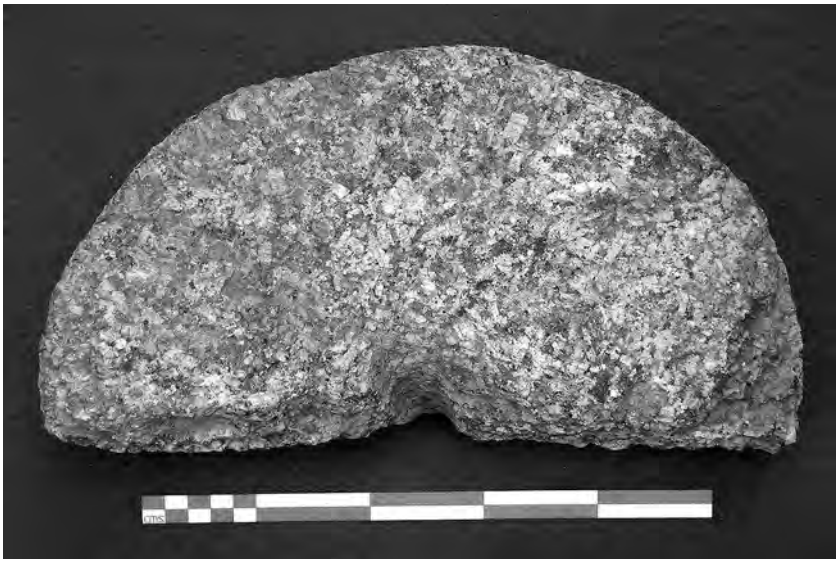

*Fig 25 Rotary quern **S2**, lower rotary quern stone from (2038), fill of gully [2037]/[2035], structure 4. Overall scale length is 250mm in Figs 25–29.*

a rope to secure the handle (Quinnell and Watts 2004, 148). Similar grooves occur on querns from Trethurgy (Treverbyn) (*ibid*, S45), Trevisker (St Eval) (ApSimon and Greenfield 1972, fig 26B), and Carn Euny (Sancreed) (Christie 1978, fig 49). The grooved circumference and the overall shape appear to be features with a long life in Cornwall as the examples quoted are late Roman, first century BC to first century AD, and unstratified respectively. The quern is of coarse megacrystic

muscovite / biotite granite, notable for relatively large plates of muscovite up to 10mm in size and some black tourmaline. A distinctive muscovite granite which could source from around the edges of the Bodmin Moor granite. It may come from the kaolinised area around the Stannon Works some 4 km south west of the site. The texture of the granite, with a large quantity of muscovite mica, causes the quartz crystals to stand out and would have formed a very effective grinding surface (RT). This piece was deposited upside down, that is, with the working face uppermost (**S2** below).

S2 (Fig 25) (2038) SF24 fill of gully [2037], north of structure 4. Half a lower rotary quern stone about 330mm across, central perforation right through stone, 50mm at its top, widening slightly at the base. Very much worn, maximum thickness now 130mm, and some damage before deposition. The radiocarbon determinations from structure 4 strongly suggest activity here belonged to the last two centuries BC. There is no apparent weakness in the rock likely to have caused the fracture and there is a high probability that the quern was deliberately broken. Site records show that the quern was buried upside down, as was **S1**, with a large stone block on top of it, both features which suggest structured deposition. A complete lower stone was buried upside down in pit M4 at Trevisker (ApSimon and Greenfield 1972, 347) and research by Sue Watts (2014) is demonstrating that burial of inverted rotary querns is not uncommon in south west Britain and can generally be related to acts of structured deposition. **S2** is made from a coarse non megacrystic biotite granite. No reason to suppose that this is not from the Bodmin Moor Granite.

S3 not illus (1032) from gully [1031] field system (south) with artefacts of probable Late Iron Age date. Sub-rectangular hump-backed cobble, 200mm by 115mm by 65mm; the lower flat surface shows some wear from use as a muller, probably with a saddle quern: the wear has produced flattened facets on quartz grains within the cobble.

The muller used a fine-grained sandstone Devonian beach cobble and could be sourced from beaches closest to site (RT).

S4 not illus (2367) from pit [2366] in car park area. Fragment of muller using a tabular slab about 50mm thick: part of the flat worn surface survives with its edge trimmed by preparatory pecking. See comment on **S3**; there is no dating from the context of **S4**.

The muller used a river cobble of fine-grained granite with some biotite and a few small feldspar megacrysts which could source from any stream or river flowing around the margin of the granite Bodmin Moor (RT).

S5 not illus (5015) soil over enclosure 2. Broken fragment of cobble muller with slight use 140mm by 105mm by 40mm. See comment on **S3**.

The cobble appears to be a hornblende lamprophyre (vogesite). This variety of lamprophyre is not comparable with the lamprophyres found in Devon and Cornwall and it is likely that the rock is a beach-sourced erratic imported to the site. It can be described as of fibrous cleaved dark amphibole phenocrysts (up to 4mm) with poorly defined margins in a granular matrix of pinkish feldspar (? orthoclase) with some fine-grained amphibole and occasional irregular occelli of quartz (RT).

Whetstones

S6 (Fig 24) (2018) in terminal of [2017] ring-gully enclosure 1. Broken square-sectioned whetstone, 175mm+ by 50mm by 27mm, with extensive wear from use as whetstone along one edge. Radiocarbon determinations indicate a range from Late Iron Age into the Roman period for the context of this piece.

Slightly weathered prolate or rod-shaped block formed by jointing and foliation of the rock which is Tintagel volcanic ash from the Tintagel volcanic formation running eastwards from around Tintagel and 5–6 km from the site (RT).

S7 not illus (2023) fill of gully [2022] in field system. Oval cobble 135mm by 60mm by 32mm with one flat surface showing slight signs of whetstone use. Ceramics suggest a Late Iron Age date for gully [2022].

Highly weathered greenstone cobble: the greenstone could originate from intrusions associated with the Tintagel volcanics. The degree of weathering suggests that **S7** was not a beach cobble but had weathered on the ground surface after some water abrasion from a river (RT).

Disc

S8 not illus (2138) fill of gully [2037] structure 5. Broken disc, roughly trimmed to shape 130mm by 33mm; very much a roughout piece. The limited ceramics and single radiocarbon determination suggests use of structure 5 falls within the first two Roman centuries.

A piece of elvan with feldspar and mica phenocrystst from slightly weathered slab likely to have sourced from local dykes. This is the kind of elvan subsequently used for weights and bowls during the Roman period in Cornwall (Quinnell 2004, 129) (RT).

Holed slates

S9 (Fig 26) (2328) in pit [2327] SF31 in enclosure 1. Holed slab lying partly below **S10**, 570mm by 450mm by 40mm, weight 6000g, split from large boulder of water-worn local slate. More or less central is a hole 50mm across carefully cut from one side but causing some impact fractures on the reverse. The hole is sub-rectangular and has straight sides. This piece has been conserved (project archive).

S10 (Fig 27) (2328) in pit [2327] SF32 in enclosure 1. Holed slab found above **S9** but in good condition, not requiring conservation. Similar dimensions to **S9**. The function of **S9** and **S10** is uncertain. Rather thicker slabs of similar size with the same carefully cut holes were found in Late Iron Age levels at The Rumps (Brooks 1974, fig 36) and considered to be thatch weights. The careful shaping of the holes does, however, suggest that these were designed to take special fitments such as wooden handles: if this were the case the slabs could have been used as large covers. The two slabs **S9** and **S10** together could form a cover to pit [2327] which had collapsed.

S11 not illus (2350) basal fill of gully [2017] enclosure 1. Diamond-shaped slate 200mm by 110mm by 25mm, with a central circular hole 15mm possibly made by a drill from one side. Weight 2883g. This may well have been a weight; the hole shows signs of wear on one side. Radiocarbon determinations indicate a range from Late Iron Age into the Roman period for the context of this piece.

Hornfelsed spotted slate from the aureole of the Bodmin granite, roughly tabular with some surface weathering (RT).

S12 not illus (2208) fill of gully [2207] field system. Diamond-shaped slate 180mm by 95mm by 12mm. Weight 290g. Irregular hole 7mm across pecked from both sides. This may also have been a weight. Ceramics suggest a Late Iron Age date for gully [2022].

Hornfelsed spotted slate from the aureole of the Bodmin granite, some surface weathering. As with **S11** the shape is unmodified (RT).

Cup-marked slate?

S13 (Fig 28) (2080) in paving in structure 4. Slab of local slate, not apparently water-worn, 450mm by 265mm by 100mm. Upper surface slightly worn and small depression pecked in upper surface. This is 55mm across and 5mm deep and is also slightly worn. It is possible that this was an unfinished attempt at a holed slate, as **S9** and **S10**. However, the depression is similar in a general way, although rather more flat-bottomed, to cup-marks, presumed religious symbolism on slabs sometimes associated with Bronze Age barrows in Cornwall (Ashbee 1958, plates 19–20; Hartgroves 1987). Other interpretations for small hollows on stone slabs or blocks are explored by Hartgroves (*ibid*): these, generally small mortars or possibly pivot stones, do not seem appropriate in easily friable rock such as slate and are usually found in hard rocks such as granite.

Quartz block with inset iron

S14 (Fig 29) (5006) in inner ditch [5005] in enclosure 2. Irregular block of whitish vein quartz, not water-worn but occurring locally, 250mm by 200mm by 190mm. This has a small piece of iron set in one surface, which is now flush with it, and probably on the lower side of the block as found. The iron is approximately rectangular and 20mm by 12mm in size: its depth within the block cannot be ascertained. The quartz around the iron does not appear to have impact scars or to have been affected by heat. If the iron had originally been set in the block to be flush with its surface, it could have been hammered into position while still warm enough to be malleable. In this case it is difficult to suggest any practical use. If the iron is the remnant of a rod set into the quartz it could have had a practical use but it is difficult to explain how the iron became set in the quartz without damage to the latter. White vein quartz, both as lumps and as water-worn pebbles, is a frequent find on Early Bronze Age Cornish barrows (for example, Dudley 1964) but there appears to be no known parallel for iron set in vein quartz in this way.

Notched slates

A total of 139 pieces of local hornfelsed slate were noted as having notches cut in their edges (Fig 30). Of these, 31(9) came from enclosure 1, 13 (8) from enclosure 2, 36 (23) from structure 4, 48 (28) from structure 5, and 11 (7) from the field system. (The numbers in brackets are for the

*Fig 26 Large holed slate slab **S9**, from (2328) in pit [2327], enclosure 1 (250mm scale).*

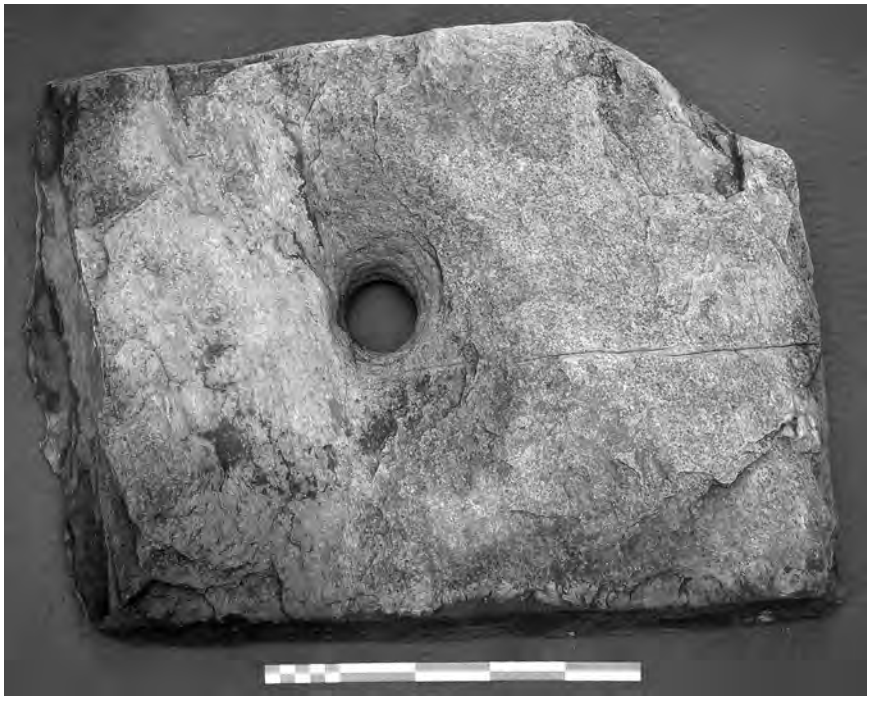

*Fig 27 Large holed slate slab **S10**, from (2328) in pit [2327], enclosure 1, lying above **S9** (250mm scale).*

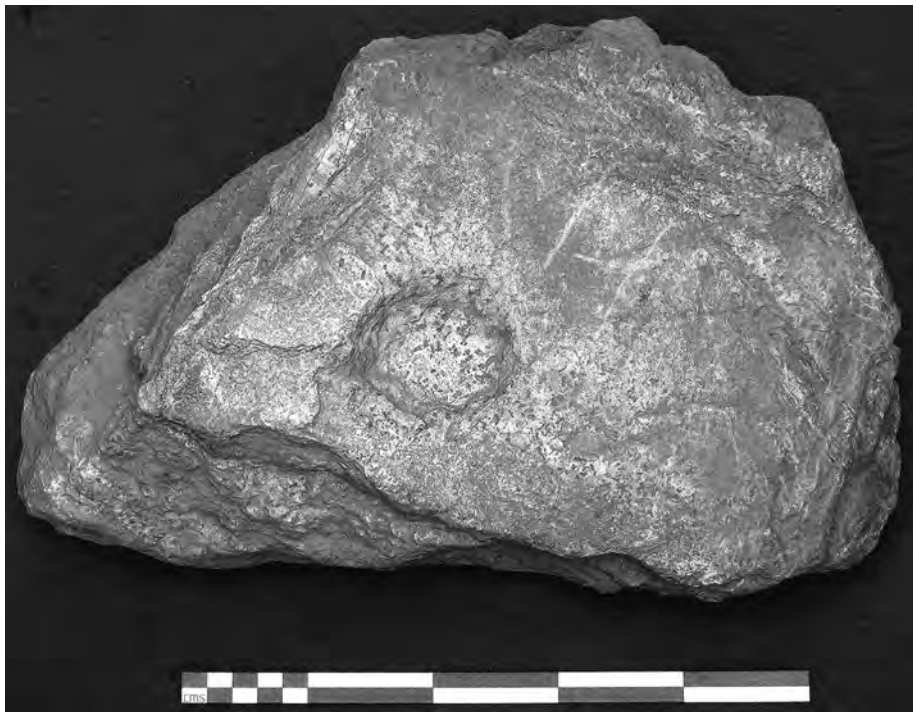

*Fig 28 Cup-marked slate **S13**, (2080) in paving, structure 4 (250mm scale).*

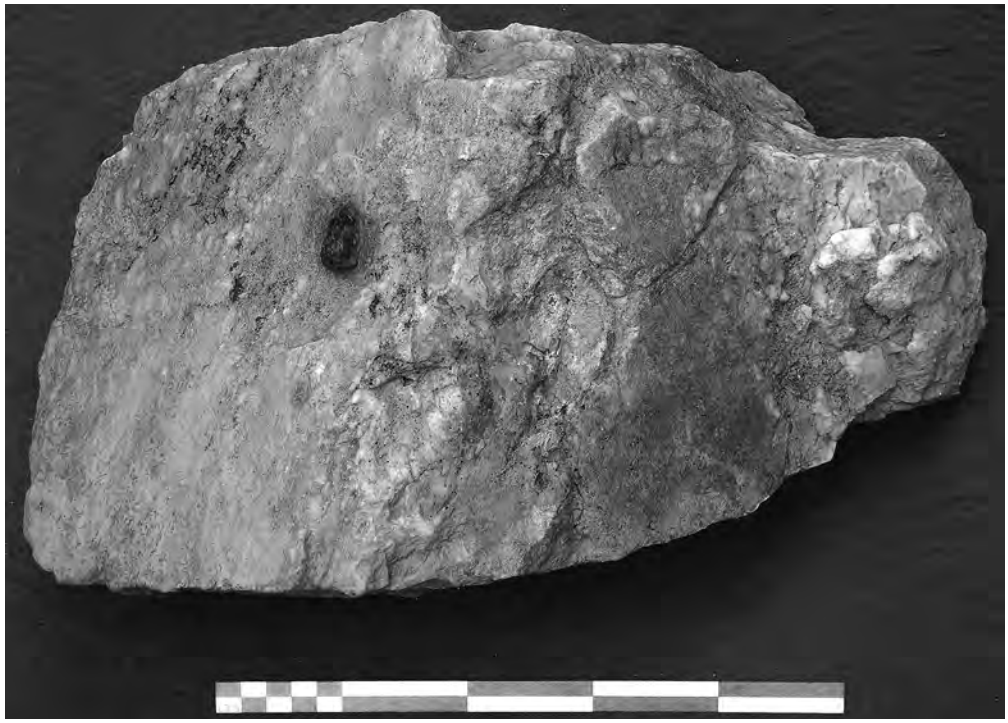

*Fig 29 Quartz block with (left of centre) inset iron, **SF14**, (5006) in ditch [5005] in enclosure 2 (250mm scale).*

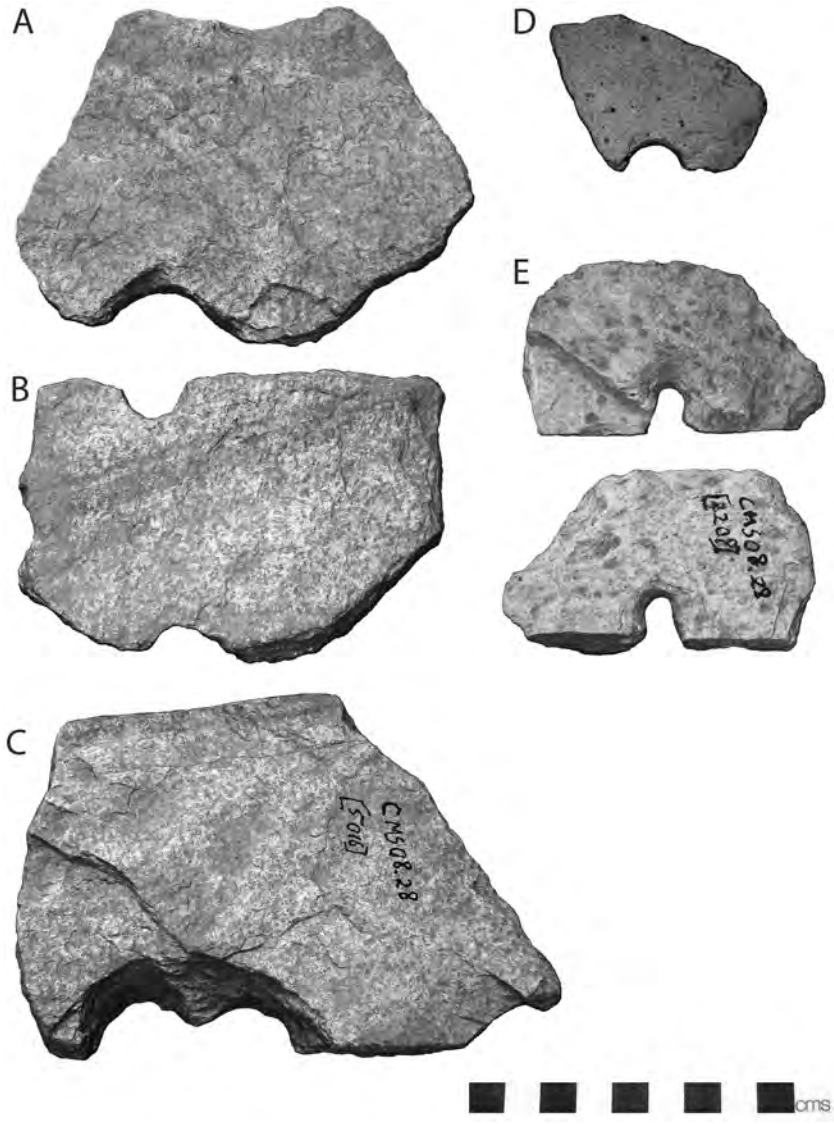

*Fig 30 Notched slates. **A**, from (5003) in ring-ditch [5002], enclosure 2 (top left). **B**, with three notches, from (5003) in ring-ditch [5002], enclosure 2 (middle left). **C**, with adjacent notches, from (5016) in ring-ditch [5002], enclosure 2 (bottom left). Small notched slate **D**, from (2208), fill of ditch [2207] (field system) (top right). **E**, with notch and edge trimming, from (2208), fill of ditch [2207] (field system) (middle and lower right).*

items discarded without record.) Details of the remainder are recorded in an archive table. The size of the slates used varies but most are in the range of 80mm to 130mm across and 20–30mm thick. These notches are generally semi-circular but sometimes deeper or shallower. They are mostly cut from one side (Fig 30), occasionally from both sides. Figure 31 shows both sides of an unfinished hole; on one side is the hole made by the first blow on a punch, on the other side a ring caused by the impact fracture although the centre has not fallen out. Probably most of the notches were made with a punch. The notches generally were in the range of 10mm to 40mm across and did not appear to be worn. Some slates have several notches, sometimes positioned opposite each other. Sometimes parts of the edges of the slates were trimmed, but more usually a piece has been used without modification. It is quite possible that artefacts with a variety of functions have been grouped together here. However, the overall impression is that the most likely use of the notches was to help secure a lashing, if the slates had been attached to some tool to provide weight.

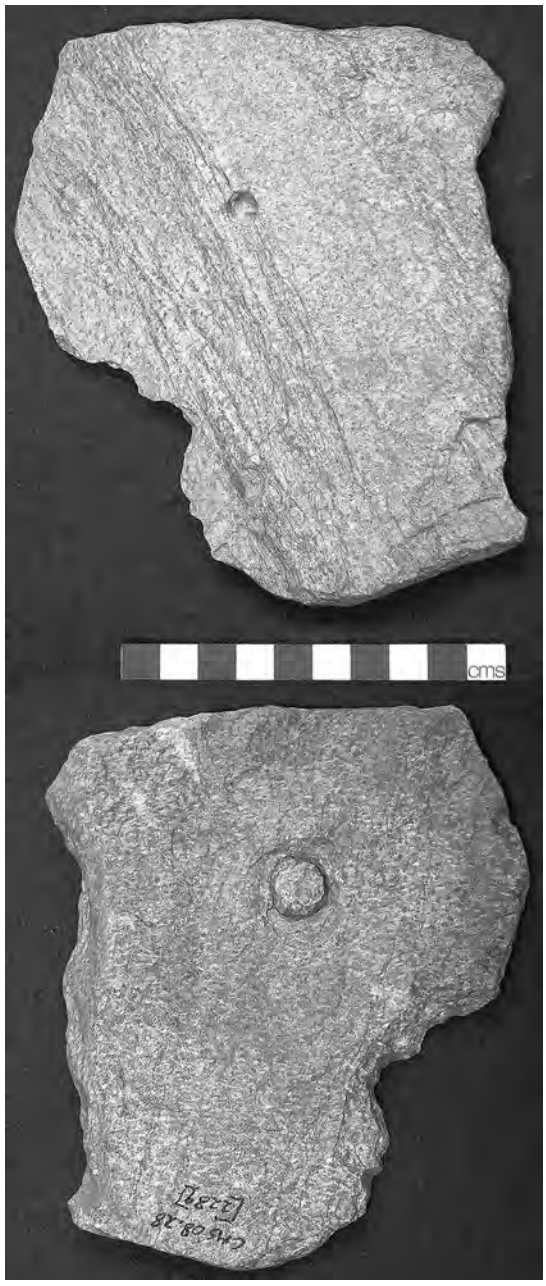

Fig 31 Notched slate F, from (2289) in structure 5 ring-gully. Both sides of a slate with a central unfinished hole. Above: the impact mark left by a punch; below: the ring caused by the impact. In this case the blow was not sufficient to cause the central core to fall out.

Only one other site, dug to modern standards, has produced an assemblage of notched slates. This is the Middle to Late Iron Age open settlement at Higher Besore (Quinnell, forthcoming). There some 40 slate pieces had notches, but the slate was softer, the notches were smaller and some at least had evidence of wear, possibly from working sinews or fibres. It appears that the use of notched slates is a localised feature developed on some sites with suitable slate but for different purposes.

Pebbles

Seven pebbles between 17mm and 39mm across were found: in (2018) white vein quartz beach pebble, in (2023) one vein quartz pebble with river wear and one sandstone river pebble, in (2036) a silicified sandstone breccia beach pebble with high polish, in (2328) white vein quartz beach pebble, in (2367) a quartzitic sandstone beach pebble with reasonable polish and in (5003) slightly yellow stained vein quartz beach pebble. These had been collected from local rivers and beaches, presumably as talismans or curios. They show no helpful concentration.

Comment

The assemblage is small and the absence of items such as rubbing stones likely to have been used in the preparation of leather is not meaningful. All the items present have general parallels in assemblages from sites with Late Iron Age activity such as The Rumps (Brooks 1974): the exception here are the notched slates discussed in some detail above. The Late Iron Age in Cornwall is now seen as starting towards the end of the second century BC (above).

The continuing use of saddle querns alongside rotary querns through the Roman period in Cornwall is well established (Quinnell 2004, 151) and explains the presence of fragmentary mullers **S3**–**S5** used with saddle querns. The date of introduction of rotary querns into Cornwall is not yet clearly established. Sites such as Castle Dore (St Sampson) (Radford 1951, 75) produced fragments of rotary querns but no detail is available and the ceramics indicate both Middle and Late Iron Age activity. **S2** the half lower rotary quern from (2038) fill of gully [2037] close to structure 4 could potentially be one of the earliest rotary quern stones from Cornwall from a well-dated context as the pottery from the structure is all of Late Iron Age Cordoned ware. If rotary querns were an

introduction to Cornwall in the first century BC this would be entirely in accord with the data from other sites in the county. There is no reason to expect that a similar date for the introduction of this type of quern should apply throughout south-west Britain. In Somerset at Cadbury (Bellamy 2000, 211 and table 2) rotary querns appear broadly in the third century BC, later than the later fifth century indicated for Danebury in Hampshire. In Devon the only site with rotary quern fragments with associated radiocarbon dating is the Blackhorse enclosure near Exeter: associated ceramics are Middle Iron Age South Western Decorated ware but dates are broad with a calibrated range of *c* 370–30 BC (Fitzpatrick *et al* 1999, 178 and table 58). (I am grateful to Sue Watts for discussion of this topic.)

Flint

Anna Lawson-Jones

The excavations produced a small assemblage comprising 14 pieces of worked flint (Table 9), five of which have been illustrated (**L1** to **L5**, Fig 32). The material is of Late Neolithic to Bronze Age date, and on the basis of the corticated pieces, is made on pebble flint probably collected from the nearest beaches. Cornish beaches are composed of up to 50 per cent flint and chert (Rogers 1923) and offered a good, local raw material source used throughout the prehistoric period.

The vast majority of the flint is of good quality, uniformly dark colour. Four pieces were paler, three being notably pale and milky in appearance, probably reflecting the natural range of flint from local beaches. Further west beach flint tends to be greyer and increasingly mottled. Superficially much of the dark flint is very similar to nodular flint found in south-east Devon at Beer Head (Tingle 1998), and closer still in western Devon (Newberry 2002). However, the soapy texture of some of the pieces may suggest the use of heat treatment (for example, **L5**). Hard hammers were used during core reduction and the initial formation of blanks. Soft hammers were then used, probably in conjunction with hard hammers, to modify and retouch these pieces to form tools.

Analysis

Approximately one third of the flint has been categorised as waste material discarded without use. It includes a cortical flake from (2082), a tested pebble (2208), two pieces of tool manufacturing

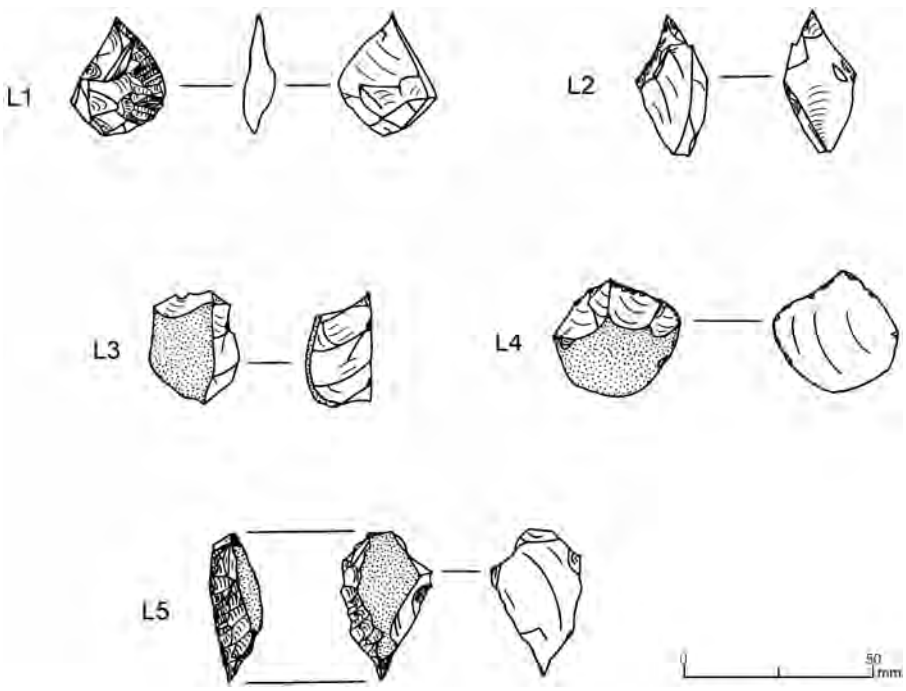

*Fig 32 Flints (later Neolithic to Bronze Age): **L1**, leaf-shaped arrowhead; **L2**, borer; **L3**, core tool; **L4**, scraper; **L5**, side scraper. (Drawings: Anna Lawson-Jones.)*

Table 9 Flint

Feature group	*Context*	*Form*	*Description*
Beaker pits	(1026) <107>	Waste flake	From pit [1025]. Small, dark, tertiary flakelet. Tool manufacturing debitage.
Beaker pits	(1028) <108>	Triangular – leaf shaped projectile **L1**	From pit [1027]. Chunky, part pressure flaked, tertiary leaf shaped arrowhead. Retouch along one edge. No damage at sharp narrow point, broad – near bulbous side profile.
Field system (north)	(2023) Slot 2 (2a)	Piercer **L2**	From ditch [2022]. Retouched on one side, slight use wear. Made on a tertiary flake. Slight backing for hand held use.
Structure 4	(2060)	Waste	From gully [2059]. Small chunk of good quality, tertiary flint waste (tool manufacturing debitage).
Structure 4	" "	?Squat borer	From posthole [2059]. Small, pyramidal shaped chunky piece from a retouched larger piece – possibly use as a short broad borer.
Structure 4	(2064)	Core tool **L3**	Floor deposit. Pale, multi-platform pebble flake core. ?Slashing use or light scraper wear on sharp, partially denticulated edge only.
Structure 4	(2067) <21>	Scraper **L4**	Ephemeral posthole/pit. Non-retouched, convex edged, rounded flake. Neat, nibbled, dorsal retouch. Small, bifacial use wear on working edge.
Structure 4	(2082) <34>	Waste flake	Fill of drain [2083]. Primary flake – core preparation.
Structure 4	(2124)	Core tablet	Fill of gully [2123]. Abandoned waste. Pebble core tablet. Good quality dark flint.
Structure 5	(2138)	Miscellaneous tool	Fill of ditch recut [2382]. Good quality, dark, tertiary flake. Pronounced edge damage causing denticulation. On an opposed platform core flake.
Field system (north)	(2208) Slot 5	Struck pebble	Fill of ditch [2207]. Struck flint pebble. Possibly through hammer use.
Enclosure 1	(2337) Slot 2	Pebble chopper	Fill of ditch [2017]. Pale, barely modified pebble flint chopper with crushed working edge made on a near keeled core
Miscellaneous	(2368)	Flint pebble	Fill of pit [2366]. Unused, small oval flint pebble.
Miscellaneous	(7002)	Side scraper **L5**	Subsoil. Heat treated/altered cortex. Steep, neat, good quality 75° retouch. Little if any wear. Flaked modification/backing and corticated dorsal face to facilitate hand held use.

waste (1026) and (2060), and a probable core tablet (2124). These pieces indicate on-site core preparation, reduction and tool manufacture.

The triangular, leaf-shaped projectile **L1** from (1028) and the small waste flake from (1026) are of interest because they come from a pair of small, apparently undisturbed pits containing Beaker pottery (Quinnell, above). Neither piece shows any heat damage despite their inclusion within fills containing abundant charcoal and burnt bone. The waste flake is sufficiently small and apparently characterless to suggest accidental inclusion within the fill, but the larger leaf-shaped flint is not. This distinctively pale piece is near pristine. It is sharp, complete, and perfectly leaf-shaped, with limited but neatly executed invasive retouch extending up from one edge only on to the dorsal surface. This piece appears entirely functional when viewed on its dorsal face, with little modification over and above what was required. Superficially it would fall within Devaney's (2005) 'domestic' range of late leaf-shaped arrowheads. However, its ventral side has not seen modification and has a pronounced ridge giving the piece a chunky profile.

Leaf-shaped arrowheads were produced from the Early Neolithic right through to the Bronze Age (Green 1984; Edmonds 1995). This piece still retains its bulb and platform, suggestive of it being a later form (Butler 2005, 123). The south west as a whole has produced a number of leaf-shaped and other triangular arrowheads (Quinnell 1999), and a securely dated assemblage of Early Neolithic leaf-shaped arrowheads was found at Carn Brea (Carn Brea) (Saville 1981). Comparison between the Carn Brea arrowheads and the Camelford example clearly shows the contrast between more finely worked, heavily retouched arrowheads, such as those associated with warfare at Carn Brea, and

this later, perhaps more everyday hunting form with only enough retouch present to confirm or imply its function. The fact that its narrow point appears to be pristine, unused, suggests that it was specifically made, not for use, but perhaps for deposition. Its presence in a small pit suggests that its inclusion was deliberate. It appears to represent part of a larger Late Neolithic pattern of deposition (Edmonds 1995, 115; Thomas 1999, 72), which extended into the earlier part of the Bronze Age. Recently a similar very pale grey, heat discoloured leaf-shaped arrowhead was found in a single pit near Boscastle (Forrabury and Minster) (Lawson-Jones 2014, 72). It too was only minimally retouched on the dorsal face and left unmodified on its ventral side. Interestingly, this piece was found thrust down, point first into the burnt pit fill. Both pieces would seem to represent token, symbolic arrowheads rather than complete pieces fit for use.

The piercer **L2** from context (2023) and the squat, lightly used borer from context (2060) are two very different looking examples of a basic tool type commonly found in later Neolithic and Bronze Age assemblages. This type includes a variety of points, piercers, borers, and awls, which will have been used to perform a range of tasks. These tools became increasingly varied and more numerous in later Neolithic and Bronze Age assemblages. The utilised flake from (2138) has been detached laterally from an opposed platform core. Its ventral face shows distinct, hard hammer-like flaked damage associated with use, potentially as a result of focused pressure on a hard object. It had a short, straight working edge which became 'ragged' or denticulated through use. All three were found in contexts that produced later pottery forms indicative of disturbance.

Side scraper **L5** (7002) has a long, slightly convex working edge that is semi-abruptly retouched with neat, regular overlain removals, which extends up to the corticated back. The opposing lateral edge has been backed or blunted by the removal of occasional, short, steep flakes, again connecting with the retained cortex. No clear evidence for use was identified, either along the scraper edge or at the potential point end. This piece represents the most heavily retouched piece in the assemblage and although found in subsoil, it may well have been made as a 'special' piece, with its pre-knapping heat treatment (identified through its altered chalky-looking cortex) and retouch apparently exceeding what was essentially functional. The heating of flint prior to knapping has been shown to significantly improve working, allowing for a marked improvement in control (Pannett 2011, 247–55). It has also been found to considerably alter flint colouration (Lee 2001, 39). If the appearance, as well as the function of this particular piece was considered important, it is likely that the use of heat in this instance had a double significance.

Scraper **L4**, a residual find in (2067), is a delicately retouched, well-formed flake with a sharply convex, almost nose-shaped but shallow working edge. This piece has seen use, indicated by small removals most clearly visible along the ventral working edge. The dorsal face retains approximately 70 per cent of its pebble cortex, which will have greatly eased hand-held use, allowing pressure to be applied without slippage during the carrying out of sticky or wet tasks. This retention of cortex is often seen in Cornish pebble flint assemblages. It represents a natural backing, facilitates hand-held use, and minimises the loss of flint from an already restricted pebble core in terms of size. Scrapers represent one of the most frequently found later Neolithic and Early Bronze Age tool forms (Edmonds 1995, 96, Butler 2005, 166, Saville 2011, 3). Many have marked abrupt or semi-abrupt retouch. This well-formed flake has minimal, short, semi-abrupt retouch and was clearly designed for fine rather than heavy duty use.

A pebble chopper from ditch fill (2337) is a superficially simple, comfortable to hold piece, which shows distinct crushing along its formerly sharp working edge. This piece was made in much the same way as a keeled core is reduced, and has a slightly tranchet-like flake removed from the edge to produce an approximately 45-degree working edge. Subsequent use has blunted and shattered this edge. The piece is made on a distinctively pale, uniformly milky-grey flint pebble. The vast majority of the piece is corticated with a notably thin, smooth cortex which has a single, narrow, near complete, natural sunken circuit or fault which runs around its upper girth. This may have eased hand-held use and limited slippage.

Core tool **L3** (2064) is a short, chunky, pale, partially corticated piece. It has short, abrupt, near 90-degree hard-hammer flaked removals, some of which are partially concave in profile. The whole piece has been removed from a larger core with a single blow, removing an entire section of the

pebble. Where the flake scars abut this final break, a sharp, steep denticulated edge has been formed, superficially looking like a nosed scraper. This piece is tricky to hold or grip comfortably and does not appear to have been hafted. Despite this there are slight signs of probable wear, present on the sharp denticulated edge only. This piece could potentially have been used either to slash through something, perhaps meat, or as a very steep-faced, deep scraper. This piece is likely to be of Early to Middle Bronze Age date.

Discussion

In conclusion, this assemblage reflects a later Neolithic to Bronze Age period of activity. It includes examples of a number of the most frequently found tool forms associated with sites of this period. Very few of the pieces show continuous or long-term use, giving the impression of short-term use, but potentially spanning several different short-term events or activities. The lack of copious amounts of waste, heavily used or broken tools discarded following use, or frequent burnt or surface abraded material is not typical of a fixed settlement site, although it should be borne in mind that mechanical stripping and removal of the topsoil will have significantly reduced the total assemblage. The two most 'interesting' pieces should probably be regarded as the leaf-shaped piece **L1** – probably made for commemorative deposition rather than use, and placed in a pit – and the finely-worked side scraper **L5** with its meticulous workmanship aided by the use of heat treatment but which shows a significant lack of use. Both pieces are suggestive of 'specialness' and hint at more than domestic, mundane routine, and instead imply a ritualised approach towards certain, possibly regularly undertaken, activities.

Ironwork
Henrietta Quinnell

Five contexts have ironwork which belongs to the Late Iron Age to early Roman period activity.

Fill (2364) of pit [2363] in the terminal of gully [2017] in enclosure 1 has the L-shaped head of a small nail, the broken rectangular shank of which is about 6mm across; this type is comparatively rare in Britain (Manning 1985, 135). Buried soil (2336) in enclosure 1, overlying ring-ditch [2324], has a broken nail shank about 9mm across surviving 60mm long rather rounded in cross-section. Fill (5017) of gully [5002] in enclosure 2 has part of an L-shaped-head nail with an oval-sectioned shaft 9mm by 7mm across and 400mm long. Fill (1032) of medieval ditch [1031] south of the school has a complete tack 32mm long, with a rectangular-cross-section shank 5mm by 33mm and a slightly expanded head. Fill (2040) of pit [2039] by structure 4 has a fragment of iron plate 3mm thick, surviving 30mm by 27mm; this could be part of a knife. The presence of nails is a strong indicator of Roman influence; these are very rarely found in pre-Roman contexts, with only a single example each from The Rumps (Brooks 1974, 48), considered a possible pot rivet, and from St Mawgan-in-Pydar (Threipland 1956, fig 36, no 17). Activity at The Rumps appears to have ended before the arrival of Roman influence but St Mawgan-in-Pydar continued until a date well into the second century AD (H Quinnell, pers comm). At Camelford the radiocarbon dating from enclosures 1 and 2 allows for some activity at the very beginning of the Roman period.

Iron slag
Dr Tim Young and Thérèse Kearns

Methods

All investigated materials were examined visually using a low-powered binocular microscope where necessary and were summarily described and recorded to a database (Table 10). As an evaluation, the materials were not subjected to any form of instrumental analysis. The identifications of materials in this report are therefore necessarily limited and must be regarded as provisional.

Results

The assemblage included the following classes of materials:

1. Flake hammer-scale: residues from (2172) contained a small proportion of flake hammer-scale with a collection mainly of magnetic (presumably burnt) rock fragments. Flake hammer-scale is produced when the surface of hot iron oxidises in air. It is indicative of a smithing process.
2. Fired clay: six fragments of oxidised fired clay occurred in (2060), (2138), (2150) and (2168). These fragments were all small.

Table 10 Summary catalogue of metalworking residues

Context	*Sample number*	*Weight (g)*	*Number*	*Description*
Structure 4				
Phase 2: construction				
(2060), linear gully [2059]		<1	1	Fired clay
Phase 3: Occupation				
[2157], fill of ring-ditch [2035]		22	5	Fragments of fired clay, vitrified surface
Exterior features				
(2038), linear gully [2037]		27	1	Fragment of coarse fired clay, oxidised on one side, thin layer of vitrification on the other
Structure 5				
Phase 1: Construction				
(2150), linear gully [2149]		4	1	Small fragment of fired clay, partially oxidised
(2168), pit [2167]		18	3	High-fired vesicular clay
(2172), pit [2171]		9	1	Blebby slag
(2172), pit [2171]		10	1	Small piece of slag with charcoal moulds
(2172), pit [2171]	53	7	1	Bleb of indeterminate slag
(2172), pit [2171]	53	12		Relatively large fragments of coarse magnetic material (hammerscale)
(2172), pit [2171]	53	262		Fragments of stone and small quantities of flake hammerscale
Phase 3: reuse				
(2138), recut [2382]		2	1	High-fired clay

These fragments are not indicative of process. Although they might derive from a metallurgical hearth or furnace, there are no diagnostic features to discriminate them from clay fired in other settings.

3. Fired clay with a vitrified surface: clay fired to a sufficiently high temperature to develop vitrification of the surface is usually an indicator of metallurgical activity. These six pieces, one from (2038) and five from (2157), are likely to derive from a metallurgical hearth or furnace, but are not diagnostic of a more detailed origin.
4. Iron slag: three tiny (total 26g) pieces of slag were recovered from (2172). The slag shows superficial moulds indicating the position of charcoal fragments during the formation of the slag. These moulds are small, compatible with the size of charcoal typically employed during smithing and smaller than the moulds (of wood?) typical of Iron Age iron smelting slags.

Interpretation

The very limited quantity of material precludes detailed interpretation. The focus of activity would appear to be around the area of structure 4 and structure 5. Shallow scoop [2171] might potentially be an actual site of activity, but there is insufficient evidence to demonstrate this. The presence of flake hammer-scale and small slag fragments with charcoal moulds is indicative of iron working (smithing). There is no material which need be from iron smelting. The very small quantity of material recovered provides circumstantial evidence that small-scale smithing was undertaken on the site, possibly as a very occasional activity. This means it is more likely that the smithing undertaken was blacksmithing (the end use of iron) rather than primary bloomsmithing (part of the process of iron production).

Environmental analyses

Burnt bone

Clare Randall

This is a small collection of bone that is heavily fragmented and in poor condition. Only a handful of fragments could be identified to species, and most of the bone only survived because it was calcined. However, it is of interest due to the positioning of the majority of the bone in a ring-ditch terminal.

Methods

Each bone fragment was identified where possible to element and species, and where this was not possible, to Large Mammal (cattle sized), Medium Mammal (sheep sized) and Unidentified Mammal categories. Identification was carried out using comparative collections and with reference to Hillson (1992) Schmid (1972) and Hillson (2005) for domestic mammals and Yalden (2003) for small mammals. Zones were recorded where possible for each anatomical element using the Maltby / Hambleton method (unpublished). Bone porosity was recorded for all fragments, and each fragment examined for fusion information. The percentage of the element present was estimated and recorded to the nearest five per cent for all identified fragments. Each fragment was also examined for breakage patterns, gnawing, and weathering indicators. Burnt bone was recorded by colour (buff, brown, grey, black, and calcined). The condition of all fragments was assessed on a five-point scale through poor, poor–average, average, average–good, and good.

Results

The main deposits in contexts (2364) and (2370) weighed 47g and 2g respectively. A total of 1174 fragments of bone were recorded, of which 18 were unburned. The unburned bone was in very poor condition, while the burnt bone was all under 10mm and generally less than 5mm. It is therefore unsurprising that only four fragments could be identified to species.

Table 11 Burnt bone, species representation by feature/context. Number of Identified Specimens only

Context	*Cattle*	*Sheep/goat*	*Large mammal*	*Medium mammal*	*Unidentified mammal*	*Main Total*	*Small mammal*	*Total*
Enclosure 1								
Ring Ditch: Phase 3: use								
(2345)	1					1		1
Ring Ditch: Phase 4: re-use								
(2365)					1	1		1
Terminal pit								
(2364)			10	30	1023	1063	1	1064
(2370)		1		4	97	102		102
Sub-total	1	1	10	34	1121	1167	1	1168
Enclosure 2								
Inner Ring Ditch: Phase 2								
(5006)					3	3		3
Sub-total					3	3		3
Iron Age Field system								
Ditch								
(2023)				1		1		1
Sub-total				1		1		1
Post medieval field system								
Ditch								
(7002)	1					1		1
B1	1					1		1
Sub-total	2					2		2
Total	3	1	10	35	1124	1173	1	1174

Species representation

The species represented are given in Table 11. Very few fragments could be identified to species due to the degree of fragmentation; two of these were of post-medieval date. While it cannot be entirely ruled out, there is no evidence to suggest that any of the bone is human in origin. Little can be inferred of the husbandry regime or consumption choices, although the proportion of large to small unidentified mammal, if it equates to cattle and sheep / goat, would be a consistent proportion to that seen in assemblages across the south west of Britain in the Iron Age and Romano-British periods (Randall 2010).

Element representation and distribution

The presence of skull, vertebral, rib, and long bone fragments in the deposits from the terminal pit in the ring-ditch indicates that a full range of body parts was included. The concentration of the majority of the material into these two contexts is notable, although we do not know how it related to the original distribution of unburned bone.

Taphonomy

The majority of the bone has been burned. The unburned bone was generally in very poor condition, including several teeth, indicating that although it is likely that more bone was deposited on this site, the hostile ground conditions have not permitted its survival. The burnt bone is completely calcined, with only a couple of fragments showing a slight grey colouration. This is indicative of high temperature burning and / or longer duration of burning. The uniformity of the calcination implies that the burning was controlled to ensure the full combustion of the material. The small fragment size (with virtually nothing exceeding 10mm in diameter, and most material is much smaller) may indicate deliberate manipulation and breakage prior to deposition. To all intents and purposes these two pit deposits have many of the characteristics of a human cremation deposit.

Species: age and population structure, metrics, pathology

In the Iron Age material, only one fragment of cattle, an unburned maxillary molar fragment in poor condition, was recorded, and appeared to relate to the permanent dentition. The single sheep / goat fragment from the terminal pit was the mid shaft area of a metatarsal and supplied no further information. Four fragments of medium mammal from the terminal pit were porous, indicating the possibility of more than one animal and different age groups possibly being included.

Butchery

No cut marks were noted.

Wild mammals

Wild mammals were represented by a single fragment of small mammal, the tibia of a field vole-sized rodent. It is likely that this was an accidental inclusion, either lying under the point of combustion, or present in a mixture of material gathered for burning.

Comment

It is unusual for discrete deposits of fully calcined material to be noted in later prehistoric contexts. Burned bone is not unusual and generally occurs at three to five per cent of Iron Age assemblages. Although we can postulate here that the unburned proportion of the assemblage does not survive due to acidic ground conditions, the concentrated nature of the deposits in the terminal pit place them apart from normal discard practices. While there may be under-recording of burned animal bone (frequently being excluded from analysis due to its lack of ability to provide significant insight into site economy), there are very few recorded instances of concentrated groups of material like this. However, a similar sized deposit of fully calcined bone, apparently exclusively sheep / goat, occurred in a small cut into the fills of a Middle Iron Age pit at Sigwells, Somerset (Randall 2006). In that case, the bone preservation on the site was average–good, and this was clearly a deliberately different deposit, carefully placed. The location of the burned material from the Camelford school ring-ditch, in a cut into the fills of the terminal, may imply similarly deliberate placement. The complete combustion of the material, and the care implied in its burning, collection, and deposition may indicate a specific ritual action.

Plant macrofossils

Julie Jones

In total 100 palaeoenvironmental samples were taken from features and layers, in most instances

of 40 litre volume, apart from small features such as posthole fills, where 100 per cent sampling was used.

The samples were processed to a minimum mesh size of 250 microns. The dried floats were then sent to the author for extraction and identification of charred plant remains. The results are shown in Table 12. Identifications were made with reference to Jacomet (2006) for the cereal remains and Cappers, Bekker and Jans (2006), as well as the author's reference collection for seed identification. Nomenclature and habitat information follows Stace (1991).

Preservation of macrofossils was by charring. Much of the charcoal and plant remains were coated with a fine layer of sediment which made some identification difficult. Overall the cereal grain was in fair to poor condition, with evidence of blistering, fragmentation and loss of the testa (outer coat of the cereal) from the charring process, rather than post depositional damage. Cereal chaff was similarly fragmented, although in contrast, many of the weed seeds were in a better state of preservation, as were the fairly fragile spines from gorse which were consistently present throughout the sampled contexts.

Cereals

Wheat (*Triticum***)**
The majority of the grain identified was wheat, occurring in 21 of the 100 samples, mostly as single occurrences, or 2–3 grains. The exception is from pit [2363] cut into the terminal ditch in enclosure 1, although even here fewer than 20 grains occur. Much of the grain was in poor condition although some showed the long slim form characteristic of glumed wheat, either emmer (*Triticum dicoccum*) or spelt (*Triticum spelta*). Similar low concentrations of wheat chaff also in poor condition, with only the very basal area of the glumes and spikelet forks preserved, were unable to further aid identification.

Barley (*Hordeum*)
Barley also occurs in low concentrations, present in only six samples and surface erosion meant that many of the grains could not be identified beyond barley (*Hordeum* sp.). Barley rachis internodes were only recovered from three samples.

Oat (*Avena***)**
Oat was recorded in 13 samples mostly as single examples, with the exception of pit [2363] in enclosure 1. No chaff was recovered to suggest whether these were wild or cultivated oats.

Wild plants

Wild plants which may have been deliberately collected include hazel, found as nut fragments (*Corylus avellana*), willow (*Salix*), from buds and a Rosaceous species (spines of hawthorn (*Crataegus monogyna*) or sloe (*Prunus spinosa*)). While hazelnuts may have been food plants, it seems more likely that all these taxa represent wood collected as fuel.

Of particular interest was the recovery of gorse (*Ulex*) spines, which occurred in 12 samples, once again most frequently associated with pit [2363] where there were also charred gorse stems. Gorse and bracken (*Pteridium aquilinum*), the pinnules of which occur in several samples, are heathland or woodland edge taxa that may also have been collected as fuel.

Weeds

The weed seeds recovered are a combination of arable and grassland taxa and as with the cereals occur at low concentrations. Arable weeds include brome (*Bromus*), black bindweed (*Fallopia convolvulus*), pale persicaria (*Persicaria lapathifolia*) and knotgrass (*Polygonum aviculare*) which are likely to have occurred as impurities amongst the cereal crops.

Grassland taxa include ribwort plantain (*Plantago lanceolata*), dock (*Rumex*), clover / medick (*Trifolium* / *Medicago*) and grasses (Poaceae). Grassland taxa frequently occur in association with more typical arable weeds, more suited to the disturbed soils of cultivation and have been interpreted as invasive species from grassy field margins, or forming part of the seed bank from periods when fields were allowed to lie fallow.

There is also limited evidence from occasional unidentified root fragments and nodules in several samples where grassland taxa also occur that may indicate uprooted plants or collection of turf. Heath-grass (*Danthonia decumbens*), a tufted perennial of moors and heaths is also one of the indicators of imported turf. It may therefore be possible to suggest the burning of turves for fuel or possibly used in pyres associated with the ceremonial structures investigated.

Table 12 Charred plant remains

Context	*Sample*	*Feature*	*Flot size (ml)*	*Sample composition*	*Macros*	*No.*
Neolithic/Early Bronze Age pit						
(1028)	108	Fill of pit [1027]	400	pred. charcoal	*Corylus avellana*	17 frags
Enclosure 1						
Ring ditch: Phase 2: construction						
(2326)	73	Fill of [2324]	1	charcoal/mineral	none	
(2346)	72	Fill of [2324]	<1	charcoal/mineral	none	
(2350)	67	Primary fill of [2017]	11	mineral/charcoal	none	
Ring ditch: Phase 3: use						
(2018)	62	Upper fill of [2017]	100	pred. charcoal	*Corylus avellana*	1 frag
(2325)	69	Upper fill of [2393], recut of [2324]	11	pred. charcoal/ mineral/roots	*Ulex* (spine)	1
(2328)	65	Lower part of (2328) in pit [2327]	80	pred. charcoal/ sediment	*Triticum* (hulled grain)	1
					Carex	1
					Danthonia decumbens	1
					Plantago lanceolata	1
					Ulex sp (spine)	9
(2328)	64	Top part of (2328) in pit [2327]	125	pred. charcoal	*Triticum* (hulled grain)	1
					Carex	1
					Persicaria maculosa	1
					Rosaceae (spine)	1
					Ulex (spine)	20
(2337)	63	Fill of [2017] below (2018)	23	pred. charcoal/mineral	*Triticum* (hulled grain)	1
					Bromus	1 frag
(2345)	68	Fill of [2393], recut of [2324]	2	mineral/rare tiny charcoal	Poaceae	1
(2345)	70	Fill of [2393], recut of [2324]	3	pred. charcoal	*Avena* (grain)	1
(2349)	66	Primary fill of [2327]	60	pred. charcoal	*Triticum* (hulled glume base)	1
					Triticum (spikelet fork)	1
					Bromus	1
					Pteridium (pinnules)	2
					Ulex sp (spine)	52
Ring ditch: Terminal pit						
(2364)	71	Upper fill of pit [2363]	80	pred. charcoal	*Avena* (grain)	3
					Avena (grain – embryo end only)	8
						12 frags
					cf Avena (grain)	3
					Hordeum (grain)	8
					Triticum (hulled grain)	8 frags
					Cereal indet	4 + 5 frags
					Bromus	1
					Persicaria maculosa	1
					Polygonum aviculare	5
					Ulex (spines)	
(2364)	76	Upper fill of [2363]	600	pred. charcoal	*Avena* (grain)	16 + 5 frags
					cf Hordeum (grain)	1
					Hordeum (rachis internode)	1
					Triticum (hulled grain)	24
					Triticum (grain)	2
					cf Triticum (grain)	3
					Triticum (hulled glume base)	22
					Triticum (spikelet fork)	5
					Cereal indet (grain)	12
					Bromus	6
					cf Bromus	2

Context	*Sample*	*Feature*	*Flot size (ml)*	*Sample composition*	*Macros*	*No.*
					Carex	1
					Ulex (spines)	76
					Ulex (stem frags)	18
(2370)	77	Primary fill of [2363] cut into terminal of [2017]	200	pred. charcoal	*Avena* (grain)	5
					Hordeum (grain)	1
					Hordeum (rachis internode)	1
					Triticum (hulled grain)	15
					cf Triticum (grain)	2
					Triticum (hulled glume base)	6
					Triticum (spikelet fork)	4
					Bromus	3 + 1 frag
					Plantago lanceolata	2
					Poaceae	1
					Raphanus raphanistrum (pod frag)	1
					Ulex (spines)	6
Enclosure 2						
Phase 1						
(5003)	82	Upper fill of [5002]	30	pred. sediment/ mineral/occ charcoal	*Plantago lanceolata*	1
					Poa/Phleum	1
(5011)	81	Fill of small ditch [5010]	59	charcoal/sediment	none	
(5016)	78	Fill of [5002]	<1	rare charcoal/mineral	none	
(5016)	79	Fill of [5002]	<1	charcoal/mineral	*Chrysanthemum segetum*	1
(5016)	84	Fill of [5002]	<1	mineral/occ charcoal	none	
(5017)	86	Fill of [5002]	1	charcoal/roots/ mineral	none	
(5018)	88	Fill of [5002]	15	mineral/charcoal	*Hordeum* (grain)	1
(5018)	88	Fill of [5002]	20	pred. sediment/ occ charcoal	none	
(5019)	90	Fill of [5002]	<1	charcoal/mineral	none	
(5019)	91	Fill of [5002]	1	mineral/few tiny charcoal frags	none	
(5020)	92	Primary fill of [5002]	<1	mineral/roots/ rare charcoal	none	
(5020)	92	Primary fill of [5002]	<1	charcoal/mineral	none	
(5039)	98	Fill in terminal of [5002]	180	pred. charcoal	*Hordeum* (rachis internode)	2
					Triticum (hulled grain)	3
					Triticum (hulled glume base)	42
					Triticum (spikelet fork)	9
					Bromus	1 frag
					Plantago lanceolata	4
					Persicaria lapathifolia	1
					Persicaria maculosa	1
					Ulex (spine)	1
Interior features						
(5009)	80	Fill of ?tree bowl [5008]	18	pred. charcoal	Indet root nodules	2
Structure 4						
Phase 1: early activity						
(2052)	18	Secondary fill of linear gully [2051]	7	roots/sediment/ occ charcoal	*Triticum* (grain)	1
(2058)	16	Upper fill of posthole [2057]	<1	mineral/charcoal	*Avena* (grain)	1
(2268)	19	Primary fill of linear gully [2051]	<1	roots/mineral/ occ charcoal	*Triticum* (grain)	1
(2282)	26	Lower fill of pit [2057]	<1	charcoal/mineral	none	
(2288)	32	Lower fill of pit [2057]	<1	rare tiny charcoal	none	

Table 12 Charred plant remains (*continued*)

Context	*Sample*	*Feature*	*Flot size (ml)*	*Sample composition*	*Macros*	*No.*
Phase 2: construction						
(2036)	42	Upper fill of [2035] slot C:9	7	pred. charcoal	none	
(2050)	13	Upper fill of posthole [2049]	42	pred. charcoal	*Trifolium/Medicago*	1
(2060)	20	Fill of linear gully [2059]	4	pred. charcoal	*Hordeum* (grain) *Plantago lanceolata* Indet root nodules	1 1 2
(2082)	34	Fill of gully [2083]	8	pred. charcoal/ mineral/modern seeds	*Avena* (grain) *cf Triticum* (grain) *Plantago lanceolata* *Poa/Phleum* *Rumex acetosella* Indet root nodule	1 1 frag 1 1 1 4
(2082)	51	Fill of gully [2083]	13	pred. charcoal/ roots	*Avena* (grain) Indet root nodule	1 frag 1
(2089)	55	Fill of posthole [2088]	1	pred. mineral/ occ charcoal	none	
(2093)	27	Fill of posthole [2092]	<1	charcoal/mineral	*Plantago lanceolata*	1
(2095)	22	Fill of [2094]	12	pred. charcoal	*Triticum* (hulled grain)	1
(2097)	23	Fill of posthole [2096]	7	pred. charcoal/ mineral/roots	none	
(2099)	33	Fill of posthole [2098]	<1	mineral/rare tiny charcoal	none	
(2101)	43	Fill of posthole [2100]	6	charcoal/mineral	*Triticum* (hulled grain) *Fallopia convolvulus* *Trifolium/Medicago*	1 frag 1 1
(2105)	39	Fill of pit [2104]	95	pred. charcoal	none	
(2118)	59	Upper fill of [2117]	1	mineral/occ small charcoal	*cf Hordeum* (grain)	1
(2130)	48	Fill of [2129]	8	pred. charcoal/ mineral/roots	*Avena* (grain) *Corylus avellana* Indet root frags	1 1 frag 4
(2262)	14	Primary fill of posthole [2049]	400	pred. charcoal	none	
(2264)	17	Fill of pit/posthole [2263]	<1	mineral/charcoal/ roots	none	
(2279)	24	Upper fill of posthole [2278]	4	charcoal/mineral	none	
(2280)	25	Primary fill of posthole [2278]	<1	pred. charcoal	none	
(2284)	29	Fill of posthole [2283] north of [2278]	9	pred. charcoal	Indet root nodule	1
(2285)	28	Primary fill of posthole [2092]	1	charcoal/mineral	none	
(2287)	31	Posthole fill	<1	charcoal/sediment	none	
(2292)	36	Fill of posthole [2291]	5	pred. charcoal	none	
(2294)	37	Fill of posthole [2293]	<1	charcoal/mineral	none	
(2313)	52	Charcoal-rich spread at north end of [2083]	34	pred. charcoal	Triticum (hulled grain) Triticum (hulled glume base) Triticum (spikelet fork) Avena (grain) Bromus Salix (bud) Ulex (spine)	2 3 1 2 1 1 1

Context	*Sample*	*Feature*	*Flot size (ml)*	*Sample composition*	*Macros*	*No.*
(2317)	57	Fill of posthole [2316]	6	charcoal/mineral	none	
(2321)	60	Lower fill of [2117]	<1	mineral/occ small charcoal	none	
(2323)	61	Fill of posthole [2322]	4	charcoal/mineral/ roots	Carex Poa/Phleum Trifolium/Medicago	1 1 1
Phase 3: occupation						
(2038)	40	Fill of linear [2037]	28	pred. charcoal	*Triticum* (hulled grain) *Bromus*	1 1 frag
(2040)	15	Burnt fill of external feature	610	pred. charcoal	*Triticum* (hulled grain) *Fallopia convolvulus* *Raphanus raphanistrum* (pod)	2 1 7 + 1 frag
(2064)	21	layer in hollow	5	pred. charcoal	none	
(2157)	41	Middle fill from [2035]	18	pred. charcoal/sediment	none	
(2277)	30	Fill of pit [2276]	10	pred. charcoal	*Avena* (grain) *Triticum* (grain) *Ulex* (spine)	1 1 1
Structure 5						
Phase 1: construction						
(2150)	50	Fill of [2149]	13	pred. charcoal/ sediment	none	
(2150)	54	Fill of [2149]	5	pred. charcoal/ roots/mineral	Fallopia convolvulus Poacea Ulex (spine)	1 1 1
(2172)	33	Fill of pit [2171]	33	rare charcoal/ sediment	none	
(2174)	58	Fill of posthole [2173]	4	charcoal/mineral/ roots	none	
(2290)	35	Primary fill of ring gully [2137]	<1	mineral/ rare tiny charcoal	none	
(2290)	44	Primary fill of [2137]	<1	occ charcoal	none	
(2301)	45	Primary fill of [2300], poss re-cut [2137]	<1	pred. charcoal	none	
(2302)	46	Re-deposited natural in [2137]	<1	rare tiny charcoal	none	
(2303)	47	Primary fill of [2137]	<1	small frags only	none	
(2309)	49	Fill of hearth [2161]	575	pred. charcoal	none	
Late prehistoric field system						
(2023)	4	Upper fill of ditch [2022]	20	pred. charcoal/ sediment	none	
(2023)	8	Upper fill of [2022]	2	mineral/occ tiny charcoal	none	
(2033)	3	Fill of ditch [2022]	9	pred. charcoal/roots	*Triticum* (hulled grain) Indet root nodules	1 frag 2
(2208)	11	Fill of [2207]	31	pred. charcoal/mineral	*Triticum* (glume base) *Bromus*	1 2
(2210)	12	?Hearth fill	14	pred. charcoal	*Corylus avellana* *Odontites/Euphrasia*	1 frag 1
(2221)	2	Fill of pit [2220]	7	pred. charcoal	*Triticum* (hulled grain)	1
(2230)	9	Primary fill of cut [2022]	2	pred. charcoal	Indet root nodules	4
(2240)	10	Fill of [2239]	<1	charcoal/roots	none	
(2242)	4	Upper fill of [2241]	210	pred. charcoal	*Corylus avellana*	2 frags
(2245)	5	Upper fill of [2244]	280	pred. charcoal	*Corylus avellana*	2 frags
(2248)	6	Upper fill of [2247]	40	pred. charcoal	*Corylus avellana*	5 frags

Table 12 Charred plant remains (*continued*)

Context	*Sample*	*Feature*	*Flot size (ml)*	*Sample composition*	*Macros*	*No.*
Late prehistoric miscellaneous						
(2367)	74	Fill of [2366]	220	pred. charcoal/roots	*Triticum* (hulled grain)	2
					Triticum (glume base)	3
					Bromus	1
					Plantago lanceolata	1
					Pteridium (pinnule)	1
					Ulex (spines)	15
					Indet root nodules	3
(2368)	75	Lower fill of [2366]	11	pred. charcoal/occ mineral/sediment	*Triticum* (hulled grain)	1
Medieval/post-medieval field system						
(2032)	1	Primary fill of narrow linear [2029]	3	mineral/occ charcoal	*Avena* (grain)	2
Undated miscellaneous						
(1030)	106	Fill of pit [1029]	280	pred. charcoal	none	
(7006)	101	Fill of posthole [7005]	7	charcoal/roots	*Avena*/Poaceae	1
					Poaceae	1
(7008)	102	Fill of posthole [7007]	10	pred. charcoal/roots	*Avena* (grain)	1 frag
					Triticum (hulled grain)	1
(7010)	103	Fill of posthole [7009]	8	pred. roots/rare charcoal/ occ modern seeds	Indet root frag	1
(7014)	104	Fill of posthole [7013]	11	charcoal/roots/sediment	*Plantago lanceolata*	1
(7016)	99	Fill of posthole [7015]	15	pred. roots/occ charcoal	*Avena* (grain)	1
					Indet root nodule	1
(7020)	100	Fill of ?stakehole [7019]		1 frag charcoal		
(7024)	105	Fill of posthole [7023]	10	roots/charcoal/ mineral	*Plantago lanceolata*	1
					Rumex	1
Undated field system						
(1024)	109	Fill of ditch [1005]	<1	rare tiny charcoal	none	
(1042)	110	Fill of ditch [1031]	<1	rare tiny charcoal	none	

Results

Enclosure 1

PHASE 2: CONSTRUCTION

No plant remains preserved in the primary fill of ditch section [2017], or the two fills of ditch section [2324].

PHASE 3: USE

Pit [2327] within the enclosure was sampled. The bulk of the float from the primary fill (2349) was charcoal with 50+ charred gorse spines and two bracken pinnules, in addition to two hulled wheat chaff fragments. The charcoal-rich upper fill (2328) was sampled in two spits, which again included charred gorse spines, a charred spine from a Rosaceous twig in addition to several hulled wheat grains and weed seeds.

There is also evidence for backfilling of the two ditch sections [2017] and [2324] during this phase. The charcoal-rich fills included burnt bone fragments, although the plant evidence is limited. The upper fill (2018) and underlying layer (2337) of [2017] included a single hulled wheat grain and hazelnut fragment, while the fills of [2324] and its possible recut [2393] all produced small floats with few charred remains.

TERMINAL PIT

The charcoal-rich fills of ditch terminal pit [2363] produced more diverse assemblages. The primary fill (2370) contained charred hulled wheat, barley, and oat grains, with some accompanying chaff, a few weed seeds, and gorse spines. Two samples from the upper fill (2364), produced a similar assemblage to the primary fill, and included charred wheat, barley, and oat grain and chaff, a

small group of weed seeds, and gorse spines and stem fragments.

Enclosure 2

Few charred macrofossils were preserved in features associated with enclosure 2, with 9 of the 13 samples having no remains. Three of the six fills from a large outer ditch [5002] included a few weeds seeds, with only a single fragment of barley grain from (5018). At the eastern terminal of [5002], a charcoal-rich secondary fill (5039) included an assemblage primarily of hulled wheat glume bases and some spikelet forks, but only a few hulled grains, some arable weeds, and a single gorse spine.

Structure 4

PHASE 1: EARLY ACTIVITY
Two of three fills (2282) and (2058) from posthole [2057] produced very small floats (<1ml) with only a single oat grain and similarly two fills (2268) and (2052) of linear gully [2051] included only a single wheat grain.

PHASE 2: CONSTRUCTION
Of the 27 samples associated with this phase, 15 contained no plant macrofossils. The secondary (2157) and upper (2036) fills of ditch [2035] were largely charcoal with no plant remains and many of the other fills associated with the ditch and internal features were similarly poor. Two fills, (2060) from linear gully [2059] and (2082) from gully [2083], included a few charred oat and possible wheat grains, with some indeterminate root nodules and occasional weed seeds. A charcoal-rich spread (2313) at the north end of gully [2083] included a few hulled wheat grains and chaff, with a willow bud and gorse spine. Charcoal fragments dominated the fills of (2262) and (2050) of pit [2049] but with only one clover / medick seed. Fill (2095) of posthole [2094] contained a single hulled wheat grain, as did fill (2101), which also contained bindweed and clover seeds.

PHASE 3: OCCUPATION
Exterior features associated with the occupation phase produced small assemblages from linear feature [2037] and the burnt upper fill of pit / posthole [2039], but as with many of the other samples this was limited to just a few wheat grains and a small weed assemblage. Fill (2277) contained single oat and wheat grains and a spine of gorse.

Structure 5

PHASE 1: CONSTRUCTION
Charcoal formed a large proportion of fills associated with features in structure 5. The only internal feature which produced plant remains was the fill (2150) of linear feature [2149]. Here a single gorse spine and two weed seeds were recorded.

Field system

FIELD SYSTEM (NORTH)
Three small possible postholes with charcoal-rich upper fills, (2242) from [2241], (2245) from [2244] and (2248) from [2247] all included small quantities of charred hazelnut (*Corylus avellana*) fragments. Similarly a possible hearth fill (2210) included charred hazel and a single weed seed.

FEATURES IN THE CAR PARK
The fill (2367) of pit [2366] included a fragment of burnt granite quern with a small assemblage of charred wheat grain and chaff, with a few weed seeds, gorse spines, and some indeterminate root nodules.

Discussion

Charred plant remains were fairly sparse from most of the samples analysed from the Camelford school site. In total 100 samples were examined, but 26 of these produced floats of a size <1ml, the remainder ranging from 1ml to 610ml. There were no macrofossils present in 46 of the samples.

Overall the economic evidence provided by the charred cereal remains from the site is fairly limited. Features associated with structure 5, where there is evidence for possible habitation in the form of a roundhouse with internal features, provided only low concentrations of wheat and barley from both the construction and occupation phases. Similarly the adjacent structure 5, where evidence of burning from a number of features as well as slags and fragments of furnace lining that may suggest metalworking, produced limited remains.

Most of the evidence comes from two enclosures, 1 and 2, located to the north of these other features, which may have been associated with ceremonial or

Table 13 List of terms used for charred plant remains

Cereal remains	*Common name*	*Habitat*
Avena sp.	Oat	#
Hordeum sp.	Barley	#
Triticum sp.	Wheat	#
Other plant remains		
Bromus spp.	Brome	CD
Carex spp.	Sedge	GMPRW
Chrysanthemum segetum L.	Corn Marigold	C
Corylus avellana L.	Hazel	HSW
Danthonia decumbens (L.) DC	Heath-grass	Ew
Fallopia convolvulus (L.) A.Love	Black-bindweed	CD
Persicaria lapathifolia (L.) Gray	Pale Persicaria	Cdow
Persicaria maculosa Gray	Redshank	Cdo
Plantago lanceolate L.	Ribwort Plantain	G
Poa/*Phleum* spp.	Meadow grass/Cat's ear	G
Polygonum aviculare L.	Knotgrass	CD
Poaceae indet.	Grass	G
Pteridium aquilinum (L.) Kuhn	Bracken	G
Raphanus rapanistrum ssp. Rapanistrum	Wild Radish	CD
Rumex acetosella L.	Sheep's Sorrel	Ho, CGa
Rumex spp.	Dock	DG
Rosaceae indet	Rose family	HSW
Salix spp.	Willow	W
Trifolium/*Medicago* spp.	Clover	DG
Ulex spp.	Gorse	EGWo

Habitats
B: Bankside; C: Cultivated/Arable; D: Disturbed; E: Heath/Moor; G: Grassland; H: Hedgerow: M:Marsh; P: Ponds, ditches – stagnant/slow moving water; R: Rivers, streams; S: Scrub; W: Woodland.
a: acidic; d: dry soils: o: open habitats: w: wet/damp soils.
#: cultivated plant/of economic importance.

ritual activity. In enclosure 1 fills from a charcoal-rich central pit [2327] also included charred gorse spines and bracken pinnules with a small cereal assemblage. A charcoal-rich fill from a pit in the eastern ditch terminal similarly produced charred gorse spines and stem fragments. Although fairly limited there is also a small assemblage of charred wheat with accompanying glume bases and spikelet forks, barley grain, and rachis internodes, with some arable weeds and it may be that all of these items were used as tinder for fires associated with the activities in the enclosures. Similar evidence was found in enclosure 2, where the fills of the ring-ditch produced sparse remains from the ditch terminal. Here the evidence is mostly wheat chaff, with only limited grain and weeds. Once again this may suggest that wheat spikelets and weeds from crop processing waste may have been used as tinder in this largely charcoal-rich fill.

The limited evidence for crop processing, particularly from enclosures 1 and 2, may support the interpretation that these structures did not have a primarily domestic function. Such low concentrations of charred cereals are not unusual from other prehistoric sites studied in the south west, but it does make interpretation of the economy of sites like that at Camelford school difficult. Clearly crops of wheat and barley were locally available and the presence of fragments of burnt granite quern suggests that processing of grain was likely. The paucity of cereal grain, but consistent presence of mostly small arable weeds associated with wheat and barley chaff, suggests that these are waste products from cereal processing. These could have been used with collected gorse and bracken as fuel, with other wood charcoal which forms the bulk of the fills from most of the features sampled.

There is little comparative palaeoenvironmental evidence for Iron Age settlement or ceremonial activity from other sites studied in Cornwall. At Higher Besore features associated with 12

Late Iron Age roundhouses produced very little grain and mostly single occurrences of arable and grassland weeds, including onion couch (*Arrhenatherum elatius*) tubers. It was suggested that these weeds were introduced with turf or thatch for roof structures associated with construction of the roundhouses (J Jones 2006).

Cereal remains were similarly sparse from the Iron Age phase of the multi-period site at Scarcewater (J Jones 2010). Hulled wheat and oat grain were recovered from fills of two ring-ditched features, with grassland taxa, including onion couch, some more typical arable weeds, but no cereal chaff.

Charcoal

Dana Challinor

The Late Iron Age features discovered during the excavations were well sampled, with a good range from the large enclosure ditches and associated structures. Two pits of earlier date, [1027] and [1029], produced abundant charcoal. Not all of the contexts, however, proved to be securely phased, or contained very little identifiable charcoal. Out of 110 potential samples, 65 were selected for examination based upon the integrity of the contexts, dating evidence, and viability of the charcoal assemblages. Some of these were examined for the purpose of finding suitable material for the radiocarbon dating programme and, although the results are recorded in the archive, did not merit inclusion in this report.

Methodology

Charcoal >2mm in size was considered identifiable and up to 25 fragments per sample were selected. The selection was not random, but designed to provide a broad characterisation of the taxonomic diversity and to identify the most frequent and abundant taxa represented. The charcoal was fractured and sorted into taxonomic 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 in longitudinal sections 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. An estimate of the relative abundance of the charcoal was made where possible. Observations on maturity or condition were made as appropriate. Classification and nomenclature follow Stace (1997).

Results

The full results are recorded in the archive and Table 14 presents a summary of the charcoal results, showing the numbers of samples in which a taxon was identified, grouped by structure and phase. Seven taxa were positively recorded, with notes on the identifications below. It is likely that some additional taxa would have been identified if the quantity of charcoal identified from richer samples had been increased. However, the methodology was appropriate for determining the main taxonomic composition, and any additional species are likely to have been minor components. It was noted that several samples were dominated by one taxon, even though others may have been present in smaller quantities. A significant quantity of the charcoal exhibited strong ring curvature and whole stems were also preserved, indicating roundwood of small diameter (<120mm and rarely up to 200mm). Age ranged between 3 and 7 years, with rare older stems of up to 20 years. Tyloses in *Quercus*, and rarely *Fraxinus* testify to the presence of some mature trunkwood.

Fagaceae:

Quercus spp., oak, large tree, two native species, not distinguishable anatomically.

Betulaceae:

Alnus glutinosa, Gaertn., alder, tree, sole native species. *Corylus* has a very similar anatomical structure to *Alnus* and can be difficult to separate.

Corylus avellana L., hazel, shrub or small tree, sole native species.

Rosaceae:

Prunus spp., trees or shrubs, including *P. spinosa* L. (blackthorn), *P. avium* L. (wild cherry) and *P. padus* L. (bird cherry), all native, which can sometimes be separated on the basis of ray width, but not in the small material recorded at Camelford.

Maloideae, subfamily of various shrubs / small trees including several genera, *Pyrus* (pear), *Malus* (apple), *Sorbus* (rowan / service / whitebeam) and *Crataegus* (hawthorn), which are rarely distinguishable by anatomical characteristics.

Table 14 Summary of charcoal results: taxa presence grouped by structure and phase type (showing numbers of samples)

		Quercus sp. Oak	*Alnus glutinosa Gaertn. alder*	*Corylus avellana L. Hazel*	*Alnus/ Corylus alder/hazel*	*Prunus sp. Cherry type*	*Maloideae hawthorn group*	*Cytisus/ Ulex broom/ gorse*	*Fraxinus excelsior L. Ash*
Beaker pits	pits	2		2			2		1
enclosure 1	phase 2: construction	1						1	
	terminal pit	2		2				2	
	phase 3: use	5	1	2				5	
enclosure 2	phase 1: first enclosure	1						2	
	phase 2: re-enclosure	2						1	
	Terminal pit?	1		1				1	
	interior features	1							
structure 4	phase 1: Bronze Age activity	2			1				
	phase 2: construction	15	2	7		1	2	8	
	phase 3: occupation	2	1	2				1	
	phase 4: later deposition & activity	1		1					
structure 5	phase 1: construction	3			1			1	
field system	features	7		2	1		1	2	1
misc.	pits	1		1			1	2	

Fabaceae:

Cytisus / *Ulex*, broom/gorse, shrubs, several native species, not distinguishable anatomically.

Oleaceae:

Fraxinus excelsior L. ash, tree, sole native species.

Discussion

Three taxa dominate the charcoal assemblages: *Quercus* (oak), *Cytisus* / *Ulex* (broom or gorse), and *Corylus* (hazel). The presence of *Ulex* spines in a number of the samples (J Jones, above) suggests that this species is likely to be represented and henceforth the charcoal is referred to as gorse. These taxa were notably dominant in individual samples as well as being the most frequently occurring throughout the site (Fig 33). Ubiquity analysis on the Iron Age charcoal indicates a plentiful supply of fuelwood from oak-hazel woodland and gorse heathland. Interestingly, there was no gorse charcoal in the Early Bronze Age features, which might suggest that heathland areas were not extensive in this period and that collection practices had changed in the Iron Age. This supports the pollen evidence from Cornwall which shows a dominance of oak-hazel woodland in the Neolithic period and increasing landscape modification from the Bronze Age onwards (Wilkinson and Straker 2008).

There is minimal evidence for trees of scrub or open habitat, with relatively infrequent occurrences of Maloideae (hawthorn group), *Fraxinus* (ash), and *Prunus* (blackthorn / cherry) (Fig 37). Wetland type taxa are also rare in the charcoal assemblage, although *Alnus* (alder) may have greater representation in the undifferentiated *Alnus* or *Corylus* category. Nonetheless, alder is still likely to represent a lesser component of the assemblages and in fact the only confirmed identifications came from samples within the same structure 4.

Spatial analysis on context types does not reveal significant patterns of context-related variation, either between feature types (ring-gullies compared to pits) or within the structures themselves. It is

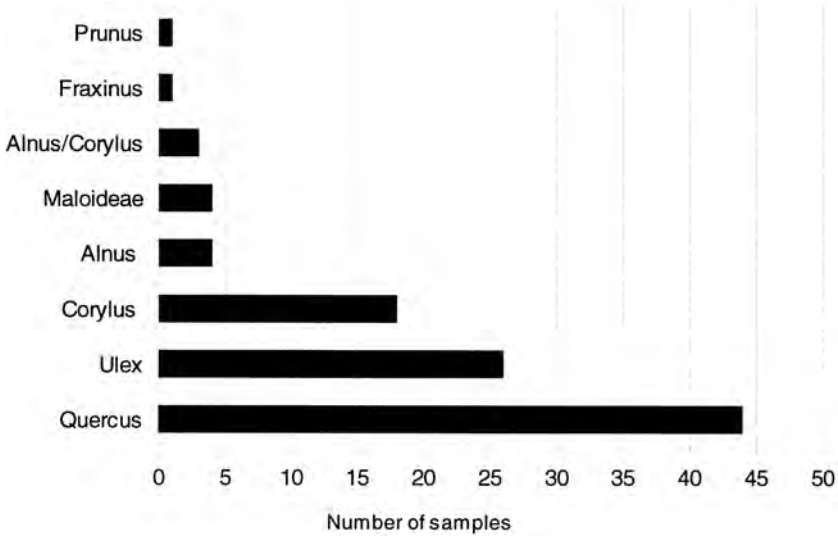

Fig 33 Ubiquity analysis on the Iron Age charcoal.

worth noting that central pit [2327] and terminal pit [2363] within enclosure 1 were dominated by gorse charcoal, but there were other contexts also dominated by gorse, including pit [2366] and ditches [2017], [5002], and [5010]. In the few samples where it was possible to age stems, an apparent lack of consistency in age (from 3 to 11 years) and diameter (3mm to 20mm) suggests that the material came from variously sized branches rather than uniform coppice stems. Generally, evidence for the use of large trunkwood and mature wood was less common, often associated with posthole fills (especially in the field system and structure 4) and may represent the remains of construction timbers. Hearth [2161] in structure 5 was notable as it was dominated by oak, including mature trunkwood.

In conclusion, the charcoal from Camelford provides evidence for oak-hazel woodland, which dominated the landscape in the Neolithic period. This woodland was still extensive enough to be exploited in the Iron Age, but there was increasing use of gorse from heathland areas. While the charcoal undoubtedly reflects the environmental picture depicted by pollen records, there may also be some deliberate selection processes occurring. Gorse produces a fast, intense heat with little ash, which was traditionally favoured for specific activities such as bread making (Gale and Cutler 2000, 260). Comparison with Late Iron Age evidence in Cornwall (for example, Sheldon 1978; Challinor, forthcoming) shows that gorse is consistently recovered in fuel residues indicating that it was both widely available and selected for use as fuelwood.

Phosphate and loss-on-ignition
Dr J Crowther

Phosphate-P (total phosphate) and loss-on-ignition (LOI, which provides an estimate of organic matter content) determinations were made on six bulk samples of fills from outer ring-ditch [5002] (enclosure 2) and three background 'control' samples (Table 15) in the hope that they might provide additional insight into the origins and mode of development of the various fills. Phosphates, which are routinely determined in archaeological site investigation, occur naturally in all organic material (for example, topsoil, plant tissue, excreta, and bone). As they are released by organic decomposition processes, they tend to form insoluble compounds and thus become 'fixed' within the mineral fraction of soils and sediments. Many forms of human activity lead to phosphate enrichment and, under favourable conditions, this may remain detectable for 10^2–10^3 years (Bethell and Máté 1989; Crowther 1997; Heron 2001).

Methods

LABORATORY METHODS

Analysis was undertaken on the fine earth fraction (< 2mm) of the samples. Phosphate-P

concentrations were determined colorimetrically following alkaline oxidation with NaOBr, using 1 N H_2SO_4 as extractant (Dick and Tabatabai 1977). LOI was determined by ignition at 375°C for 16 hours (Ball 1964).

Results and discussion

The analytical results are presented in Table 15.

Loss-on-ignition

The control samples analysed show a typical reduction in organic matter content from the topsoil (LOI, 8.77 per cent), through the subsoil (4.85 per cent) and into the underlying natural (2.47 per cent). By comparison, the various fills display a narrower range of values (4.15–5.74 per cent), though it should be noted that the fills will have been affected by post-depositional decomposition processes. They would therefore originally have been rather more organic-rich and may have exhibited greater variability in organic matter content. Interestingly, the three darker secondary fills, (5016), (5018), and (5039), have a higher LOI than the paler secondary fill (5017) and primary fill (5020). The levels of organic matter recorded could account for the darkness of these particular fills.

Phosphate-P

The phosphate-P concentration recorded in the topsoil control (1.12 mg g^1) is quite low and, as would be anticipated, the concentration decreases progressively down through the subsoil (0.698 mg g^1) into the underlying natural (0.370 mg g^1). The phosphate-P concentration of the uppermost (tertiary) fill (1.10 mg g^1) is almost identical to that of the topsoil control, though, as noted above, it does have a somewhat lower LOI. In contrast, the remaining fills all contain quite high concentrations of phosphate (range, 3.23–4.67 mg g^1), which undoubtedly reflect quite high levels of enrichment. Interestingly, the three darker contexts, (5016), (5018) and (5039) have higher phosphate concentrations than the other fills. On the basis of the chemical evidence alone, it is impossible to establish the source(s) of this enrichment. While inputs from animal manure could be a key source, the high levels of enrichment recorded would suggest that inputs may have included phosphate-rich midden material, possibly including bone (which will have subsequently decomposed in the acidic sediments). What is somewhat surprising is that context (5020), which is identified as being primary fill, also has a high level of enrichment (3.71 mg g1). If this were uncontaminated primary fill associated with the original cut of the ditch, then it would be expected to exhibit concentrations more typical of the control samples. In light of this finding, it is recommended that this particular fill be re-evaluated.

Conclusion

The results clearly demonstrate that the secondary fills within the ditch are significantly enriched in phosphate, with the highest concentrations (and also highest LOI) being recorded in the three dark fills, contexts (5016), (5018) and (5039). While animal manure is a potential source of phosphate enrichment, the levels recorded suggest that midden material (including bone) may also have

Table 15 Details of phosphate and LOI analytical data

Sample	*Context*	*Description*	*LOI (%)*	*Phosphate–Pa (mg g1)*
Fills of outer ring ditch (cut 5002)				
83	(5003)	Tertiary fill	5.04	1.10
85	(5016)	Secondary fill (dark)	5.74	4.62*
87	(5017)	Secondary fill	4.43	3.23*
89	(5018)	Secondary fill (dark)	4.61	4.67*
93	(5020)	Primary fill	4.15	3.71*
97	(5039)	Fill at terminal (dark)	5.42	4.34*
Controls				
94	(5001)	Topsoil control	8.77	1.12
95	(5015)	Subsoil control	4.85	0.698
96	(5019)	Natural control	2.47	0.370

*Values highlighted indicate high levels of phosphate enrichment.

been a component of the fills. These results are encouraging and clearly demonstrate the value of phosphate-P and LOI analysis at this site.

Radiocarbon dating

The principal aim of the dating strategy was to obtain determinations from key features and contexts within the site to support and enhance the data obtained from the stratigraphic, artefactual, and ecofactual analyses and provide a chronological framework for activity within the project area. The well-defined stratigraphy within the ditches of enclosures 1 and 2 allowed for a series of dates to be obtained throughout the life of the features while contexts from structures 4 and 5 were targeted with the aim of confirming that features unrelated stratigraphically were all from the same period of activity.

All samples were submitted for accelerator mass spectrometry (AMS) dating to the Scottish Universities Environmental Research Centre (SUERC) at Glasgow. A total of 13 samples were submitted. These consisted of residue from potsherds, charred plant macrofossils including cereal grains, and charcoal from short-lived species such as gorse, and from oak roundwood.

The probability distributions (Fig 34 and Table 16) were calculated using OxCal (v3.10). Unless stated otherwise, the 95 per cent level of probability has been used throughout this report; calibrated determinations in the text may therefore differ from older published sources.

Results

Enclosure 1

Five determinations were obtained from enclosure 1, two from the 'terminal pit' [2363], one from the northern ditch [2324], one from the southern ditch [2017], and one from central pit [2327].

Possibly the earliest dates from enclosure 1 are those from the terminal pit [2363] of the enclosure ditch [2017]: 2035 ±35BP, 170 cal BC – cal AD 60 (SUERC-35022), from the primary fill, and 2015 ±35BP, 110 cal BC – cal AD 70 (SUERC-20414), from the upper fill. They also match the date obtained from the primary fill of central pit [2327], 2035 ±35BP, 170 cal BC – cal AD 60 (SUERC-35014). However, the date ranges associated with these determinations are potentially earlier than the two from the enclosure ditch.

The date from the primary fill of ditch section [2017] was 1965 ±35BP, 50 cal BC – cal AD 90 (SUERC-35013). This determination overlaps with those from the ditch terminal and it is possible that the date of the enclosure lies at the end of the Iron Age. However, it is also possible that the determinations from the terminal were either associated with an earlier phase of the enclosure ditch or represent redeposited material within the ditch. In the first scenario, the enclosure ditch [2017] completely recut and emptied fills of an earlier ditch apart from at the very end terminal, where pit (or ditch) [2363] was located. In the second, pit [2363] was later as recorded in section, but older material from elsewhere on the site was deposited into the cut. Taking the stratigraphic evidence at face value the second alternative looks more likely; however, it is also the case that the fill of the terminal pit need not be earlier than the primary fill of the enclosure ditch, as there is a big overlap in the date ranges.

The final date in the sequence, 1750 ±30BP, cal AD 210–390 (SUERC-36233) from a tertiary fill of ditch section [2324], might be consistent with a long, gradual silting process over a period of one to three centuries of an enclosure that had fallen out of use, perhaps by the end of the first century cal AD. However, the date was obtained from residue on Cordoned ware pottery that should date to no later than the first century cal AD, so unless the vessel had been curated and reused at a much later date, it is probably best discounted.

In summary, it appears likely that enclosure 1 dates to the first century cal BC, with evidence for further recutting and reworking of the ring-ditch over the period of a century or so. The radiocarbon dating also suggests that there is potential for material to have been reworked from other contexts and then redeposited in the terminal of the enclosure ditch.

Enclosure 2

Four determinations were obtained from enclosure 2, one from an earlier section of ring-ditch, [5010], and three from the larger outer enclosure ditch, [5002].

The earliest determination 2060 ±35BP, 180 cal BC – cal AD 20 (SUERC-35002), came from deposit (5039), thought to be the fill of a terminal pit in outer enclosure ditch [5002]. Although this

date is not very distinguishable from the other determinations there is a possibility that it is a little earlier than other fills of the ditch. It is possible that the deposit belongs to an earlier feature, either a ditch that was subsequently emptied of all its fills apart from in the area occupied by (5039), or a pit that was then partially cut by ditch [5002]. However, it is also a possibility that midden material was dumped into the terminal of the ditch and that this has skewed the radiocarbon dating of the ditch fill.

The large outer enclosure ditch [5002] produced two stratigraphically consistent dates of 2025 ±35BP, 120 cal BC – cal AD 60 (SUERC-35003), from the primary fill and 1990 ± 35BP, 60 cal BC – cal AD 90 (SUERC-35004), from secondary fill (5018). The dates indicate that the ditch was probably filling up at some point in the first century cal BC, which is supported by the Type D sherds that are likely to date to the later first century BC to the early second century AD. A late date for the final infilling of the enclosure ditch enclosure is also suggested by the presence of Type 4 jar sherds of at least mid-second century AD date in the upper fill of [5002].

Fill (5011), within ring-ditch [5010], produced a determination of 2035 ±35BP, 170 cal BC – cal AD 60 (SUERC-35008). This is consistent with the

Table 16 Radiocarbon determinations from Camelford School

Feature	*Context*	*Material*	*Lab no*	*Age BP years*	*Calendrical years 95.4% probability*	*Calendrical years 68.2% probability*
Enclosure 1	(2325) upper fill of ditch recut [2393]	pot residue	SUERC-36233	1750 ±30	AD 210–390	AD 240–265 (18.1%) AD 270–335 (50.1%)
Enclosure 1	(2349) fill (secondary) of pit [2327]	charred plant macrofossil	SUERC-35014	2035 ±35	170 BC–AD 60	100 BC–AD 20
Enclosure 1	(2350) fill (primary) of ditch [2017]	*Ulex* charcoal	SUERC-35013	1965 ±35	50 BC–AD 90 (91%) AD 100–130 (4.4%)	20–10 BC (0.9%) AD 1–75 (67.3%)
Enclosure 1	(2364) fill (secondary) of terminal pit [2363]	pot residue	SUERC-20414	2015 ±35	110 BC–AD 70	50 BC–AD 30 (64%) AD 40–50 (4.2%)
Enclosure 1	(2370) fill (primary) of terminal pit [2363]	charred grain	SUERC-35022	2035 ±35	170 BC–AD 60	100 BC–AD 20
Enclosure 2	(5011) fill of ditch [5010]	*Ulex* charcoal	SUERC-35008	2035 ±35	170 BC–AD 60	100 BC–AD 20
Enclosure 2	(5018) fill (secondary) of ditch [5002]	*Ulex* charcoal	SUERC-35004	1990 ±35	90–70 BC (1.6%) 60 BC–AD 90 (93.8%)	40 BC–AD 55
Enclosure 2	(5020) fill (primary) of ditch [5002]	*Ulex* charcoal	SUERC-35003	2025 ±35	160–130 BC (3.6%) 120 BC–AD 60 (91.8%)	90–70 BC (5.8%) 60 BC–AD 30 (62.4%)
Enclosure 2	(5039) fill (terminal) of ditch [5002]	charred plant macrofossil	SUERC-35002	2060 ±35	180 BC–AD 20	160–130 BC (11.8%) 120–30 BC (54.2%) 10–1 BC (2.3%)
Structure 4	(2095) fill of posthole [2094]	charred grain	SUERC-35012	2060 ±35	180 BC–AD 20	160–130 BC (11.8%) 120–30 BC (54.2%) 10–1 BC (2.3%)
Structure 4	(2157) fill of ring-ditch [2035]	pot residue	SUERC-35011	2095 ±35	210–20 BC	170–50 BC
Structure 4	(2262) fill of posthole [2049]	*Quercus* sp charcoal	SUERC-35010	2090 ±35	210–20 BC (94.3%) 10–1 BC (1.1%)	170–50 BC
Structure 5	(2309) fill of hearth [2161]	*Quercus* sp charcoal	SUERC-35009	1875 ±35	AD 60–240	AD 70–170 (59.1%) AD 190–210 (9.1%)

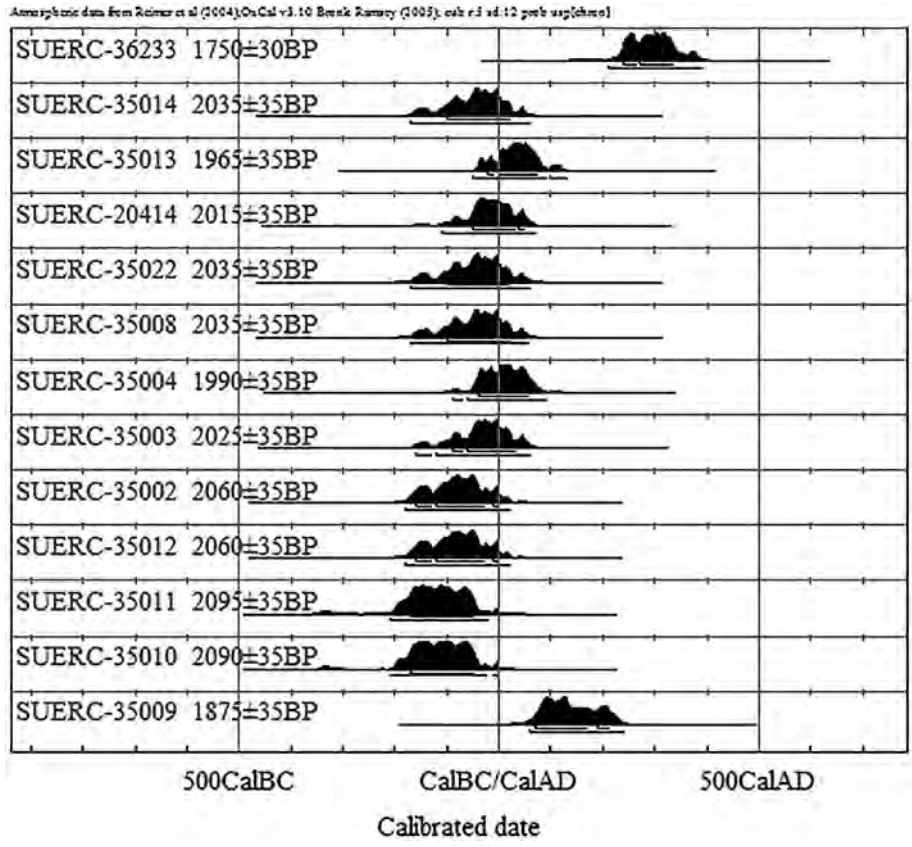

Fig 34 Radiocarbon determinations.

earlier determination from ring-ditch [5002] and that from layer (5039) within the ditch terminal.

As with enclosure 1, there is evidence for the recutting, with [5002] cutting earlier ring-ditch [5011], and as at enclosure 1 there is a possibility for earlier activity taking place within the terminal of the ring-ditch [5002]. This again this may be indicative of material being reworked and dumped into the end of the ditch. Overall, however, the results from the radiocarbon dating are indicative of an enclosure evolving within a reasonably tight timeframe during the last century of the first millennium cal BC.

Structure 4

Three determinations were obtained from structure 4, two from pit and posthole fills and one from the fill of ring-gully [2035].

The dates show a chronology centred on the second and first centuries cal BC. The earliest are from pot residue from the secondary fill of ring-ditch [2035], 2095 ±35BP, 210–20 cal BC (SUERC-35011), and the primary fill of pit [2049], 2090 ±35BP, 210–20 cal BC (SUERC-35010). The date ranges are identical, although it may be too early for the pottery (Quinnell, above). However, given the large date range, a date consistent with the pottery in the first century BC is entirely plausible.

The third date, from posthole [2094], 2060 ±35BP, 180 cal BC – cal AD 20 (SUERC-35012), is slightly later but still consistent with the other dates.

Overall the close dating and the general lack of intercutting features suggest that the structure was relatively short-lived and stood in the second or first century cal BC. The ceramics indicate it

belongs in the latter part of this span and a date in the second half of the first century cal BC is likely.

Structure 5

One radiocarbon determination was obtained from structure 5, from the fill of hearth [2161].

The date, 1875 ±35BP, cal AD 60–240 (SUERC-35009), is later than those obtained from the adjacent structure 4. It is also later than the date suggested by the sherd of Iron Age pottery, which comes from another gully within this structure and by the stratigraphy for the primary cut of the ring-gully which appears to pre-date structure 4. Along with the evidence for recutting of the gully, this determination implies that the structure had more than one phase of occupation. It seems likely that the original date for the structure was in the Iron Age but that it was rebuilt or reused in the Romano-British period; potentially after structure 4 had fallen out of use.

Discussion, interpretation and conclusions

Despite covering quite a large area, the investigations at Camelford revealed just three major episodes of activity. The earliest was associated with Beaker pits and this was followed by a further phase of pits containing Bronze Age Trevisker pottery, as well as a small number of finds of Bronze Age date, which were recovered as residual artefacts within Iron Age contexts. It is likely that these finds were associated with Middle Bronze Age settlement-related activity in the vicinity of structure 4. However, the character of the Bronze Age activity is uncertain.

The main period of settlement activity occurred during the Late Iron Age, in the form of a large roundhouse defined by a ring-gully, a smaller ring-gullied structure and traces of a field system. In addition three enclosures were discovered, two of which were excavated. All of the investigated structures fell within the later Iron Age, with more limited evidence of continuing use of some sites during the earlier part of the Romano-British period.

The Bronze Age (*c* 2500 to 1500 cal BC)

The evidence for Bronze Age activity took the form of a number of pits and a small number of residual finds in later contexts.

The earliest of the features were three shallow pits, [1025], [1027] and [1029], located to the south of the school and associated with Beaker pottery, burnt bone, and flint. The pits are broadly comparable to other sites which have been recorded across the county, including Treyarnon (St Merryn) and Scarcewater (St Stephen-in-Brannel) (Jones and Taylor 2009–10; 2010, 5). These pits have been interpreted as representing the ritualised clearing up of debris associated with short-term occupations (Jones *et al* 2012) and although the evidence at Camelford is limited, this interpretation is also consistent with the contents of the three pits.

The second phase of Bronze Age activity was associated with a small number of features which were found within structure 4, an Iron Age roundhouse. Postholes [2057], [2092] and [2096] contained Trevisker pottery, as did gullies [2051 and [2035]. Trevisker pottery and flint was also recovered from a number of other features which also contained Iron Age pottery, and the assumption must be that the Bronze Age pottery is residual. Likewise, the cup-marked slate **S13** is also likely to be a residual find within the roundhouse, although it is possible that it had been taken to the roundhouse as a 'curio' and deliberately incorporated into paving associated with the structure. It is also possible that some of the stakeholes and other features without diagnostic finds were of Bronze Age date; however, these were not securely dated and they may relate to Iron Age activity within the roundhouse. The activity associated with this ceramic assemblage is therefore hard to characterise. It may have been produced by small-scale and possibly transient domestic activity, or with more formal, ritualised deposition into pits. The latter explanation is suggested by the unusually small size of the ceramic vessels, which may have been associated with the formal consumption of food.

The Iron Age to Romano-British period (*c* 100 cal BC to AD 100)

The evidence for Late Iron Age activity comprised three elements: enclosures, roundhouses and the remnants of a field system. Interestingly, the radiocarbon dating from circular enclosures 1 and 2 and from the larger roundhouse, structure 4, shows a great deal of overlap, suggesting that they were all in use during the last century cal BC. Current understanding of the Cordoned ware pottery found in the enclosures indicates that the date is likely

to lie in the second part of first century cal BC or early in the first century AD. The pottery from the field system and the first phase of structure 5 is also compatible with that date. A third rectilinear enclosure was not dated, although its form would not be out of place within the later part of the Iron Age.

There are indications that activity may have extended into the first centuries AD. Iron nails were found in the upper fill of the terminal pit [2363] in enclosure 1 and the upper part of the recut ring-ditch [5002]. These may be an indicator of Roman influence, though in both cases they are associated with late phases of activity and the majority of the finds and the weight of radiocarbon determinations would make a Roman presence unlikely during the main period of use. Sherds of probable Trethurgy Type 4 Jar, which would date to the mid-second century AD, were also recovered from the top fill of enclosure 2, but these are likely to post-date the use of the enclosure. The only unequivocal use of the site in the Romano-British period is the radiocarbon date cal AD 60–240 (SUERC-35009), suggesting reuse of structure 5. The near absence, however, of securely dated, diagnostic Romano-British pottery or artefacts implies that the site had largely fallen out of use by the middle of the first century AD, and the main *floruit* of activity on site is therefore likely to have been from the first century cal BC into the period immediately before the Roman conquest.

The suggested contemporaneity of the excavated sites would indicate that the settlement was arranged to include areas for livestock, places for dwelling, and for ceremony, and that these had overlapping biographies of use. This integrated form of landscape inhabitation may have had its roots in the Middle Bronze Age (Jones 2008; 2012) and there is increasing evidence for this arrangement being typical of the Iron Age too (Jones 2010).

Sacred or secular? Enclosures 1 and 2

Enclosures 1 and 2 were located at the western end of the project area, just beyond the field system and between structures 4 and 5 and the larger rectangular enclosure 3. Both enclosures were unusual ditch-defined sites with diameters of approximately 17m. The enclosures had east-facing entrances and the ditches displayed evidence for recutting and for the deposition of structured deposits into the terminals. Both enclosures were of unusual form. Enclosure 1 had an outer bank which would have given the site the appearance of a small hengiform monument, whereas enclosure 2 had a low central cairn surrounded by multiple ring-ditches, and would have resembled a ditched platform cairn. Neither enclosure appeared to contain any internal structures. In the case of enclosure 1 there was an off-centre pit covered by holed slates, and in enclosure 2 the only features were tree bowls, though these may well be earlier than the enclosure, as some are cut by the enclosure features.

It is evident that neither enclosure contained any buildings or settlement-related evidence, and this raises the question as to their function. Two potential possibilities arise; the first that they represent animal pounds and the second that they were related to ceremonial activity within the settlement.

Stock enclosures

The low level of evidence for cereal production from Camelford fits well with other known sites of this period, which indicates that in the western region cereal production was limited to levels of self-sufficiency (Henderson 2007, 40). The frequent low levels of charred plant remains recovered from excavated sites across the Atlantic Iron Age region and the occasional survival of animal bones in the region's acidic soils (Cunliffe 2010, 290; Henderson 2007, 44–6) have led to the suggestion that pastoralism was the mainstay of local economies. Classical sources (Julius Caesar 1970, 136; Strabo 1923, 257) also allude to the importance of cattle to the economy of the Iron Age Britons, although in these cases it is not always clear which parts of Britain are being referred to.

However, very few physical remains associated with Iron Age stock management have been identified; the situation is still much as it was when Fowler (1983) published a general view, even in lowland Britain where bone preservation is good (Pryor 2006). Occasionally, but all too rarely, phosphate analysis and soil micromorphology have been used to establish the housing of animals, as at Cat's Water, Fengate (Pryor 1984, 218). A tethering ring and byre are known from Jarlshof in Shetland (Morris 1979). Animal bone assemblages are rarely recovered from sites in Cornwall, although evidence for cattle and sheep were recovered from the Iron Age cliff castle at Trevelgue (Hammon 2011, 305).

It is possible that some of the many Iron Age enclosures may have been used to hold animals. It was, for example, at one time thought that the 'banjo' enclosures found on the Wessex chalk were used as stock enclosures (Bowen and Fowler 1966); although today it is considered likely that they were integrated within the wider settlement pattern, and in addition to being associated with agricultural and pastoral activity, could have performed a range of functions, including acting as higher status settlement sites or ceremonial feasting centres (Perry 1986; Winton 2003; Cunliffe 2010, 244–7). Other recent work has considered British data in the light of ethnographic studies and this indicates that some roundhouses may have been used to house animals (Pope 2007, 219).

The Camelford enclosures are too small to have housed a great deal of livestock but an alternative explanation to simple livestock pens may be that they were covered animal shelters or byres. Comparable sized ring-ditched features in Scotland have been argued to have served as byres on the basis of the lack of hearths and other aspects of domestic architecture within their interiors (Harding 2004, 98). Many of these sites are associated with multiple ring-grooves which may have held an upstanding walls or supported roof rafters, in which case a ditch and external bank may have been a safety feature in case of breakout by livestock. Alternatively the ditch may have held the roof rafters in which case the bank from the upcast would need to be external to avoid fouling them. However, unlike these sites, neither enclosure contained internal postholes, or features within the ditches which gave an indication that they had held wall slots or posts. Indeed, the ditches enclosing enclosures 1 and 2 displayed evidence for recutting and infilling with complex deposits, especially in the ditch terminals. Likewise, those features which were found inside both enclosures did not indicate that they were associated with animal management but instead were suggestive of less functional activity.

Ceremonial enclosures

It is probable that neither enclosure 1 nor 2 was inhabited. The lack of internal features, internal bank and paucity of associated occupation debris found in either enclosure contrasts with the range of contemporary hillforts and round sites, which are associated with a range of dwellings and other structures as well as with occupation and industrial-related activity (Appleton-Fox 1992; Edwards and Kirkham 2008; Lawson-Jones and Kirkham 2009–10). Indeed, the nearest morphologically similar forms of monuments appeared to be henges and hengiform monuments, but traditionally these have been thought to belong entirely to the latter part of the Neolithic period (for example, Harding 2003, 15).

However, more recent work on henge-like enclosures outside southern England has revealed that both larger and smaller enclosures with internal ditches and external banks could be much later and post-date the Neolithic period (Bradley 2011, 182–3; Gibson 2012). The 'classic henge' site at Castle Dykes in north Yorkshire, has for example been securely dated to the Iron Age (A Gibson, pers comm). Excavations of Picts Knowe in south-west Scotland has also indicated that henges could be remodelled, if not in fact actually constructed during the Iron Age (Thomas 2007, 147).

It is in Ireland, however, where the largest number of comparable sites are found (Jones 2014). The Camelford enclosures probably have their closest affinities with a group of sites known as ring-barrows, which were used from the Bronze Age into the Iron Age. These sites, which typically have diameters of 15m to 25m (Waddell 1998, 365–9), are of a broadly similar scale to the Camelford enclosures. Ring-barrows consist of annular or penannular ring-ditches with external banks and internal pits, which often contain cremation burials, and as at 'Dathi's Mound', low mounds or platforms, which are encircled by a ditch and sometimes a low outer bank (Waddell 1987). Although no human remains were recovered from either of the Camelford enclosures, it is of interest that the burial of burnt animal bone within the terminal of enclosure 1 had been treated like a cremation and the overall form of enclosure 2, with its low platform, is similar to Irish ring-barrows.

In recent years it has become apparent that there are also a number of enclosures in Cornwall, which, due to their unusual, often henge-like form, may have been used for ceremonial or communal purposes (Jones 2010). The possibility of contact between Cornwall and Ireland during the Late Bronze Age has been shown by the evidence for exchange around the Atlantic façade during the first millennium cal BC (Henderson 2007, 25). Metalwork finds from sites in the south west provide evidence for long-distance exchanges during this period, and a small number of imported

objects such as amphorae from the Continent demonstrate later seaborne contacts (Cunliffe 1988, 103–4; Fitzpatrick 2013; Jones *et al* 2015, 210–15). Indeed, given the evidence for a range of sea-going vessels (McGrail 1996), it is very likely that contacts between Cornwall and Ireland continued throughout the Iron Age and may have led to visually comparable 'special' enclosures being constructed in Cornwall (Jones 2014).

In addition to Camelford, three Cornish henge-like enclosures have been investigated. The largest, a cropmark enclosure at Hay Close (St Newlyn East) has a diameter of 60m. Evaluation trenching revealed that the site was enclosed by a substantial 'V' shaped ditch, and that there were traces of an external bank. The few internal features identified included a low, possible cairn or stony platform on the northern side of the enclosure with a diameter of approximately 5m, and a pit containing early post-Roman pottery, and a perforated stone weight. The analysis of the ceramic assemblage from the enclosure ditch revealed that the majority of the pottery is likely to date from the first millennium cal BC, or was much later still, and included both local wares and Mediterranean imports, dating to the sixth century AD (Jones 2014). A radiocarbon determination on a charcoal-rich deposit at the base of the ditch fell at 2465 ±35BP, 770–410 cal BC (SUERC-17652). This supports an earlier first millennium date for the earliest activity within the site.

The second enclosure, at Tremough (Penryn), was situated near an area associated with Late Bronze Age and Romano-British settlements (Jones *et al* 2015, 49–51). A geophysical survey had identified three concentric ditches forming an enclosure with a diameter of approximately 50m, and this was confirmed by an evaluation trench. The site is larger than the Camelford enclosures; however, again, there is evidence for one of the ditches having a bank on its outer face. Artefacts from the upper part of the ditch included sherds of Late Iron Age or Romano-British pottery. In common with Camelford enclosure 1, there was a large oval pit, measuring nearly 1m deep. However, this feature was not covered by a slab and it is possible that it had held a substantial upright post.

The third site, cairn 2002 at Scarcewater just west of St Austell, was much smaller, with a diameter of less than 10m. The site was a penannular ring-ditch, with an east facing entrance (Jones and Taylor 2010, 40). Iron Age pottery was recovered from the ditch and a radiocarbon determination obtained, which fell at 2308 ±32, 410–230 cal BC (Wk-21858), which lies in the Middle Iron Age. As at Camelford enclosure 2, there was a central, low, flat cairn which in this case sealed a number of pits or postholes that did not form any readily discernible pattern.

None of these excavated sites are entirely the same date as the Camelford enclosures; Hay Close and Scarcewater appear to be somewhat earlier and the site at Tremough is not closely dated. In addition, they vary greatly in size, with Hay Close being much larger and Scarcewater being a third smaller than either of the Camelford enclosures. However, this difference in scale may in part reflect the size of the community which was being served; for example, the large enclosure at Hay Close may have had significance for many communities, whereas those at Scarcewater and Camelford could have been of much more localised importance. It is also of interest that none of the excavated enclosures were associated with settlement-related activity, yet all were found near to contemporary settlements, thereby revealing the potential for non-domestic activity to occur in close proximity to areas of settlement.

Returning to Camelford, evidence for ritualised activity within enclosures 1 and 2 occurs in two ways, the visual appearance of the site and structured deposition within the ditches and pits.

The lack of occupation evidence and the arrangement of the banks and ditches associated with enclosures 1 and 2 suggest that space was being bounded and defined in ways which would make them look obviously different from other forms of settlement-related enclosure. However, it appears unlikely that the banks would have been high enough to screen off activities inside the enclosures from onlookers standing beyond them and the cairn or platform inside enclosure 2 may have made events inside it more visible to outside observers. Activities in the centre of the enclosures, for example communal gatherings to mark calendrical rituals, the ritualised slaughtering of animals or communal feasting could have become heightened experiences through the use of such spaces as theatrical areas. Indeed, the reversal of the usual arrangement of the bank and ditch at enclosure 1 and the concentric ditches and low platform within enclosure 2 may have been a deliberate attempt to recreate and manipulate the past by creating ancient forms of monuments

(Bradley 1993, 118–9; Bradley 2002, chapter 5), or as argued above, reflected knowledge of 'exotic' monuments found in distant lands.

At enclosure 1, the arrangement of the internal ditch and external bank would have meant that it strongly resembled a small hengiform monument. When freshly excavated, the material forming the external bank would have been visually distinctive as it comprised light yellowish-brown clay. Comparable use of coloured soils is known from the region's Bronze Age cairns and barrows (Miles 1975), including those located not far away at Davidstow Moor (Davidstow), where the barrow complex included several monuments with banks and mounds of yellow clay (Christie 1988). Although it is highly unlikely that any of these sites retained their original colouring in the Iron Age, they would still have formed extant monuments and it is possible that some members of the community had 'local knowledge' of the appropriate constituent colours for monument construction and were referencing the past.

A desire to maintain the ditch circuit is suggested by evidence for its recutting, and some longevity of the site is indicated by the radiocarbon dating, which might indicate that the enclosure was used during the first century cal BC and into the first half of the first century cal AD (SUERC-35022), (SUERC-20414) and (SUERC-35013). Evidence for structured or special deposition was indicated by evidence in the southern ditch terminal and the central pit. The southern ditch terminal appears to have acted as a receptacle for a dark deposit which contained pottery, charcoal and burnt animal bone. The condition of the burnt bone suggested that it had been deliberately fragmented and treated rather like a cremation deposit. The preservation of the bone indicates that it had been encapsulated in organic-rich material that had to some extent shielded it from the effects of the prevailing acidic soil conditions. Despite coming from an apparent later pit cut into the enclosure ditch, this material gave the earliest radiocarbon determinations from the site. One possible interpretation for this deposit is that it was old material, derived from elsewhere on the site. Midden material, produced by settlement activity and feasting, seems to have formed an important symbolic resource in the Iron Age of southern Britain, and in Wessex it was sometimes heaped into huge mounds which may have marked boundaries in the landscape (for example, McOmish *et al* 2002, 73–4; Madgwick and Mulville 2015). Similar material, deposited in far smaller quantities has also been identified at Iron Age sites in Cornwall, such as the cliff castles at The Rumps and Trevelgue (Brookes 1974; Nowakowski and Quinnell 2011, 389–90). At The Rumps part of a skull was found within the midden material and at Trevelgue there is evidence that midden material deposited against the ramparts contained large amounts of settlement and metalworking waste. It is possible that at Camelford material associated with feasting activity and the consumption of animals was, at the end of the 'life of the enclosure', deposited into the terminal of the ditch. The midden deposits at the The Rumps belong to the Middle and the Late Iron Ages, at Trevelgue to the Middle Iron Age.

The central pit in enclosure 1 did not contain any artefacts other than abraded scraps of pottery and a waterworn pebble; however, it was unusual in that it was sealed by two slates with central holes. The holes were not worn which suggested that they had not supported an upright pole, and there was no evidence to suggest that the slabs had been lifted up and down. One possibility is that the holes allowed libations to be poured through them. Comparanda for Iron Age libation pits in the south-west region is lacking; however, evidence for a comparable libation pit was uncovered at a wheelhouse site in the Hebrides at Sollas, North Uist, where a series of pits containing animal burials was found. In one instance a broken quern with central perforation had been placed over a small pit, suggesting the possibility that libations were poured through it to the cavity below (Harding 2004, 257).

Enclosure 2 also produced evidence for ritualised activity; although there were some similarities with activity found in enclosure 1 there were also several differences. Enclosure 2 was ditch-defined, although unlike enclosure 1 there appear to have been up to three ditches, and recutting appears to have taken the form of adding additional ditches to the enclosure. It seems from the radiocarbon dating and ceramics to have been used for a similar period to enclosure 1, and that the enclosures were broadly contemporary with one another. In common with enclosure 1, there may also have been a desire to reference other monument forms as the multiple ditch circuit and the low central cairn might have given it the appearance of a platform cairn. There is also evidence for the

deposition of midden material into the terminal of the ditch [5002]. This material took the form of a dark deposit which contained sherds of pottery and had a high organic content that was confirmed by phosphate and LOI analyses. Again, despite being stratigraphically later than the other ditch fills, this produced what is possibly the earliest radiocarbon determination (SUERC-35002) from the enclosure. As has been suggested for enclosure 1, it seems likely that midden-rich materials from elsewhere on the site had been stored for some time before being dumped into the terminal of the ditch.

The reworking of the ditch fills is also suggested by the distribution of pottery. Most of the pottery within the enclosures was found within a restricted range of contexts, such as the terminal pits (Quinnell, above). The few sherds in primary ditch fills may have been parts of deposits which had been removed before the ditches were subsequently backfilled.

Other artefacts in enclosure 2 may have been deliberately placed into the ditches. In particular, two artefacts stand out as being significant. The upper fill, (5003), ditch [5002] contained a fragment from the upper part of a rotary quern **S1**, which appeared to have suffered deliberate damage before being placed face down into the ditch. In itself this may not be viewed as being significant; however, it is noteworthy that quern **S2**, from gully [2037] located near to roundhouse structure 4 had also been deposited face down. These may represent a ritualised practice whereby when querns reached the end of their period of use they were buried with a degree of formality (Quinnell, above). The structured deposition of querns is found elsewhere in Cornwall and the south west, and has been documented at Early Bronze Age cairns as well as within later Bronze Age roundhouses (Jones 2004–5; Jones and Taylor 2010, 76). Querns have obvious potentially symbolic links with fertility and the transformation of harvested crops into processed food. The likelihood that ritualised practices associated with them which are found within Bronze Age settlements persisted, and even increased, in Iron Age contexts has been demonstrated by research undertaken by Sue Watts (2014, 102–25).

The second object is so far unique and takes the form of a large block of quartz, **S14**, which was recovered from ditch [5005] (Fig 29). This block had a small piece of iron set into one side of it. The reason for this setting is unknown, although it does not appear to have been a functional one (Quinnell above). One possibility is that it was an attempt to merge two materials which may have held symbolic or magical properties. Quartz was frequently deployed in barrows in Cornwall during the Early Bronze Age and is also found in ritualised deposits within later Middle Bronze Age roundhouses (Jones 2004–5; Nowakowski 1991). Quartz blocks had been arranged to form a circular feature described as a 'stone pad' within the Romano-British period enclosure at Reawla (Gwinear). Its function is unknown but it is of interest to note that a rotary quern had been placed face down beside it (Appleton-Fox 1992, 81). More recently quartz has been found in association with pagan practices during the post-Roman period too (Jones 2014). It is therefore very likely that quartz was considered to have magical properties in the intervening Iron Age. Smiths appear to have been honoured people in Iron Age society (Hutton 1993, 224–5) and metals and metal production may have been perceived as being a magical process. In European folklore smiths were often considered to be able to wield supernatural powers through their metalworking (Lönnrot 2008, 88–119) and within early Irish literature the blacksmith *Goibhniu* was a divine member of the Irish pantheon, the *Tuatha de Danaan* (Green 1996). Within the Cornish Iron Age and Romano-British periods, iron working frequently seems to have taken place within specialist enclosures (Nowakowski 2011), for example at Caervallack (St Martin-in-Meneage) and Little Quoit Farm (St Columb Major) (Edwards and Kirkham 2008; Lawson-Jones and Kirkham 2009–10) and it is possible that iron may have been worked under controlled, ritualised conditions during this period (Hingley 1997). The merging of quartz and iron together may therefore have been a magical act, which could have been made theatrical by taking place within the confines of enclosure 2.

The interior of enclosure 2 did not appear to contain any structures or, like enclosure 1, a central pit. Instead there were a number of features with no coherent pattern. Many of these may in fact have been tree bowls and it is tempting to remember that several classical sources recorded the presence of trees at Iron Age shrines and groves around western Europe (Hutton 1993, 166; Aldhouse-Green 2000; Lucan 1956, 78–9), although more recent writers have, given the lack

of evidence, questioned whether sacred groves were found in Britain (Hutton 2013, 216–7). The tree bowls are undated but some were sealed by the central cairn, which might imply that they were cut down at some point during the Iron Age. If the trees did form the original focus for the enclosure, they too might represent a referencing of the past.

There were no finds or features associated with the central cairn and its full height is unknown, as it is likely to have been ploughed down over the centuries. The cairn may have been constructed to form a platform upon which activities inside the enclosure took place or alternatively, it may have been intended to seal the site and create a monument after the enclosure had fallen out of use. Iron Age mounds are uncommon in England, although, as discussed above, ring-barrows with low mounds are known in Ireland, and at the 'royal' site at Navan a large cairn was constructed over a burnt timber building (Lynn 2003, 17–26). However, in Cornwall cairn 2002 at Scarcewater had a low stony cairn within a ring-ditch and at Hay Close an undated stone cairn or platform was recorded within the enclosure. It is therefore possible that cairns of Iron Age date were more common than is currently thought in the south west and if generally small may have escaped detection until recently.

Summary

To summarise, after consideration of the possibility that enclosures 1 and 2 were used for livestock, it is argued that it is unlikely that they were primarily used for the purpose of holding animals, although animals may have been bought into the enclosures at certain times. Instead it is suggested that the Camelford enclosures were linked to a growing class of newly recognised Iron Age monuments which were associated with ceremony. These enclosures are recognisable by their unusual forms, which often appear to reference earlier monuments, and their non-defensive arrangements of banks and ditches. The spread of these sites across Cornwall may reflect contacts with other communities around the Atlantic façade.

The living zone; structures and fields

The archaeological investigations also resulted in the recording of several features associated with an open settlement. These included the unexcavated enclosure 3, which was identified by geophysical survey, structure 4 a large roundhouse, structure 5 a small ancillary building and the fragmentary remains of a field system.

Enclosure 3

This rectangular anomaly was identified by the geophysical survey to the north of enclosure 1 but was not excavated as it was not within the development area. Situated on the south-western edge of the highest contour, it is aligned north-north-west to south-south-east and measures approximately 32m by 28m. There appear to be gaps in the northern and southern ditches; apparent gaps in the eastern and western ditches mark where the feature is interrupted by a field boundary. A central circular anomaly identified within the enclosure suggests that it contains a round structure.

The shape of the enclosure 3 could be seen as being suggestive of a Roman fortlet and it is of comparable size (0.08 ha) to identified fortlets or signal stations in the region such as Old Burrow (0.1 ha) and Martinhoe (0.1 ha) in north Devon, although these sites are surrounded by larger oval enclosures (Riley and Wilson-North 2001, 76–7). In addition, the absence of Roman-period ceramics from the fills of the features in the adjacent excavated area, and the paucity of unstratified finds generally, also makes the 'fortlet' interpretation unlikely.

In fact, the form of enclosure 3 parallels a number of Iron Age square and rectilinear enclosure sites which have been excavated across Cornwall, including examples at Boden (St Anthony-in-Meneage) and Tremough (Gossip 2013; Gossip and Jones 2009–10) and is similar to the unexcavated cropmark enclosure which was identified at Higher Besore. The latter site is also analogous to enclosure 3 by being located near an unenclosed Iron Age roundhouse settlement (Gossip, forthcoming). It is, however, smaller than these examples and would belong to the 'very small' enclosures which have been identified as cropmarks in the Camel estuary (Young 2012, 78).

Enclosure 3 is also very similar in layout to an excavated site at Blackhorse in east Devon, which has been radiocarbon dated to the Middle Iron Age (Fitzpatrick *et al* 1999, 160–92). This rectangular enclosure contained a centrally placed ring-grooved roundhouse, which is also potentially analogous to enclosure 3.

Indeed, the internal curvilinear anomaly within enclosure 3 appears to be comparable with the anomalies that were associated with roundhouse structures 4 and 5. Although the site is unexcavated, it seems likely that enclosure 3 is of Iron Age date and that it had a large roundhouse within it. It is therefore perhaps best interpreted as a higher status dwelling on the margins of the settled area. This might also be suggested by its location at the highest point within the settlement.

Structures 4 and 5

Structures 4 and 5 were located at the south-western part of the main excavation area, to the south of enclosure 1. Any discussion of structures 4 and 5 should bear in mind the truncation that has occurred across this area of the site. The creation of the playing field in the 1960s involved the levelling of this field, cutting into the slope that rose up to the north.

The overall form of structure 4 is uncertain, as it was not entirely exposed and a good proportion of the site remains unexcavated on its western side. The excavated ring-gully revealed a penannular ditch with a 10.6m wide entrance to the south. The geophysical survey appeared to show that the northern and eastern section of the curvilinear ditch is dislocated from the western section; however, this area could not be investigated and the ditch may be continuous.

Nonetheless it seems that structure 4 was a roundhouse, with a confusing number of internal features, some of which may have been associated with an earlier Bronze Age occupation, and others which may have been heavily truncated. Some of the internal postholes may have been part of a post-ring but others are more likely to have been associated with the internal subdivision of space within the roundhouse. No hearth was identified, although traces of floor surfaces did survive, implying that it had been occupied. The lack of a hearth may be due to the impact of truncation; if the hearth had not been set within a deep cut it is quite possible that it had been removed. Interestingly, there was little evidence that the structure had been renewed, as there was an absence of duplicate features or for recut postholes and the three radiocarbon determinations form a tight group (SUERC-35010), (SUERC-35011) and (SUERC-35012). It is therefore likely to have been a single phased building which probably stood during the second half of the first century cal BC.

The most prominent feature was the ring-gully which formed the perimeter of structure 4. In the past, it was thought that ring-gullies were for the drainage of rainwater away from the walls of structures. However, work on reconstructed roundhouses has revealed that drip-gullies are not needed and do not work particularly well (Reynolds 1982, 197). More recently it has been suggested that some ring-gullies were structural features, termed ring-grooves, which were dug to hold the bases of the vertically-set timbers which formed the walls of roundhouses (Manning and Quinnell 2009). Ring-groove roundhouses are widely distributed and have been recorded in southern England (Cunliffe 2010, 273) and Wales (Crane and Murphy 2010). Within the south-west region examples have been identified at Blackhorse in east Devon, where stakeholes were identified in the base of the encircling gullies (Fitzpatrick *et al* 1999, 163–6), and large Middle Iron Age ring-groove roundhouses of similar diameter to structure 4 were recently identified at Penmayne (St Minver) (Gossip *et al* 2012).

Another possibility is that the ring-gully did not mark the position of the house wall but enclosed it. This arrangement was found at the Iron Age settlement at Higher Besore, particularly house 4, where there is a shallow groove for the wall (with stakeholes) set 1.5m inside the main ring-gully (Gossip, forthcoming). The ring-gully around Camelford structure 4 is 'ditched', rather than 'grooved' in section, so it is possible that it was intended to provide a barrier around a roundhouse which stood inside it.

The gully around structure 5 had been recut and the interior of the enclosed space did not contain a post-ring. This makes it more difficult to ascertain whether it was set inside the perimeter of the ring-gully or if it was a ring-groove structure. Either way it would have been a modest sized structure and if enclosed by the ring-gully it would have been less than 6m in diameter.

By contrast, as a building within its own enclosure, structure 4 would have been set within a space of around 14.4m in diameter. This would have made an imposing building, approximately of the same dimensions as enclosures 1 and 2. This is of interest as there is evidence for architectural associations between ceremonial monuments and roundhouses throughout the Bronze Age (Gossip and Jones 2007, 38; Bradley 2012, 165) and these links may have continued into the Iron Age. Just

as the ring-ditch and banks around the enclosures 1 and 2 defined the community's ceremonial activities, so the ring-gully around structure 4 would have defined the living space around the community and it is possible that there were metaphorical references between different kinds of enclosed space.

Structure 4 is one of a small number of comparable sized Iron Age roundhouses which have been recorded across Cornwall (Fig 35).

House 1 at Trevelgue cliff castle (Nowakowski and Quinnell 2011, 105–27) was a stone-walled building 14m in diameter levelled into a slope. However, there were differences as the perimeter of the Trevelgue roundhouse was defined by walling consisting of large stone orthostats with gaps filled by flat-laid slates, and there was no evidence of a ring-gully. A post-ring 6m in diameter formed of nine large posts and an inner ring of six posts has been proposed by Nowakowski and Quinnell (*ibid*, 113), with an entrance nearly 3m wide to the south east (*ibid*, 119). The use of the structure has been radiocarbon-dated to the fourth to second centuries cal BC. The Trevelgue structure therefore appears to have fallen out of use before structure 4 at Camelford was constructed.

At Threemilestone (Kenwyn) on the western edge of Truro, 12 later Iron Age roundhouses, were uncovered and excavated (Gossip, forthcoming). Most of the main domestic structures, including house 8, measured 8–10m in diameter, although house 12 had a diameter of 11.5m. This means that Camelford structure 4 is slightly bigger than the largest ring-gullied roundhouse at Threemilestone

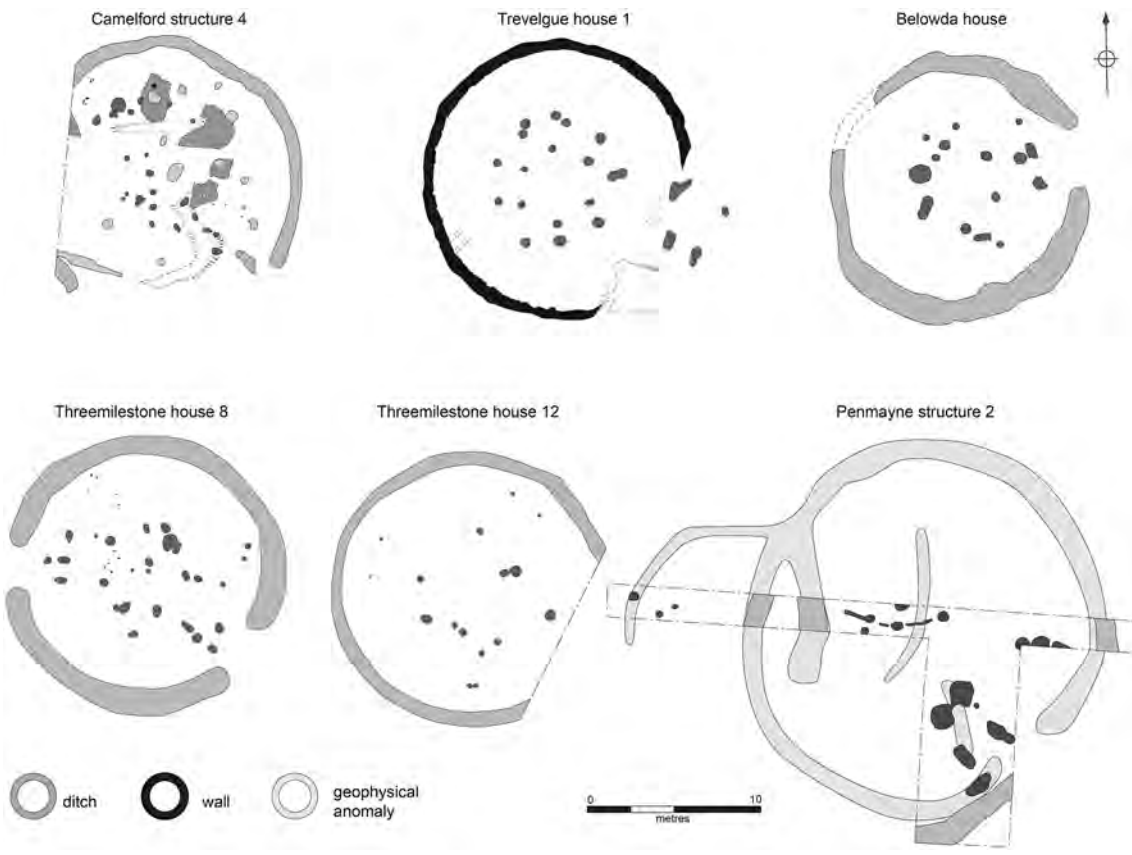

Fig 35 Plans of large Iron Age roundhouses recorded in Cornwall: Trevelgue (after Nowakowski and Quinnell 2011); Belowda (after Clark and Foreman, forthcoming); Threemilestone (after Gossip, forthcoming); Penmayne (after Gossip et al *2012).*

(*ibid*). In common with Camelford structure 4, no internal hearths were identified. Radiocarbon dating suggests that the settlement was occupied during the fourth to first centuries cal BC (*ibid*).

The remains of two unenclosed roundhouses have also been identified at Belowda (Roche). Both are recorded as being 12m in diameter and consist of penannular gullies surrounding central post-rings. Radiocarbon dating falls in the period from the third century cal BC to the first century cal AD (Clark and Foreman, forthcoming).

Ring-gullied roundhouses were also recorded at Penmayne (St Minver). At Penmayne the remains of at least three large ring-gullied structures with diameters of 14m to 18m, and three smaller ones under 10m in diameter, associated with a roundhouse settlement were identified through geophysical survey and evaluation trenching (Gossip *et al* 2012). Dating evidence is limited to a hearth associated with structure 2 which provided a radiocarbon determination of 2210 ±30BP, 380–190 cal BC (SUERC-35184), and a few sherds of pottery which are likely to be of a similar date. These roundhouses did not appear to contain central post-rings. However, only a limited area of the Penmayne roundhouses was investigated and further features may have lain outside the excavated areas. The limited evidence suggests that the settlement was earlier than Camelford and occupied during the Middle Iron Age, although the origins and length of occupation on the site remain unknown.

From this brief survey of recently excavated structures in Cornwall, it appears that structure 4 sits comfortably within the range of larger roundhouses which are securely dated to the Iron Age. The lack of identifiable hearth and strongly-defined internal post-ring are also paralleled both in Cornwall and across the south-west region as a whole.

Structure 5 was conjoined with the eastern side of structure 4. Despite being a small ring-gullied building with a diameter of up to approximately 7m, it appears, by contrast with the much larger roundhouse, structure 4, to have been a multi-phased building. The first phase of the feature is dated to the Late Iron Age by sherds of Cordoned ware and by the fact that the primary ring-gully is cut by structure 4, which is dated to the first century cal BC.

The building in its primary form was defined by a possibly continuous ring-gully. Again no post-ring could be defined within the building and only a handful of features were assigned to this phase. Unlike structure 4, there were no *in situ* occupation deposits, and it is possible that structure 5 was not a dwelling but a workshop. One of the largest features within the structure took the form of a long, possibly stone-lined pit, [2149], perhaps associated with smithing. Some support for this was suggested by the presence of burnt clay within the fill of the pit, which may have been associated with a metallurgical hearth. Burnt clay, hammer-scale and three fragments of iron slag from an adjacent pit, [2171], may also have been associated with this phase of activity, and is indicative of small-scale smithing.

The primary ring-gully around structure 5 was cut by the ring-gully around structure 4. This implies that it had fallen out of use, or that structure 4 was built right up against it, perhaps suggesting that structure 5 became an ancillary building to the larger roundhouse, structure 4. Similar developments have been found at Middle Bronze Age upland roundhouse settlements, where stone-walled roundhouses were sometimes added to earlier structures (for example, Jones and Quinnell 2011).

However, the ring-gully around structure 5 was recut and evidence for a second phase is provided by a radiocarbon determination 1875 ±35BP, cal AD 60–240 (SUERC-35009) from hearth-pit [2161]. This date falls within the Romano-British period and implies that long after structure 4 had been abandoned, structure 5 was rebuilt. The fill of the hearth was charcoal-rich but there were no obvious traces of metalworking. However, it is possible that some of the slag and burnt clay discussed above could belong to this phase. Some Roman period activity on the site as a whole is indicated by the presence of Roman-period sherds in enclosure 2.

Structure 5 was unusual in having a continuous ditch around it, and for being, by comparison with structure 4, long-lived. It is possible that its longevity may relate to its function, as it seems likely that the building was used in at least one, if not both phases, for small-scale secondary smithing. The continuous ring-gully might also imply that the building had been closed down with some formality as it is possible that the entrance into was removed when the building was abandoned. This is of interest as there was no sign of formal closure associated with structure

4. Comparable small buildings containing traces of smithing and small-scale metalworking have been found elsewhere in Cornwall, as for example at Tremough (Gossip and Jones 2007, 45–9) and Little Quoit Farm (Lawson-Jones and Kirkham 2009–10). At Camelford, this activity is may have been associated with the repair of farm tools and domestic equipment associated with the settlement; however, the building may have acquired a special status or reputation because of the activities that took place within it.

Field system

The field system was very fragmented through truncation and was largely confined to the eastern end of the excavation area although further, uninvestigated, ditches identified by the geophysical survey were also located to the south of the school, and some of these may also be of later prehistoric / Roman date.

Unlike the majority of dated Iron Age ditched field systems in Cornwall (for example, Gossip and Jones 2009–10), the surviving ditches at Camelford did not appear to form a rectilinear field pattern, and instead the ditches at the western end of the field were sinuous and curvilinear. However, in common with many of the ditched field systems in Cornwall (Jones 2001–2; Johns 2008; Jones and Taylor 2010, 47–9), they do appear to date from the latter part of the Iron Age when the formal division of land by ditch-defined fields became more commonplace.

The southern half of the longest ditch, [2261], was unusual in that it had a stone revetment along its western edge. The nearest comparison for this type or arrangement was found at Trenowah (St Austell), where large stones were found within curvilinear ditches associated with enclosures of Iron Age date (Johns 2008). The reason for the revetment was unclear, though it could represent the basal courses of a revetted bank or wall which formed a stock-proof barrier, designed to keep animals out of the settlement area to the west, or strengthening of the edge of the ditch in an area of concentrated use. Further possible hints of stock management are also perhaps suggested by the second curvilinear ditch [2207] which lay 2m to the west of [2022]. These ditches may have worked together as a funnel to channel animals and perhaps people in and out of the settlement area. A reliance on animals, rather than arable agriculture is also indicated by the paucity of charred cereals from the roundhouses and the enclosures, and by the presence of burnt animal bones within some of the enclosure ditch fills.

Pits and postholes were found to the immediate east of ditches [2022] and [2207]. These did not form a coherent pattern, although an amorphous pit [2209] appeared to contain a stone-lining and may have been used as a hearth. No metal slag or other industrial residues were identified within this feature; however, it is possible that the hearth and pits were associated with open air activities, such as the cooking of food close to the edge of the field system.

Conclusions and overview

The excavations at Camelford were hugely significant because they provided a rare opportunity to examine the contemporary remains of both unenclosed settlement-related activity and more rarely glimpsed formal ceremonial activity dating to the Late Iron Age, in the first century cal BC.

The settlement-related activity included the identification of fields, at least one roundhouse and an ancillary structure. The settlement is smaller than other recently investigated open settlements at Penmayne, where there were up to four roundhouses, and Threemilestone, where 12 were recorded (Gossip *et al* 2012; Gossip, forthcoming). However, it is possible that, as at Penmayne, the settlement was linear and further structures were located beyond the extent of the project area, to the east of structure 4. Curvilinear features were also detected by the geophysical survey in the area between enclosures 1 and 2, but these lay outside the investigated area. The excavations suggested that the settlement may have been associated with livestock and that small-scale blacksmithing had taken place. Although complex, the ceremonial monuments were relatively small in scale; it is tempting to see them as serving a localised community.

The proximity of the structures and enclosures also strongly suggested that different types of activity happened in close propinquity, and that there was no major attempt to create a distinct ritual area which was spatially separate from the settlement-related activity. Instead the ceremonial enclosures were sited near to a roundhouse, which was in turn immediately adjacent to a structure used for smithing. Furthermore, although enclosures 1 and 2 were distinctly defined spaces it is unlikely

that the banks would have been large enough to hide activities taking place within them from people standing outside. A person entering the fields from the opening to the east, looking towards the settlement, would have seen structures 4 and 5 straight ahead and enclosures 1 and 2 to the right. If contemporary, only the large rectangular enclosure 3 with its central structure may have stood slightly above the rest of the settlement. As argued above, this enclosure may have been associated with a higher status dwelling.

Likewise, there are indications that there were, as Richard Bradley (2005) has argued, ritualised activities within the domestic sphere. Indeed, it seems that there were relationships between ritualised activities in the roundhouse and more overt rituals taking place within the enclosures. This is indicated by the evidence for overlapping practice which is found both within the enclosures and the structures, involving the face-down burial of the quern within enclosure 2 and in the gully near to roundhouse structure 4. The merging of the iron with the quartz block found in enclosure 2 may also have been undertaken by the blacksmith who worked out of structure 5. Similarly, the evidence for feasting found within the terminals of enclosures 1 and 2 may well have involved the killing and roasting of animals raised in the adjacent fields, and the careful treatment and burial of some of the burnt remains may relate to the close links between people and their livestock.

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The project archive will be deposited at the Royal Cornwall Museum, Truro, and the accession number is Truri:2008.28.

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Restormel Castle, Cornwall: archaeological recording, 2006–2008

SEAN R TAYLOR AND CHARLES JOHNS

with contributions from ERIC BERRY, CLAIRE INGREM, OLIVER JESSOP, JAN LIGHT, ROGER TAYLOR and CARL THORPE

Archaeological investigations in the bailey of Restormel Castle revealed evidence for buildings, including a wall or buttress that may have been part of the Great Hall. Finds included pottery, building materials, oyster shells and many pieces of lead; the artefacts and ecofacts recovered represent the period when the castle was at the zenith of its importance, during the tenures of the Earls of Cornwall and the Black Prince, the first Duke of Cornwall, from the late thirteenth to the mid-fourteenth century.

Between October 2006 and February 2008 Historic Environment Service (Projects), Cornwall County Council (HES; now Cornwall Archaeological Unit) undertook a programme of archaeological investigations in the bailey of Restormel Castle, connected with the construction of a new admissions building and upgrading of services. These were the first recorded archaeological interventions to have been carried out at the castle.

Location and setting

Located 1.6 km north of Lostwithiel, Restormel Castle (Scheduled Monument 15004; NGR SX 1040 6139) is a medieval castle with shell keep and bailey built on a spur of high ground on the west bank of the River Fowey overlooking a bend in the river. It has clear views upstream and downstream to Lostwithiel (Fig 1). The ground falls steeply on three sides of the castle and to the west slopes gently to a saddle some 275m away, beyond which it rises again to the site of a Roman fort.

Previous work

Since becoming a public monument in the 1920s Restormel Castle had hardly been studied so during the 1990s English Heritage commissioned a programme of works to improve interpretation material and to create a detailed record which could be used for specifying conservation measures (Thomas 1996, 3). In 1993 Cornwall Archaeological Unit (CAU) carried out an interim historical and archaeological investigation including analysis of the standing fabric and a brief description and sketch plot of the bailey earthworks (Thomas and Buck 1993, 12 and fig 10); there was also a review of the documentary evidence (Buck 1993). Subsequently, primary sources were also assessed (Travers 1995). In 1994 a geophysical survey (Fig 4) comprising resistivity and magnetometry, both inside and outside the bailey, was carried out by Geophysical Surveys of Bradford (Geophysical Surveys of Bradford 1994). Augering in 1994 suggested that the castle ditch had always been dry (Thomas 1994). A measured survey was made of the bailey (Fig 3) and a full

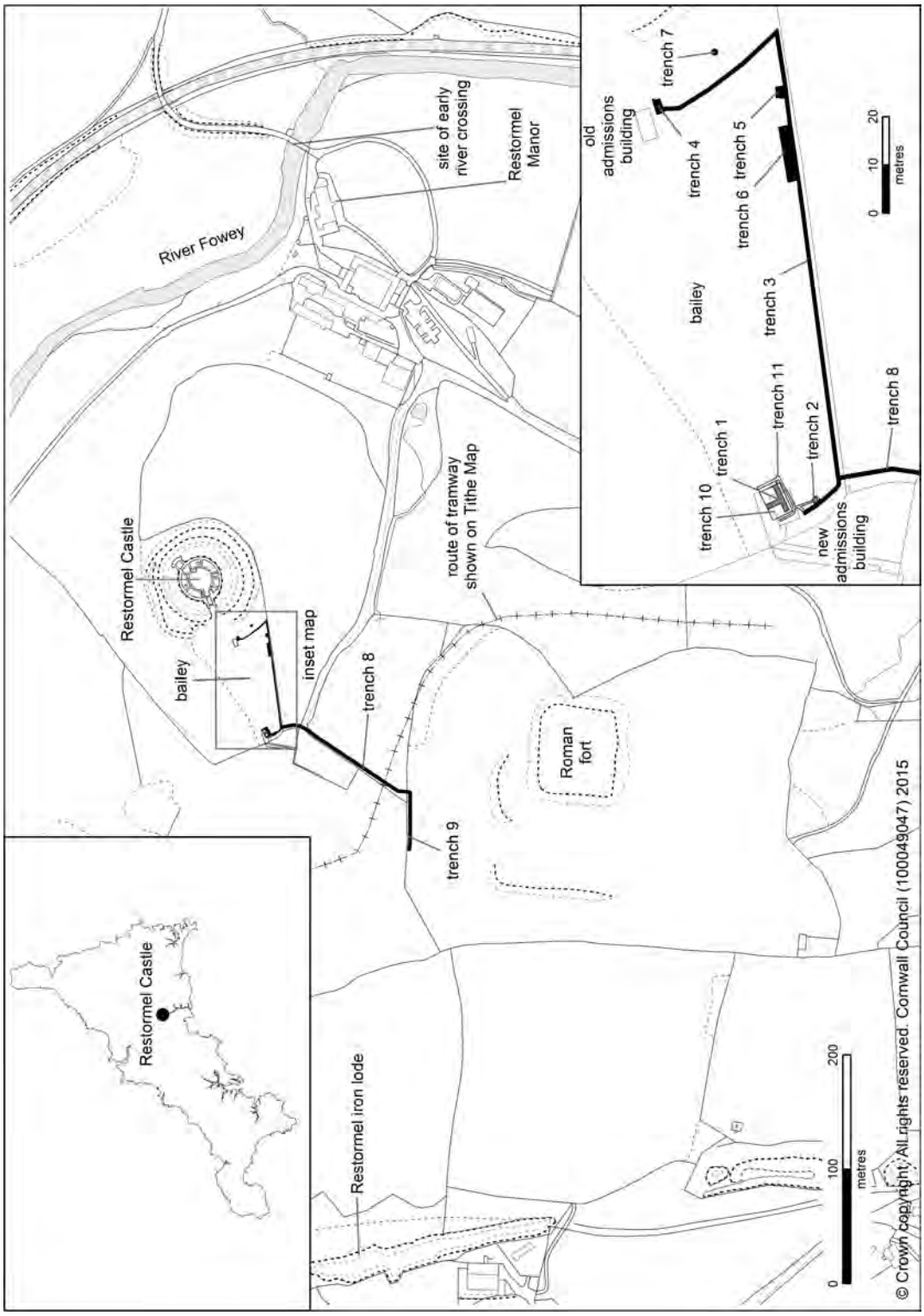

Fig 1 Restormel Castle: location and positions of trenches.

photogrammetric survey of the keep (covering the gatehouse, hall, chapel and all exterior faces) was partly annotated and analysed by CAU (Thomas 1996). This supported conclusions from the 1993 assessment that the shell keep and the buildings within had been built in a single building programme in the late thirteenth century.

Approximately 350m south south west of the castle, occupying the tip of a spur overlooking the River Fowey, is the site of a Roman fort 'rediscovered' from aerial photographs in the early 1970s (Irwin 1975). The earthwork had previously been plotted on nineteenth-century Ordnance Survey maps and labelled 'Uzella (of Ptolemy)', a reference to a fort listed in Ptolemy's *Geography*. A large number of Roman finds have been recovered by metal detecting and fieldwalking on and around the site, prompting a geophysical survey which confirmed that the earthwork is a Roman fort (Hartgroves and Smith 2008).

Archaeological and historical background

Restormel Castle

The original castle was a ringwork, some 38m in diameter, with timber defences and a quadrangular bailey on its west side (Radford 1991, 5–6), which is now thought to have been built by the de Cardinham family at the beginning of the twelfth century to control a crossing point on the River Fowey and encourage the growth of Lostwithiel. The surrounding deer park may have been created at the same time as part of a single design and was certainly extant by 1250 (Herring 2003, 39; Thomas *et al* 2011, 298; Thomas, forthcoming).

In 1265 Isolde de Cardinan surrendered the castle, surrounding lands and the town of Lostwithiel to Richard, Earl of Cornwall, following the battle of Evesham and the death of her husband Thomas de Tracey (Thomas and Buck 1993, 8). In 1272 Richard was succeeded by his son Edmund who transferred the seat of royal administration from Launceston to Restormel (Saunders 1984, 7) and built Restormel's shell keep as an early, castle-like country house within a wider designed landscape (Thomas *et al* 2011, 298; Creighton, forthcoming). The house's large windows would have afforded views over the park and to Lostwithiel further down the Fowey valley. The bailey defences were not strengthened and surviving sources suggest that the castle was never directly involved in medieval conflict (Thomas *et al* 2011, 298). Its importance stemmed from its role as an administrative centre and residence, as attested by the character of the well-preserved and unaltered suite of domestic structures within the keep (Salter 1999, 8).

On Edmund's death in 1299 the Earldom of Cornwall reverted to the Crown and since 1337 Restormel has belonged to the Duchy of Cornwall, set up in that year to provide an income for the sovereign's eldest son. Edward the Black Prince visited Restormel in 1354, 1362 and 1365 (Radford 1991, 5–6; Molyneux 2010, 20) but the castle was mainly a residence for stewards of the Duchy (Thomas and Buck 1993, 10).

The park was expanded and in 1337 was recorded as having 300 deer, making it the largest deer park in Cornwall (Hull 1971, 42; Thomas and Buck 1993, 6). Deer parks were symbols of lords' political and feudal power and the animals themselves helped reflect and reinforce the lord's status (Herring 2003, 42). A chart of the Fowey estuary drawn about 1540 shows the park surrounding the castle, the greater part of it on the Lostwithiel side of the river but with a portion to the east in St Winnow parish. A deer park gate is shown towards the town and woodland is evident north of the castle (Molyneux 2010, fig 13). This chart is the earliest known illustration of Restormel Castle, created shortly before Restormel was disparked in *c* 1541 (Thomas, forthcoming).

A hermitage and chapel of the Trinity in the park at Restormel was recorded in documents of the late thirteenth and fourteenth centuries (Orme 2010, 304–5); this is thought to have stood on the site of Restormel Manor.

While it appears to have been maintained during the fifteenth century, Restormel was abandoned by 1540 and subsequently fell into disrepair (Thomas *et al* 2011, 298). In 1644, the ruinous castle was occupied by a detachment of troops from the parliamentary army of Lord Essex but it was taken by the royalist forces of Sir Richard Grenville in August of that year, the only time that the castle saw military action (Barratt 2005).

In the eighteenth and nineteenth centuries the castle became a picturesque, ivy-covered ruin which was a popular romantic subject for artists, engravers and photographers (Thomas and Buck 1993, 10).

Fig 2 Restormel Castle from the east. (Photograph: © Historic Environment Record, Cornwall Council; F80-065, 11 September 2007.)

The bailey

The castle bailey is sub-rectangular and occupies the flat spur west of the keep. It is likely that it retained its earth and timber defences when the keep was rebuilt in stone. A document of 1325–6 might give details of the construction of buildings within the bailey. A roll of the expenses of castles and parks in Cornwall and Devon (PRO E/1010/461/11, transcribed in Travers 1995) begins with a reference to sawn floorboards obtained from Bodmin and Pendenys (*sic*) for the houses below (*infra*) the castle and goes on to list a large quantity of building materials including timber from Penlyn (*sic*), lead, an iron key, various nails, tin for solder, sand, lime, water to slake the lime, slates, and laths. Services paid for include the drawing of nails from old timber and various transport costs to and from the castle. The roll ends with reference to roofing 'the great hall and certain chambers outside the castle' (Travers 1995).

In the following decade the 1337 Caption of Seisin records that

> 'there are beyond the gate of the said castle a great hall with two cellars and a sufficient chapel. The kitchen of the said hall and a certain passage leading from the hall to the kitchen are weak and need speedy repair. Also there are there three chambers with cellars below and a decayed bakehouse. And two old and ruinous stables for 20 horses on either side of the gateway. And there is a certain conduit of water made of lead through which water is brought into the castle to each house of office of the same castle which needs new repair with lead' (Hull 1971, 41–2).

Subsequent documentary references to an order in 1361 for '102 oaks of a shape for roof-beams for the repair of the prince's castle of Rostormel' (HMSO 1930, 185) is thought likely to refer to maintenance of buildings within the bailey since there are no signs of major alterations within the keep dating to this time (Thomas and Buck 1993, 9).

The decline of the castle and bailey was commentated on by a number of post-medieval travellers: Leland, 'the base court is sore defacid' (Chope 1918, 44); Carew, 'his base court is rather to be conjectured than discerned by the remnant of some few ruines; amongst which an oven of 14 foot largeness, through his exceeding proportion, prooveth the like hospitality of those dayes' (Halliday 1953, 213); and Borlase, 'on the higher side . . . leading to the principal gate there are traces of buildings to be found' (1769, 356–8).

Today, the crest of the southern rampart of the bailey appears to be represented by a break of slope inside the present field boundary; this is particularly evident along most of the south side and at the south-west corner. On the west side the bailey rampart is very low and may have been almost entirely removed by a field boundary. The northern limit of the bailey is still traceable as a bank up to 1.5m high running along the contour above a steep wooded natural slope. This bank has been greatly disturbed approximately halfway along its length due to small quarrying pits, shallow recent cuttings (Thomas and Buck 1993, 12).

Within the area of the bailey numerous terraces or building platforms can be discerned, some of which appear to have been disturbed by modern tree planting. There is undoubtedly a great deal of archaeological material surviving below the surface throughout the bailey, possibly the foundations of buildings mentioned in the *Caption of Seisin* and noted by later writers such as Leland and Carew. The terraces visible today have a rather smoothed-over appearance, possibly caused by landscaping when the site became part of the grounds of Restormel Manor in the eighteenth century, or

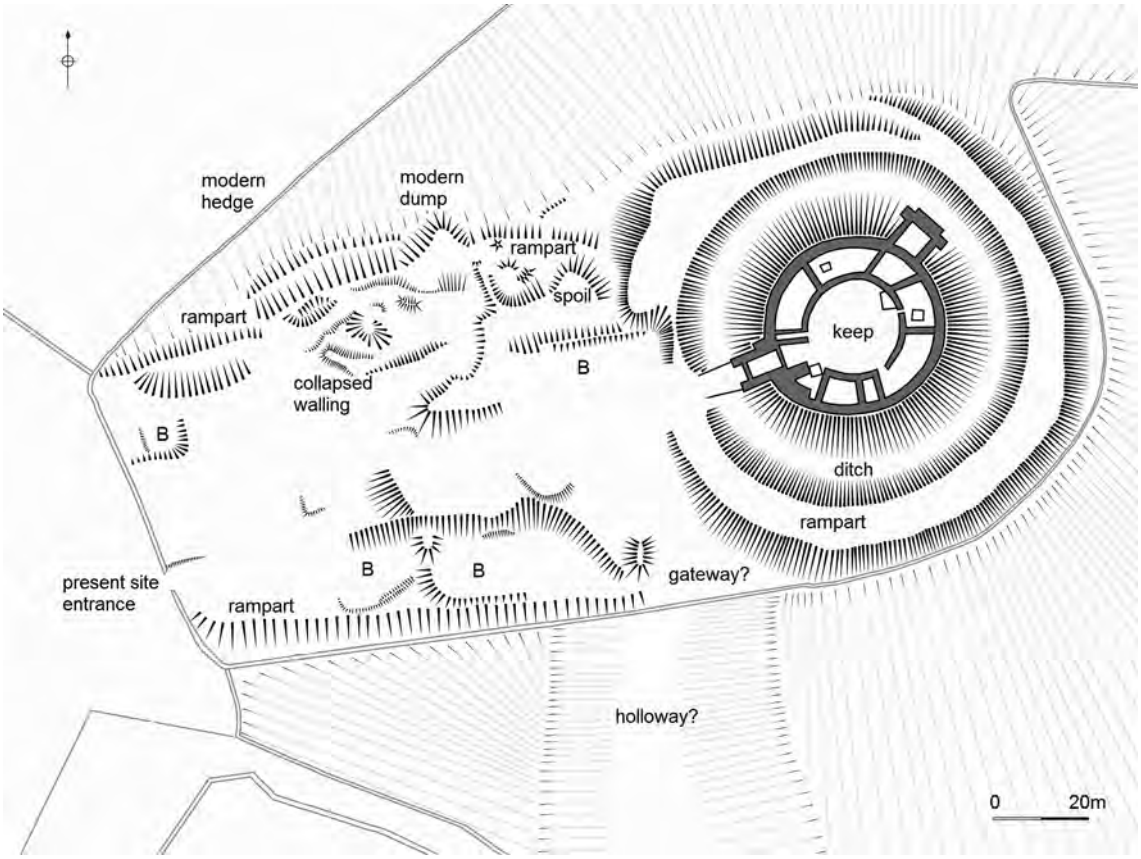

Fig 3 Earthwork survey of Restormel Castle. B = building platform. (Unpublished 1994 survey by Nigel Thomas and Colin Buck, CAU archive GRH 168/6.)

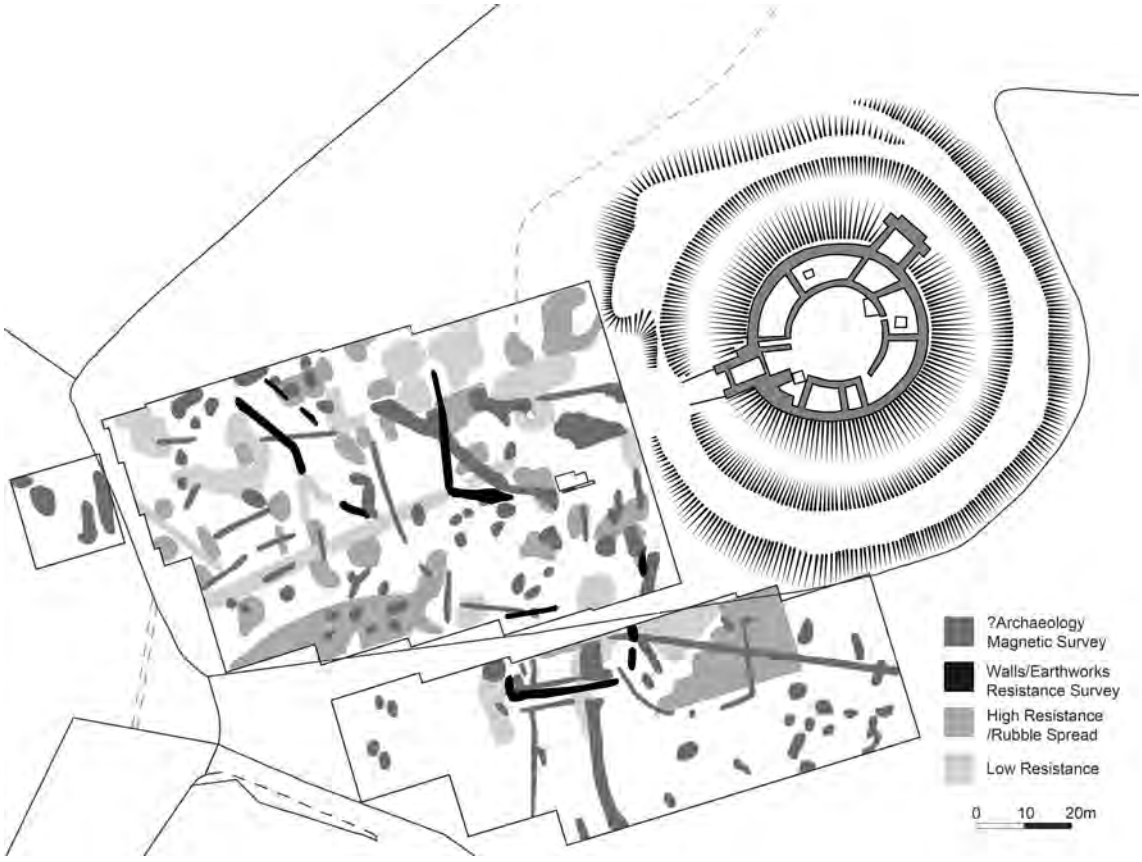

Fig 4 Interpretation of 1994 magnetometer and resistivity surveys. (Geophysical Surveys of Bradford 1994, fig 10.)

perhaps by a limited amount of ploughing (Thomas and Buck 1993, 12).

The position of the medieval gateway into the bailey had not previously been established until CAU reported on the results of earthwork and geophysical surveys and concluded that the most likely area was in the south-east corner of the bailey, adjacent to the keep, where evidence for the bailey rampart was absent. Additional evidence in the form of a hollow way approaching this area from the access lane and the positioning of arrow loops in the keep wall facing this direction strengthened these claims (Thomas and Buck 1993, 13). The geophysical survey supported this conclusion by discovering a high resistivity signal that appears to indicate the stone footings of a rectangular building, presumably a gatehouse, in this area.

The geophysical survey also shows plenty of evidence for activity in the bailey, including several areas of high resistance which may indicate building debris and lengths of possible walls (Fig 4). There are two linear features identified by the magnetometer survey which might represent the line of the water supply referred to in the 1337 survey, with one line heading west to east towards the entrance to the keep, and a second line heading south from this before appearing to curve to the east and continuing to the south of the bailey. Evidence for activity continues outside the bailey, to the south. The main features here are two parallel ditch-type anomalies running north–south, the eastern, curving, feature being the most substantial. These are interrupted by an east–west line of high resistance which might suggest walling. Together with other high resistance features this appears to

form a large rectangle; perhaps this is the gatehouse and the north–south ditches define a trackway leading to it. However, there are problems with this interpretation. First, the position of the entrance suggested by earthwork evidence lies about 10–20m east of this point. Second, the rectangular outline suggested by the high resistance features seems very large for a gatehouse. And third, if it is a gatehouse then the ditches of the supposed track leading to it would be expected to stop at the gatehouse rather than continue through it. Alternatively, perhaps the parallel ditches are part of another enclosure to the south of the keep and bailey, with the line of high resistance making a metalled trackway through its entrance. This could either be an enclosure predating the castle or an additional bailey associated with it. If so, this lower bailey would have been on sloping ground to the south of the keep, and there could have been an entrance from it to the upper bailey next to the keep, where there is a break in the scarp representing the line of the bailey rampart.

The investigations

The archaeological recording was commissioned by English Heritage to satisfy a condition of Scheduled Monument Consent for the construction of a new admissions building and associated upgrade of services. The new building, at the west end of the bailey, replaced the old admissions building in the east of the bailey.

In 2006 the recording comprised evaluation and excavation of the new admissions building site (trenches 1 and 10), excavation of a test pit on the site of a new cess pit (trench 2) and watching briefs during short lengths of trenching for sewage, water and telephone connections to the building. In 2007 a watching brief was carried out during upgrading of the power supply to the castle. This involved excavation of a trench some 200m long from the public entrance, around the southern edge of the bailey to the area of the keep (trench 3) with a branch to the new admissions building (trench 11). Where significant archaeological remains were uncovered the trench was widened to allow for further investigation (trenches 4, 5 and 6). A watching brief was also carried out during the excavation of a trench approximately 125m long from the bailey to the car park (trench 8) with a branch 50m long along the southern side of a field boundary (trench 9). In addition a hole dug for tree planting was also examined (trench 7). The results were collated in an archive report (Taylor and Johns 2009) and then assessed to set out a programme of further analysis and publication.

The numerous interventions have been rationalised and renumbered for this report in order to be more easily understood. To enable reference to the archive, Table 1 lists the new and original numbering system for the various trenches in order of the date of the intervention. The location of the trenches is shown on Figure 1.

Metal detecting was carried out over the footprint of the new admissions building (trench

Table 1 Rationalisation of trench numbering, ordered by date

New number	*Old number*	*Date of intervention*	*Site code*	*Description*
Trench 1	Areas 4a and 4b	October 2006	RC06	Evaluation of the footprint for the new admissions building
Trench 2	Trench 5	October 2006	RC06	Test pit over the site of the new cesspit
Trench 3	Trenches 1 and 2	March 2007	RC07	Electricity supply trench, 0.6m wide by 0.3m deep, within the bailey
Trench 4	Area 1	March 2007	RC07	Extension of T3 over wall 108
Trench 5	Area 2	March 2007	RC07	Extension of T3 over cut [134]
Trench 6	Area 3	March 2007	RC07	Extension of T3 over possible entrance into the bailey
Trench 7	Trench 7	March 2007	RC07	Pit dug for tree planting
Trench 8	Trench 3	October 2007	RC07	Electricity supply trench., 0.3m wide by 0.6m deep, beyond the bailey to car park
Trench 9	Trench 4	October 2007	RC07	Earth lead beyond the bailey
Trench 10	Area 4	December 2007	RC07b	Footprint of the new admissions building
Trench 11	Trench 6	December 2007	RC07b	Trench connecting the new admissions building with the power supply

1), the cess pit (trench 2), and the route of trenches between the cess pit and the footprint, and between the cess pit and a sewage access point 100m to the east. The results from this exercise were limited to the recovery of a quantity of waste lead and a Victorian penny.

During the watching brief for the power supply within the bailey metal detecting was undertaken over the trench (trench 3), excavated areas (trenches 4–7), and spoil, which was piled up by layer so that artefacts recovered could be identified by context. This exercise was extremely productive and a large quantity of metal objects was recovered, including an Edward III jetton, a large number of iron nails and other objects, melted lead, and some copper-alloy fragments, including a book clasp.

During the watching brief for the power supply beyond the bailey metal detecting was undertaken over the spoil in trench 8 in the field to the south-east of the car park. No artefacts were recovered during this phase of the works.

Stratigraphic summary

This section sets out the results from the evaluation and watching brief on the site of the new admissions building and two watching briefs conducted along sections of trenching. Context numbers were assigned to all structures, cuts and layers. Structures are given in unbracketed numbers, e.g. 108; cuts are given in square brackets, e.g. [126]; layers, fills, and deposits are displayed in rounded brackets, e.g. (118).

General

Within the bailey the topsoil was given eight numbers: (1) and (9) in trenches 1 and 2 respectively and (100) to (105), representing sections of trench 3, which ran from the old admissions building, south to the bailey wall, then west to the site of the new admissions building.

Directly beneath the concrete plinth of the old admissions building a substantial piece of walling was encountered, wall 108. South of this, in the central section between the old admissions building and the bailey wall, the topsoil, (101), was found to overlie a large quantity of slate rubble, (109), much of which had fastening holes or remnants of holes. This layer was excavated to a depth of 0.3m without reaching the base of the deposit. Within the pit dug for the planting of a tree (trench 7), 6m to the east of trench 3, the same slate rubble layer was encountered and here it was excavated to a depth of 0.38m without reaching the base of the deposit. The southern end of the trench up to the bailey wall was relatively free of building debris.

Trench 3 then ran along the inside of the bailey wall, across the possible location of the bailey entrance, and continued on to the site of the new admissions building. At the eastern end the stratigraphy was similar to part of the previous section, topsoil (103) lying over slate rubble. One section was particularly stony and the trench was extended to investigate (trench 5 below). West of this, in the central section, topsoil (104) was found to overlie a burnt layer, (111), at a depth of 0.3m and a decision was made to extend the trench in this location (trench 6). This also coincided with the possible location of the medieval gateway suggested by the geophysical survey. The western part of trench 3 ran from trench 6 to the site of the new admissions building. The topsoil here, (105), was markedly different from the topsoil in the rest of the trench, being redder and containing very few artefacts in comparison. No features or rubble deposits were observed in the base of the trench in this section.

The base of the topsoil throughout most of the bailey was not reached at the maximum depth of trench 3, 0.3m. Finds recovered from the topsoil included: roofing slates; ceramic ridge tiles; floor tiles; sherds of Cornish medieval coarseware; a sherd of French Saintonge ware; iron objects including a possible razor, an awl, a knife or saw blade, a bolt, a staple, a spoon handle, a door bracket, and hand-forged nails; copper-alloy objects including a dome-headed nail / tack or decorative stud and a book clasp (Thorpe, below); lead objects including pieces of sheeting, melted material, a musket ball, and a stud (Jessop, below); and modern (nineteenth- and twentieth-century) brick / tile, coins and glass. Most were found at the eastern end of the bailey; the quantity of finds diminished in the western part of the bailey.

Wall 108

An extension to trench 3, trench 4, was made in order to evaluate a large section of masonry, wall 108, encountered during the excavation of trench 3 (Figs 5–6). This substantial wall or buttress lay beneath the old admissions building, and extended beyond it for 0.8m to the south east.

Fig 5 Trench 4 facing north, wall 108. 1m scales. (Photograph: Cornwall Archaeological Unit.)

The wall was left *in situ* but the deposits surrounding it were excavated in an area measuring approximately 3m by 1.5m. A baulk 0.7m wide was left between the south-western corner of the wall and the edge of the excavated area in order to record the stratigraphic relationships of the wall and the surrounding layers. This relationship had been destroyed in part by the construction of a sewage pipe encased in concrete, 130, which ran under the admissions building in the north-western corner of trench 4.

The deposits on the western side of the wall were excavated to a depth of 1.2m revealing that the wall had been built in a foundation trench, cut [126]. This cut was not fully excavated but at the deepest point reached it had a steep straight edge and flat base. It was at its widest to the south, 2m, narrowing to the north to 1.8m. The foundation trench contained wall 108 and a single fill, (125). The wall was 1.4m wide and built of coursed, dressed killas blocks with slate fillets, facing a killas rubble core. Up to 13 courses of stone survived to a height of 1.25m. The stone was cemented with sea sand and lime mortar. A small area on the west face of the wall retained some render of similar material, suggesting that this portion of the wall had been above ground level at the time of rendering.

The edges of foundation trench [126] were filled with a clay deposit (125) which was excavated to a depth of 0.4m without reaching the bottom. Finds from this, the earliest context in trench 4 from which artefacts were recovered, included sherds of Cornish medieval coarseware, fragments of mortar, plaster and / or render, fish bones, oyster shells, small snail shells, and charcoal pieces.

Above this layer two deposits, (116) and (118), were recorded on either side of the baulk, and may represent the same layer. Both butted against wall 108 and contained sherds of Cornish medieval coarseware, animal bones, and oyster shells. Layer (116) also contained hand-forged iron nails while (118) contained a much greater amount of mortar and / or render, three fragments of ceramic ridge tile and a large quantity of land snail shells.

Deposit (117) was a rubbly layer butting against wall 108 to the east but separated from it by deposit (118) to the south, where it appeared to be edged by a concentration of roofing slates. It contained ceramic ridge tile and mortar fragments.

Layer (115) was encountered above (116) to the west of the baulk: a thin greyish deposit, it contained burnt animal bone, mortar fragments, and slate rubble. It did not appear to relate to any deposits recorded to the east of the baulk.

Fig 6 Trench 4, wall 108 plan and sections.

Layer (112) was recorded above (115) in the baulk: a deposit butting against wall 108, it contained roofing slates, ridge tiles, Cornish medieval coarseware, nails, animal bones, oyster shells, and land snails. An Edward III copper-alloy jetton dating to *c* 1345–1355 (Fig 10) was found in the excavated spoil from this deposit. Layer (112) appeared to be different from deposit (113) a sandy material containing a ridge tile and melted lead fragments, which layer was recorded only on the eastern side of the wall.

Sealing all previously described deposits around wall 108 was layer (107), a deposit composed predominately of broken roofing slates with ridge tiles, sherds of Cornish medieval coarseware, fragments of mortar / plaster, hand-forged iron nails, fish and animal bones, and snail shells. Layer (107) overlay wall 108 to the east and could be traced in the section to the west of the wall.

The western part of wall 108 was overlain by layer (129), a very rubbly layer possibly representing later disturbance of the wall. Over this was the concrete plinth, 106, for the old admissions building incorporating a waste pipe encased in concrete, 130.

Interpretation

The section of wall 108 is both substantial and close to the surface and it is perhaps surprising that it was not identified by the geophysical survey. It lies directly beneath the concrete plinth laid to support the admissions building and must have been visible when the plinth was set. It seems likely that the reason that it does not appear on the geophysical survey is that it is a short length of wall almost entirely masked by the recent structure. This would suggest that the wall has either been at least partially removed or that it never was a long wall. This might suggest a function as a buttress to perhaps a wall of finer stone that has subsequently been robbed leaving only the buttress behind. The building might also survive as stone foundations, but may not show on the geophysical survey because it is masked by rubble. The deposits around the wall have a homogeneity of finds all suggesting a thirteenth- or fourteenth-century date, indicating that they were laid down within a fairly short time. This might indicate that they are levelling layers, deliberately deposited to support the wall or buttress.

The location of a large buttress directly in front of the entrance to the castle suggests a building of stature, and the most obvious explanation is that this building was the great hall. The predominance of roofing slates in the upper layer beneath the modern topsoil indicates that the building fell into decay before robbing of the upper courses of stone occurred.

The rubble spread between the site of the old admissions building and the bailey wall suggests either the presence of a building in the vicinity or a levelling episode using building debris. The geophysical survey (Geophysical Surveys of Bradford 1994) shows a spread of rubble at this location at the centre of four cut features which may be structural although the evidence is inconclusive.

Possible entrance

Two areas close to the inner perimeter of the bailey were examined in more detail in trenches 5 and 6.

Trench 5: robber trench [134]

A concentration of rubble (110) was encountered during the excavation of trench 3 close to the inner perimeter bank of the bailey. Due to its proximity to the possible entrance identified by the geophysical and topographic surveys (Geophysical Surveys of Bradford 1994; Thomas and Buck 1993) it was thought the rubble might be related to a structure connected to this feature. Consequently a trench measuring approximately 2m by 1.5m, trench 5 (Fig 7), was opened north of and adjacent to trench 3.

Trench 5 was excavated down to a deposit of redeposited natural, (135), at a depth of 0.5m below the ground surface. Cut into this deposit was a trench or ditch, [134], up to 0.4m deep. This might be the site of a robbed-out wall. Only one edge of the feature was identified within the trench and, in plan, this edge ran north–south, with a central dog-leg. The earliest fill within this cut was (127), a rubbly deposit containing roofing slates, ridge tiles, Cornish medieval coarseware, melted lead, animal and fish bones, a variety of marine mollusc shells, and fragments of mortar.

Above this fill was deposit (114), another rubbly deposit similar to (127) but lighter in colour. The deposit contained Cornish medieval coarseware, French medieval coarseware, a sherd of Saintonge ware, hand-forged iron nails, a lead ingot, and mortar or plaster and chalk fragments.

Deposit (114) was cut by [139], a fairly shallow cut in the north-eastern corner of the trench which was filled by deposit (133) containing moderate amounts of rubble and mortar.

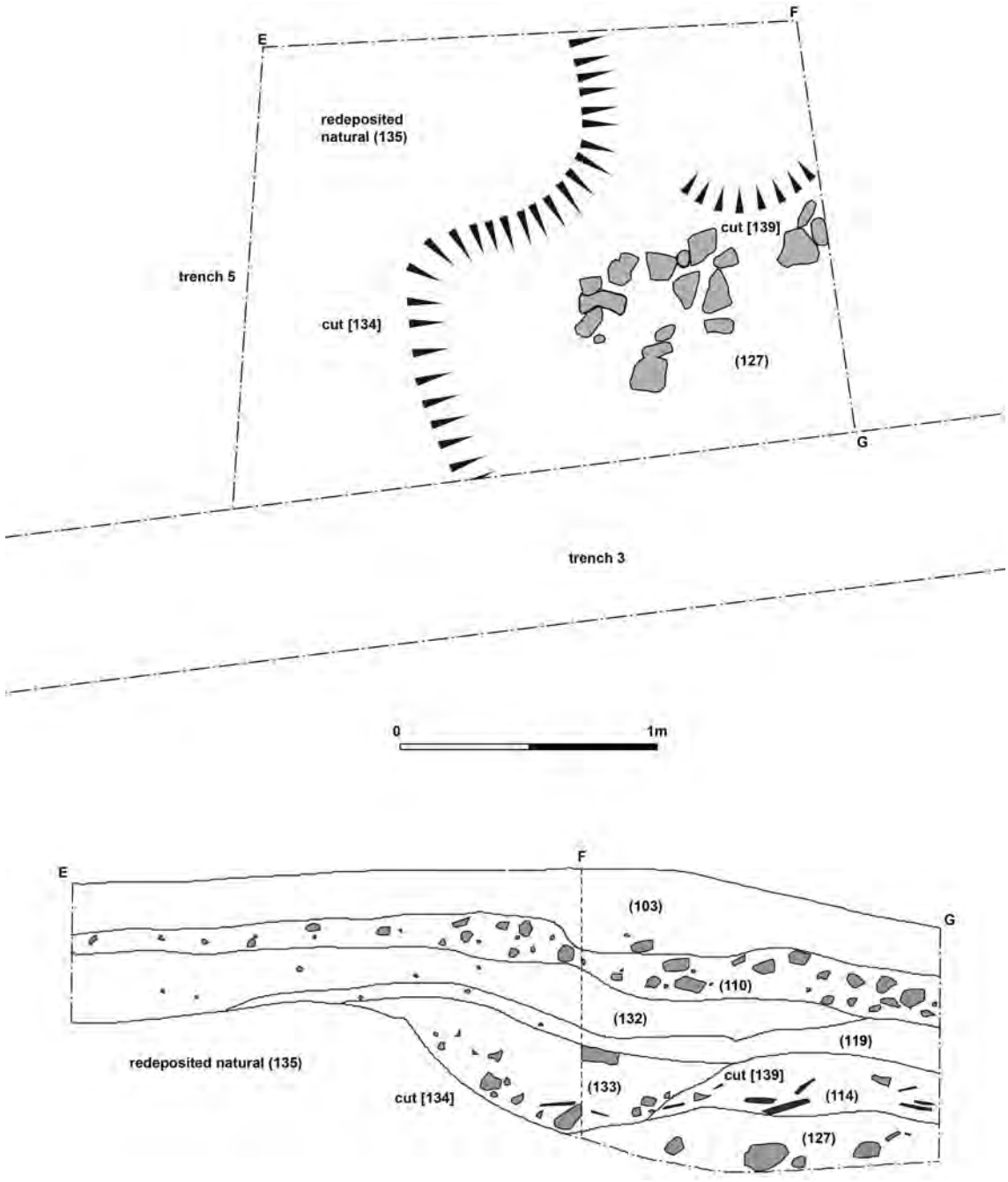

Fig 7 Trench 5, robber trench [134] plan and section.

Fills (114) and (133) were sealed by a single thin layer, (119), a silty deposit containing fragments of Cornish and French medieval coarseware, the latter including a Saintonge ware jug rim with an applied facemask decoration (Fig 17).

Above (119) to the north and north east was a thicker deposit, (132), an oxidised layer containing no finds. Sealing both (119) and (132) was layer (110), a deposit predominately composed of rubble with ridge tiles, a decorated floor tile, Cornish and French medieval coarseware (Saintonge plain ware), as well as a piece of intrusive modern bottle glass. Above (110) was the topsoil, (103).

Trench 6

The geophysical evidence for the suggested medieval entrance to the bailey consists of a possible approach track indicated by two roughly parallel north–south ditched features in the field to the south, and walls which may represent a rectangular gatehouse (Fig 4) (but see also an alternative interpretation of these ditches, above – 'The bailey'). The earthwork survey (Fig 3) recorded a terrace within the present boundary with edges curving away to the south and a shallow hollow way approaching from the field to the south, within which lie the north–south ditches indicated by the geophysical survey.

Trench 6, measuring 12m by 2m, was opened to investigate this possible entrance (Fig 8). Due to the large area exposed and the limited time available the excavation was evaluative and targeted in locations of interest. In areas showing no visible archaeological remains a sondage 1m by 0.5m was excavated to ascertain the overall depth of potential archaeological layers, and the top of the weathered natural clay, (138), was encountered at a depth of 1m beneath the ground surface. Above

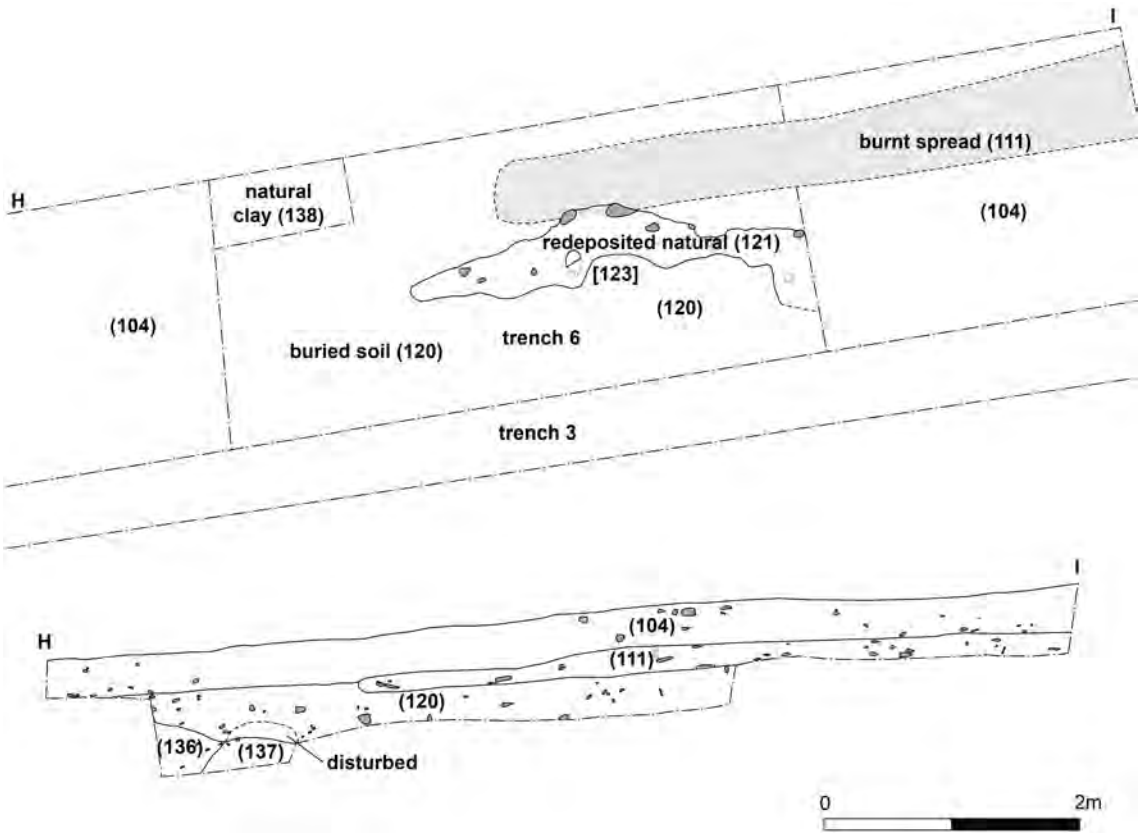

Fig 8 Trench 6 plan and section.

the natural two distinct deposits were recorded: layer (136), a buried subsoil horizon, into which intruded layer (137), possibly as a result of animal burrowing.

Sealing all lower deposits in trench 6 was layer (120), a buried soil horizon. Finds recovered from this deposit included Cornish medieval coarseware, an iron bracket, and fragments of copper alloy and melted lead. Above and against this layer a sub-linear band or bank of redeposited natural, (121), ran through the eastern central part of the trench. The excavated section of this feature was over 3m long and 0.5m wide. It appeared to be curving to the south at its eastern end and was cut by a number of small possible stakeholes and a larger posthole or animal burrow [123].

Above and to the north of (121) was a layer of slate rubble, (111), with evidence of burning in the form of significant quantities of mottled charcoal. The rubble may have filled a shallow trench and formed a sub-linear band along the northern side of the trench, petering out to the west; it contained a large number of finds including ridge tiles, Cornish medieval coarseware, French medieval coarseware (Saintonge plain ware) and an iron pin. Sealing all layers was the topsoil layer, (104).

Interpretation

The cut feature [134] was suggestive of a robbed-out wall trench. There was no sign of it on the geophysical survey but it may have been masked by a rubble spread. Finds recovered from the fills and sealing layers all suggested a late thirteenth- to fourteenth-century date, in common with other areas excavated during this project.

The results from trench 6 provided no evidence for an entrance into the bailey at this location. It is possible that the trench was actually positioned within the possible gatehouse, or perhaps the gatehouse was not here but further to the east, beyond the visible extent of the bailey rampart. The band of redeposited natural and the linear spread of slate rubble appeared to be closely linked but neither looked like the remains of an entrance. The posthole and stakeholes in the redeposited material may represent a fence line but were too few to be conclusive evidence for such a feature. The finds from these deposits were all of the same period as the finds from other excavated areas and whatever the features in trench 6 represent they are likely to be contemporary with the other activities at the castle identified by these excavations.

Ditch / pit [11]/[23] and associated features

Much of the work within the bailey was concerned with the site of the new admissions building, at the western end of the bailey. Here, a number of trenches were opened; the most informative being trenches 1 and 2 which were dug during the evaluation phase. A layer of greyish-white clay, (7), covered most of the floor of trench 1, becoming much higher to the north east. To the south west the clay was disturbed by a series of irregular pits interpreted as tree bowls. It was initially suspected that the clay might be the remains of material used to create the original bailey rampart since natural clays in the area tend to oxidise to a reddish brown colour. However, a trial sondage at the north-eastern end of the trench dug to a depth of 1.1m revealed that the clay became harder with depth with the characteristics of weathered natural slaty bedrock.

At the south-western end of the trench the clay gave way to a harder, stonier material which was cut by a large ditch or pit [23] (Figs 9 and 10). This steep-sided feature, at least 1.65m wide and up to 1.1m deep, seemed to be rising up to the north west and may indicate a ditch terminal. The feature contained a primary silty fill (30) overlain by a rubbly deposit, (28). This was cut by what appeared to be a post-pipe full of slaty rubble (29). This feature cut one of three patches of disturbance above the ditch fill but was sealed by the topsoil, (1). A subsoil horizon, (6), which survived between areas of disturbance, contained a sherd of Cornish medieval coarseware, a roofing slate, a melted piece of lead with an impression of organic matter on its underside, and modern bottle glass. A fragment of iron, tentatively identified as part of the head of a medieval hammer, was also recovered from this area.

The area between feature [23] and white clay (7) may have been excavated following the infilling or backfilling of the ditch or pit. In section it certainly appeared to be marked by a possible feature, cutting deposits associated with the backfilling of ditch [23]: however, this was not apparent during excavation of the trench.

Trench 2 was located to investigate a large cut feature, [11], only one edge of which was encountered (Fig 9). The cut sloped down to the north, was over 1m deep, and was filled with a rubbly deposit, (13). It seems likely that this cut was a continuation of feature [23], in which case it is likely to be a ditch. The feature was sealed by

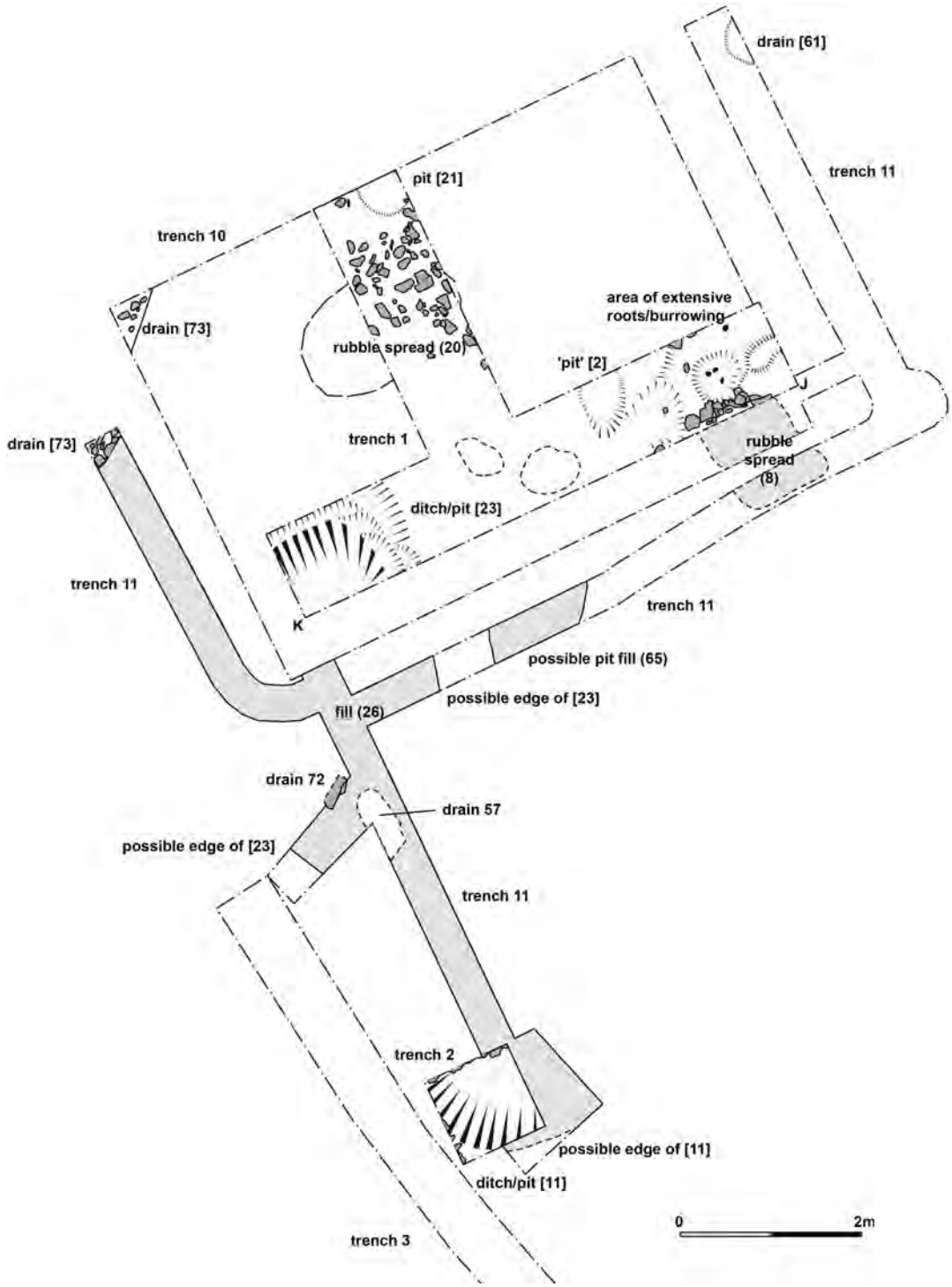

Fig 9 Feature [11]/[23] and related features.

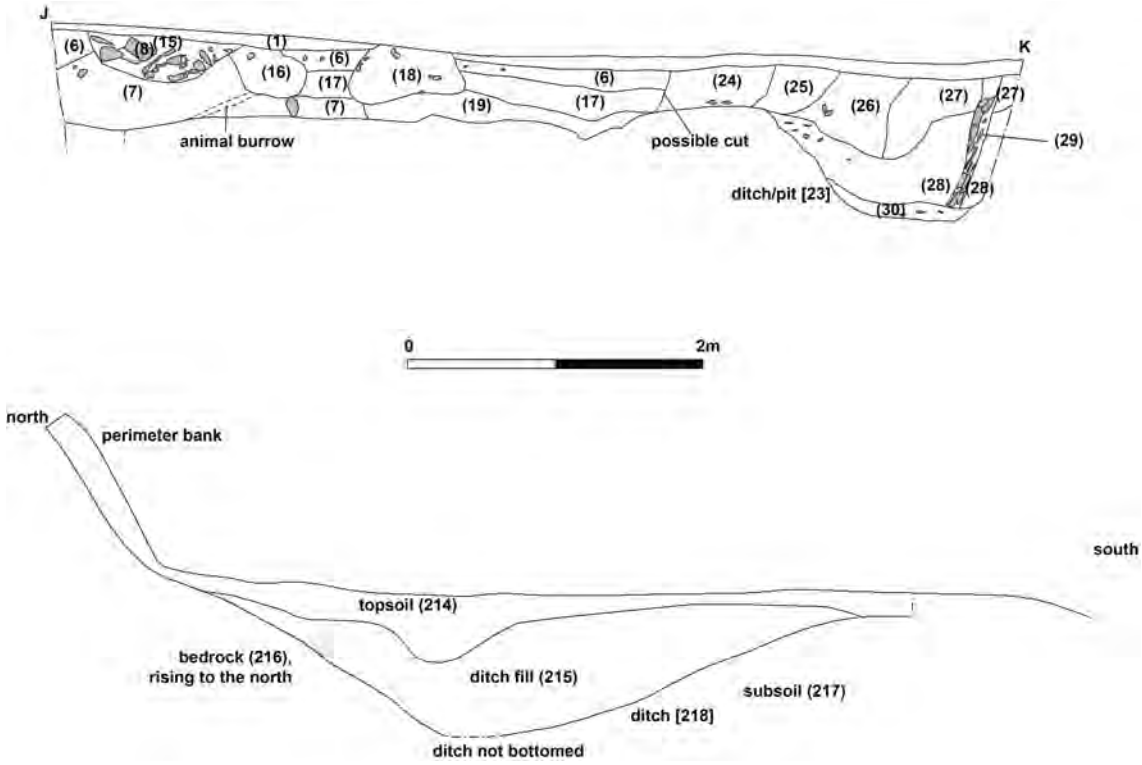

Fig 10 Section through feature [11]/23] (top) and outer ditch [218] (bottom).

a subsoil horizon, (10), which contained a sherd of Cornish medieval coarseware and fragments of lead sheeting. The area represented by this trench was re-dug and extended during the construction works but the excavations were not deep enough to penetrate the base of the topsoil and little useful additional information was gleaned.

In the northern corner of trench 1 a small circular pit or posthole, [21], was identified (Fig 9). The cut, 0.2m deep and 0.45m in diameter, contained a single fill, (22), with no dateable material. The feature might be represented by a pit-type anomaly on the geophysical survey (Fig 4), one of four in this area.

Later features identified in this area included field drains, 57/72, 61 and 73. One sherd of plain white pottery was recovered from the fill of 73 and they are most probably the product of nineteenth-century ground improvements within the bailey.

At the north-eastern end of trench 1 the edge of a deposit of rubble, (8), was encountered just below the turfline (Figs 9 and 10). The majority of the material was slate and killas rubble with a few pieces of decomposed granite. A sherd of modern white glazed stoneware was recovered from this layer. The rubble overlay clay, (7). The rubble spread (63) was probably part of the same deposit and a piece of cut and dressed stone, part of a Pentewan stone window mullion, was recovered from it (Fig 28). A linear spread, (20), of slate and killas rubble 0.2m below the ground surface ran east–west across the other arm of trench 1 (Fig 9). Initially (20) was thought to represent the same deposit as layer (8) but the extent of the spread recorded during the excavation of trench 10 showed it to measure only 2m by 1.2m and not to be connected with (8). The spread showed no evidence for being structural.

Interpretation

The excavations in this part of the bailey contrasted with those undertaken closer to the castle (below) in being almost devoid of features and finds that could be associated with the occupation of the castle.

The cut features [11] and [23] were likely to be part of the same feature, a large linear ditch running along the inside of the present field boundary. This may be the remains of the original external bailey ditch or an inner excavation trench to provide material for the outer rampart.

The two spreads of rubble, (8)/(63) and (20), may be elements of the same deposit. Deposit (8)/(63) produced a single sherd of modern pottery and the probable window mullion in Pentewan stone (Fig 28) but both were within 0.2m of the ground surface and are likely to be recent in date, although it would be easier to see the sherd as intrusive than the mullion.

The results from the metal detecting were interesting in view of the large sample of waste lead recovered. As indicated in the lead report (Jessop, below), this may reflect the manufacture of fittings within the bailey for use in the castle, or alternatively might represent the melting down of such fittings for use as musket shot during the Civil War siege of the seventeenth century.

The presence of field drains, exclusively at this end of the bailey, may indicate a need to drain parts of the path to the castle, presumably following its opening to the public in the 1920s, or possibly earlier in the nineteenth century as part of a general landscaping of the castle grounds. They are unlikely to be the result of agricultural improvements since there is no evidence that the bailey was ever used for such a purpose.

Outside the bailey (trenches 8 and 9)

Bailey ditch

Immediately outside the south bank of the bailey a ditch, [218] (Fig 10), was identified running parallel to the hedge. It cut bedrock immediately below the hedge and was excavated to a depth of about 0.5m, without being bottomed. Only one fill, (215), was recorded. It seems likely that this ditch was of a substantial size and is the original outer bailey ditch, although the intervention was too limited to confirm this.

Miscellaneous features

Trench 8 ran from the field boundary by the existing power supply, down the field to the north east, crossing the lane where it enters the car park, and up to the bailey boundary (Fig 1). A number of linear features were located in the field to the south east of the car park. Immediately north of the field boundary at the southern end of the trench was a narrow, shallow linear, [202], running parallel to the boundary at a distance of 2m. This is likely to be a ditch associated with the extant field boundary. Three metres to the north of this feature another linear cut, [207], was observed following the same alignment. This feature appeared to have been re-cut at some stage; both fills were much stonier than those in [202].

Continuing downslope from the top of the field, the next feature observed was another narrow linear cut feature, [219], which was approximately 0.5m wide and 0.3m deep, cutting the subsoil, (209) and filled with soft red homogenous clay, (220).

Between feature [219] and the hedge flanking the southern edge of the lane leading up to the car park, a large break of slope facing north was followed by a level area at its base. Within this level area a 1.65m wide deposit of sandy material containing abundant charcoal, (212), was observed overlying a grey clay deposit, (213), that appeared fluvial in nature. Between deposit (212) and the hedge the topsoil contained a large quantity of modern artefacts.

Interpretation

Ditch [218] appeared to be of a substantial size although it was not bottomed. The cut into bedrock suggested that this is the original bailey ditch, originally fronting a substantial rampart of cut-away bedrock. Unfortunately the limited nature of the intervention afforded little opportunity to fully evaluate this feature.

The field to the south west of the car park contained a number of linear cut features, none of which was associated with any dateable artefacts. However, linear [219] was located immediately south of, and parallel to, the route of the post-medieval tramway, as located on the 1841 tithe map (Fig 1). It seems likely that the two are associated, and the red colour of the fill of [219] may reflect the function of the tramway transporting iron ore from Trinity Mine. The feature may have acted as a drainage ditch alongside the tramway and the sediment settling out of the runoff may have been especially high in haematite particles. The cut was located by a section of wall that post-dated the hedge to either side, indicating the blocking of a gap in the hedge, lending weight to the presence of the tramway in this position.

The linear features upslope from here, [202] and [207], are also most probably related to the

tramway shown on the 1841 tithe map (Fig 1), representing drainage ditches. The linear band of burnt material, (212), at the bottom of the field was more puzzling since, although it resembled a path or track surface, it lay on what appeared to be an old stream bed or channel. This part of the field looks as if it has been levelled for some purpose, and this may have been an alteration to a stream channel to take it away from the track leading up to Restormel Castle, which is likely to be of fairly recent origins since the original entrance to the castle is thought to be to the east of the bailey.

The finds

The copper-alloy objects
Carl Thorpe

Stratified medieval metalwork is rare from Cornwall and the three items recovered reflect the potential high status of the site.

Nail/tack or decorative stud

Trench 3 (104). A nail, tack or decorative stud with a domed or mushroom-shaped head 18mm in diameter and an irregular-profiled shank which is mostly circular in section with a rounded point 29mm in length. Cast from copper alloy, the head was originally gilded. Although no exact parallels could be found from Cornwall, several are depicted on the Portable Antiquities Scheme (PAS) database, including one from Suffolk (Brown 2011) and another from Lewes in East Sussex (Walker 2009). Similar items are also portrayed from Norwich (Margeson 1993). It has been suggested that these studs may have been used in furnishings or perhaps horse harness or saddles. Dates vary from the thirteenth century through to the seventeenth century.

Book clasp or fitting

Trench 3 (105). A medieval book clasp or fitting; no exact parallel for this item could be found despite an extensive search of the PAS database and various reference books. The fitting is 50mm long, tapered in shape with the narrow end terminating in a trefoil resembling a fleur-de-lys. This termination is perforated with a hole of 2mm diameter. The other end is expanded into a wedge shape almost 19mm wide. Cast from copper alloy, there is evidence for the item having been gilded. The function of this item is uncertain; the perforation and bent nature of the object suggests it is most likely a book clasp or fitting, although it is also possible that it may have been an ornamental strap end.

Jetton

Trench 4 (112). A jetton of Edward III (Fig 11); late pictorial issue (long cross patonce) *c* 1345–1355 (Mitchiner 1988). Made of copper alloy (latten), circular in shape (22.5mm diameter) the obverse side bears a star in crescent within a border of strokes (saltires) and pellets. The reverse bears a long cross patonce with 6-pellet cluster (rosettes) in each angle within a border of pellets (Anna Tyacke, pers comm). There is a small off-centre perforation with a diameter of 2.5mm.

Fig 11 Edward III jetton, obverse (left) and reverse. (Photographs: Cornwall Archaeological Unit.)

Although no parallel could be found from Cornwall a matching item is portrayed on the Winchester museum website (museum object number WINCM:C2442). Jettons were used in calculations, in a variation on the abacus. They were laid out on a reckoning or checker board, giving us the modern 'Exchequer', and were in use from the later medieval period into the seventeenth century. Initially, actual coins may have been used, before the innovation of using cheaper base metal tokens was introduced. The designs of many jettons are based on those of coins. They may also have been used for gaming purposes.

The lead objects

Oliver Jessop

An assemblage comprising 39 fragments of lead is listed in the catalogue below. The material can be subdivided into three groups: castings; sheet and off-cuts; and melted droplets. A high percentage of the assemblage (72 per cent) is represented by melted material, which is essentially amorphous in form and undiagonistic. A lump of lead with a triangular profile was recovered from trench 5 and may represent caulking from structural ironwork set in stone. Six strips of lead sheet or off-cuts were recovered, one of which may have been used as a fixing strip to protect the head of an iron structural nail. Two cast artefacts were found within the topsoil of trench 3 along the inner boundary of the bailey, one of which has been identified as a used musket ball.

Discussion

The melted lead has largely been recovered from the topsoil in all parts of the bailey, and as such is perhaps associated with destruction activity and re-landscaping following the decommissioning of the castle. This is similar to depositional sequences recorded on other castles, such as at Beeston (Courtney 1993), Rhuddlan (Boon 1994) and Stafford (Wilkinson 2007).

The concentration of lead, both melted and in the form of off-cuts, from the upper layers of the excavated sequence is principally associated with constructional materials such as roofing slates, ridge tiles, nails and rubble deposits. The majority of the lead, therefore, is likely to have had a structural function in the form of flashings, roof coverings, window features, piping, guttering, and roof fixings, as at Ludgershall Castle (Ashworth and Ellis 2000), Stafford Castle (Wilkinson 2007) and Nonsuch Palace (Egan 2005a). The assemblage is likely to represent destruction activity and abandonment processes and must be considered to represent only a partial sample of lead used within the site.

It is interesting that no lead was recovered to the south of the bailey, which may indicate that this area was a peripheral part of the castle devoid of stone structures requiring structural leadwork. The lead sheet varied in thicknesses from 1mm to 3mm, with the triangular off-cuts being indicative of discarded waste from constructional work or repairs, rather than removal of lead for recycling, or looting.

The removal of lead was common, however, during times of siege for reuse (Harrington 2004), especially during the Civil War when shortages of shot frequently resulted in the removal of roofing lead as a source of raw material (Courtney 1988, 3). Evidence for the manufacture of lead shot for both pistols and muskets during the English Civil War in the form of moulds and waste material has been found at Beeston and Pontefract Castles (Eaves and Hall 2002, 291), although none has been observed at Restormel Castle.

Only two cast artefacts not associated with structural metalwork were recovered, from trench 3, topsoil (104), in the bailey. The siege and subsequent capture of Restormel Castle by Richard Grenville in 1644 during the English Civil War may explain the origin of the lead shot, which has an impact scar. Its diameter of 17mm correlates with shot recovered from Stafford Castle (Wilkinson 2007, 143), Pontefract Castle (Eaves and Hall 2002, 345) and in Southwark (Egan 2005b). As stipulated in 1630 by the Council of War edict, 'Orders for the general uniformatie of all sortes of armes both for horse and foote' (Eaves and Hall 2002, 348), this shot would have been fired with a 12 bore musket.

Catalogue

CASTINGS

1. Triangular section of melted lead with granulated surface, caulking for jointing or bonding metal fixing, 25 × 20 × 20mm and 40mm in length; 86g; trench 5 (114)

2. Sub-spherical lead casting (musket shot) with pinched upper surface and impact scar, 20 × 19 × 17mm; 26g; trench 3 (104)

3. Small hemispherical lead casting, with concave surface and burred edges, 21 × 25 × 11mm; 30g; trench 3 (104)

SHEET AND OFF-CUTS

4. Small slightly folded fragment of lead sheet (partially melted), 40 × 22 × 1mm; 4g; trench 5 (127)
5. Curved off-cut strip from lead sheet, triangular profile, 140 × 4 × 3mm; 120g; trench 5 (127)
6. Rolled and flattened rectangular strip of lead, 45 × 38 × 12mm (sheet thickness 2mm); 120g; trench 3 (104)
7. Torn fragment of rectangular strip of lead with bevelled edges and 5 sided nail hole with impression of circular scar of nail head (30mm diameter), 45 × 25 × 2mm; 26g; trench 3 (103)
8. Folded off-cut of lead sheet with narrow triangular shape with cut end, 98 (unravelled) × 27 × 3mm; 36g; SF4; trench 2 (9)
9. Three joining fragments of folded lead sheet, triangular shape with cut end, 33 × 89 × 1mm; 30g; trench 2 (10)

MELTED DROPLETS (GROUPED BY CONTEXT)

10. Two small flat droplets of lead, 20 × 12 × 2mm; 8g; trench 4 (113)
11. Concave lump of melted lead, 40 × 22 × 10mm; 40g; trench 4 (113)
12. Large convex melted lump, with granulated surface, 70 × 120 × 10mm; 389; trench 5 (114)
13. Three small fragments of melted lead, 15–25 × 10–15 × 5–7mm; 20g; trench 5 (119)
14. Rounded lump of melted lead, 45 × 25 × 15mm; 40g; trench 5 (119)
15. Seven tiny droplets of melted lead, 10–15 × 7–25 × 2–6mm; 24g; trench 5 (127)
16. Four fragments of melted lead, 32 × 15 × 4mm to 36 × 45 × 6mm; 54g; trench 5 (127)
17. Large flat droplet of melted lead, 85 × 35 × 6mm; 58g; trench 5 (127)
18. Rounded lump of melted lead, 13 × 12 × 10mm; 4g; trench 6 (120)
19. Tiny fragment of melted lead, 17 × 12 × 2mm; 2g; trench 6 (122)
20. Large lump of melted lead, impression of organic matter on underside, 160 × 70 × 25mm; 902g; SF1; trench 1 (6)
21. Concave melted lump of lead, numerous holes and voids, 46 × 20 × 7mm; 24g; trench 3 (unstratified)
22. Four small lumps of melted lead, 35 × 25 × 5mm to 13 × 16 × 10mm; 42g; trench 3 (104)

The pottery

Carl Thorpe, with petrographic comment by Roger Taylor

The assemblage consists of 331 sherds of medieval pottery weighing 3256g and coming from 19 contexts. The chronological range is unusually tight, covering the thirteenth and fourteenth centuries. The material from contexts (112), (116), (118), and (125) within trench 4 is the most significant, being sealed groups that should allow close dating of the building to which the wall or buttress 108 belonged.

Fabrics are described in accordance with the recommendations of the Prehistoric Ceramic Research Group (1998). All the sherds are granitic in nature (Lostwithiel-type ware, formerly known as Bunnings Park / Stuffle ware), apart from ten sherds of imported Saintonge ware from France.

Condition and abrasion

The sherds are in a variable condition: some are soft and friable, presumably due to the effects of acid ground water, while others are very fresh. As far as is possible sherd numbers are given as the number originally present in the ground and abrasion is estimated from preserved edges. Recording of abrasion on sherds is based on the system devised by Sørensen (1996) for Bronze Age midden material at Runnymede with some modifications.

Very fresh	1; Sorenson Grade 1, hardly ever applicable
Fresh	1/2; colour of core slightly patinated but unaltered surfaces with sharp corners and edges
Moderate abrasion	2; core colour patinated, some definition in the sharpness of corners lost
Abraded	2/3; core colour patinated, slight rounding of corners and slight erosion of surfaces
High abrasion	3; core colour patinated, rounding of corners and of sherd outline, surfaces somewhat eroded

Fabrics

CORNISH MEDIEVAL COARSEWARE: LOSTWITHIEL-TYPE WARE (FORMERLY BUNNINGS PARK / STUFFLE WARE)

This pottery is hard-fired with a pink-buff exterior and a grey core. It was hand-made, often wheel finished, and thin-walled, a micaceous fabric with common inclusions of rounded quartz grains, abundant muscovite (white) mica, feldspar, and tourmaline. There may be a few fragments of slate. The notably high content of white mica probably indicates a source derived from an area of kaolinised granite. Some parts of the south-western area of the Bodmin Moor granite are kaolinised and streams draining from there flow into the River Fowey above Lostwithiel. A likely source of the tempering sand used for the coarseware would be the Fowey to the north of Lostwithiel. This ware was probably fabricated in the Lostwithiel area, although actual kiln sites are not known; it is possible that it was clamp-fired without purpose-built kilns. The most recent petrographic report for this material was for the 2002 excavations at Quay Street, Lostwithiel (J Allan and R Taylor in Gossip 2007; forthcoming). This recent study proposed that the term 'Lostwithiel-type' ware now be used, replacing 'Bunnings Park / Stuffle' ware.

FRENCH LATE MEDIEVAL COARSEWARE (SAINTONGE PLAIN WARE)

This ware was produced in the same area as Saintonge Polychrome ware. The pottery is wheel-thrown, well-fired with thin walls in relation to the size of vessel. Fine off-white or buff fabric often with quantities of mica and occasional red haematite inclusions (Platt and Coleman-Smith 1975; Hurst *et al* 1986; Brown 2002).

Forms include large cooking pots with lids, small jugs and large globular jugs (called pégau) similar to those found in Polychrome ware. They are mainly unglazed, but may have a speckled or spotted green glaze. Decoration is rare, but includes slashed strap handles, vertical thumbed applied strips, horizontal or wavy combed lines or occasional rouletted pattern (Platt and Coleman-Smith 1975; Hurst *et al* 1986; Brown 2002).

The peak period of importation into Britain appears to be around the second half of the fourteenth century and continuing into the first half of the sixteenth century, although earlier and later examples are known.

Trench 1

Two undiagnostic bodysherds of Lostwithiel-type ware most likely of thirteenth- to fourteenth-century date.

Trench 2

A single abraded sherd of probable thirteenth- to fourteenth-century date.

Trench 3

Seventy-two sherds from a minimum of 14 vessels including three jugs and three cooking vessels. Sherds varied in size and were fresh to moderately abraded. One was a fragment from a handled jar, and all the basal angle sherds indicated vessels with sagging bases. There was a single very small sherd of imported Saintonge ware which was unfortunately undiagnostic. The ceramics indicate

Table 2 Medieval pottery from trench 1

Context	*Description*	*Sherds*	*Weight*	*Abrasion*	*Illustrated*
(6)	Subsoil	1 sherd Lostwithiel-type ware	15g	2/3	–
(53)	Topsoil	1 sherd Lostwithiel-type ware	11g	2/3	–
Totals		**2**	**26g**		

Table 3 Medieval pottery from trench 2

Context	*Description*	*Sherds*	*Weight*	*Abrasion*	*Illustrated*
(10)	Subsoil	1 sherd Lostwithiel-type ware	10g	2/3	–
Totals		**1**	**10g**		

Table 4 Medieval pottery from trench 3

Context	*Description*	*Sherds*	*Weight*	*Abrasion*	*Illustrated*
(101)	Topsoil	2 basal angle sherds Lostwithiel-type ware	13g	2	–
(102)	Topsoil	1 neck/rim + 4 sherds (1 basal angle) Lostwithiel-type ware	28g	2	–
(103)	Topsoil	1 neck/rim + 4 sherds Lostwithiel-type ware	58g	2 to 2/3	**P1**
(104)	Topsoil	10 rim sherds (at least 7 vessels), 1 handle sherd, + 47 sherds Lostwithiel-type ware	602g	2 to 2/3	**P2–P6**
		1 sherd Saintonge ware	2g	2/3	
(105)	Topsoil	1 neck/rim + 1 sherd Lostwithiel-type ware	28g	2	**P7**
Totals		**72**	**718g**		

a probable late thirteenth- to fourteenth-century date.

ILLUSTRATED SHERDS (FIGS 12 AND 13)

P1 (103). Lostwithiel-type ware fabric. Rim and neck of a long necked jug with a rim diameter of 120mm. Wheel finished, with tooled horizontal line decoration forming two bands on neck. Jugs entered common domestic use in the mid- to late thirteenth century (O'Mahoney 1989b). Similar rim forms of approximately late thirteenth-century date are seen at Tintagel Castle (O'Mahoney 1989a fig 7), and of around late fourteenth-century date at Okehampton Castle (Higham *et al* 1982, fig 43).

P2 (104). Lostwithiel-type ware fabric. Rim and handle from a jug with a rim diameter of 120mm. Rim is simple upright, slightly beaded. Handle is a flattened U-shape in profile. This rim form has been identified at Tintagel Castle (O'Mahoney 1989a, fig 4), of around late thirteenth-century date.

P3 (104). Lostwithiel-type ware fabric. Rim and handle from a jug with a rim diameter of 140mm. Rim is simple upright, slightly everted. Handle is a flattened U-shape in profile with incised lines forming a chevron pattern decoration on the upper surface. The form of this particular vessel with tapering neck, decorated strap handle and wheel finish suggests it is more likely to be of fourteenth-century date. Although no exact parallel could be found, similar ones of around late thirteenth-century date are seen at Tintagel Castle (O'Mahoney 1989a, figs 4, 6 and 8), of around late fourteenth-century date at Okehampton Castle (Higham *et al* 1982, figs 43 and 46), of thirteenth- and fourteenth-century date at Launceston Castle (Saunders 2006, fig 9.7) and of around fourteenth-century date at Exe Bridge and *c* 1355–1450 from Trichay Street, Exeter (Allan 1984, figs 27 and 46).

P4 (104). Lostwithiel-type ware fabric. Rim sherd from a cooking vessel (could just possibly be

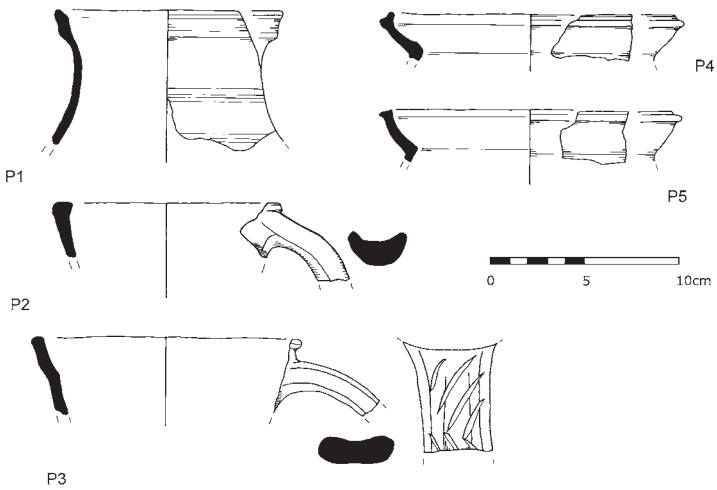

*Fig 12 Pottery from trench 3. **P1–P3**, jugs; **P4** and **P5**, cooking vessels. (Drawing: Carl Thorpe.)*

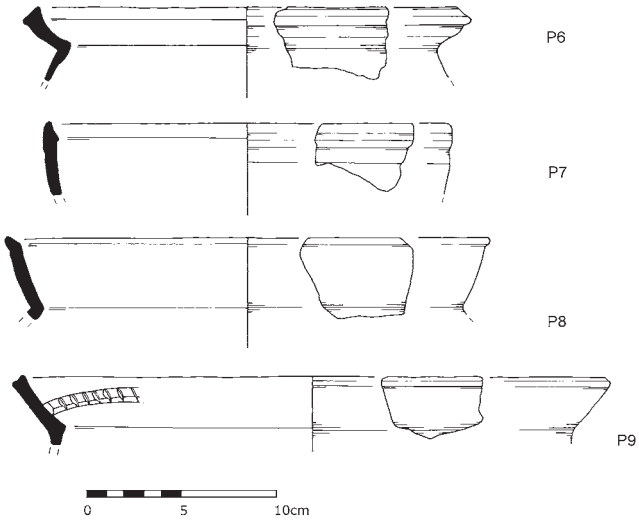

*Fig 13 Pottery from trench 3 (**P6** and **P7**) and trench 4 (**P8** and **P9**); all are cooking vessels. (Drawing: Carl Thorpe.)*

rim of a large jug or cistern) with a rim diameter of 160mm. Rim has a complex profile, sharply everted. This vessel has been carefully made, wheel finished and this suggests a fourteenth-century date. Similar rims of around late thirteenth-century date have been noted at Tintagel Castle (O'Mahoney 1989a figs 1 and 2), of thirteenth- and fourteenth-century date at Launceston Castle (Saunders, 2006 fig 9.6), post 1250 to pre 1500 at Bunnings Park, St Neot (O'Mahoney, 1989b figs 4.1 to 4.4), of late thirteenth- to fourteenth-century date at Okehampton Castle (Higham *et al* 1982 fig 43), around the early fourteenth-century from Exe Bridge, Exeter, *c* 1250–1300 from Goldsmith Street, Exeter and late fourteenth- to early fifteenth-century at Trichay Street, Exeter (Allan 1984 figs 27, 40, 46).

P5 (104). Lostwithiel-type ware fabric. Rim sherd from a cooking vessel with a rim diameter of 160mm. Rim has a complex profile, sharply everted. This vessel has been carefully made, wheel finished. The rim is very similar to **P4**. Similar rim forms of approximately late thirteenth-century date have been identified at Tintagel Castle (O'Mahoney 1989a, figs 1 and 2), post 1250 to pre 1500 at Bunnings Park, St Neot (O'Mahoney 1989b, fig 4.3), of late thirteenth- to fourteenth-century date at Okehampton Castle (Higham *et al* 1982, fig 43), of around early fourteenth-century date from Exe Bridge, Exeter, and *c* 1250–1300 from Goldsmith Street, Exeter (Allan 1984, figs 27 and 40).

P6 (104). Lostwithiel-type ware fabric. Rim sherd from a large cooking vessel with a rim diameter of 240mm. Rim has a complex profile, sharply everted. Although no exact parallel could be found for this vessel similar rim forms of around late thirteenth-century date have been identified at Tintagel Castle (O'Mahoney 1989a, fig 2), post 1250 to pre 1500 at Bunnings Park, St Neot (O'Mahoney 1989b, figs 4.1, and 4.3) and *c* 1250–1300 from Goldsmith Street, Exeter (Allan 1984, fig 40).

P7 (105). Lostwithiel-type ware fabric. Rim sherd from a large cooking vessel with a rim diameter of 220mm. Rim has a simple everted profile with lid seating? Similar vessels of around late thirteenth-century date have been identified at Tintagel Castle (O'Mahoney 1989a, figs 3 and 7), of late thirteenth- to fourteenth-century date at Okehampton Castle (Higham *et al* 1982, fig 44), of around late thirteenth-century date from 11 North Street, Exeter and 1250–1300 from Goldsmith Street, Exeter (Allan 1984, figs 39 and 40).

Trench 4

Seventy-seven sherds from a minimum of six vessels including jugs and cooking vessels. Sherds were fresh to moderately abraded. All the basal angle sherds indicated vessels with sagging bases. Apart from the illustrated sherds one sherd had vertical lines of green glaze as decoration. The presence of glazed decoration, a method which

Table 5 Medieval pottery from trench 4

Context	*Description*	*Sherds*	*Weight*	*Abrasion*	*Illustrated*
(107)	Slate rubble around wall 108	1 neck sherd Lostwithiel-type ware	8g	1/2	–
(112)	Deposit butting against wall 108	8 rim sherds + 37 sherds Lostwithiel-type ware	535g	1/2	**P8–P10**
(116)	Deposit butting against wall 108	10 sherds Lostwithiel-type ware including cistern spout.	118g	1/2	–
(118)	Deposit butting against wall 108	16 sherds Lostwithiel-type ware	81g	2 to 2/3	–
(125)	Fill of foundation trench [126] for wall 108	5 sherds Lostwithiel-type ware	58g	2	–
Totals		**77**	**800g**		

is not introduced to Cornish pottery until the late thirteenth or early fourteenth century (Allan and Preston 1986), and the forms represented, including the cistern spout from (116), suggest a probable late thirteenth- to late fourteenth-century date, cisterns not occurring before the late fourteenth century (O'Mahoney 1989a). This material is almost certainly contemporary with the jetton from context (112) which has been identified as a jetton of Edward III (Fig 11) dating *c* 1345–1355 (Mitchiner 1988). It is very rare within the realms of Cornish archaeology for medieval pottery to be so closely associated with a dateable artefact.

ILLUSTRATED SHERDS (FIGS 13 AND 14)

P8 (112). Lostwithiel-type ware fabric. Rim sherd from a large cooking vessel with a rim diameter of 260mm. Rim has a simple sharply everted profile with possible lid seating. A zone of tooled grooved decoration occurs at neck of vessel. Similar rim forms of around late thirteenth-century date have been identified at Tintagel Castle (O'Mahoney 1989a, figs 1 and 3), of thirteenth- and fourteenth-century date at Launceston Castle (Saunders 2006, fig 9.4), post 1250 to pre 1500 from Bunnings Park, St Neot (O'Mahoney 1989b, figs 4.1 and 4.4) and *c* 1250–1300 from Goldsmith Street, Exeter (Allan 1984, fig 40).

P9 (112). Lostwithiel-type ware fabric. Rim sherd from a large cooking vessel with a rim diameter of 320mm. Rim has a simple sharply everted profile with possible lid seating. An applied 'pie crust' strip decorates the interior of sharply everted rim. Similar rim forms of around late thirteenth-century date have been identified at Tintagel Castle (O'Mahoney 1989a, fig 5) and post 1250 to pre 1500 at Bunnings Park, St Neot (O'Mahoney 1989b, fig 4.4).

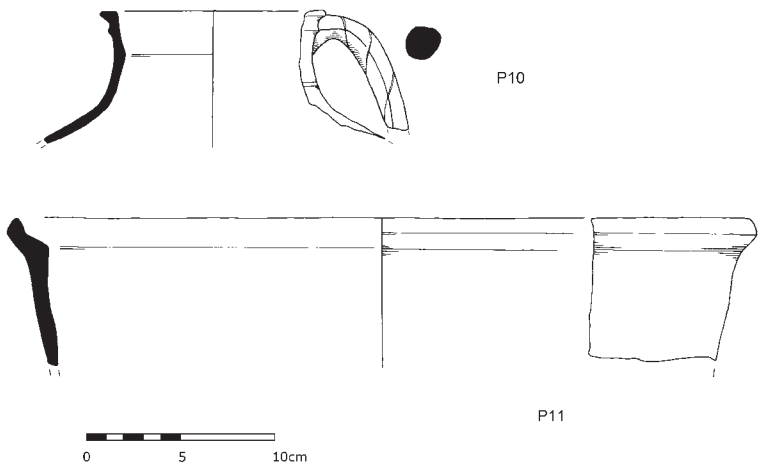

*Fig 14 Pottery from trench 4 (**P10**, jug) and trench 5 (**P11**, cooking vessel). (Drawing: Carl Thorpe.)*

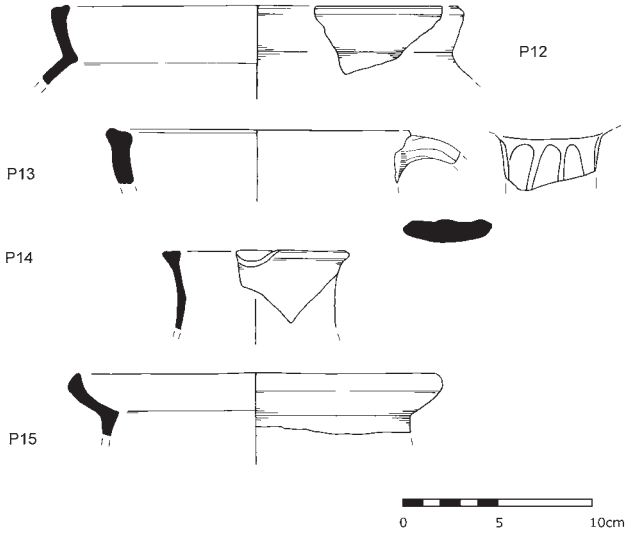

*Fig 15 Pottery from trench 5. **P12** and **P15**, cooking vessels; **P13**, jug or cistern; **P14**, jug. (Drawing: Carl Thorpe.)*

P10 (112). Lostwithiel-type ware fabric. Rim and handle from a jug with a rim diameter of 120mm. Rim is simple upright, slightly beaded. The handle is a twisted rod handle which suggests a very late thirteenth- or fourteenth-century date is most likely for this vessel. Similar rim forms of around late thirteenth-century date have been identified at Tintagel Castle (O'Mahoney 1989a, fig 4), post 1250 to pre 1500 at Bunnings Park, St Neot (O'Mahoney 1989b, figs 4.2 and 4.3), of late thirteenth- to fourteenth-century date at Okehampton Castle (Higham *et al* 1982, fig 43), around late fourteenth-century date from Exe Bridge tenement, Exeter and *c* 1270–1330 from 112 Queen Street, Exeter (Allan 1984 figs 27, 44).

Trench 5

Eighty sherds from a minimum of 13 vessels including jugs and cooking vessels. The sherds of Saintonge ware probably represent two vessels. Sherds were fresh to moderately abraded. All the basal angle sherds indicated vessels with sagging bases. The ceramics indicate a probable mid-thirteenth- to fourteenth-century date.

Table 6 Medieval pottery from trench 5

Context	*Description*	*Sherds*	*Weight*	*Abrasion*	*Illustrated*
(110)	Rubble deposit below topsoil (103)	6 rim sherds, 3 handle sherds + 31 sherds Lostwithiel-type ware	445g	2 to 2/3	**P11–P13**
		2 conjoining sherds Saintonge ware	10g	2	
(114)	Rubble deposit within cut [134]	4 rim sherds, + 7 sherds Lostwithiel-type ware	104g	2	**P14**
		1 sherd Saintonge ware	4g		
(119)	Buried soil layer below (132)	3 rim sherds, + 5 sherds Lostwithiel-type ware	177g	2	**P15, P16**
		5 conjoining sherds Saintonge ware jug with applied facemask decoration	28g	2	**P17**
(127)	Rubble deposit below (114) within cut [134]	13 sherds Lostwithiel-type ware	122g	2	
Totals		**80**	**890g**		

ILLUSTRATED SHERDS (FIGS 14, 15 AND 16)

P11 (110). Lostwithiel-type ware fabric. Rim sherd from a very large cooking vessel (just possibly a bowl) with a rim diameter of 400mm. Rim has a flanged profile. This rim form has been identified at Tintagel Castle as being of around late thirteenth- to fourteenth-century date (O'Mahoney 1989a, fig 5).

P12 (110). Lostwithiel-type ware fabric. Rim sherd from a cooking vessel with a rim diameter of 220mm. Rim has an everted profile flat top and possible lid seating? Similar rim forms of around late thirteenth- and fourteenth-century date have been identified at Tintagel Castle (O'Mahoney 1989a, figs 1, 2 and 6), pre 1250 to pre 1500 at Bunnings Park, St Neot (O'Mahoney 1989b, fig 4.3) and of thirteenth- or fourteenth-century date at Launceston Castle (Saunders 2006, fig 9.6).

P13 (110). Lostwithiel-type ware fabric. Rim and handle from a jug or cistern with a rim diameter of 160mm. Rim is upright and flat topped with a wide strap handle 55mm wide with three finger grooves running down its length. Jugs entered common domestic use in the mid- to late thirteenth century (O'Mahoney 1989b). Although no exact parallel could be found for this vessel, the form, especially with the broad strap handle, suggest a thirteenth- or fourteenth-century date for this vessel.

P14 (114). Lostwithiel-type ware fabric. Rim from a jug with a rim diameter of 100mm. Rim is upright and flat topped with a pinch spout for pouring. Similar rim forms of late thirteenth- and fourteenth-century date have been identified at Tintagel (O'Mahoney 1989a, fig 4), of thirteenth- to fourteenth-century date at Launceston Castle (Saunders 2006, fig 9.5), of fourteenth-century date at Okehampton Castle (Higham *et al* 1982, fig 43), *c* 1230–1250 from The Valiant Soldier 256, Exeter and *c* 1250–1300 from Goldsmith Street (Allan 1984 figs, 36, and 41).

P15 (119). Lostwithiel-type ware fabric. Rim sherd from a cooking vessel with a rim diameter of 200mm. Rim has an everted profile and inner lip. Similar rim forms of mid- thirteenth- and fourteenth-century date have been identified at Tintagel Castle (O'Mahoney 1989, a fig 3) and post 1250 to pre 1500 at Bunnings Park, St Neot (O'Mahoney 1989b, fig 4.4).

P16 (119). Lostwithiel-type ware fabric. Rim from a jug with a rim diameter of 140mm. Rim is upright and flat topped with overhang. Strap handle has central thumbed groove. A similar rim form dated to *c* 1250–1300 was noted at Okehampton Castle (Higham *et al* 1982, fig 45).

P17 (119). Saintonge Polychrome ware (Figs 16 and 17). Rim from a polychrome jug with a rim diameter of 120mm. Rim is upright and complex. There is a moulded face mask on its side. Coloured with green and black painted glaze. A late thirteenth- to fourteenth-century date is most likely for this vessel. A vessel is pictured in Cardiff Museum (National Museum of Wales 2007) with identical painting and face mask, perhaps from the same mould, while similar vessels of late thirteenth- to fourteenth-century date occur at 228

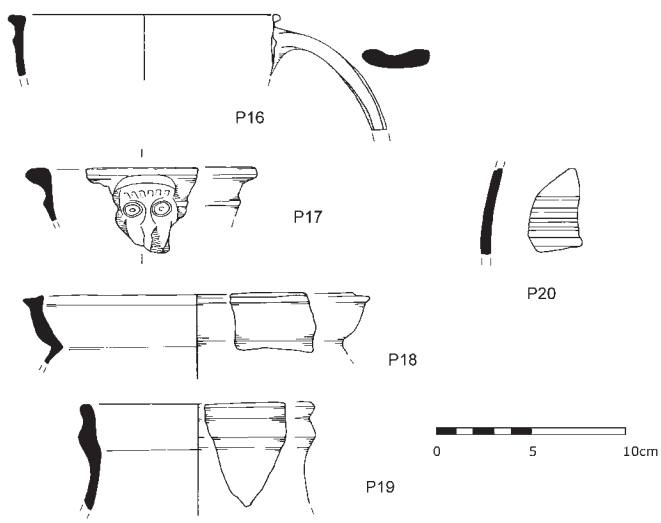

*Fig 16 Pottery from trench 5 (**P16** and **P17**) and trench 6 (**P18–P20**). **P16** and **P19**, Lostwithiel-type ware jugs; **P18**, Lostwithiel-type ware cooking vessel; **P17** and **P20**, Saintonge ware jugs. (Drawing: Carl Thorpe.)*

Goldsmith Street, Exeter (Allan 1984, fig 45) and from Southampton in contexts dating from 1250 to 1350 (Platt and Coleman-Smith 1975; Brown 2002).

Trench 6

Ninety-nine sherds, from a minimum of 10 vessels including three jugs, and six cooking vessels. Sherds were fresh to moderately abraded. All the basal angle sherds were sagging in form. The ceramics indicate a probable mid-thirteenth to fourteenth-century date.

ILLUSTRATED SHERDS (FIG 16)

P18 (111). Lostwithiel-type ware fabric. Rim sherd from a cooking vessel with a rim diameter of 180mm. Rim has a complex profile. Similar rim forms of late thirteenth- and fourteenth-century date have been recorded at Tintagel Castle (O'Mahoney 1989a, figs 1, 2 and 6), of late thirteenth- and fourteenth-century date at Launceston Castle (Saunders 2006, fig 9.6), post 1250 to pre 1500 at Bunnings Park, St Neot (O'Mahoney 1989b, figs 4.1 to 4.4) and *c* 1250–1300 at 135 Goldsmith Street, Exeter (Allan 1984, fig 40).

P19 (111). Lostwithiel-type ware fabric. Rim and handle from a jug with a rim diameter of 120mm. Rim is upright and flat topped. Similar rim forms of late thirteenth- and fourteenth-century date have been recorded at Tintagel Castle (O'Mahoney 1989a, fig 9), of fourteenth-century date at Okehampton Castle (Higham *et al* 1982, fig 43) and around thirteenth-century from Exe Bridge tenement B, Exeter (Allan 1984, fig 28).

P20 (111). A sherd from a Saintonge plain ware jug. Green glazed exterior, with horizontal grooved decoration. Similar material of mid-thirteenth- to fifteenth-century date has been recorded at Tintagel Castle (O'Mahoney 1989a), of thirteenth- to fourteenth-century date at Launceston Castle (Saunders, 2006), of late thirteenth- to fourteenth-century date at Okehampton Castle (Higham *et al* 1982) and of late thirteenth- to fourteenth-century date at Exeter (Allan 1984).

Discussion

The study of Cornish medieval pottery is still at an early stage. Most published sites are rural and lack stratified sequences (Allan 1984; Allan 1991), their dating being relative to broad regional traditions, so the stratified tight chronological sequence encountered here at Restormel Castle is unusual and important.

This assemblage, especially the material from contexts (112), (116), (118), and (125) within trench 4, is a closely stratified group of very restricted date being of the late thirteenth to mid-fourteenth century. The presence of a sherd with glazed decoration, a technique not adopted on Cornish pottery until the late thirteenth- or more likely early fourteenth century (Allan and Preston 1986), a cistern spout, a vessel type that does not occur until the late fourteenth century (O'Mahoney 1989a) and the forms of the illustrated vessels (**P8–P10**) support this. This is confirmed by the association of this material with the Edward III jetton (*c* 1345–1355).

Unfortunately the pottery recovered from fill (125) of foundation trench [126] was not sufficiently diagnostic to allow a refined date for when the wall was built. Only bodysherds of Lostwithiel-type ware were recovered. This material first appears around 1200 reaching a floruit *c* 1250 before being supplanted by Lostwithiel ware in the fifteenth century (O'Mahoney 1989a and b; Allan 2000; Saunders 2006). No earlier material was recovered.

Analysis of the ceramics from contexts associated with the building suggest that it may

Table 7 Medieval pottery from trench 6

Context	*Description*	*Sherds*	*Weight*	*Abrasion*	*Illustrated*
(111)	Linear burnt layer at eastern end of trench 6	11 rim sherds, + 74 sherds Lostwithiel-type ware	663g	2 to 2/3	**P18, P19**
		1 sherd Saintonge ware	8g		**P20**
(120)	A buried soil beneath (111)	2 rim sherds, + 11 sherds Lostwithiel-type ware	172g	2	–
Totals		**99**	**843g**		

have been constructed in the mid- to late thirteenth century, or early fourteenth century, which would correspond well with the dates noted above for possible construction of buildings in the bailey in 1325–6 (PRO E/1010/461/11 transcribed in Travers 1995). The ceramics may be associated with refurbishment of the buildings that were described in the 1337 Caption of Seisin as requiring repair (Hull, ed, 1971, 41–2) prior to the visit of the Black Prince in 1354 (Radford 1991, 5–6) with the building staying in use until the late fourteenth century. There is no apparent evidence for activity continuing into the fifteenth century.

The ceramics are principally domestic cooking vessels, although there are jugs and at least a couple of cisterns. This suggests that a kitchen range may be nearby, with jugs being used for serving of liquids to the table. What is remarkable is the homogeneous nature of the material: Lostwithiel-type ware dominates the collection with no regional imports among the coarsewares.

This is a great contrast to other contemporary sites of similar status such as Launceston Castle (Saunders 2006) or Tintagel Castle (O'Mahoney 1989a; Barrowman *et al* 2007), which have material from north Devon, Wiltshire, Somerset, and Exeter present, as well as material from Lostwithiel. Other sites of lesser status investigated in Cornwall such as St Michael's Mount (Herring *et al* 2000) and Tremough, near Penryn (Gossip and Jones 2007), also show a greater variety of wares, although in all cases material from Lostwithiel is predominant.

Why this should be the case is uncertain. It is known that Lostwithiel was a major centre of ceramic production within Cornwall (Douch 1969) and a port on the River Fowey shipping out its produce throughout the south-western peninsula. Although no kilns have as yet been found, it is possible that in an area adjacent to the town the industry produced pottery which outsold the rival competition or that a monopoly was operated under the sponsorship of the Earldom and Duchy of Cornwall.

Fig 17 A decorative 'face mask' on the rim of a Saintonge ware jug; ***P17****, trench 5. (Photograph: Cornwall Archaeological Unit.)*

Despite Lostwithiel being a port there is a paucity of imported foreign ceramics within the collection. Only a few sherds of Saintonge ware from France, including the rim of a Polychrome ware jug with a decorative 'face mask' (Fig 16 (**P17**); Fig 17), were recovered, with at most only three vessels represented. Despite the high status of the site, this is a surprise as all the other sites mentioned above have produced similar or even greater quantities. It is uncertain if this pattern reflects activity within the area, or is just a result of the limited area excavated.

The tile, slate, stone, mortar and plaster

Eric Berry and Carl Thorpe

The programme of archaeological investigation and finds collection has created an invaluable opportunity to assess the tile, slate, stone and plaster in a wider county context and provide a framework for further research and analysis of other buildings. The stored and archived finds were the subject of photographic recording and brief study at the assessment and updated project design stage (Johns and Taylor 2009).

The aim of the analysis was to identify the historic interest and importance of ridge tiles, roof slate, stone fragments, and mortar and plaster from the site and to place them in a wider context that might lead to further related research, collation and investigation not only of Restormel Castle but also the related building traditions in medieval and later Cornwall. Photographs of the finds were scrutinized and examples from other buildings of a similar period or containing similar features were collated and assessed. This included identification of the use of similar building stone elsewhere, examples of the use and reuse of early hand-made ridge tiles and discussion about the practice of wall renders in early buildings in the county. Floor tiles are briefly discussed but were not included in the scope of the analysis.

Ridge tiles

Most of the ridge tiles, 46 of the 80 pieces collected, were from contexts associated with wall 108: (107), (112), (113), (117) and (118). The ridge tile fragments contain useful information about their clay type, method of firing, former dimensions, and decorative detail. Lostwithiel was one of the principal manufacturing places for ridge tiles in Cornwall in the medieval period, the other main source being St Germans (Brown *et al* 2006) and it is likely that the finds at Restormel Castle were locally sourced; in 1325–6, 189 feet of ridge tiles for the castle were bought at Lostwithiel (Travers 1995, quoting PRO E/101/461/11); ridge tiles ('crestys') were also purchased in Lostwithiel, in 1454, for the Duchy Palace (Douch 1969, 47).

In Cornwall ridge tiles are commonly found in excavations on medieval ecclesiastical sites, high status houses and castles, for example Chapel Jane, Zennor (Thomas 1968, 58–9, fig 14), Fenton-Ia chapel, Camborne (Thomas 1967, 84, fig 17), the monastic site at Lammana, Looe (O'Mahoney 1994, 122–4, fig 22), St Helen's on Scilly (O'Neil 1964, 67–8, fig 8) and the moated manor at Penhallam, Jacobstow (Beresford 1974, 135–8, figs 43 and 44). The most complete recent analysis is of the material from Launceston Castle (Brown *et al* 2006, 423–30, figs 16.2, 16.3). There, 2038 sherds were studied, consisting of four basic fabric groups; almost all the material was produced in the south west, particularly from St Germans and Lostwithiel in Cornwall.

Unfortunately there was insufficient evidence from the Restormel ridge tile fragments to allow for a full determination of their dimensions or shape (although they averaged between 8mm and 10mm in thickness), but information from the other Cornish assemblages helps to inform their reconstruction (Fig 18). Similar examples excavated at Penhallam (Beresford 1974, 135) averaged between 355mm and 480mm in length with a height of about 160mm (not including crests). Two from the chapel at Fenton-Ia, Camborne (Thomas 1967, 84) were 17 inches long (430mm), while the length of those from Launceston Castle (Brown *et al* 2006, 423–8) varied from 290mm to 360mm. There is some evidence from the Midlands (Leicestershire) that ridge tile production was standardised (Dunning 1971–2, 38) with lengths between 380mm to 480mm. An Act of law was passed in 1477 by King Edward IV (Cherry 1991, 195) which stipulated that ridge tiles should be '13½ inches long and 6¼ inches wide' (340mm by 160mm). The majority of Cornish examples certainly seem to conform to these standards.

All the ridge tiles were of a granitic clay fabric that is similar to that used to manufacture Lostwithiel-type ware pottery. The clay matrix is characterised by abundant mica, and ill-sorted quartz with numerous inclusions of abundant large flakes of white and black mica (muscovite (white)

mica being prevalent), shale, granite, irregular shaped quartz, feldspar and tourmaline. All the tile fragments are fired in an oxidising environment being various shades of red-brown in colour with a grey to dark grey core.

A thin patchy green glaze is seen on the exterior of many of the fragments, this being generally concentrated on the ridge and upper parts of the tile. The tiles appear to have been 'crested,' that is decorated with roughly triangular shaped peaks, or 'crests' (usually three to four in number) along the spine of the tile, these projecting above the level of the ridge line. At least three different forms of these crests were recorded (Fig 18).

Slashed decoration was noted on several of the tiles, usually related to the crests. Apart from being decorative, the slashes also had a practical function in helping to prevent the cracking of the tile by aiding in the venting of steam from where the clay was thickest in the process of firing within the kiln. The most complex pattern was that of lines forming a 'Christmas tree' design, with the

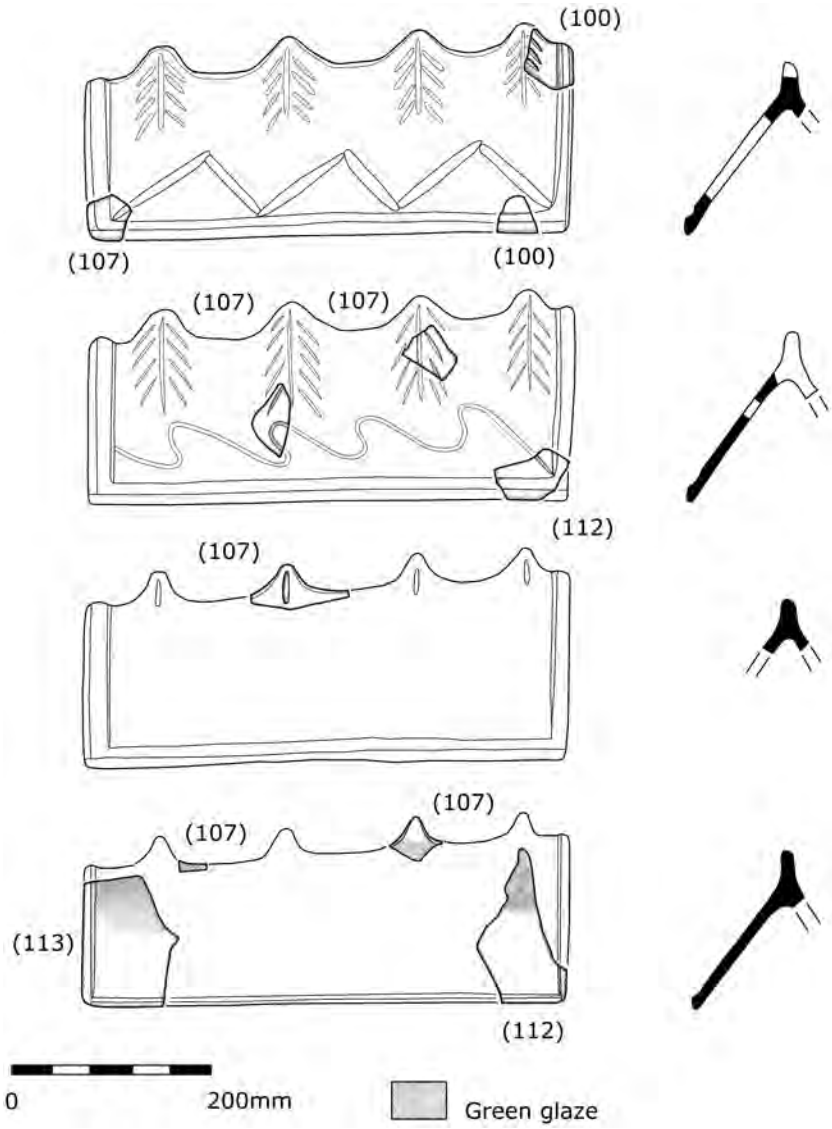

Fig 18 Ridge tile fragments, showing suggested form of complete tiles. (Drawing: Carl Thorpe.)

Fig 19 Ridge tile fragments with deep incised decoration. Second from left: tile with crest and traces of glaze from context (107); see also Figure 18, third from top. (Photograph: Eric Berry.)

Fig 20 Ridge tile fragments. One fragment with deep incised decoration and traces of glaze from context (100); see also Fig 18, top drawing. (Photograph: Eric Berry.)

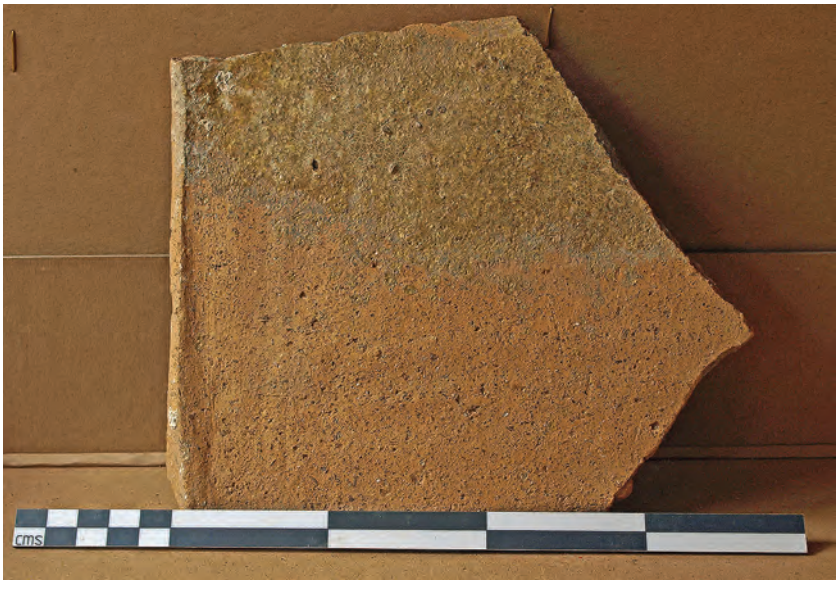

Fig 21 Large ridge tile fragment with extensive remains of green glaze, from context (113); see also Fig 18, bottom drawing. (Photograph: Eric Berry.)

vertical slash proceeding up the centre of the crest, a design paralleled on many Cornish examples including Penhallam (Beresford 1974, fig 44, 136), Launceston Castle (Brown *et al* 2006, fig 16.2, 425), St Mawgan in Pydar Church (Thorpe 2001, fig 18, 71) and at Davidstow Church (Thorpe 1996, fig 4, 11). The simplest consisted of a single vertical slash up the centre of the crest.

At Launceston Castle ceramic ridge tiles appear to date from the mid-thirteenth century onwards (Brown *et al* 2006). This is also the case in Exeter, where crested ridge tiles only appear in stratified deposits after *c* 1250 (Allan 1984, 228). The shapes of the crests found at Restormel suggest a late thirteenth- to fourteenth-century date. This is supported by the close resemblance of these tiles to those found at Penhallam, which was abandoned at the end of the fourteenth century (Beresford, 1974, 126). The size and shape of crests vary through time, until by the eighteenth century they are reduced to residual 'waves' along the ridge line (Thomas 1967, 84, fig 17, F, G and H; Allan 1984, fig 134, 2956, 2957, 2958; Preston 1986, 71–3). There are a significant number of sites in Cornwall where post-medieval hand-made crested or carved ridge tiles survive on roofs (Fig 22). These have mostly been reused in their present locations but most probably belong to their surviving building context. There are also some good examples in museum collections and other archives.

Fig 22 'Horse-and-rider' crested ridge tile on the taller roof of the Jolly Sailor public house in West Looe, one of three horse-and-rider examples that survive in Looe; the only other known examples are in museum collections. (Photograph: Eric Berry.)

Roof slate

The finds vary greatly in size and colour, texture, and origin (at least four geological sources). The slates have fastening holes, or remnants of holes. Many of the slates have remnant plaster to part of their surface. The slate finds at Restormel Castle survive from what must be close to the beginning of the known medieval slate roofing tradition in Cornwall, a tradition that later became divided into either a rag slate tradition or a scantle slate tradition. Both traditions produce roofs with slates of random width laid to diminishing courses. Rag slate appears to be the older tradition with generally much larger slate sizes, the largest slates at the eaves reducing to slates of still reasonable size at the ridge. Scantle slate appears to be later tradition where the smaller inferior slate sizes are used in areas away from the quarries. The largest slates used for scantle slating are about the same size as the smallest slates used on rag slate roofs.

At Restormel Castle the finds may be evidence for an evolving tradition that uses slates of random widths and diminishing courses, a characteristic that is common to both main slate-roofing traditions in Cornwall (and in other places where there is an old slate roofing tradition). The finds combine characteristics that later evolved into the two separate traditions of rag slate and scantle slate. These two traditions have clear geographical boundary splits throughout the county with rag slate generally used in north and east Cornwall and scantle slate used in west Cornwall. The slates at Restormel vary in length from the largest full-length slate (all measured from foot to fastening hole) at 380mm and the smallest full-length slates at 90mm. This size range ranges from slightly longer to considerably shorter than what is standard practice with scantle slate roofing but is much closer to this tradition than the rag slate tradition.

The 'quarries' from where the slate was extracted were probably mostly located in north Cornwall, an industry which is now represented by two surviving quarries. The largest and oldest quarry is at Delabole (the Delabole Slate Quarry), one of the largest of its type in England, which has run continuously since at least the late sixteenth century (Stanier 1995, 114) when there were four or five quarries on the site delivering slate as far afield as Brittany and the Netherlands. In 1841 the five quarries combined to make the Old Delabole Slate Quarry. The other main quarry is at Trevillett, near Tintagel, an old quarry that was reopened in

the mid-twentieth century when it became part of Mill Hill Quarries Ltd. The slate may also have come from quarries in the Tavistock area where the slate is geologically similar to that found in Cornwall; quarries were working in the Bere Ferrers area in the Tamar Valley as early as 1296 (Jope and Dunning 1954, 210, 215). Although there are several references in the fourteenth and fifteenth centuries to the purchase of roof slates and the employment of tilers at Restormel Castle (Travers 1995) in only three instances is a source mentioned. In 1325–26 slate stones were brought from Golant and Fowey and also from Bodmalgan (Travers 1995, quoting PRO E/101/461/11); Bodmalgan is identified as Bosmaugan in St Winnow parish, 1.5 km north east of the castle (Jope and Dunning 1954). In 1448–49 '3000 stones called helynstone' were brought from *Delyaboll* to the castle for 13s (Travers 1995, quoting PRO E/101/461/17). The cliffs along the north coast of Cornwall are a likely source for many of the slate finds at Restormel Castle.

Although slate-stone is abundant geologically in Cornwall, suitable roofing slate that lies in flat bedding planes and can be split to a consistent thickness occurs in a very limited part of this wider area. Many of the slate finds compare in thickness to the earlier rag slate roofs that survive in Cornwall but some of the slates are more irregular both in terms of thickness and flatness. Their irregular character probably accounting for the need to set them in bedding mortar (to prevent rocking) for which much evidence survives. This method of laying slate, together with the range of sizes, is much closer to the scantle slate tradition than to the rag slate tradition. The limited size and the use of very small slates (smaller than the smallest slates used with scantle slate roofs) is probable evidence that the slate was being extracted from near the surface and using more primitive quarrying methods than those that became established practice from probably the Tudor period onwards.

Rag slate and scantle slate differ in their general character and also the way that they are fastened to the roof timbers. Rag slate roofs incorporate a range of large-sized slates with the largest available slate sizes used at the eaves, with slates occasionally included that are up to about 2m wide and more than 1m in length (along the rafter). These roofs typically diminish towards the ridge to slates slightly smaller than the largest slates found at Restormel and about the size of the largest slates used in scantle slate roofs. Older examples of rag slate roofs have slates that are fastened directly to the rafters, fastened either by wooden pegs or by wrought-iron nails. Some later examples have laths at the upper part of the roof so that smaller sizes can be used. Rag slate roofs sometimes have lime-mortar pointing applied to the joints between the slates on the underside of the roof. This practice is known as torching and is also common practice with the use of stone slates in other parts of the country where a roof is intended to be open to the roof from rooms underneath.

The scantle slate tradition has typically 14 inch (356mm) long slates for the eaves courses diminishing by one inch length sizes (each size used for a number of courses of slates) to a 6 inch (152mm) length at courses towards the ridge. This tradition makes good use of the smaller slate sizes that come from quarries. The slates are fastened to laths that are spaced according to the coursing, the lath spacing further closing together wherever there is a change of course size. This change is called a 'twist' and this can easily be seen when the roof is viewed from underneath. The slates are fastened with split wooden pegs projecting to the underside so that they hook over the laths. Where the fastening opportunity coincides with rafter locations the slates are nailed directly to the rafters. Scantle slate is either dry-laid or wet-laid, in both cases usually rendered underneath onto the laths with either earth or lime mortar. Where earth mortar is used there is usually also a thin layer of lime mortar added as a final finish. This mortar has two main practical functions: it prevents wind-driven rain from entering the building and it also prevents condensation from occurring under the slates and therefore prevents frost damage. Many old roofs are suffering from powdering caused by expansion of successive laminates of slate caused by frozen condensation.

A rag slate example that shares characteristics with the slate finds at Restormel Castle is illustrated in Figure 27.

Mortar and plaster finds

Over 200 pieces of mortar or plaster were recovered, the majority, 177 pieces, coming from contexts associated with wall 108: (107), (117), (118). The plaster is either fallen wall plaster or was used as bedding mortar for the roof slates, or to seal the underside joints (torching) of the roof(s).

Fig 23 Roofing slate, context (127). Measured foot to peg hole: longest slate 210mm (8.25 inches); the other larger slates 152mm (6 inches) long. Samples illustrated are from two geological sources. Longest slate with traces of lime mortar, probably applied later as grout. (Photograph: Eric Berry.)

Fig 24 Roofing slate, context (107). Measured foot to peg hole, all surviving to their full original length (left to right): 191mm (7.5 inches), 178mm (7 inches), 171mm (6.75 inches) and 89mm (3.5 inches). (Photograph: Eric Berry.)

Fig 25 Context (107), small slate fragments that show consistent peg hole size and considerable geological variety. (Photograph: Eric Berry.)

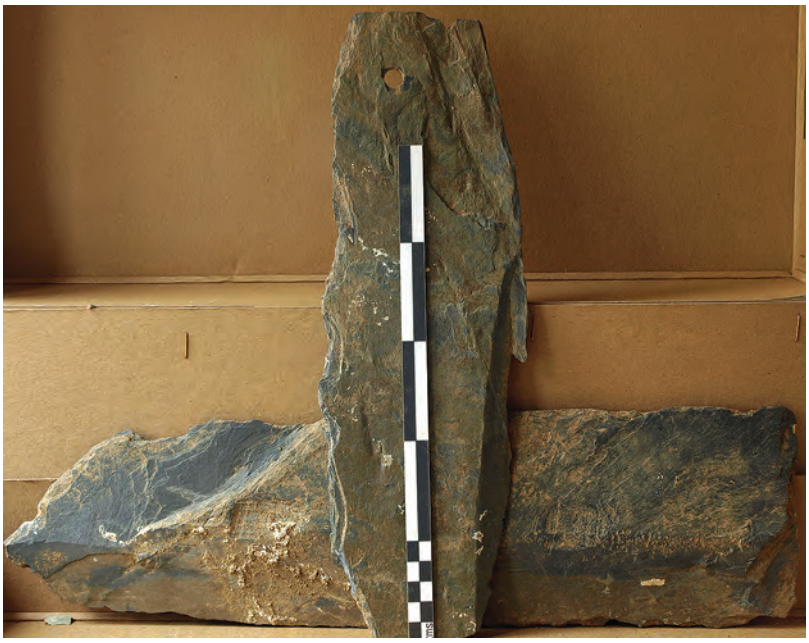

Fig 26 Roofing slate, context (107). Measured foot to peg hole: horizontal slate 380 mm (15 inches) and vertical slate 360mm (14 inches). Narrow widths of the longest slates may indicate the difficulty of extraction of larger slates at the time of construction. (Photograph: Eric Berry.)

Fig 27 Bokelly Barn, St Kew, horse-engine house and granary; rag slate throughout plus rag slate-hanging on granary. (Photograph: Eric Berry.)

The plaster remnants that survive to the external walling of the shell keep at Restormel Castle are evidence for an original rendered finish. The finds from the investigation trenches demonstrate that at least some of the buildings within the bailey at Restormel Castle were also rendered.

This was common practice for medieval castles and for many buildings constructed from

rubble stone of the medieval period: substantial archaeological evidence that survives in many medieval buildings shows that a thin layer of lime render was generally used over rubble stone. It is likely that the dressed stone features were lime-washed so the whole building had a harmonious appearance. Most of this render has been eroded away or removed by well-meaning but misguided works of restoration or repair. Like Restormel Castle, the Duchy Palace, Lostwithiel, also has remnant render mortar.

Floor tiles

A small number of fragments of glazed ceramic floor tiles were recovered during the investigations, two pieces from topsoil layer (101) near wall 108 and another from rubble layer (110), trench 5. The three fragments represent two separate tiles. Unfortunately they are fragmentary, so it is impossible to determine their dimensions, or shape, although both are some 20mm thick. The sides are vertical, and both have a flat bottom.

The fabric, which has fired to a dark or orange-red colour and is well mixed, has abundant, well-sorted, sub-angular to rounded quartz with sparse fragments of a fine-grained sedimentary rock and sandstone with flecks of muscovite mica. This fabric appears to be the same as floor-tiles of Series 1 at Exeter (Allan and Keen 1984, 232–6) which are believed to have been manufactured in Devon, possibly Exeter itself.

Both of the tiles show evidence of decoration, this being of an impressed pattern inlaid with white pipe clay, filling the stamped design to a depth of about 1 mm or less. There is evidence that the tiles had been lead glazed, the glaze being a light green colour. Being heavily abraded, the patterns on the tiles were difficult to discern, although the larger tile had the arcs of two concentric circles approximately 15mm apart forming an element of the design.

Only one floor tile has previously been found at Restormel Castle (Eames 1980, no 11,669, design 1996). Medieval floor tiles in Cornwall are surprisingly rare and mostly come from ecclesiastical sites; the largest collection comes from Launceston Priory and others come from Tywardreath, Bodmin Priory, St German's Priory, Glasney College, Penryn and King Charles' Castle, Tresco, Isles of Scilly (Keen 2005, 40–5) while Tudor period floor tiles survive in the chapel at Cotehele (Berry *et al* 2004, 40). This building has *c* 1411 walling from its original recorded period of construction but the chapel was mostly rebuilt in the early sixteenth century.

Stonework

The stonework appears to be from a number of sources and is of different geological types. Only one fragment has architectural detail and is part of a probable window mullion carved from Pentewan stone (Fig 28), from rubble layer (63) in trench 1.

Dressed stone practice in Cornwall as relevant to the context of Restormel Castle

There are two buildings in Lostwithiel town that are approximately coeval with the principal surviving phase of Restormel Castle, namely the church of St Bartholomew and the Duchy Palace (Figs 29 and 30), both of which have Pentewan stone dressings (Berry 2008). There is much Pentewan stone within the town, some of which is probably reused from the Duchy Palace. Surviving fragments found at the castle show that the dressed stone here was similar and it is likely that the features were also stylistically similar to the Duchy Palace and to the church. At Restormel Manor loose stone

Fig 28 Probable window mullion fragment of Pentewan stone, from rubble layer (63) in trench 1. (Scale: 5cm divisions (Photograph: Eric Berry.)

fragments and a relieving arch above the recently rediscovered hall fireplace are also Pentewan stone. The great east window at St Bartholomew's is the largest surviving window of its period in Cornwall. Archaeological evidence shows that the original east window of the surviving chapel at Restormel Castle was made from timber and was a stepped lancet design, much simpler than the window at the church. An archaeological assessment of the castle in the 1990s shows that the large window openings of the shell keep are original features of the main period of its survival, that the chapel is part of the design of the main part of the surviving stone shell and that the stone buildings within the shell also belong to this period.

Archaeological evidence shows that until the mid- to late fifteenth century, granite was generally not used for dressed architectural features in buildings. The earliest use of this material is mostly confined to the construction of aisle additions to parish churches. The date of many of these has recently been confirmed by dendrochronology that has been carried out to their wagon roofs (Thomas and Berry 2011, 56). Earlier stone dressings were cut from a variety of indigenous stone sources or were imported from elsewhere, particularly from Beer in Devon. Stone was used for its fine grain and the character of the stone that enabled it to be cut in any direction, behaving like freestone such as limestone or sandstone. The stone sourced from within Cornwall is mostly metamorphic and often as hard as many types of granite. These are generally classified as volcanic agglomerates or greenstone, often called elvan in Cornwall. The most common stone derived from quarries in Cornwall is from the north coast of Cornwall, quarries near Launceston, Pentewan stone, and Catecleuse stone. Based on the fragments that have

Fig 29 Duchy Palace, Lostwithiel. This almost complete c *1300 doorway spans the river Cober, the base of the doorway infilled but the head of the doorway retaining original dressed Pentewan stone. (Photograph: Eric Berry.)*

Fig 30 Church of St Bartholomew, Lostwithiel. Late thirteenth-century east window, constructed from Pentewan stone like many of the dressed fragments found at Restormel Castle. (Photograph: Eric Berry.)

been assessed the stone used at Restormel Castle is from more than one geological source but most is Pentewan stone. Some roof corbels made of this material are still *in situ*.

The animal bone

Claire Ingrem

Methods

The assemblage from Restormel Castle was assessed in March 2009. All hand collected bone fragments over 10mm and all fragments of sieved material over 2mm were examined, with the number of potentially identifiable and unidentifiable bones being counted for each context, to provide a basic NISP (Number of Identified Specimens Present). The number of bones or teeth that could provide metrical, ageing or sexing information was recorded, and the presence of butchery was noted. No further work was recommended. A summary of the assessment report is included here and the full report has been deposited with the project archive. This includes metrical data which was available from seven specimens (sheep, pig, fallow deer (3), mallard, galliform and hake) and recorded according to the criteria of von den Driesch (1976).

Condition of the bone

In order to estimate the potential of an assemblage to provide taphonomic information, the condition of the bone was graded on a scale of 1 to 5. That assigned to '1' was deemed to be in excellent condition, demonstrating little post-depositional damage while bone material classed as '5' has suffered severe surface erosion and can be identified only as 'bone'. Ninety-one per cent of the assemblage was in good condition and was classed as '2'.

Data

A total of 125 fragments of animal bone were recovered of which 35 per cent were identifiable (Table 8). A wide range of taxa was represented with domestic and wild mammals, birds and fish all present. The major domestic food animals – cattle, sheep/goat and pig – were all present and so too was galliform (probably domestic fowl). Bones belonging to fallow deer (*Dama dama*), roe deer (*Capreolus, capreolus*) and cetacean (*c.f. Delphinidae spp.*) were also present. A single duck bone belonged to a mallard size bird. Fish were represented by bones belonging to cod (*Gadus morhua*), ling (*Molva molva*) and hake (*Merluccius merluccius*). Evidence of butchery on a cattle femur was present in the form of a chop mark.

Table 8 Taxa representation (NISP)

Taxa	*Total*
Cattle	11
Sheep	3
Sheep/goat	2
Pig	3
Fallow deer	5
Roe deer	1
Cervus spp.	5
Cetacean	1
Medium mammal	6
Large mammal	36
Mallard	1
Galliform spp.	3
Cod	1
Hake	2
Ling	6
Fish	5
Unidentifiable	34
Total	**125**
Total identifiable	**44**
% identifiable	**35**

Discussion and interpretation

The sample of animal bones recovered from Restormel Castle was insufficient in size to provide detailed information concerning diet, animal husbandry and trade practices and consequently the potential of the assemblage to increase our understanding of human / animal relationships was negligible. However, the assemblage was not without interest as the range of taxa present provided clear evidence that a wide variety of animal foods was consumed including beef, lamb / mutton and pork as well as luxury foods such as venison and wild fowl. In this respect it conformed well to contemporary castle sites which have produced evidence for the consumption of foods associated with high status such as Launceston Castle (Albarella and Davies 1996; Smith 1995). During the medieval period hunting of deer was restricted to the aristocracy with severe penalties imposed on poachers; consequently the presence of fallow and roe deer suggests that venison came

from Restormel's own deer park and the animals were hunted for sport. The cetacean vertebra and bones belonging to large fish of the cod and hake family is evidence that marine foods were also enjoyed; they were probably readily available from several fishing harbours on the coast where fresh fish would have been landed and available for purchase.

The marine molluscs

Jan Light

Methodology: background information and technique employed

Thirteen 19 × 21cm self-seal plastic bags representing seven contexts were sent for analysis. In addition there were three small bags containing shell fragments.

The shells were in their excavated condition with some adherent soil and loose material in the bags. Initially it was intended to wash the shells; however, it was evident that the oysters were very vulnerable to flaking. Assessment of modification to shells, whether natural or unnatural (man-made) is hampered when they have been subjected to post-excavation washing, unless carried out in controlled circumstances. While the removal of adherent soil allows some features to be discerned more clearly, the tendency to flaking is accelerated. Also, the removal of shell material which was weakly attached, including those fragments which may have been loosened or generated during excavation but remain attached, held in place by the soil, results in the loss of potentially useful information.

Because of the foliar character of oyster shell, the juvenile portion of larger shells tends to flake away from the exterior surface. This results in the production of another 'shell' and leaves a clean pearly surface 'scar' on the larger shell exterior. Layering of the shell occurs because the family Ostreidae produces shells which are wholly calcitic (Bøggild 1930). The overall morphology of most oyster shells is irregular and the shell layers are irregularly foliated with the folia turning in all possible directions, although nearly always horizontal. This gives rise to the pearly lustre of the shell. It is characteristic of many oyster shells that the layers of normal consistency alternate with others more or less porous which have all their elements placed vertically. This applies to the common oyster, *Ostrea edulis*, which possesses numerous such layers of chalky consistency, consisting of very fine, vertical folia. This mineralogical character accounts for the chalky condition of oysters in archaeological deposits.

Foliation (flaking) in the Restormel Castle shells had evidently occurred *in situ*, but also as a post-excavation artefact during handling and storage in the bags. A few juvenile regions of shell which had flaked off larger valves were noted and could be matched to their counterparts. Care was taken not to include these as individual shells during sizing and counting. Sizing was carried out using Vernier calipers, taking the maximum height as the distance between the umbo (hinge end), sometimes called the 'beak', and the shell margin (ventral margin) opposite. Individual measurements in millimetres are shown in Table 9 and displayed as scattergrams in Figures 31 and 32. A few shells were washed for closer examination and photography.

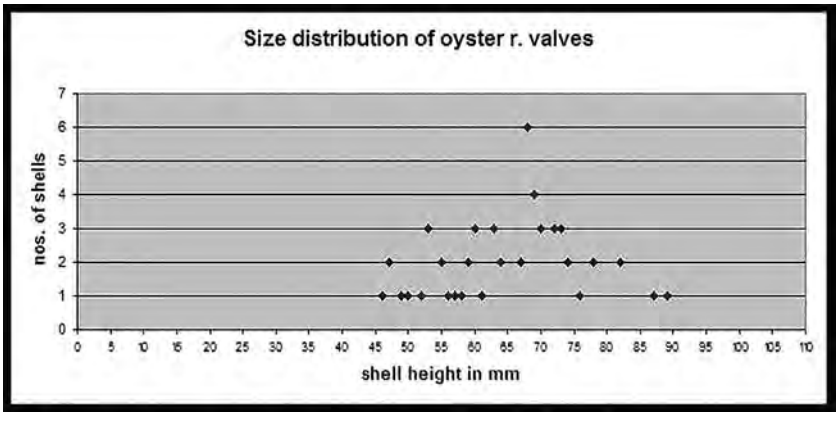

Fig 31 Scattergram of oyster shell (right valve) heights.

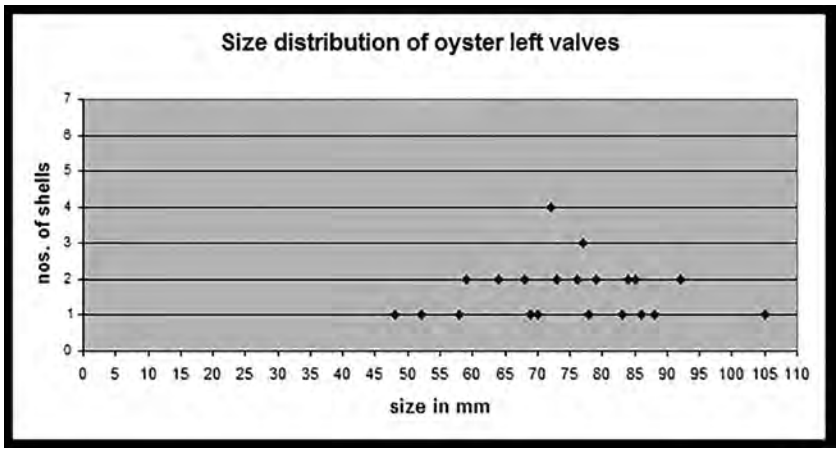

Fig 32 Scattergram of oyster shell (left valve) heights.

Results

There are 97 more or less complete and measurable oyster valves in the assemblage (59 right and 38 left valves). Although the individual oysters were measured, another rapid method involves sizing with categories designated large (>85mm), medium (60–85mm) and small (<60mm) oysters. On this basis 66 per cent of right valves and 66 per cent of left valves are of medium size. This dominance of medium size oysters is to be expected and in line with occurrences of oysters from archaeological sites elsewhere. Whether harvested from managed or from wild populations of oysters, individuals falling into the medium category tend to be selected for a balance between their meat return in relation to tenderness and palatability.

Work elsewhere (Winder 1992) has shown that right valves survive in larger numbers and are generally better preserved, but morphometric measurements for more detailed analysis are best carried out on the larger left valve since the right (upper) valve in living oysters is usually inset.

Distribution in the contexts

With the exception of shells from context (127) all excavated shells come from trench 4. This area included a large section of masonry, wall 108. The oyster-bearing contexts represent deposits butting against the wall and, with the exception of (117), are associated with animal bones as well as other finds categories. (There were oyster shells submitted for this analysis from (117) although these are not shown in figure 2 of Johns and Taylor 2009, 28). The assemblage of shells from context (127) in trench 5 is different: this deposit was the only one to contain other marine shell, a few cockles, whelks and mussel fragments as well as oysters.

Patterns of growth and morphology

Even allowing for the characteristic irregular shape of oyster shells, some of the left valves of the oysters were misshapen and rather distorted, suggestive of growth in a restricted space, from a wild population. Oysters from a fully marine open coastal environment, rather than an estuarine environment, accumulate encrusting epifauna and infestations of boring organisms such as the sponge (*Cliona* sp.) and polychaetes (*Polydora* spp.). A few shells displayed such evidence (Figs 35, 36 and 38).

State of preservation and human modification of oyster shells

Many shells were in poor condition, with broken margins and some fragmented to the extent that they were unmeasurable. It seems very likely that the shells were brought to the site alive; no beach-dead shells were evident in the samples. In line with oysters from other archaeological assemblages (e.g. Light 2001; 2004), in some instances a right and a left valve from the same context could be matched to a pair (six individuals in total from contexts (112), (117), (118), (127). This suggests that the context concerned was the primary site of shell disposal. With persistence and time it is probable that a few more oysters could be matched

Fig 33 Large left valve showing evidence of restricted growth and V notch in ventral margin, context (116). (Photograph: Jan Light.)

Fig 34 Left valve showing evidence of restricted growth and irregular breakage at ventral margin, context (127). (Photograph: Jan Light.)

Fig 35 Right valve showing V notch in ventral margin and Polydora burrows on exterior of shell (context 112). (Photograph: Jan Light.)

Fig 36 Left valve showing boreholes and opening damage at margin, context (127). (Photograph: Jan Light.)

up; however, constraints imposed by the damaged condition of the oysters (fragmentation, loss of shell layers) would make this a time-consuming and uncertain exercise.

Many of the oysters had a broad but shallow region of the ventral margin missing; some were damaged more randomly. A smaller number had more distinct V-shaped notches cut into the outer edge (Figs 33 and 35). Similar damage patterns have been reported by Winder (1992) as being frequent on shells from a large deposit of oysters

Fig 37 Oyster, matched right and left valves, context (112). (Photograph: Jan Light.)

Fig 38 Right valves showing Polydora boreholes, and burrow damage where shell layers have been undermined and exterior layer has broken away. (Photograph: Jan Light.)

at a Late Saxon/early medieval site in Poole. These various patterns of breakage result from damage sustained during opening of the oyster.

Other mollusc species

The presences of other species in the samples are very low. It would appear that cockles, *Cerastoderma edule* and mussels, *Mytilus edule*, (edible species) were brought to the site, but the

Fig 39 Oyster, matched right and left valves, from context (127). Match at ventral margin not complete owing to loss of shell material in this region on both valves. (Photograph: Jan Light.)

very low numbers do not allow an interpretation of their presence. There were also two partial shells of the edible common whelk (*Buccinum undatum*.) There was a single shell of the non-marine snail, *Cepaea* sp., not usually considered to be a comestible.

Conclusion

This report documents 133 oyster shells (59 right, 38 left and 36 unmeasurable valves) and 13 other marine shells in the assemblage (these totals exclude the small pieces of oyster valve which were not measured for the analysis). Most of the oysters (58n) are concentrated in the sample bags from context (112). The character of the oysters suggests that these were gathered, for food, from a wild population rather than a managed one. Although the Romans introduced farming of oysters to Britain (Yonge 1960) and exported oysters from England to Rome, it was not until late Saxon / early medieval times that the practice seems to have become more widespread. Earliest archaeological evidence for some form of commercial oyster farming or systematic exploitation of oyster beds comes from a large oyster midden in Poole dated

Table 9 Marine mollusc summary

Context	*Oysters total valves*	*Right valve sizes (mm)*	*Left valve sizes (mm)*	*Un-meas valves*	*Comments*	*Other marine shells*
(112) trench 4	58	49 50 63 63 64 64 67 68 68 68 68 68 68 69 70 72 72 72 73 73 74 78 82 89	58 64 64 68 70 72 72 72 73 73 76 77 77 79 84 84 85 85 88 92	14	Few flakes and fragments. V notches in several valves, others with lateral 'slices' of shell missing from ventral margins = opening damage. *Polydora* damage to several shells and some serpulid encrustation. **4 valves matched to 2 paired oysters**.	
(116) trench 4	4	59	77 104	1	Large left valve has V notch in ventral margin.	
(117) trench 4	10	53 57 58 67 69	46 47 54 57 83		**2 oyster valves matched to one pair**. Large left valve has soil cemented to interior surface and small oyster shells attached.	
(118) trench 4	22	46 47 56 59 60 61 63 69 69 70 70 73 74	59 69 72 86	5	**2 oyster valves matched to one pair**. *Polydora* damage evident. Few oyster fragments from sieving.	
(125) trench 4	1	>78	nil		Oyster fragments from sieving.	Common mussel frags from sieving.
(127) trench 5	37	47 52 53 53 55 55 58 60 60 63 65 76 78 82	48 52 76 80 83 84 92	16	Some oysters very fragmented and flaky. *Polydora* damage on several valves, also boring sponge holes. One landsnail (*Cepaea* sp.) in bag. **4 valves matched to 2 paired oysters**.	Common whelk: 1 shell and 1 columellar frag. Edible cockle 8 valves + 3 frags.
(128) trench 4	1	87	nil		Shell very flaky, oblique slice missing from ventral edge.	

to the eleventh or twelfth century (Winder 1994). Given the keyhole nature of the excavation it is likely that more substantial deposits of all the edible species found in the excavated samples may lie elsewhere at the site.

Discussion

While essentially 'keyhole' in nature, the investigations associated with the new admissions building are important because they are the first recorded archaeological interventions to be undertaken at Restormel Castle. Although the location of the medieval gateway into the bailey was not clearly established – this would have required more extensive open-area excavation – the work returned interesting results that shed light on the occupation and layout of the castle. The excavations provided a glimpse of a short period in the history of the castle, spanning the late thirteenth to mid-fourteenth centuries. Previous phases in the history of the bailey may not have been represented since investigations were restricted to upper deposits where possible.

The bailey

Bailey defences

The bailey ditch was located in one or perhaps two locations. In trench 8 a ditch was identified immediately outside the south bank of the bailey, at its western end. The ditch, [218], (Fig 10), was only partly excavated but was about 4m wide.

The possible line of the western ditch of the bailey was picked up in trenches 1 and 2 as [11]/[23] (Figs 9 and 10). This was 1.1m deep and at least 1.65m wide, and so although relatively substantial it does not seem to be a major defensive work. If this is the line of the western ditch the position is a little unexpected as it runs along the

inside of the field bank which had been thought to follow the line of the bailey rampart.

Entrance

Evidence from the geophysical and earthworks surveys suggests an entrance to the bailey close to the motte, at least in the earlier phases of the castle. Unfortunately, the results from the excavations were inconclusive and failed to support these findings. It is possible that the entrance and gatehouse was just to the east of the area investigated and led from a possible lower bailey, on the slope south of the keep, to the upper bailey.

It is not without parallel to find the entrance into the bailey so close to the keep itself. Gatehouses at both Launceston and Trematon castles are situated next to their mottes. At Launceston the original North Gatehouse led from a point at the western base of the motte into the outer bailey or the town (Saunders 2006). Similar examples are known from Cardinham (Preston-Jones and Rose 1986, fig 13), and, further afield, Heywood in mid-Devon (Vatchell 1963). As previously mentioned, the positioning of the bailey entrance here afforded a degree of protection from the keep itself.

Internal features and finds

The discovery of a substantial section of masonry beneath the old admissions building has provided the first excavated evidence for stone structures within the bailey. Its short and robust nature suggests that it may have been a buttress to support the wall of a large building, now robbed out. The deposits around the wall demonstrate homogeneity of finds, all suggesting a thirteenth to fourteenth century date. The location of a large buttress directly in front of the putative entrance to the bailey and near the entrance to the shell keep suggests a building of some stature and it is tempting to suggest that this building was the great hall referred to in the Caption of Seisin of 1337 (Hull 1971, 41–2). This conclusion is supported by the large quantities of roofing slates, ridge tiles, and fragments of floor tile that were recovered from around the wall, all indicating a building of some considerable size and status.

If the masonry is indeed a buttress it would indicate that the 'hall' was aligned south west to north east, the same orientation as the entrance to the ringwork and the shell keep. For comparison, the thirteenth-century great hall in the bailey of Launceston castle measured 22m by 7m internally (Saunders 2006, 24). The range of building material recovered during the excavation in this area is significant and indicates a building which had been roofed in slate (probably held in place by iron nails) with ceramic ridge tiles; accounts of 1325/6 record that thousands of slates for roofing came by boat from Golant and Fowey and that two men were paid £9 10s for roofing 'the great hall and certain chambers outside the castle' (Molyneux 2010, 14). The floor of the building had been covered with decorated floor tiles, apparently with a heraldic design, and the overall impression is that this represents a building of quite high status. The fragment of window mullion in Pentewan stone (Fig 28) may have come from the keep itself but, if not, again suggests a building of some quality.

By contrast with the results from the eastern end of the bailey, the evaluation and watching brief on the site of the new admissions building at the western end was fairly unproductive, a motley collection of 21 artefacts being recovered. This could be seen to represent the nature of activity, or lack of it, in this far corner of the bailey, remote from the keep and the suggested medieval gateway.

The ceramics are principally domestic cooking vessels, although there are jugs and at least a couple of cisterns. Status is again indicated by the presence of several imported sherds of Saintonge ware, imported from France, including the rim with a decorative 'face mask' from a jug (Fig 17). This ware is generally seen as a by-product of the Bordeaux wine trade (Derœux and Dufournier 1991, 163–77) and is the commonest, albeit not particularly common, imported ware in London during the late thirteenth to early fourteenth centuries (Vince 1985, 51). Other evidence supporting the high status of the site comes from the earlier find of the neck shard of a Syrian flask (Williams 1983, 145), presumably from the interior of the keep.

However, the ceramic assemblage from the site is characterised by its homogeneity in terms of fabric, the vast bulk of material, both pottery and tile, being Lostwithiel-type ware. As mentioned in the ceramics finds report (Thorpe, above) this may be a result of the limited nature of the investigations but against this interpretation is the

fact that the material was recovered from across the site. As Thorpe says, a possible interpretation is that the occupants of the castle, the earldom and then the Duchy of Cornwall by the fourteenth century, may have been more concerned with a monopoly on pottery production, perhaps as a result of controlling the kilns (as yet unfound) in Lostwithiel, and preventing the importation of other wares. Alternatively, such importation may simply have been uneconomic given the proximity of such a well-developed industry.

The large number of faunal remains recovered from layers around the buttress, particularly oyster, cockle, and whelkshells, suggests the presence nearby of a kitchen and / or feasting activity, such as might be expected at a Great Hall. It is interesting that the deposits in which they were found are regarded as the primary site of disposal (Light, above), perhaps indicating that kitchen waste was simply tossed out of a window. Oysters, and more exotic marine life, were popular at Launceston Castle too, with large amounts recovered from deposits associated with Period 5b which coincided with the introduction of Saintonge ware there (Saunders 2006, 461) and has been interpreted as the period during which Earl Richard carried out a programme of building, including the Great Hall, designed to make 'a very public statement of his status and prestige' (Saunders 2006, 257). It is tempting to see the construction and initial use of a Great Hall at Restormel, probably a little later in the thirteenth century, intended to serve much the same purpose.

The function of the site as an administrative centre is supported by the book clasp and stud, both of which had been gilded, and the Edward III jetton (Fig 11). Much of the material from the excavations appears to fall into a tight chronology spanning the late thirteenth to mid-fourteenth centuries. This would seem to be the zenith of Restormel's occupation, starting with Richard, Earl of Cornwall and his son Edmund in the late thirteenth century and culminating in the tenure of the Black Prince, the first Duke of Cornwall. The castle's administrative role was probably lost to the Duchy Palace in Lostwithiel as the residential occupation of the castle increased in importance. However, that too diminished and the castle seems to have fallen into decline following the Prince's last visit in 1365 since subsequent reports describe ruins. This chronology matches that of other major Cornish castles such as Tintagel where fourteenth-century restorations are followed by fifteenth-century accounts of its ruinous state (Barrowman *et al* 2007, 323). Ironically, Launceston, despite losing out to Restormel as the seat of the Earls, and later Dukes, of Cornwall, continued to function as a judicial centre and prison into the post-medieval period (Saunders 2006, 460).

Lead working

A significant outcome from the metal detecting was the large sample of waste lead recovered. This may reflect the manufacture of fittings at a site within the bailey for use in the castle, or, as indicated in the finds report (Jessop, above) might represent the melting down of such fittings for use as musket shot during, for instance, the Civil War.

The presence of so much melted lead might concur with documentary evidence that Restormel was one of two sites (the other being Launceston Castle) in the Duchy where a pewterer was allowed to operate (BPR 1930 in Saunders 2006, 38). This industry was restricted (in a similar way to the control of tin) to a small number of stannary towns, in order to control production and increase the opportunity for revenue (Saunders 2006, 38). However, as the finds report indicates (Jessop, above), much of the lead is likely to derive from functional fittings associated with roofing, windows, and guttering.

Lead was also used to make pipes to bring in the water supply. Sections of the lead pipe have been seen, although much of it was destroyed in the nineteenth century by strip mining (Price and Price 1980, 24). The pipes were mentioned in the *Caption of Seisin* in 1337 (Hull 1971, 41–2), which notes that they 'brought water to each house of office', and are a rare example of water supply from a source external to the defences (Creighton 2002, 54). The probable line of the pipe can be seen on the geophysical survey, which shows it splitting into two within the bailey (GSB Prospection 1994), one section crossing into the keep by the present bridge, the other leading to a possible complex of buildings to the south of the present bailey wall, or perhaps an overflow. It is clear that the pipes were not intended to water the moat, as augering in 1994 found no evidence for silts or a clay lining, suggesting it was a dry moat (Thomas 1994).

The presence of lead shot indicates that Restormel did see some action during the Civil War, although the castle was occupied by

Parliamentarian forces for only a short while during the Battle of Lostwithiel. The presence of only a single fired musket ball is consistent with the relative ease with which the castle was taken by the Royalist forces under Sir Richard Grenville on 21 August 1644 (Barratt 2005, 90).

Conclusions

The limited excavations at Restormel, perhaps predictably, have resulted in as many questions as answers. The position of the gatehouse has still not been established unequivocally, although some evidence supporting the geophysical survey has emerged. The existence of a great hall is surmised rather than proved, although again the excavations have provided evidence in support of this structure. The limitations of the geophysical survey results have probably been demonstrated to be the result of the widespread spreads of rubble found across the site and it may be that future refinements and calibrations of the techniques may yield more results. Future research and / or evaluation might be targeted on the gatehouse, entrance features and possible lower bailey lying to the south of the bailey wall outside the Scheduled area. Within the bailey, the layout of the buildings might be discovered through a series of evaluation trenches. The work has shown that there is high potential for the survival of layers, features, structures and artefacts of the late thirteenth and fourteenth centuries.

Acknowledgements

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Within the Historic Environment Service, fieldwork was carried out by Sean Taylor, James Gossip, Neil Craze and Dick Cole. Jonathan Clemes and Brian Parker volunteered and metal-detected, Anna Lawson-Jones sieved the soil samples, Konstanze Rahn cleaned and sorted the finds and Carl Thorpe compiled the archive finds report; the Project Manager was Charles Johns.

Project archive

Artefacts and environmental material retrieved during the investigations, together with site documentation, specialists reports, drawings and photographs are housed at the Royal Museum, River Street, Truro, TR1 2SJ. The museum accession number is LOAN 353.

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After the storm: an Early Bronze Age cist burial at Harlyn Bay, Cornwall, 2014

ANDY M JONES AND RICHARD MIKULSKI

Following a severe winter storm in March 2014, human remains were reported eroding from the cliffs at Harlyn Bay. Cornwall Archaeological Unit archaeologists recorded the exposed section and excavated the remains of an inhumation burial preserved in the sandy conditions within the cist. The cist was set within a larger pit, which contained a large quartz-rich stone. No artefacts were present but analysis of the skeleton revealed that it was a young female aged between 26 and 35.

A sample of bone from the burial produced a radiocarbon determination which fell towards the end of the third millennium cal BC, 2284–2038 cal BC, the earliest Bronze Age inhumation burial to be found in Cornwall. This paper considers the results from the radiocarbon dating and discusses the wider context of the burial in relation to others recorded in Harlyn Bay and along the north Cornish coast.

Location and background

In 2014, Cornwall Archaeological Unit was contacted by Sara Grattan, Senior Officer, Environmental Protection (Public Health and Protection, Cornwall Council) to report the discovery, after a severe storm, of human bones which had become exposed in the cliff section at Harlyn Bay (St Merryn) on the north Cornish coast to the west of Padstow (SW 87680 75419) (Fig 1). The authors visited the site of the cliff fall, and the corner of a cist was clearly visible. The base of the cist was approximately 6m above OD (Fig 2). The site was very close to several other recorded prehistoric burials (Jones *et al* 2011) so its potential importance was immediately apparent; given its location above a well-used public beach the decision was taken to excavate it. The site has been given the Cornwall Historic Environment Record reference number MCO 57953.

The importance of the area has been known since the middle of the nineteenth century (Iago 1890–1; Bullen 1912). However, because of wind-blown sand many of the sites are buried and the actual burials and their mounds are difficult to locate. All of the seven definite and three possible Early Bronze Age burial sites (Table 3) have been chance discoveries resulting from digging in the dunes or cliff falls.

The latest cist is situated within a cluster of Bronze Age burials sited on low cliffs covered by sand dunes (Figs 1 and 2, and Table 3). The distribution of sites within the complex forms a band, approximately 650m long, in a roughly north-west to south-east orientation along the edge of the bay. The area around the bay forms one of the most important concentrations of archaeological sites in Cornwall and includes upstanding Early Bronze Age barrow mounds on the higher promontories on either side of the bay. In addition to Early Bronze Age burials, prehistoric pits containing Late Neolithic Grooved Ware and Bronze Age Trevisker pottery, as well as middens and structures belonging to the Bronze Age and later periods, have also been periodically exposed within the surrounding dunes or found along the adjacent coastline (Crawford 1921; Christie 1985; Jones 2009–10; Jones and Quinnell 2014). The

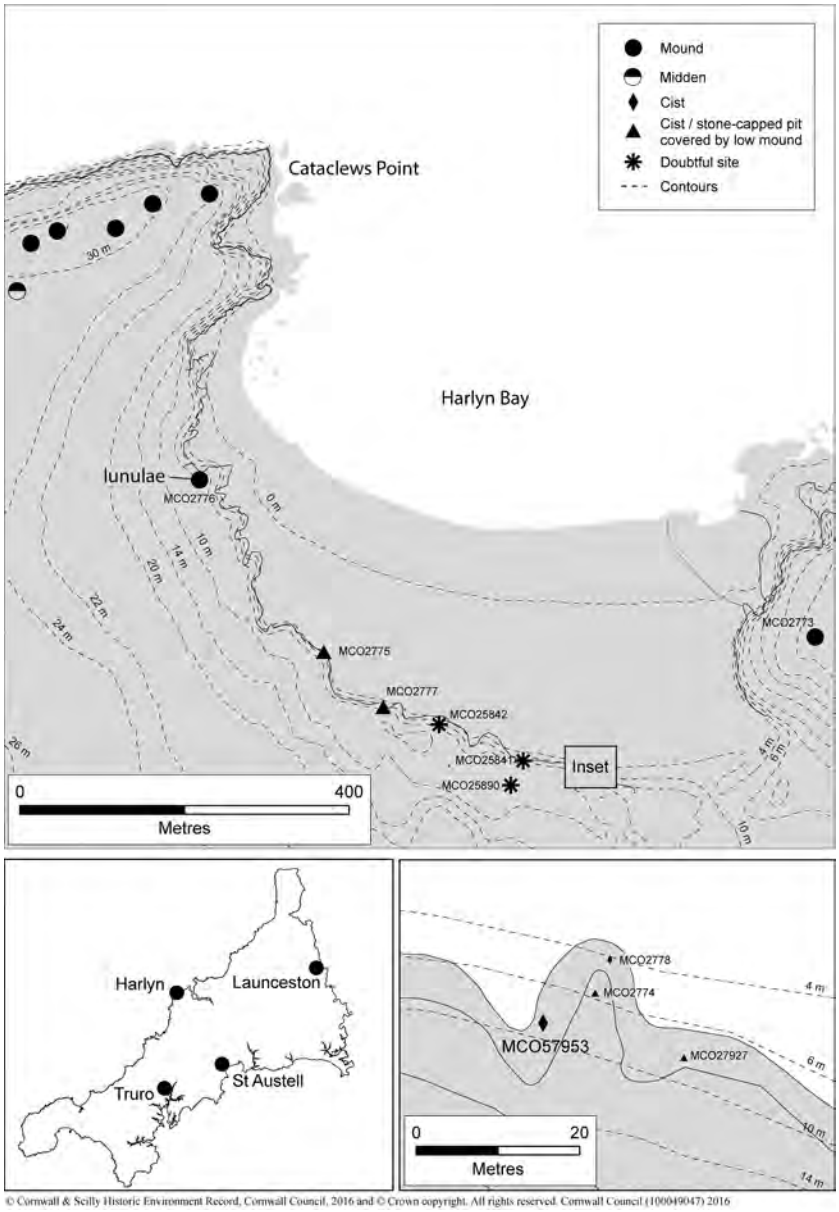

Fig 1 Location map.

well-known later Iron Age cist grave cemetery was uncovered in the dunes approximately 160m to the south east of the new cist site (Bullen 1912; Whimster 1977).

Cist MCO 57953 is located within a tight group of Early Bronze Age funerary sites (Table 3). It is approximately 8m south west of an Early Bronze Age cremation deposit in a stone-capped pit (MCO 2774) associated with a Trevisker vessel, an accessory vessel, a copper-alloy awl and a copper-alloy dagger; 11m south west of an unaccompanied cremation in a cist (MCO 2778) with a quartz lining; and roughly 18m to the west of a multiple cremation deposit in a stone-capped pit (MCO 27927) associated with an urn and a copper-alloy pendant.

The Early Bronze Age artefacts recovered from around Harlyn Bay are exceptional. They include

Fig 2 The north-facing cliff section with cist MCO 57953 exposed within it prior to excavation.

gold lunulae which reflect contacts with and possibly the supply of gold to Ireland (Taylor 1980; Mattingly *et al* 2009; Standish *et al* 2015), as well as a Camerton-Snowshill dagger, a copper-alloy pendant and ceramics (Rose and Preston-Jones 1987; Jones *et al* 2011).

The Early Bronze Age activity at Harlyn may have had unexpectedly long-lived consequences, when, much later during the Iron Age, the area again became the focus for burials (Bullen 1912; Whimster 1977). It is possible that stories attached to the place resulted in it being considered as an appropriate place for burial, stories possibly enhanced if the erosion process had already begun and Bronze Age ancestors were beginning to re-emerge.

The excavation

The site was visited on Friday 28 February 2014 but, as the tide was incoming, only the loose visible bone was lifted (a femur, a vertebra and part of the pelvis) and the site was returned to the following morning at low tide (Fig 3).

The exposed section was trowelled clean and drawn at a scale of 1:10 and a measured sketch plan was made (Fig 4). Since the cist remained exposed to the elements and was at risk of further falls, it was decided to rapidly excavate it to recover any remaining human remains and any associated contents.

The top of the cist was covered by a substantial amount of wind-blown sand up to 0.5m thick. Beneath this was a layer of compact reddish-brown sandy loam up to 0.2m thick which contained shells, quartz stones and pieces of the shale bedrock. This material rested directly above the capstones of the cist. It could not be ascertained for certain whether this was a naturally formed layer which post-dated the construction of the cist or was upcast that had been dumped on top of the cist to form a low mound over the site (Fig 5). However, it was distinct from soils in the adjacent cliff section and this might suggest that it was a disturbed soil layer that had been dumped over the top of the cist.

The thickness of the sand and potential mound material above the cist, together with its inaccessibility, meant that it could not be excavated from above; instead, the cist was entered via the

cliff fall on its north-east corner (Fig 4). The limitations of this approach are that the dimensions of the cist are approximate and the full extent of the site (for example, the cut into which the cist was set) and the presence of any associated features, or activity outside the immediate confines of the investigated area, are unknown.

Despite these drawbacks, investigation of the cliff fall did reveal that the cist was set inside a pit with vertical sides which had been cut into the

Fig 3 Interior of cist MCO 57953 from the north prior to excavation, with exposed bone.

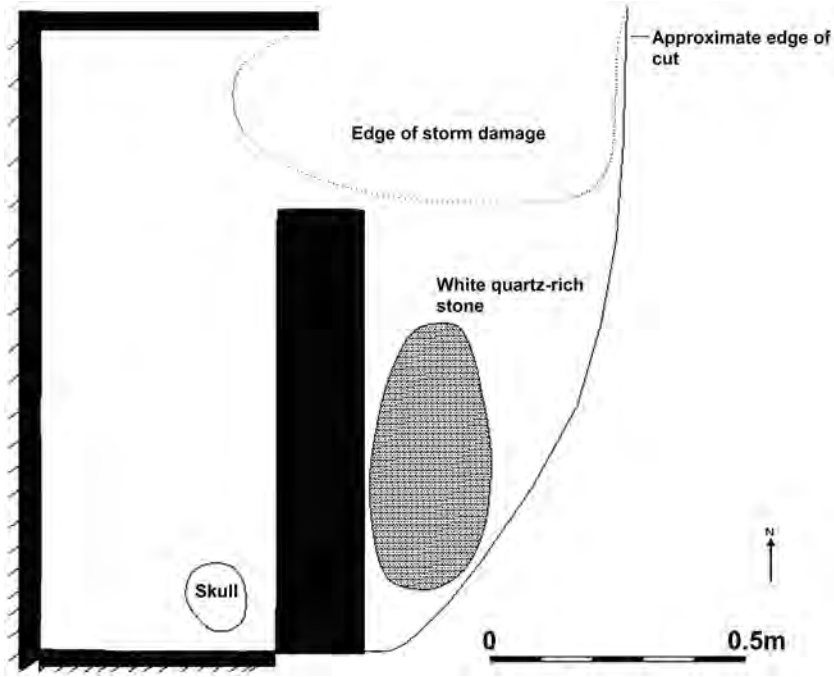

Fig 4 Schematic plan showing cist MCO 57953 within the pit cut and the in situ quartz-rich stone outside the cist. Note that neither the outer faces of the southern and western stones forming the cist nor the western and southern sides of the pit cut were visible.

Fig 5 Deposits overlying cist MCO 57953. Note the band of reddish-brown sandy loam beneath the wind-blown sand, which may represent the remains of a low mound over the cist.

shale bedrock (Figs 4 and 6). The full dimensions of this pit are unknown but it is likely to have been sub-rectangular in plan, and measured at least 1.4m long north–south by 1.2m wide east–west and 0.7m deep. It was larger than was needed for the cist which had been set into the western side of the cut. The cist itself was rectangular, measuring approximately 1.25m by 0.45m. The western side was formed by a single edge-set slate but it was not possible to determine whether the same was true of the eastern side, as this had partially collapsed during the cliff fall. The cist seemed to be capped by overlapping slates, but given the method of excavation this could not be determined for certain. The eastern side of the cist was not flush with the wall of the rock-cut pit and there was a gap of up to approximately 0.5m. This gap gave the effect of there being a second compartment, but there had been no attempt to line the eastern side of this with stone, although it was also roofed with capstones. The smaller area does, however, seem to have carried some significance, as it was largely filled by a substantial, white quartz-rich stone which was up to 0.45m long by 0.25m wide (Figs 4 and 6). The stone was elongated and roughly oval and its surface was irregular and worn or rounded. At first it seemed that the base of the pit had been lined with clay; however, excavation revealed this to be decayed slate.

The interior of the cist was partly filled with sand and fragments of slate which were up to 0.1m deep at the exposed northern end of the cist but deeper at the southern end. This deposit appears to have formed naturally and represents dune material which had seeped into the cist over time and slate fragments which had spalled from the covering slates. Small snail shells were also recorded in this layer. The layer partially covered the burial, but not all the bones, including those initially recovered. All of the human bone was

Fig 6 Cist MCO 57953 after excavation. Note the large quartz-rich stone on the left, outside the cist but within the wider pit cut.

recovered from the cist and no bones were found in the remainder of the pit. The burial itself was partially disarticulated and incomplete (Mikulski, below). The head, vertebrae and most of the bones located within the top portion of the body above the waist were found at the southern end of the cist. The head was at the south and the body was on its right side. However, some of the bones were not articulated and represent a spread of material across the floor of the cist. Much of it was covered by the sand and slate which suggests that the jumbling of the bone did not occur in recent times, for example, after the cliff fall. No artefacts were found with the body, although it does appear to be that of a young woman. Further comment on the state of the burial is given below.

The burial

Richard Mikulski

The excavation afforded a rare opportunity to examine a prehistoric inhumation burial from Cornwall. The primary aim of the skeletal analysis was to determine the age and sex of the skeletal remains, as well as to record and diagnose any skeletal manifestations of disease and trauma.

Methodology

The skeleton was macroscopically analysed in detail, assessing the preservation and completeness, as well as determining the age and sex of the remains. Only two metric measurements could be carried out on the extant skeletal elements. All pathological lesions were recorded and described.

Preservation

Preservation was assessed using a grading system of five categories: very poor, poor, moderate, good, excellent. Excellent preservation implied no bone surface erosion and very few or no breaks, whilst very poor preservation indicated complete or almost complete loss of the bone surface due to erosion and severe fragmentation.

The extant skeletal remains were in a poor condition, often with the surface missing and the long bone ends absent. Many of the bones were extremely fragile and highly fragmented. Consequently, the amount of retrievable information was limited.

Results

Completeness

Only those bones located in the southern (landward) half of the cist structure survived *in*

situ, specifically the head and upper torso including arms. Taking all skeletal elements recovered as representing a single individual, the skeleton was approximately 60 per cent complete.

Minimum number of individuals (MNI)

Only single instances of many skeletal elements were observed, consistent with representing a single individual. Therefore the MNI = 1. It should, however, be noted that the poor preservation of the majority of the remains may have affected identification of smaller fragments.

Assessment of age

Age at death was determined using standard ageing techniques where possible (Buikstra and Ubelaker 1994). The morphology of the auricular surface (forming the hip-sacrum joint) indicated the individual was likely a young middle adult, aged between 26 and 35 years at the time of death. This was consistent with the minimal amount of enamel wear observed in the teeth recovered from the cist burial.

Sex determination

Sex determination was carried out using standard osteological techniques (Buikstra and Ubelaker 1994). On the basis of observations of the left *os coxa* (hip bone) and characteristics of the extant portions of the skull, the skeleton was determined to be female. Parts of the individual's hip shape and form, termed the greater sciatic notch, strongly suggested female sex. The individual also displayed marks at the pelvis, termed the 'preauricular sulcus', which are usually observed in adult females.

Metric analysis

No complete long bones were recovered and consequently no estimate of stature could be calculated for the skeleton. However, the femoral shaft appeared significantly platymeric (broad and flat).

Non-metric traits

Non-metric traits are non-measurable anomalies in the normal anatomy of the skeleton and are simply recorded on a present or absent basis. They are found in a minority of skeletons and are believed to suggest hereditary affiliations (Saunders 1989). No clearly identifiable non-metric traits were observed in the Harlyn Bay skeleton, although a distinct foramen was observed to the central ectocranial surface of the occipital, just left of the sagittal plane and slightly below the level of the inion hook (Fig 7).

Fig 7 One of the lumbar neural arches which exhibited marked asymmetry, possibly indicative of a healed trauma.

Pathological analysis

Despite the poor condition of the skeletal remains, some evidence of pathological changes was observed. The roof of the left eye socket exhibited evidence for cribra orbitalia, specifically vessel impressions within the bone surface and some slight porosity / pitting in the same area. In addition, there was also a distinct bony exostosis (small bony spur) and some swelling evident to the medial aspect of the extant left orbital socket at about the level of nasion (the top of the nose).

The changes observed within the left eye might represent separate pathological processes, specifically the metabolic condition manifested as slight cribra orbitalia and a distinct traumatic event / lesion affecting the medial aspect of the

eye. Alternatively these two changes might be related, with the apparent healed trauma perhaps having caused a subsequent infection from which the individual was still suffering at the time of death. This might also account for the non-specific periostitis observed in the right femur.

The asymmetry and possible healed fracture observed in the single lumbar neural arch, if confirmed, would be indicative of a healed injury to the lower back (Fig 7). Alternatively the asymmetry could simply be the result of congenital or developmental malformation.

There was also evidence of active new bone formation (non-specific periostitis) to the lateral anterior aspect of the proximal right femoral shaft, taking the form of slightly striated / lamellar new bone possibly with some porosity.

Dental health

A total of 14 loose teeth were present. The severity of the dental wear in the Harlyn Bay skeleton in general was mild, which corresponds with the individual's relatively young age. A left maxillary incisor (probably the left central incisor) exhibited marked wear across the lingual aspect of the occlusal surface, especially to the distal side. In addition, a canine (possibly the right mandibular, but siding / location uncertain) exhibited a polished / worn surface or alternatively a deformed lateral occlusal edge. The enamel of this tooth is also heavily eroded / pitted.

Calculus (dental plaque) is commonly observed in archaeological populations whose dental hygiene was less conscientious than today. Slight calculus was observed in 3 of 14 teeth, specifically the left maxillary M1 and M2 (buccal aspects) and the left mandibular M1 (lingual aspect). It is probable that calculus deposits caused periodontitis.

Dental Enamel Hypoplasia (DEH) (lines, grooves or pits within the enamel crown surface of the teeth) represent periods of severe stress during childhood such as malnutrition or disease. DEH was observed in a single tooth, affecting a canine (possibly the right maxillary canine), which exhibited slight linear enamel hypoplasia (LEH) to the anterior crown surface.

Body position

The right femoral shaft and the left *os coxa* were found lying loose and disarticulated on top of the deposit during the initial inspection of the cist.

By contrast, all cranial remains, along with the arms bones and the majority of the ribs and vertebral fragments were recovered the next day during excavation of the southern end of the cist and apparently *in situ*. It was, however, difficult to assess whether these remains represented an articulated torso or not. The fragments of the cranium and mandible were located close to each other within the inner south-east corner of the cist. The arm bones appeared aligned north–south and were situated immediately north of the cranium and jaw. The majority of the rib and vertebral fragments lay to the north of the cranium and west of the majority of the arm bones.

Conclusion

Osteological analysis of the skeletal remains recovered from the cist burial established that the remains represent the inhumation of a single young middle adult female, aged 26–35 years.

Unfortunately the skeleton was poorly preserved and loss of or damage to many of the bones limited macroscopic analysis, particularly with regard to metric, pathological and dental observations. It was, however, possible to identify evidence for possible infection or metabolic disease (cribra orbitalia) and / or healed trauma in the left eye. Evidence of a possible active infection of recent minor trauma (non-specific periostitis) was also observed in the upper right leg.

The body was placed into the cist so that it appeared to be articulated, although displaced bones might imply that it had been placed in parts or that it had been rearranged.

Radiocarbon dating

In the absence of any associated artefacts the key aim of the project was to obtain secure dating evidence from the burial, which although of almost certain prehistoric origin could, given the close proximity of Bronze Age or Iron Age cist burials, have been of either date.

A fragment from a rib bone was submitted for accelerator mass spectrometry dating (AMS) at the Scottish Universities Environmental Research Centre (SUERC) (Table 1, Fig 8).

The probability distribution has been calculated using OxCal (v4.2) and all radiocarbon

Table 1 Radiocarbon determinations from Early Bronze Age features in Harlyn Bay

Feature	*Lab. no*	*Age BP*	*Material*	*Calendrical years 95.4%*
Cist MCO 57953, inhumation burial.	SUERC-55908	3751±32 BP	Rib bone fragment	2284–2038 cal BC
Stone-capped pit MCO 27927, multiple cremation deposit.	SUERC-15536	3610±35 BP	Cremated bone	2041–1885 cal BC (91.5%) 2120–2096 cal BC (3.7%)
Stone-capped pit MCO 2777, charcoal present but no burial.	BM-2472	3460±70 BP	Oak charcoal	1957–1613 cal BC

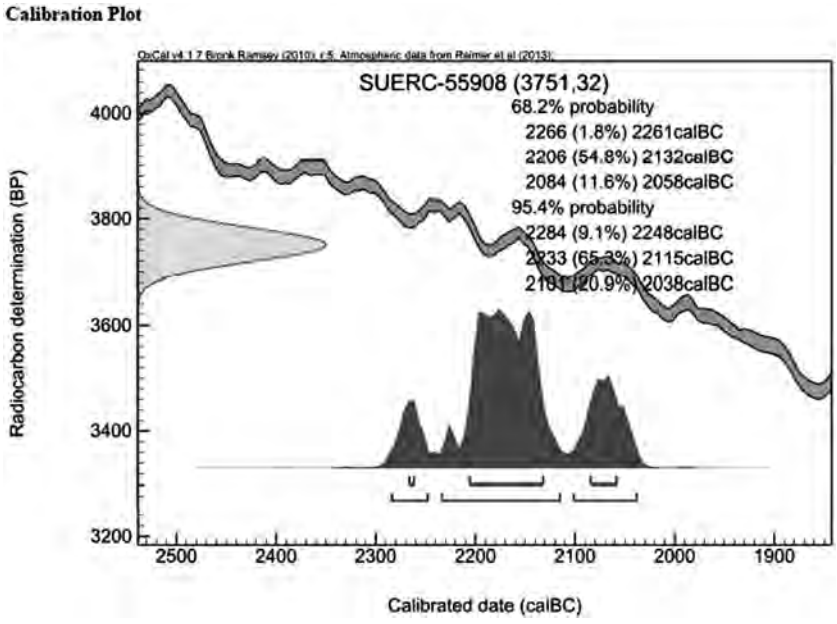

Fig 8 Radiocarbon determination from cist MCO 57953.

determinations are quoted at 95 per cent throughout this paper unless otherwise stated.

Results

The radiocarbon determination on the bone falls in the last quarter of the third millennium cal BC or early in the Early Bronze Age. The significance of the dating is discussed below.

Discussion

Although small in scale the rescue excavation at Harlyn Bay produced some very significant results. The character of the burial and results from the radiocarbon dating shed light on a period of Cornish prehistory for which there are very few human remains. Currently the inhumation is the earliest securely dated burial within the Harlyn Bay complex and is the earliest Early Bronze Age inhumation burial to be recorded within the wider south-west region.

The period of the burial is also significant because it dates to the time when inhumation burial, often in deeply cut graves beneath low mounds, was becoming more common elsewhere in Britain (Barrett 1994, 114–21; Garwood 2012; Jones and Field, forthcoming). Beyond Cornwall these were frequently associated with Beaker pottery, although Beaker-associated inhumations are still rare in the south west (for example, Jones 2011). It is therefore of interest that no pottery was recovered from the site, despite the fact that Beakers and Food Vessels have been recovered from nearby middens as well as from barrows in the wider area (Crawford 1921; Jones and Quinnell 2006); this absence is considered below.

The radiocarbon determination from the skeleton also highlights the importance of dating unaccompanied human remains: superficially this inhumation was similar to nearby cist burials which have been dated to both the Middle Bronze Age and the Iron Age (Jones 2009–10; Whimster 1977); without the radiocarbon determination only a very broad assignation of period could have been offered and the burial would have become the fourth to be assigned a probable rather than certain prehistoric date (Table 3).

The skeleton is also significant because it offers a valuable resource for further research, which could include DNA and isotopic analysis (see, for example, Fitzpatrick 2011; Mckinley *et al* 2015).

The following discussion considers the characteristics of the burial and its relationship with other burials in the area and along the north coast.

The date of the burial and its context

The radiocarbon determination 2284–2038 cal BC from the skeleton within cist MCO 57953 makes it the earliest Bronze Age burial to be scientifically dated within Harlyn Bay. It therefore provides an important addition to the other chronological indicators from Harlyn Bay, in particular the lunulae (Taylor 1980; 1985), Camerton-Snowshill dagger (Needham 1996; Jones and Quinnell 2013) and the previous radiocarbon determinations from pits MCO 2777 and MCO 27927 (Rose and Preston-Jones 1987; Jones *et al* 2011) (Table 2).

The age of the pair of gold lunulae from barrow MCO 2776 is, as Stuart Needham (2000) has pointed out, less than secure as their dating is based on a single radiocarbon determination from Ireland and parallels with decoration on Beakers. This evidence indicates that the Harlyn Bay lunulae were deposited between *c* 2200 and 2000 cal BC, a date consistent with the Migdale type copper-alloy axe which was found with them (Mattingly *et al* 2009). If this dating is accepted it is broadly contemporary with the inhumation in cist MCO 57953, which, by contrast, was without artefactual associations (below).

The radiocarbon determination from the cremation deposit found within stone-capped pit MCO 27927 (Jones *et al* 2011) provides a date range of 2120–1885 cal BC; this is quite close in time to the deposition of the lunulae and the inhumation in cist MCO 57953, although probably slightly later. It does, however, point to a rapid diversification in funerary rites from very early in the second millennium cal BC.

The radiocarbon determination of 1957–1613 cal BC from stone-capped pit MCO 2777 (Rose and Preston-Jones 1987; Jones *et al* 2011) is less precise than the more recently obtained dates, because the charcoal identification was limited to noting the species as oak. The determination is, however, certainly later than that from the Harlyn Bay inhumation and post-dates the deposition of the lunulae in barrow MCO 2776 but is possibly broadly contemporary with, the Camerton-Snowshill dagger in stone-capped pit MCO 2774 (Table 3).

According to traditional dating schemes, the Camerton-Snowshill type dagger from stone-capped pit MCO 2774 lies in the latter part of the Early Bronze Age, *c* 1750–1550 cal BC (Needham *et al* 2006). However, the dating of other Camerton-Snowshill daggers from Devon and Dorset strongly suggests that they could originate before 1750 cal BC, perhaps as early as 1900 cal BC (Jones and Quinnell 2013; Jones *et al* 2013). The accessory vessel found with the dagger provides relatively little improvement with regard to chronology. Currently there are only two radiocarbon determinations associated with accessory vessels from barrows in the south west. The date on cremated bone associated with the

Table 2 Harlyn Bay, sequence of key dated sites

Approximate date (cal BC)	*Site reference*	*Contents*	*Dating method*
2300–2050	MCO 57953	Inhumation in cist, no artefacts (2014)	Radiocarbon
2200–2000	MCO 2776	Lunulae and Migdale axe (1865)	Artefact type
2120–1875	MCO 27927	Multiple cremation and Trevisker vessel in pit (1990)	Radiocarbon
1900–1750	MCO 2774	Camerton-Snowshill dagger, accessory vessel, Trevisker vessel and cremation (1887)	Artefact type
1900–1600	MCO 2777	Small Trevisker vessel (1985)	Radiocarbon

Table 3 Early Bronze Age sites within the Harlyn Bay area (Note: MCO prefix relates to current numbering in the Cornwall HER; numbers with PRN were used in previous publications)

Recorded sites	*Burial*	*Associated artefacts*	*References*
Cist MCO 57953 A cist set within a larger pit was uncovered and excavated in 2014. It was stone capped and was possibly covered by a low mound of redeposited earth and sand.	A crouched inhumation of a young woman was found within a cist. The burial was largely complete and partially articulated. It could have been buried fully articulated and subsequently disturbed or buried in a partly skeletonised state. 3751±32BP, 2284–2038 cal BC (SUERC-55908)	There were no artefacts inside the cist. However, outside the cist but within the eastern part of the pit was a large white quartz-rich stone.	This paper.
Stone-capped pit MCO 2774 (PRN 21703) A stone-capped pit. Possibly covered by a low mound	A large amount of cremated bone was recovered from a pit covered by a flat stone slab. The number of individuals is unknown.	In 1887 an upright Trevisker vessel was discovered after 'falling away of the ground'. It was accompanied by an accessory vessel, a Camerton-Snowshill dagger, a copper-alloy awl, a slate 'spindle whorl' and a whetstone. A large amount of charcoal appeared to line the bottom of the pit.	Iago 1890–1; Bullen 1912; Pearce 1983, 418; Rose and Preston-Jones 1987.
Cist MCO 2775 (PRN 21705) Possible low mound covering a stone-lined pit /cist.	Cremated bone was recovered. The number of individuals and completeness of the burials is unknown.	In 1901 an inverted Trevisker vessel was discovered after a cliff fall. It was accompanied by three copper-alloy pins, two white bones, rounded pebbles and possibly some 'blue beads' (faience?). A significant amount of charcoal appeared to cover the capstone of the pit. The floor of the pit included quartz blocks and pebbles.	Bullen 1912; Pearce 1983, 418; Rose and Preston-Jones 1987.
Barrow MCO2776 (PRN21708) Mound, no details recorded.	No burial is recorded from the site (site unexcavated).	Two gold lunulae were recovered from the mound of a barrow in 1864. Found in association with a copper-alloy flat axe of Migdale type and a copper-alloy 'buckle' (lost).	Smirke 1867; Iago 1890–1; Taylor 1980, 78; Needham 1988; Mattingly *et al* 2009.
Stone-capped pit MCO 2777 (PRN 21749) A low sandy mound covering a stone-capped pit.	No burial recovered from the site. 3460±70BP, 1970–1600 cal BC (BM-2472)	In 1985 a Trevisker vessel on its side was discovered after a cliff fall. It was not associated with a burial; however, a large quantity of charcoal was recovered from the pit. Quartz pebbles were recovered from above the pit and these may have been part of a capping layer.	Preston-Jones and Rose 1987.
Cist MCO 2778 (PRN 21769) A shallow pit lined with cobble-sized quartz pebbles.	Cremated remains were recovered. The number of individuals and completeness of the burials is unknown.	The site was exposed in 1988. Aside from quartz pebbles no other artefacts were recorded.	Cornwall HER.
Stone-capped pit MCO 27927 (PRN 32093) A stone-capped pit possibly covered by a low mound.	A multiple burial deposit was recorded comprising up to five individuals. Some animal bone was also present with the human remains. 3610±35BP; 2040–1880 cal BC	In 1990 a cliff fall revealed an upright Trevisker vessel covered by a stone. It was found to contain human and animal remains, quartz pebbles, flint and a bronze pendant.	Jones *et al* 2011.

Table 3 (*continued*)

Recorded sites	*Burial*	*Associated artefacts*	*References*
Crop-mark barrow MCO 2773	The site is unexcavated and there is no information about any burials.	The site is a ploughed-down barrow on the east side of Harlyn Bay, visible on aerial photographs.	Cornwall HER.
Sites of possible Bronze Age date			
Cist MCO 25841 (PRN 21702) 'A slate coffin'.	The jaw bones of a deer were said to have been recovered from the site.	The site was exposed after a cliff fall in 1954 but no further details were recorded. The date of the site is uncertain and it could be of prehistoric or later date.	Cornwall HER.
Burial MCO 25842 (PRN 21704)	A human skull was recovered.	The find spot was discovered in 1953 after bone fell out of the cliff but no further details were recorded. The find could be of Bronze Age, Iron Age or later date.	Cornwall HER.
Burial MCO 25890 (PRN 21850)	An inhumation burial was recovered not far from cist MCO 25841.	Found before 1890. No further details were recorded. The find could be of Bronze Age, Iron Age or later date.	Cornwall HER.

vessel in Farway 21 in east Devon fell between 1940 and 1751 cal BC (Jones and Quinnell 2008); that on charcoal from Colliford barrow CRIVC, St Neot, to 2191–1696 cal BC (HAR-2991) (Griffith 1984). These dates would broadly overlap the recently obtained pre-1750 cal BC determinations from the Camerton-Snowshill daggers.

The three determinations and the closely diagnostic artefacts demonstrate that the Harlyn Bay complex was used over several centuries. Even if the lunulae had been heirlooms curated for some time before deposition (for example, Woodward 2002), the determination from cist MCO 57953 points to the complex starting prior to 2000 cal BC, with those from pit MCO 27927 and stone-capped pit MCO 2777 and the Camerton-Snowshill dagger and accessory vessel in stone-capped pit MCO 2774 pointing to activity continuing until towards 1700 cal BC. As such the complex is likely to have been used over several centuries, with the earliest phase on current evidence being characterised by burials with no artefacts and artefacts with no direct association with burials. This appears to have been followed by diverse rites, involving cremation deposits, at least one of which was a multiple burial (Table 3).

Cist structure and comparanda

In common with other Early Bronze Age and later sites found at Harlyn Bay and elsewhere across Britain and Ireland (Savoury 1972; Watkins 1982; Jones 2009–10; Waddell 1990, 73), cist MCO 57953 was comprised of edge-set stones covered by capstones, forming a box which had been set into a cut in the ground.

Cist MCO 57953 was aligned north–south. Beyond Harlyn Bay, on Bodmin Moor study has revealed no overall pattern to cist alignment (Trahair 1978), although on Dartmoor there is a definite patterning which favours a broadly north west to south east alignment (Butler 1997, 176; Jones 2016). However, it is not possible to determine whether this was a local preference as none of the other recorded cists of probable Bronze Age date in the Harlyn Bay area have had their orientations recorded.

Cists in Cornwall and in Devon are quite widespread on the moors, where they are found both singly and as elements within monument complexes (Grinsell 1978; Harris 1979; Thomas 1975; Johnson and Rose 1994, 39–40). However, excavated examples have generally been found to be 'empty' or to contain undiagnostic artefacts (for example, Butler 1997, appendices 4 and 5; Jones 2016). Within Cornwall only a few cists have been found to contain closely dateable artefacts, as for example at Harrowbarrow, Calstock (Thomas and Hartgroves 1990), and where bone is present, virtually all are cremations. The cists at Trebartha (North Hill) on Bodmin Moor and Porth Mellon, near Mevagissey, for example, were associated with Trevisker pottery and cremations (King and Miles 1976; Sheppard 1961), whereas the cist

on Emblance Downs (St Breward) on Bodmin Moor was empty (Thomas 1975). This latter site could have held an inhumation burial, which would not have survived in the area's acidic soils. The remnants of an inhumation, however, found within the cist at Rillaton (Linkinhorne) on Bodmin Moor (Smirke 1867) provides one of the few examples of a cist with unburnt bone away from the coast. Along the coast where calcareous sands are present there have been instances where prehistoric inhumation burials have survived, as for example, at Constantine Island, St Merryn (Jones 2009–10).

Returning to Harlyn Bay, the entire structure of cist MCO 57953 (together with the human remains inside) was situated within the western half of a large pit, cut directly into the bedrock. Within the eastern half of the rock-cut pit, but outside of the cist itself, a large, elongated quartz-rich stone was recorded lying alongside the eastern cist lining along a similar north–south axis. The subdivision of space within the pit appears to have been intentional and the placing of the stone is likely to have been connected with activity inside the cist. It is, however, unusual for a cist to sit within a larger feature. Elsewhere, the subdivision of space has been recorded in the form of bipartite cists, as for example at Iron Mills, Co Laois, in Ireland (Waddell 1990, 104–5), but none of the excavated Early Bronze Age sites in Cornwall have been found to be partitioned in this way. Bullen (1912, 108–12) did describe a circular pit, referred to as the 'round cist', which had been subdivided and which contained several crouched inhumations in one compartment and a single burial with a good-sized piece of quartz in the other (below). However, these burials were accompanied by an iron brooch and are therefore later and of Iron Age date. The placing of the white stone has analogies with other excavated sites in Harlyn Bay, in Cornwall and beyond, and this is discussed below.

Mortuary practice

The skeleton within cist MCO 57953 was interred in an area which has a large number of burials and burial deposits, dating from the Early Bronze Age to the late Iron Age (Bullen 1912; Christie 1985; Jones *et al* 2011). Elsewhere it has been suggested that the coast here may have been perceived as a liminal zone between land and sea, which became associated with mortuary practices (Jones 2009–10; Jones *et al* 2011). The osteological analysis of the skeletal assemblage from the cist burial at Harlyn Bay therefore provides additional insight into the nature of later prehistoric funerary archaeology in this area of Cornwall.

By contrast with other Early Bronze Age human remains found eroding out of the sea cliff at Harlyn Bay, the skeleton represents a single, apparently relatively isolated, cist burial. Previous investigations have revealed a diverse range of funerary and ritual practices including multiple cremation deposits in urns, deposits of burnt bones, an individual skull and sites without any human remains at all (Jones *et al* 2011; Rose and Preston-Jones 1987; Bullen 1912), although the majority of these earlier reports appear to consist of funerary urns and cremated remains (Table 3).

The skeletal assemblage of partially disturbed bones excavated in 2014 consisted of the remains of a single young adult female buried on her right side with the head to the south. The disturbed character of the northern half of the burial or lower portion of the skeleton may have in part been caused during the collapse of the cist, although disturbed loose bone was found in the sand at the bottom of cist as well. This might therefore reflect manipulation of the bone or disturbance to the skeleton at a much earlier period than the cliff fall, and this requires further consideration.

Once the body had ceased to belong to the individual and lost its autonomy it would have become at the disposal of the family and / or wider community and as such could be used to focus social relations at a particular place (Fowler 2013, 100) through activities which could include extended funerary rituals and the manipulation of bone. None of the other inhumations from Harlyn Bay can be securely dated to the Early Bronze Age; however, elsewhere in Britain there is good and widespread evidence for the manipulation and movement of human remains in the Beaker-using period and Early Bronze Age, with bodies becoming rearranged, mummified and kept whole long after decomposition had taken place (for example, Parker Pearson *et al* 2004; Fitzpatrick 2011, 201–2; Bailey *et al* 2013; Booth *et al* 2015). For example, at Pant y Butler, Ceredigion, in Wales, barrow 2 was found to contain an inhumation that was incomplete but had partially articulated vertebrae, suggesting that the body had been buried before full skeletonisation had occurred (Murphy and Murphy 2013). Interestingly this burial was

radiocarbon dated to 2190–1950 cal BC, close in date to that from cist MCO 57953.

Few of the Early Bronze Age burials from Harlyn Bay have been closely analysed; however, the cremation from pit MCO 27927 was found to have been made up from parts of several individuals, as well as animal bone (Jones *et al* 2011), which had had been merged and buried as a single deposit; multiple cremations are known from a number of sites in Cornwall (*ibid*, 101). This demonstrates that bone was being mixed and rearranged at Harlyn Bay early in the second millennium cal BC. Although it is not possible to suggest any kind of continuity in burial practice, it is worth noting that excavation of the adjacent Iron Age cist cemetery certainly revealed that bodies had been manipulated; for example, one cist was found to contain only skulls and in one of the compartments of the circular cist mentioned above, the skulls had been detached from the trunks (Bullen 1912, 108; Whimster 1977).

In light of this, it is possible that some of the disturbance within cist MCO 57953 may relate to prehistoric activity and could represent an attempt to create an idealised or even fictionalised burial arrangement of an individual from a decaying or skeletonised corpse, which could be 'read' and understood by onlookers (for example, Thomas 1991; Healy and Harding 2004). If this were the case the stone lining forming cist MCO 57953 could have acted to frame the burial, perhaps in the way that deeply excavated Beaker-associated graves did elsewhere (Barrett 1994, 112–13; Jones and Field, forthcoming).

Grave goods

If the burial within cist MCO 57953 had been laid out so that it could be 'read', it is of interest that it was completely devoid of any artefactual associations which may have helped create an idealised image of the deceased person, which mourners or onlookers would have viewed. Chris Fowler (2004, 75), for example, has argued that artefacts in burial contexts were used to create and express particular ideas about the identity or 'personhood' of the deceased individual by the community; these may have been different from those of the actual lived reality of the individual.

The absence of finds is also noteworthy given that the Harlyn Bay area is unusual in a Cornish context in having a large number of burials associated with metalwork and other artefacts, mostly from small and inconspicuous sites (Rose and Preston-Jones 1987; Jones *et al* 2011). The metalwork assemblage from the area comprises the largest number of finds from any Early Bronze Age complex in Cornwall (for example, Pearce 1983, 417–8). The overall metalwork assemblage from Harlyn Bay ranges from small objects, such as the three copper-alloy pins and an awl, to artefacts which are likely to have held much wider significance, including the Camerton-Snowshill dagger, a copper-alloy pendant, a Migdale axe and, most notably, the two gold lunulae. However, none of the metalwork appears to have been buried with single individuals. The copper-alloy pendant in MCO 27927 was probably deposited with a cloth bag which held multiple partial cremations and the lunulae and axe from barrow MCO 2776 did not appear to accompany a burial in the mound (Mattingly *et al* 2009).

In addition to metalwork the burials around the bay and on the adjacent cliff to the west at Cataclews have also been found to contain a large number of different ceramic vessels, including Trevisker ware, a Collared Urn and a Food Vessel (Christie 1985; Jones 2005, appendix 2). No artefacts were found with the individual in cist MCO 57953, although at this date Beaker pottery might be expected. Broadly contemporary Beaker pottery has been recovered from the area, and although Beaker burials are uncommon in Cornwall, the Lousey barrow (St Juliot), some distance along the coast to the east, covered an inhumation burial which was associated with Beaker pottery (Christie 1985). Likewise, cists across the wider south-west region, including the example at Harrowbarrow (Thomas and Hartgroves 1990) and several examples on Dartmoor, are associated with Beaker pottery (for example, Quinnell 2003). Not all, however, can clearly be associated with the burial of human remains.

Although it could be argued that the individual within cist MCO 57953 was not considered to be of sufficient status to warrant artefactual associations, this seems unlikely given the lengths taken to bury her. This means that it is very likely that a deliberate choice was made not to associate the individual buried at Harlyn Bay with either a Beaker or any other items. Given that the burial was likely to be broadly contemporary with the lunulae, this may reflect a wider desire by communities at Harlyn Bay, during the period *c* 2200–2000 cal BC, to

separate artefacts from people in burial-associated contexts, perhaps so that each category of interred object (that is to say, artefact and person) would retain its own distinctiveness or symbolism.

Quartz, symbolism and metaphor, bone and soul

Although the burial was not accompanied by any surviving artefacts there was a large block of white quartz-rich stone beside the cist and within the cut for the pit. Perhaps this secondary compartment was created specifically to contain the stone. The stone clearly held an important meaning for the people who put it there, although the nature of that meaning is harder to determine.

White quartz blocks are widely associated with Early Bronze Age barrows and cairns around western Britain and Cornwall; the material was frequently used as structural components such as layers in mounds and in the kerbs of barrows (for example, Darvill 2002; Dudley 1964).

In the immediate vicinity, several cists and barrows in Harlyn Bay itself have also produced quartz pebbles (Table 3; Jones *et al* 2011) and the cist excavated nearby on Constantine Island was also found to contain small pebbles along with a quartz-rich 'pillow' stone on which the skull of the burial rested (Jones 2009–10). The Constantine Island burial was dated to *c* 1400–1100 cal BC and is therefore much later than cist MCO 57953. The use of quartz in burials does, however, seem to have been exceptionally long-lived. Bullen's (1912, 53) account of the Iron Age inhumation burials at Harlyn Bay, for example, also mentions the discovery of at least two large pieces of 'worked' quartz near a cist. These were apparently 'heart' or 'shield'-shaped and measured '15 inches' long. Whilst these are a little smaller, they appear to be broadly comparable to the large quartz-rich stone observed in cist MCO 57953.

The persistence of the association of quartz with human remains may lie in its materiality. The hardness and whiteness of quartz may, for example, have made it metaphorically redolent of human bone and this may had led to some perceived correspondences between quartz and the non-decaying element of the individual. The symbolic significance of quartz may, however, also partly lie in its luminescent attributes, in reflecting both moon and firelight (Bradley 2005, 112); when struck it also has triboluminescent properties (a flash of light resulting from impact or friction). Anthropological studies have found these properties to have been used in rituals by, for example, North American Indian shamans (Lewis-Williams and Pearce 2005, 256–60). As such, quartz may not only have embodied the hardness of human remains but also contained an inner spirit of its own. Seen in this light, it is of interest that quartz pebbles were also placed in graves during the early medieval period, where they were associated with prayers to the dead or with their souls (Crowe 1992; Darvill 2012). While it not suggested that there were continuous beliefs over this extremely long period of time, it is possible that the quartz-rich stone found beside cist MCO 57953 could have been considered to be animate or a container of spirits or even the deceased's soul.

Conclusions: burial and memory

Cist MCO 57953 represents a significant addition to the burial record of the Harlyn Bay area. As has been discussed above, it is the earliest to be recorded so far and in its form places more emphasis on the interred individual than is typical of any of the other securely dated Early Bronze Age sites found around the bay. The lack of associated artefacts is of particular interest given that that the burial was made at the time when Beaker burials were commonly found across Britain (for example, Needham 2005); their absence is, however, in keeping with Cornwall as a whole, where Beaker inhumations are very uncommon (Jones and Quinnell 2006).

The divergence in associated rites within the Early Bronze Age is also of interest given that cist MCO 57953 is located in very close proximity to three other sites, all of which have broad morphological similarities (cists or stone-capped pits) and both comparable and contrasting contents inside them. Stone-capped pit MCO 2774 lay just to the north and contained cremated bone, ceramic vessels, a copper-alloy dagger and an awl. Cist MCO 2778 was lined with quartz pebbles and held an unaccompanied cremation. To the east, stone-capped pit MCO 27927 held a vessel with a multiple cremation deposit, a copper-alloy pendant and quartz pebbles.

Although these sites are, as discussed above, likely to be separated in time by several centuries, the overlapping repertoire of artefacts (including objects such as quartz) and construction techniques

implies that there were links or shared traditions between them. Connections are also strongly suggested by their location. None of the recorded sites were covered by very substantive mounds and they must have become little more than slight swellings or knolls close to the coast. Despite this lack of monumentality, the sites were located close to one another, yet were not intercutting. The proximity of the sites therefore also suggests, as has been found elsewhere, a social memory of the appropriate use of place for burial over time (for example, Thomas 2008, 128) and of the power of places associated with death and burial to be used over generations to help bind community identity (for example, Garwood 2007; Reid *et al* 2014). Seen in this light, cist MCO 57953 could be taken to be an origin point, around which later sites were placed and the significance of Harlyn Bay as a liminal place in the landscape for ritual and burial developed.

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The archive and skeleton are temporarily stored at the Cornwall Archaeological Unit offices. In the longer term it is hoped that they will be transferred to the Royal Cornwall Museum

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An urn from Lanlawren, Lanteglos-by-Fowey

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The Lanlawren urn, a Bronze Age Trevisker vessel, was illustrated in W C Borlase's classic nineteenth-century work on Cornish barrows, Naenia Cornubiae, *but is not known to survive. The recent unearthing of a watercolour illustration of the urn, apparently painted at about the time of its discovery, provides an opportunity to review what can be said of the depiction of the urn and to consider its archaeological context and parallels in the Early Bronze Age ceramic record.*

The Lanlawren urn was first depicted in print in William Copeland Borlase's *Naenia Cornubiae* (1872, 145), where it was captioned 'Cylindrical Urn from Lanlawren. From a Sketch by Mr Couch' (Fig 1). However, beyond citing the find-spot, and including the engraving in a section of the text dealing with sepulchral urns, Borlase provided no information on how, when or in what context the vessel was found.

The engraving published in *Naenia Cornubiae* shows a complete, relatively simple urn, which appears to have a small perforated lug. The upper portion is shown decorated by apparent cord impressions. The vessel would today be classified as belonging to the Trevisker ware series, first identified by Arthur ApSimon (ApSimon and Greenfield 1972). Trevisker vessels are found in Bronze Age contexts across Cornwall throughout the second millennium cal BC. In the first half of the period they occur within barrows and in other funerary contexts; subsequently, after *c* 1500 cal BC, they are found in domestic contexts in settlements (Quinnell 1998–9, 25; Jones 2005, 31, 37; Jones and Quinnell 2011, 212).

A few years after its publication by Borlase, the Lanlawren urn appeared in Llewellynn Jewitt's 'grand corpus' of British ceramics (1878, I, 11, fig 32). It is unlikely, however, that Jewitt ever saw the actual vessel as his engravings were taken from published sources. A number of Cornish urns illustrated in *Naenia Cornubiae* were selected for inclusion (Johns 1995) and Jewitt's illustration appears to be a reproduction of Borlase's engraving.

One perhaps surprising outcome of publication in Jewitt's volume was that the Lanlawren urn was selected to be one of the vessels reproduced as white china miniatures by the Goss Pottery in 1913, as part of a series of heraldic models of British prehistoric pottery (Johns 1995, no 17) (Fig 2). An internet search reveals versions of the Lanlawren model with a variety of crests, including those of Southport (Lancashire), Filey (Yorkshire), Sandgate (Kent), Pangbourne (Berkshire), Wellington College, the Royal Air Force and, a little more appropriately, given the urn's origin, the manor of St Just, Cornwall. Again, it is likely that Jewitt's engraving was used as the template for the model and that the whereabouts of the urn were at this time unknown. Catherine Johns (1995), in her catalogue of Goss heraldic pottery, lists the Lanlawren urn as lost.

The original urn appears never to have been widely known to antiquarians and archaeologists. It was not mentioned by J M Winn (1845) in his review of urns then known in Cornwall, and was not described by Borlase (1872); nor was it included

Fig 1 Engraving of the Lanlawren urn reproduced in Naenia Cornubiae *(Borlase 1872, 145).*

in Abercromby's (1912) work on British Bronze Age pottery or cited by Hencken (1932). Florence Patchett included the vessel as G1 in her corpus of Cornish Bronze Age pottery (1944) but her description was again based upon the illustration from *Naenia Cornubiae* and no location was given.

From this absence of information we can assume that the urn was lost well before the end of the nineteenth century and was probably never reported in any detail to Cornwall's antiquarian community. Its disappearance from view could have occurred very soon after its initial discovery: some nineteenth-century country people were not inclined to keep urns and human remains which had been unearthed in the course of agricultural operations, reburying in nearby boundaries the vessels and the ashes they contained and sometimes also the cists in which they were found (Kirkham 2012, 13).

The recent rediscovery of a watercolour painting of the Lanlawren urn (Fig 3), annotated 1844 and apparently contemporary with its original discovery (below), makes it possible to say a little more about the vessel and provides a prompt for enquiry into its possible original context. The watercolour was found in a private collection by Chris Bond and subsequently reproduced on his *Cornish Sourcebook* website. The authors are indebted to Chris Bond for a digital copy of the

Fig 2 Front and rear views of the Goss pottery heraldic model of the Lanlawren urn (Royal Cornwall Museum). (Photographs: Anna Tyacke.)

Fig 3 Watercolour of the Lanlawren urn by Jonathan Couch or Thomas Quiller Couch, c 1844 (in private ownership).

image and to the anonymous owner of the painting for permission to reproduce it.

The watercolour

The original watercolour of the urn was made across a double page, perhaps of a notebook or sketchbook; a deep central fold is visible on the scanned image (Fig 3). The paper was matt, cream in colour and fairly fine, although not of particularly good quality (Chris Bond, pers comm). The size of the individual sheets was probably approximately 200 by 125mm. The side of one of the pages has been torn but fortunately the illustration was undamaged.

The illustration is a simple watercolour with a light greyish-blue wash forming a background behind the urn and grey-brown shading representing a surface beneath it. The urn itself is represented in a dark terracotta colour with detail of the decoration probably executed in ink. The painting is captioned in ink 'Sepulchral urn found at Lanlawren' and a monogram, apparently representing a letter T combined with a C, is signed in ink below and to the left. The date 1844 has been added in pencil after the inked caption. Importantly, there is also a pencilled note across the foot of the page, presumably intended to run on from the inked caption, which reads 'with fragments of burnt bone and Cinders'. The initials T Q C are added in pencil below this note.

A further annotation in ink across the bottom right-hand corner of the sheet – 'XXXVIII Reduce to size of Tresvennack' – is a direction, almost certainly by W C Borlase himself, to the engraver of the plates for *Naenia Cornubiae*, Tresvennack referring to the findspot of another vessel illustrated in the volume (1872, 104). The Lanlawren image is actually the fortieth engraving in the work, suggesting that others were added to the sequence after this note was written. The engraver is identified in the preface to *Naenia Cornubiae* (*ibid*, xiii) as Joseph Blight, the younger brother of the Penzance antiquary and artist, J T Blight (Bates and Spurgin 2006, 209).

The artist

W C Borlase (1872, 145) referred to the engraving of the urn as based on a 'sketch by Mr Couch'; the annotation on the watercolour directing the engraver makes it clear that this was the 'sketch' referred to. The initials T Q C which appear in the pencilled note added to the watercolour are those of Thomas Quiller Couch (1826–1884), a member of a prominent nineteenth-century Cornish family of doctors, naturalists, antiquaries and accomplished artists (Johns 2010). His father, Jonathan Couch (1789–1870), spent his working life as a doctor and surgeon in Polperro, only 4.5 km from Lanlawren as the crow flies. Jonathan's principal interests were in natural history (for example, Couch 1838–44; 1860–5), but he also published a closely observed account of the opening of several barrows near Pelynt in the 1830s, donating what were described as 'beautifully coloured drawings' of finds from them to the Royal Institution of Cornwall (RIC) (Couch 1846; *Royal Cornwall Gazette* (subsequently *RCG*), 14 November 1845; Anon 1846, 18). He also produced a variety of short notes on other antiquarian topics, recorded antiquarian observations in his private papers and prepared detailed notes for a history of Polperro which was brought to publication by his son Thomas after his death (Couch 1854; 1867; 1871; Couch archive, Courtney Library, RIC).

Several pieces of evidence suggest that Jonathan Couch was responsible for the watercolour of the Lanlawren urn. Late in 1847 the *West Briton* (12 November 1847) reported that at the annual meeting of the RIC held in Truro a week earlier, the Secretary of the Institution 'shewed a drawing of a "British" urn, sent by Mr Jonathan Couch, of Polperro. The urn had been found in a barrow at Lanlawren, in the parish of Lansallos' [*sic*]. The other Truro newspaper of the time, the *Royal Cornwall Gazette*, stated that a paper by Couch 'on a sepulchral urn' was read at the meeting (*RCG*, 12 November 1847). This paper was not abstracted in the following week's edition as some other reports presented to the meeting were, and no account of an urn by Couch appeared in the RIC's *Annual Report* for 1847. This did, however, briefly record the gift to the Institution by Mr J Couch F.L.S., Polperro, of a 'Drawing of a Sepulchral Urn, found at Lanlawsen [*sic*], 1844' (Anon 1848, 18). The writing on the inked caption to the urn painting strongly resembles that on a watercolour signed by Couch of a perforated greenstone 'hammer' recovered from one of the Pelynt barrows (Couch archive, Courtney Library, RIC; Couch 1846), although the style of depiction is not similar (Fig 4).

Fig 4 Watercolour sketch by Jonathan Couch of a perforated greenstone 'hammer' recovered from a barrow in Pelynt in the 1830s; compare the depiction in Naenia Cornubiae *(Borlase 1872, 191). (Courtesy Courtney Library, Royal Institution of Cornwall.)*

Jonathan Couch was a fine artist, best known for his closely observed illustrations of fish and other natural subjects (for example, Couch 1860–5). However, despite the implicit attributions to him of the urn painting it is possible that he in fact presented it on behalf of his son, Thomas Quiller Couch. Thomas, also later a doctor, was born and brought up in Polperro and would have been about 21 in 1847. The monogram on the painting appears to be TC, rather than JC, and resembles one on a pen sketch of a bird dated 1846 in a small album of Thomas's works in the Couch archive (RIC Courtney Library); it is also comparable with slightly more complex monograms which appear on some of his illustrations, the earliest dated 1850, which were later published in *Ancient and holy wells of Cornwall* (Quiller-Couch and Quiller-Couch 1894, 36, 37, 59, 89, 118). At about the period at which the watercolour was produced Thomas also appears to have used the name Thomas Couch (and would therefore have had the initials TC): his name is inscribed thus on the title page of his copy of a collected edition of Pope's *Essay on Man* and other literary material published in 1844 (Couch archive, RIC Courtney Library).

Thomas was undoubtedly a gifted artist from an early age (B Couch 1891, 150; Johns 2010, 80): he produced drawings from wax impressions of coins held in the British Museum to illustrate his father's translation of Pliny's *Naturalis Historia*, published in 1847 (Wheeler 1983, 115), and the Couch archive (Courtney Library, RIC) contains a variety of his work. His later drawings of holy wells are charming and full of detail (Quiller-Couch and Quiller-Couch 1894).

Thomas also had strong antiquarian interests. In the mid-1850s he guided and accompanied the young J T Blight while the latter prepared material for his *Ancient crosses and other antiquities in the east of Cornwall* (1858) – Thomas's drawing of the cross at Lanteglos-by-Fowey church appears in the volume and Blight acknowledged having received from him 'accurate drawings of Crosses, &c., in the neighbourhood of his residence' (*ibid*, v, 61) – and in 1862 he was the official guide in east Cornwall for the visit of the Cambrian

Archaeological Association (Bates and Spurgin 2006, 24, 60). He was elected a Fellow of the Society of Antiquaries (*RCG*, 4 June 1870) and was evidently proud of the honour, citing himself as F.S.A. in listings in postal directories. In 1871 he showed items from his own collection, including a Bronze Age bead, 'celts' and spindle-whorls, to members of the RIC lunching at Boscastle during their annual excursion (Anon 1871, xxxviii). His researches on holy wells in Cornwall were published posthumously by his daughters (Quiller-Couch and Quiller-Couch 1894).

A case can therefore be made for either Jonathan Couch or his son Thomas as the author of the watercolour. One possibility is that Jonathan, already a well-known figure in Cornwall's learned societies, added a caption in his own hand to a watercolour produced by Thomas prior to donating it to the RIC in November 1847.

At a later date, probably around 1871–2, the watercolour of the Lanlawren urn was removed from the RIC and given or loaned to W C Borlase for use in preparation of the engraving subsequently published in his *Naenia Cornubiae*. The withdrawal may have been made by Thomas Quiller Couch. His father Jonathan, the original donor, had died in 1870 and Thomas was at this time the local Secretary of the RIC for Bodmin and would therefore presumably have had a degree of privileged access to the Institution's collections; however, Borlase was himself a member of the RIC committee at this time (Anon 1872). It was presumably Thomas who added the pencilled note bearing his initials to the watercolour, referring to 'fragments of burnt bone and Cinders' found with the urn. Thomas is otherwise known to have been in contact with W C Borlase prior to publication of *Naenia Cornubiae*: the latter acknowledged having received an account from him of a glass 'adder-bead' – almost certainly a Bronze Age *faience* glass bead – which had been found 'in a stone cairn' near Fowey (Borlase 1872, 223n; *cf* Anon 1871, xxxviii). The note to the engraver, Joseph Blight, specifying the size at which the image of the Lanlawren urn was to be reproduced, was evidently added by Borlase while the volume was in preparation.

What subsequently happened to the watercolour and the route by which it came to be in the private collection where it was seen by Chris Bond are unknown. It appears not to have returned to the RIC: no mention of it has been found in the Institution's later records (Jane Marley, pers comm). It may have remained with the engraver, Joseph Blight, or could have been returned by him to Borlase. If the latter was the case the painting may have been among the contents of Borlase's library auctioned with his other possessions after his bankruptcy and disgrace in the late 1880s (Cooke 1993, 28; Bates and Spurgin 2006, 223).

The depiction of the urn

The watercolour of the Lanlawren urn is in the simple style common among many antiquarian illustrators of the first half of the nineteenth century, such as Philip Crocker, the draughtsman and surveyor who illustrated Richard Colt Hoare's *Ancient history of Wiltshire* (1812–21). Rather than including a landscape background or other artefacts as the artist Thomas Guest had done in his portrayal of prehistoric objects (Smiles 2005), and as Jonathan Couch himself did with some of his depictions of fish, the vessel was shown on a plain background with no attempt to set it in either a relevant landscape context or to include other objects which would give an indication of scale: we actually have no information on the original dimensions of the urn. Nonetheless, the character of the vessel is very clearly shown and the depiction is certainly equal to those produced by other artists illustrating Cornish artefacts at this time. Compare, for example, the urns figured by F B Edmonds, nephew of the Penzance antiquarian Richard Edmonds (Edmonds 1849, figure between pages 228 and 229), or J T Blight's painting of a 'sepulchral urn' (Bates and Spurgin 2006, fig 32) and his drawings of urns from Penzance museum (Blight 1861, 194). Interestingly, Blight was encouraged in his earliest archaeological drawings by Jonathan Couch's older son, Richard Quiller Couch (Bates and Spurgin 2006, 21), also a naturalist and doctor and an early stalwart of the Penzance Natural History and Antiquarian Society, of which W C Borlase was also an important member. Richard too occasionally dabbled in antiquarian matters, sending, for example, observations on a bronze figure of a bull found in St Just-in-Penwith to the same annual meeting of the RIC at which the drawing of the Lanlawren urn was first shown (*West Briton*, 12 November 1847).

The engraving produced for *Naenia Cornubiae* differs from the watercolour in a number of

small but important details. Both show a simple band of chevrons between horizontal lines but the engraving shows a down-turning chevron on the far right-hand side, the watercolour original does not; the vertical relationship between the band of chevrons and the vessel base is also different. Further, in the watercolour the chevrons appear to lie *between* the horizontal bands of cord impression; in the engraving the apices of the chevrons appear to coincide with – that is, they over- or under-lie – the horizontal lines. In addition, the rim in the engraving is shown more or less upright whereas in the watercolour it has a slight out-turn. It is clearly the same vessel – both show a large crack down the right hand side – but the viewpoint in the watercolour appears slightly higher than that of the engraving. These differences may be a consequence of re-drawing to create an original from which the engraver could work or, more probably, in light of the annotation by Borlase, Joseph Blight produced his engraving by interpreting the original watercolour. Whatever the reason, the two depictions differ slightly from one another. The watercolour, presumably taken from the original artefact, is likely to be the more accurate, offering a more reliable basis for future comparisons of form and decoration.

The location

Lanlawren is a farm situated in the ecclesiastical parish of Lanteglos-by-Fowey in south-east Cornwall (NGR SX 1670 5330) (Figs 5, 6). It lies in a fertile area characterised as Anciently Enclosed Land or Farmland: Medieval, part of Cornwall's agricultural heartland and farmed since at least the medieval period (Cornwall County Council 1996; Herring 1998, 77–82; Dudley 2013, 35–40). Lanlawren itself was first documented in the tenth century AD when it was granted, with its land and fish weirs, to Lansallos church (Padel 1979; 2005).

At the time of the Lanteglos-by-Fowey tithe survey, finalised in 1845, Lanlawren was a substantial 177-acre farm but formed part of a larger composite holding which also included land in Lansallos and Pelynt parishes (Cornwall Record Office (CRO) HL/1/120/(vi); *RCG*, 12 June 1840). The farm was owned by the Howell family, who had been sporadically resident at Lanlawren until the death of David Howell in 1804 (CRO HL/2/153; *Universal Magazine*, ns, 3 (Jan–June 1805), 178). At the time of the tithe survey the property was owned by the latter's son, also David, then of Trebursye (South Petherwin), but the land was in the hands of tenants. From at least the mid-1820s until the early 1840s it was held by Thomas Thomas and his family (CRO HL/1/120/(vi); *RCG*, 12 June 1840; 1841 census: HO107/153 (part 3), enumeration district 10, book 9, folio 17, p2). Thomas must have left the farm in the early 1840s: the tithe apportionment recorded William Harris occupying Lanlawren and he and his family were still there at the time of the 1851 census (HO107/1903 (part 4), enumeration district 2B, folio 251, p8).

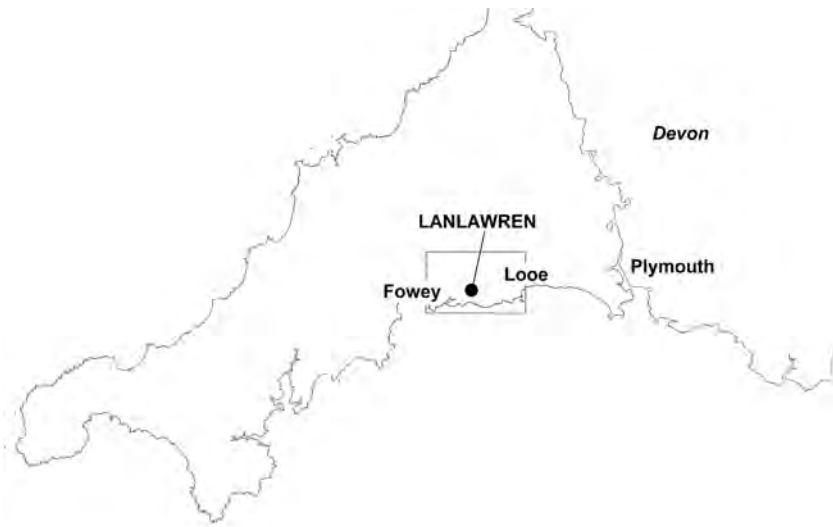

Fig 5 Lanlawren: location.

Discovery of the urn

Nothing is known of the circumstances under which the urn was originally found or how it subsequently came to be seen and painted by either Jonathan or Thomas Couch. The discovery probably took place in 1844, the date added to the caption on the drawing and cited when Jonathan Couch donated it to the RIC in November 1847 (above). We have no way of knowing how soon after its discovery the Couch family were told of it. Jonathan Couch would certainly have been known locally at this time for his interest in local antiquarian matters, not least for the 'watchful eye' he kept in the 1830s and 1840s on the removal of material from barrows near Pelynt (Couch 1846). He was evidently well known in the wider area around Polperro – he first went to school in Lansallos and Pelynt (Wheeler 1983, 102–3) – and as a doctor had frequent contacts with farming families in the locality, travelling considerable distances on horseback to make home visits (Couch 1891, 93; Hipperson 2008; Johns 2010, 101). Couch's daughter Jane married into a local family who farmed at Tregue, Lansallos (Johns 2010, 34). This was also part of the Howell estate (CRO HL/1/147) and Jonathan evidently knew David Howell of Trebursye, the owner of Lanlawren: in July 1841 he sent him a detailed letter about local political matters (CRO HL/2/255).

Couch also had extensive networks among local gentry and was particularly well connected at Trelawne (Pelynt), the home of Sir Harry Trelawny, making extensive use of the library there (Wheeler 1983, 136; Couch 1871, 12; B Couch 1891, 49; Johns 2010, 37). The novelist Ann Eliza Bray met Couch at Trelawne in November 1833, describing him as a 'medical man of talent who lives in the neighbourhood and is a linguist, an antiquary, a naturalist and a zealous preacher . . .' (quoted in Johns 2010, 38).

Given this diverse range of local contacts it is not altogether surprising that the Couch family came to hear of the discovery of the urn or that, given their interests and abilities, either Jonathan or Thomas produced an illustration. More surprising, perhaps, is that neither appears to have left an account of what they knew about the unearthing of the urn; nothing referring to it has been found in the extensive Couch archive in the Courtney Library at the RIC.

The archaeological context

The annotation on the watercolour referring to burnt bone and cinders suggests that the urn contained a cremation and came from a funerary context. No accounts are known of barrows or other burials having been opened in the immediate area of Lanlawren. Field names recorded in surveys of the farm made *c* 1720, in 1815 (CRO HL/2/59; HL/1/147) and in the Lanteglos-by-Fowey tithe apportionment offer no clues to where a barrow may have been located, nor do accompanying maps.

The caption to the watercolour stated that the urn had been 'found at Lanlawren' but it is conceivable that it was in fact discovered elsewhere in the locality and then brought to the farm. In 1840 Lanlawren was offered for lease with additional land in adjacent parishes, including a parcel of 4 acres named Carn Parks in Pelynt (*RCG*, 12 June 1840). The Pelynt tithe survey of 1840 recorded a field called Carne Park, measured as 4 acres of arable with an additional half acre of furze (TA 1250–1), as part of a holding called Polain, of which the lessee was William Harris, also the name of the tenant of Lanlawren from the early 1840s. No barrow or other funerary feature is known in Carne Park but it lies only about 400m south of the principal Pelynt barrow group (below) and alongside the same stream.

The lack of information about the original site from which the urn came, and its discovery, is not of itself surprising: many barrows in Cornwall were opened without record in the post-medieval period by antiquarians and treasure hunters; many others were damaged or completely removed in the course of land improvement and similarly went undocumented (Kirkham 2012). W H Box of East Looe, another local doctor with antiquarian interests, lamented the 'vague and confused testimony' he obtained of such occurrences from the 'accidental discoverers among the labouring classes' (Box 1847, 56). Overall, unless further documentary evidence is unearthed, it is unlikely that the original site from which the urn came can be identified.

Nonetheless, it is possible to gain some understanding of the local context for such a discovery. In many other parts of Cornwall in which Anciently Enclosed Land predominates (Cornwall County Council 1996; Herring 1998, 77–82) above-ground survival of barrows as earthworks is relatively rare and only small numbers are known

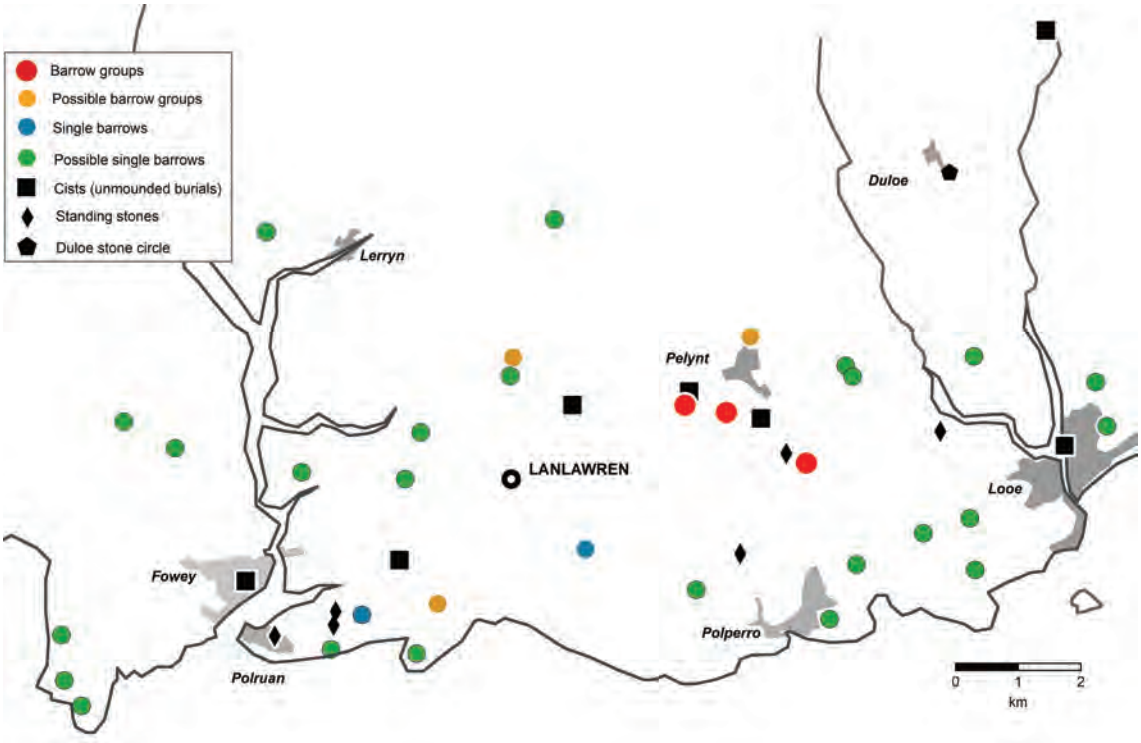

Fig 6 Probable Early Bronze Age monuments – barrows, cists or unmounded graves, standing stones and the Duloe stone circle – in the wider area around Lanlawren (data from the Cornwall and Scilly Historic Environment Record, with additions).

from antiquarian accounts or air photographs (for example, Young 2012, fig 37). By contrast, the wider area around Lanlawren hosts comparatively extensive survivals of standing prehistoric sites, particularly barrows (Young 2015, 117–20), and it is evident that there was a rich Early Bronze Age ceremonial landscape in this part of Cornwall (Fig 6). Mabel Barrow (Lansallos) lies on high ground only 1.8 km south east of Lanlawren (Cornwall Historic Environment Record (HER) MCO 3086) and air photographs show several other probable barrow sites within less than 2 km (HER MCO 39935, 40063, 40080, 40082, 40427); the former existence of others in the area has been identified from historic maps and inferred from farm and field names (HER MCO 2998, 2999, 3890, 37217.10). Important groups of barrows are located south west of Pelynt churchtown – at least ten in the cluster known as the Mountain barrows (HER MCO 1961) and others nearby at Cartole and Hendra (MCO 2396, 2796–2800) – and to the south at Ashen Cross (MCO 2049–55, 39311); all of these are in Pelynt parish and within 3–4 km of Lanlawren. Several of the Pelynt barrows were opened in the 1830s and 1840s in the course of agricultural operations and by antiquarian excavators (Anon 1846, 18; Couch 1846; Box 1847).

The report of the 'drawing' of the Lanlawren urn having been shown at the annual meeting of the RIC indicated that the vessel had come from a barrow (*West Briton*, 12 November 1847), but this may have been supposition. No mention of a barrow was made in the original caption to the watercolour or the subsequent annotation and it may in fact have come from an unmounded context. Unmounded burials – 'flat graves' – do occasionally occur in Cornwall, although it is not usually possible to demonstrate that mounds have never covered them. Several examples are known from the area around Lanlawren. In 1972 a cist containing a 'barrel-shaped' pottery vessel and large pieces of bone was discovered in a field at Headland

Farm, Pelynt, 1.5 km north east of Lanlawren (HER MCO 28626), and another urned cremation together with unburnt bones was discovered in a cist found under a road adjoining the barrow group near Pelynt churchtown (Bond 1823, 68); a further cist containing an urn was discovered to the south of the village in 1857 (Dunkin 1875). A stone-lined cist, apparently empty, with a capstone 1.1m long, was uncovered in 1979 during ploughing at Carne (Lanteglos-by-Fowey), less than 2.5 km west of Lanlawren (HER MCO 26712). Further afield, Jonathan Couch recorded the discovery in 1840, perhaps in a flat grave, of a 'very coarse brown urn, rudely made' during the construction in 1840 of a new road from East Looe to St Martin-by-Looe churchtown; the urn was about 10 in (255mm) high, 'clumsily mark'd round the mouth' and inverted over a deposit of fragments of burnt bone (Couch archive, Courtney Library, RIC). A flat grave with a single vessel containing ashes deposited in a cist was discovered in 1840 near Fowey, again during construction of a new road (Treffry 1841, 66–7; Borlase 1872, 202). Another example, from which two vessels were recovered, is known from Portmellon, near Mevagissey (Sheppard 1961). A brief survey of such sites in Devon and Cornwall was published by Watts and Quinnell in 2001.

The wider area around Lanlawren therefore shows evidence for a significant number of funerary, or potentially funerary, sites (Fig 6), although it is worth noting that when one of the Pelynt barrows was opened the excavators found no trace of an urn or human remains, only 'black ashes' and a perforated greenstone 'hammer' (Couch 1846, 35) (Fig 4). Other features suggest a more diverse ceremonial landscape in the area. A cluster of up to ten probable former standing stones – only two remain upright – on the Polruan promontory south west of Lanlawren may represent the remains of a stone setting, a stone circle or stone row (HER MCO 7439, 7441–4; Payne and Lewsey 1999, 248–9). Two further stones are said formerly to have stood on the eastern outskirts of Polruan (Ackland 1975, 102; HER MCO 7485). No investigations of these stones are known, although evidence of prehistoric activity, including flint and sherds of Bronze Age Trevisker pottery, was recorded in the same field as the two surviving upright stones and in the adjacent area during a watching brief on cable trenching (Taylor 2012). Other possible prehistoric standing stones are recorded at Watergate and Great Kellow (both Lansallos) (HER MCO 7413, MCO 23450) and another was reported within the same field as the Ashen Cross barrow group in Pelynt (MacLauchlan 1847, 32). Standing stones are relatively unusual in lowland Cornwall, other than in West Penwith (Barnatt 1982, 95); the stones in the Polruan group are particularly so in being formed of slate (*ibid*, 103, 261).

Barnatt (*ibid*, 100–2) suggested that standing stones in west Cornwall and on the Lizard may have marked out different landscape zones in the Early Bronze Age (*cf* Peters 1990; Herring 2011). Some certainly also had funerary associations, although their primary purpose may not have been as commemorative markers (Barnatt 1982, 95–7). In the Lanlawren area the only hint of a possible funerary association is the reported former presence of a standing stone in the same field as the Ashen Cross barrow group (MacLauchlan 1847, 32). A Trevisker-type urn with cremated bone was found in the early 1860s at the small and unusual stone circle at Duloe, located approximately 8 km north east of Lanlawren (HER MCO 18441). Some accounts suggest that the urn was discovered when a fallen stone was raised (Borlase 1872, 127–8; Tregelles 1906, 399–401); Dunkin, however, asserted that the urn was found 'in the course of digging round the fallen or north-north-west stone . . . This ancient vessel was found at a depth of about 3 feet; not beneath but buried in the loose earth by the side of the stone' (Dunkin 1873, 46–7). Overall, the apparent concentration of barrows, unmounded burials, standing stones and a stone circle in this area around and between the Looe and Fowey rivers distinguishes it from most other areas of lowland Cornwall.

Comparanda for the urn

The Lanlawren urn was associated with human remains – the annotation to the watercolour refers to burnt bone – and comparanda for the vessel may therefore be sought among ceramics with funerary associations dating to the first half of the second millennium cal BC. The vessel has the slightly sinuous profile and flat-topped rim of many Trevisker vessels of this period, with the decoration formed by double lines of impressed cord. It is not possible to ascertain from the illustration whether these double lines were of cord twisted in opposed directions – the so-called 'plaited cord' (ApSimon and Greenfield 1972, 326) – or parallel to one

another. It is almost certain, considering the range of Trevisker vessels now known, that the pierced lug shown centre front in the Lanlawren illustration is one of an opposed pair.

The pattern of decoration, with simple chevrons set between pairs of parallel lines, has no close comparanda among known vessels from funerary contexts. It is assumed that the well-spaced layout of these chevrons is accurate even if there was some error in the number of lines shown. The closest published by Patchett (1950, F4, 59) is the vessel from Merrows (now Merrose), Gerrans (Winn 1845); this has four plain lugs. The fragmentary vessels from Treligga 2, St Teath (Christie 1985, fig 50), and Davidstow 1 (Christie 1988, fig 11) also have chevrons. One of the two vessels from the 'flat cemetery' at Portmellon, Mevagissey (Sheppard 1961, fig 20), has the most comparable impressed chevrons found, with only four lines of these; the vessel had two simple perforated lugs but these were not decorated and it is therefore not a close parallel. Fairly similar pieces (vessels B and Y) appear to occur among the fragments of numerous broken pots found in the ditch of the Trelowthas barrow, Probus (Jacky Nowakowski, pers comm). Most vessels with chevron decoration, however, have a much more packed pattern, with eight or ten stacked chevrons impressed between the bordering lines (*cf* Crig-a-mennis, Perranzabuloe: Christie 1960).

The overall impression from a brief review of all available published vessels from funerary contexts is that zig-zags, rather than chevrons, were the more commonly used motif (*cf* Patchett 1944; 1950, *passim*), and that where chevrons were used they were in close-spaced multiple rows. What is also apparent, however, is the very great variety of detail in the cord-impressed decoration on Trevisker vessels used in funerary contexts. No vessel appears to be the exact match of any other, even if some decorative or formal features are similar.

The long vertical crack in the Lanlawren vessel may well have occurred during firing and not subsequent to deposition. A similar crack is recorded from a vessel from a cairn at Stannon on Bodmin Moor (Harris *et al* 1984, fig 6).

Conclusion

The rediscovery of the watercolour of the Lanlawren urn, despite the meagre information available on the circumstances of the original find, highlights the potential for both additional knowledge of the past and new insights into the early development of Cornish archaeology to be obtained through investigation of archive material. This case also reminds us of the apparent concentration of Bronze Age ceremonial sites in the parishes of Pelynt, Lanteglos-by-Fowey, Lansallos, Lanreath and Talland, and in adjacent areas on the east side of the Looe river and the west side of the Fowey. In addition to the barrows and flat graves noted in the Cornwall Historic Environment Record there were clearly many other funerary sites in this area which, as with that attested by the watercolour of the Lanlawren urn, have disappeared without any detailed record. Jonathan Couch, for example, wrote of 'Urns . . . which at different times have come to light' along the sides of the road running north west from Looe where it passed across high ground near Pelynt (Couch 1846, 33–4). He also noted the discovery in 1839 of 'bones, urns, and ashes of human beings' close to the bank of the Looe river within the modern urban area of East Looe (*ibid*). His son Thomas owned a Bronze Age *faience* bead said to have come from a cairn near Fowey, of which there appears to be no other record (Borlase 1872, 223n), and Patchett recorded twentieth-century finds of Bronze Age urns from Port Looe and Hannafore, both near West Looe, the latter with fragments of bone, but for neither of which are the find-spots or contexts known (Patchett 1944, 35, fig 8, table 4, D.10, table 6, F.14).

These instances can be added to the relatively large number of certain and possible barrows and flat graves which have been more closely located. Was this a particularly well occupied part of Cornwall during the Bronze Age, with a consequently large number of burials, or was it a preferred zone for constructing ceremonial monuments and memorialising the dead? Or is the apparent frequency of such sites in this area simply an illusion of survival and the happenstances of past recording?

The rediscovery of the watercolour of the Lanlawren urn usefully opens these questions for further investigation. It also acts as a reminder of the complex networks within the learned community in Cornwall in the middle decades of the nineteenth century: members of the Couch and Blight families and W C Borlase were all linked in some way to the urn drawing. Jonathan Couch is himself buried,

with members of his family, less than 2 km from Lanlawren in the small, private cemetery he established, and where his monument still stands, immediately adjacent to the Early Bronze Age Mabel Barrow (Couch 1871, 19; B Couch 1891, 131; Johns 2010, 66). We can be grateful for what Jonathan and the other two busy polymath doctors of the Couch family, his sons Thomas and Richard, left to enhance our understanding of the past, but may also vainly regret that they did not produce more archaeological work to set alongside their achievements in studying the natural world. However, as Thomas observed in notes for the preface to his planned work on holy wells, 'The local antiquary who gathers even a fragment is not without his praise' (Quiller-Couch and Quiller-Couch 1894, xxi).

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http://www.webarchive.org.uk/wayback/archive/20090806120733/http://cornovia.org.uk/hiac/hiac01.html

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A greenstone axe and possible Bronze Age ditch at Pennare Farm, St Allen

SEAN R TAYLOR

with contributions from HENRIETTA QUINNELL and ROGER TAYLOR

In autumn 2013 Cornwall Archaeological Unit undertook a programme of archaeological mitigation in advance of the construction of a solar farm at Pennare Farm, St Allen. The work revealed the presence of an underlying field system or systems thought to be of prehistoric date. Material from a large ditch was submitted for radiocarbon dating and a Neolithic greenstone axe found on the surface was subjected to petrological analysis.

In 2013 Cornwall Archaeological Unit, Cornwall Council, was commissioned by British Solar Renewables to undertake a programme of archaeological mitigation in advance of the construction of a solar farm at Pennare Farm, St Allen (SW 81120 49380; Fig 1). The potential for the proposed development area to contain buried archaeological remains had been demonstrated by a geophysical survey (Watson and Gater 2013) and archaeological assessment (Gent and Manning 2012).

The development covers approximately 60 ha and is situated on land falling from a high point of 103m OD to the north to 56m OD in the south east with a generally southerly and south easterly aspect. The underlying geology consists of Devonian slaty mudstones and siltstones (Geological Survey of Great Britain sheet 346).

The land included in the development is all characterised as Anciently Enclosed Land (Farmland: Medieval) (Cornwall County Council 1996). However, while the fields to the north of the farm appear to be subdivided medieval cropping units based on groups of former cultivation strips, those to the south have markedly straight boundaries (Fig 2) and are more probably derived from post-medieval enclosure of former rough ground, perhaps as an expansion of the enclosed land associated with Pennare (*cf* Dudley 2011, 112). Field names in this area recorded by the St Allen tithe apportionment (Cornwall Record Office) include New Park and Square Close, both names certainly hinting at late enclosure.

Underlying the fields north of Pennare the geophysical survey (Fig 2) identified elements of what appears to be a late prehistoric field system, taking the form of conjoined curvilinear enclosures. The geophysical data also suggested a possible prehistoric enclosure in the north-western part of the site. In the three fields along the southern edge of the project area a sinuous linear anomaly proved on excavation to be a former hollowed track. No dating evidence was recovered for the hollow way but it passed through an extant gateway between fields, suggesting that it is likely to be post medieval, perhaps a track across former rough ground which was respected when the area was enclosed. However, the geophysical survey indicated at least one possible roundhouse in the same area.

Limited soil strips were undertaken in eight areas identified as requiring detailed investigation

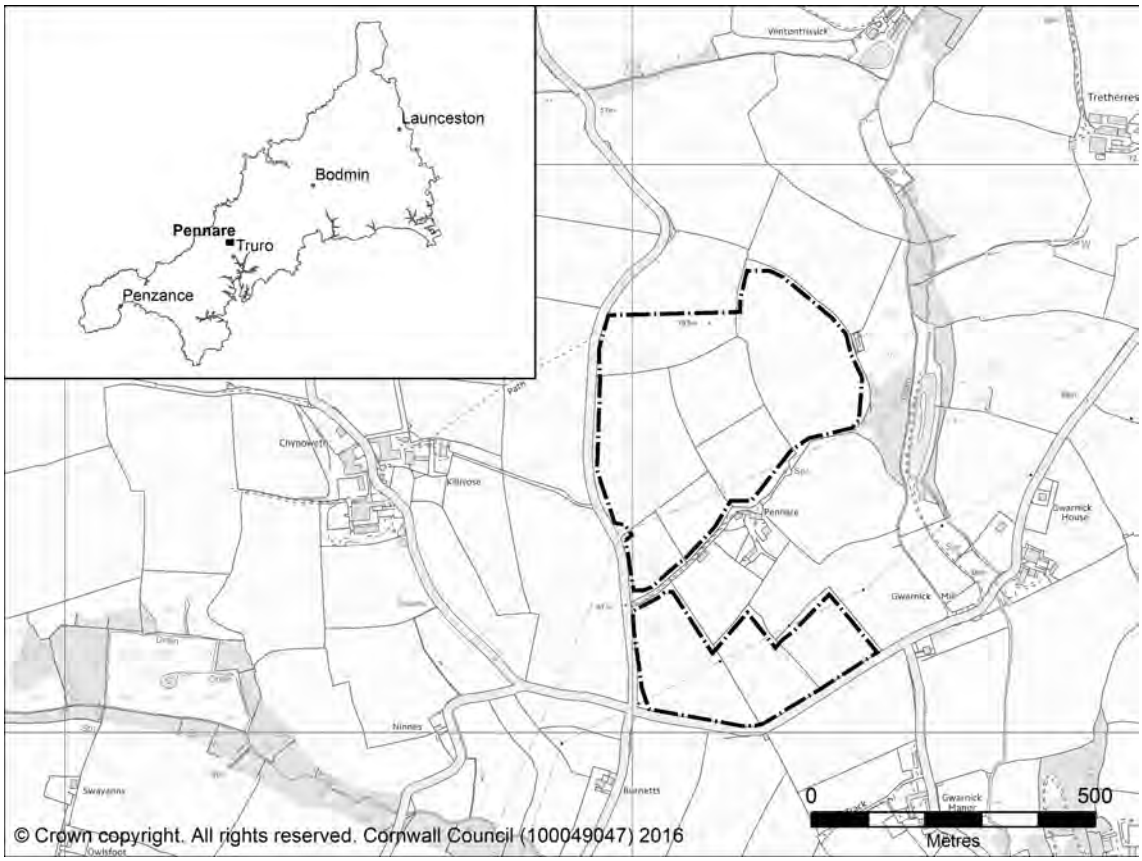

Fig 1 Pennare Farm, St Allen: location.

to examine features of potential significance revealed by the geophysical survey. The results of the trenching are summarised in an archive report (Taylor 2014).

This paper focuses on two aspects of the project results: a greenstone axe found on the surface in a field to the west of Pennare farm and a large ditch identified in the same field.

Greenstone axe

The most significant artefact found during the work was a polished greenstone axe of Neolithic date (Figs 3 and 4). The axe measures 200mm by 70mm, tapering to 12mm, and is 40mm thick; it weighs 1088 grams. One side is flattish and retains traces of high polish, enhancing an already smoothed cobble. The other side is convex with a shallow depression, probably reflecting the shape of the cobble, and a short notch adjacent to one edge. The blade end is worn to a rounded profile and slightly chipped; the butt has a single impact fracture.

The axe was unfortunately an unstratified surface find (from SW 81049 49390; Fig 2) but is nonetheless of some importance. Stone implements of this type formed part of what has been called a 'very distinctive Early Neolithic sub-regional identity' in the south west (Pollard and Healy 2008, 92), with greenstones from a variety of sources fashioned into artefacts and used both within the region and distributed more widely in Britain. These implements have been grouped by their petrologies (Clough and Cummins 1988) and attempts made to link these with particular rock sources in Cornwall (Jones and Quinnell 2011). The Pennare axe belongs to Group XVI and

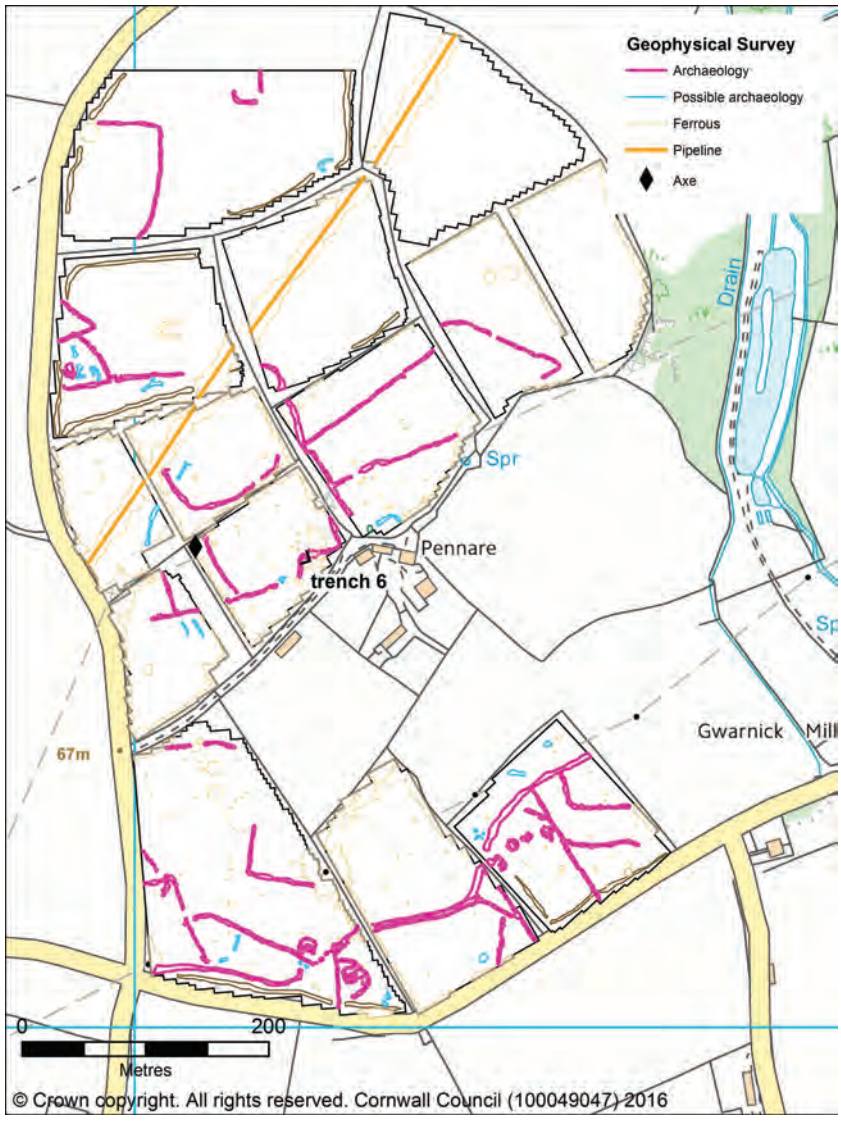

Fig 2 Pennare Farm: geophysical survey, trench 6 location and find spot for the greenstone axe.

recent work has tested the origin of this Group by sampling sources in a valley near Camborne (Jones *et al* 2015).

Petrographic analysis

The axe was submitted for petrographic analysis. A thin-section was prepared and the lithology compared with the geologically grouped collection of implement thin sections held at Somerset Heritage Centre, Taunton, by the South Western Federation of Museums and Art Galleries Implement Petrology Group (SWMIPG). The axe has been registered by SWMIPG with the reference number CO472 1988 and the thin section lodged at Taunton.

The thin section obtained from a core from the axe was examined and described by Dr Roger Taylor:

> *Amphibole* – the predominant component. Pale green pleochroic to bluish green to pale brown and colourless actinolite. As abundant randomly orientated acicular crystals. Some

larger amphibole grains up to 1.5 mm long are the result of direct replacement of augite.

Feldspar – plagioclase, mainly as untwinned irregular patches interstitial to amphibole and penetrated by numerous acicular pale green amphibole crystals. Possible outlines of original plagioclase grains are up to 1 mm long and may show traces of twinning.

Pyroxene – colourless to neutral or very pale pink grains with high relief 0.2–1mm across are probably augite. Commonly grains are fringed with, and appear to be undergoing replacement by, green amphibole.

Opaque ore – possibly ilmenite as irregular grains and aggregates comprising approximately 5 per cent of the rock; some grains show skeletal structure and are up to 0.6 mm.

Biotite – possibly present as irregular light-brown weakly pleochroic areas in and around amphibole but the identity is difficult to confirm.

Apatite – sparse small prismatic crystals with high relief and low birefringence.

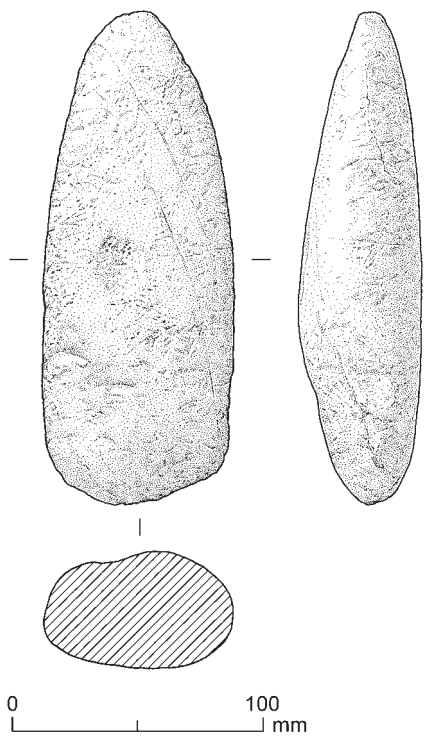

Fig 3 Pennare Farm greenstone axe. (Drawing: Jane Read.)

Dr Taylor comments that this is a 'fine-grained 'greenstone' with no obvious relict igneous texture but possibly originally a doleritic basic rock. The axe shares characteristics which have recently been attributed to the Group XVI 'greenstone', which outcrops in the Camborne area' (Jones *et al* 2015).

Discussion

The use of Cornish greenstones in the production of a variety of implements in the Neolithic period, and their subsequent distribution around the British Isles, is well documented (Clough and Cummins 1988). Implements have been grouped by their petrologies in a well-established format proposed in the 1930s (Keiller *et al* 1941) and refined over the following decades (Stone and Wallis 1947; 1951; Evens *et al* 1962; 1972). More recent work has integrated these studies with similar projects carried out throughout the British Isles and beyond (Clough and Cummins 1979; 1988). A good proportion of the implements thin-sectioned have been assigned to specific Groups, which in some cases outside Cornwall can be confidently assigned to single rock sources. Sources for stone used to fashion Cornish axes, however, have proved elusive (Berridge 1993), even for the most common Group I from around the Mount's Bay area of west Cornwall (Markham 2000). Recent work on Group I material has indicated probable use of cobbles with slightly varying lithologies coming from an area rather than from a single locality or source (Jones *et al* 2013).

Recent research on Group XVI implements has confirmed similar variation and the use of cobbles from the area of the Polstrong valley (centred on SW 63066 39337) to the west of Camborne (Jones *et al* 2015). The valley lies some 21 km south west of Pennare. In the last published list (Clough and Cummins 1988), 78 axes were identified as of Group XVI, with 64 of them found in the south west. The remainder were scattered widely across southern and eastern England (Fig 5). The identification of the Pennare axe with Group XVI adds to the evidence for a source of local importance comparable with Group I axes, which were both locally important within the south west and widely distributed throughout England and Wales. There is a cluster of mostly unstratified Group XVI axes from around the Camborne and Redruth area but the largest known concentration came from the Carn Brea tor enclosure (SW 68360 40718), 5.5 km

Fig 4 The greenstone axe. (Photographs: Cornwall Archaeological Unit.)

east north east of the Polstrong valley and 15.5 km south west of Pennare. Construction of the Carn Brea tor enclosure may have begun in the thirty-seventh century cal BC (Whittle *et al* 2011, I, 509) and a complete (although very weathered) Group XVI axe was recovered from a context within the enclosure walling (Mercer 1981, 59). Further afield, a date of 3780–3370 cal BC, 4830±80 BP (HAR-9167), was produced from a context containing a Group XVI axe at the Hambledon Hill causewayed enclosure in Dorset (Mercer and Healy 2008, 387, 644).

The ditch

The geophysical survey identified a number of linear and curvilinear anomalies that were interpreted as representing enclosures belonging to a field system or systems of probable late prehistoric or Roman date (Watson and Gater 2013). The evaluation and watching brief tended to confirm this interpretation although there was little dating evidence.

Stratigraphical evidence

A trench (trench 6) was positioned to investigate an angled section of a large linear anomaly shown by the geophysical survey in the south-eastern corner of a field to the west of Pennare farmhouse (Fig 2). This appeared to form part of a more extensive field system represented by anomalies in the western part of the field and continuing in the field to the east.

The trench was subdivided into T6a and T6b, the former running east–west across the anomaly, with the latter excavated perpendicular to this to

Fig 5 Distribution of Group XVI axes (based on data from Council for British Archaeology 1999).

catch the anomaly again as it turned sharply to the east (Fig 6a). Two sections were cut, one in each trench.

The excavations revealed a large ditch [607], 2.6m wide across the top and 1.05m deep, with steep sides and a flat base (Fig 6b). The ditch cut two buried soil horizons, (604) and (605), as well as the natural substrate, (606). The earlier soil horizon, (605), a light reddish-brown silty clay, was thicker within the angle of the ditch, that is, to the south and east. Here it was up to 0.23m thick while to the west of the ditch, coincident with a rise in the natural, it was only 0.12m thick. This deposit sealed the fill of a small pit or posthole, [613], lying immediately east of the ditch in T6a.

Above (605), but only identified to the west of the ditch in T6a, was another buried soil horizon, (604), a mid reddish-brown clay, also cut by ditch [607]. The presence of this horizon on one side of the ditch only might indicate that this is the truncated remains of a bank.

Ditch [607] was filled by a complex series of fills, up to six, and while these were broadly comparable in both of the excavated sections, there were some differences. The section in T6a (Fig 6b) revealed six fills. The earliest, primary fill (612), was a substantial stony deposit up to 0.25m thick consisting of an abundance of sub-angular shillet blocks in a matrix of light reddish-brown clay. This deposit only appeared in this section and may represent a localised event such as the collapse or deliberate pushing in of a section of walling.

Soil samples were taken from deposit (612) in the hope of recovering material suitable for radiocarbon dating and palaeoenvironmental analysis. However, assessment of the flot revealed only three small pieces of charcoal (Julie Jones, pers comm). A Late Bronze Age radiocarbon date

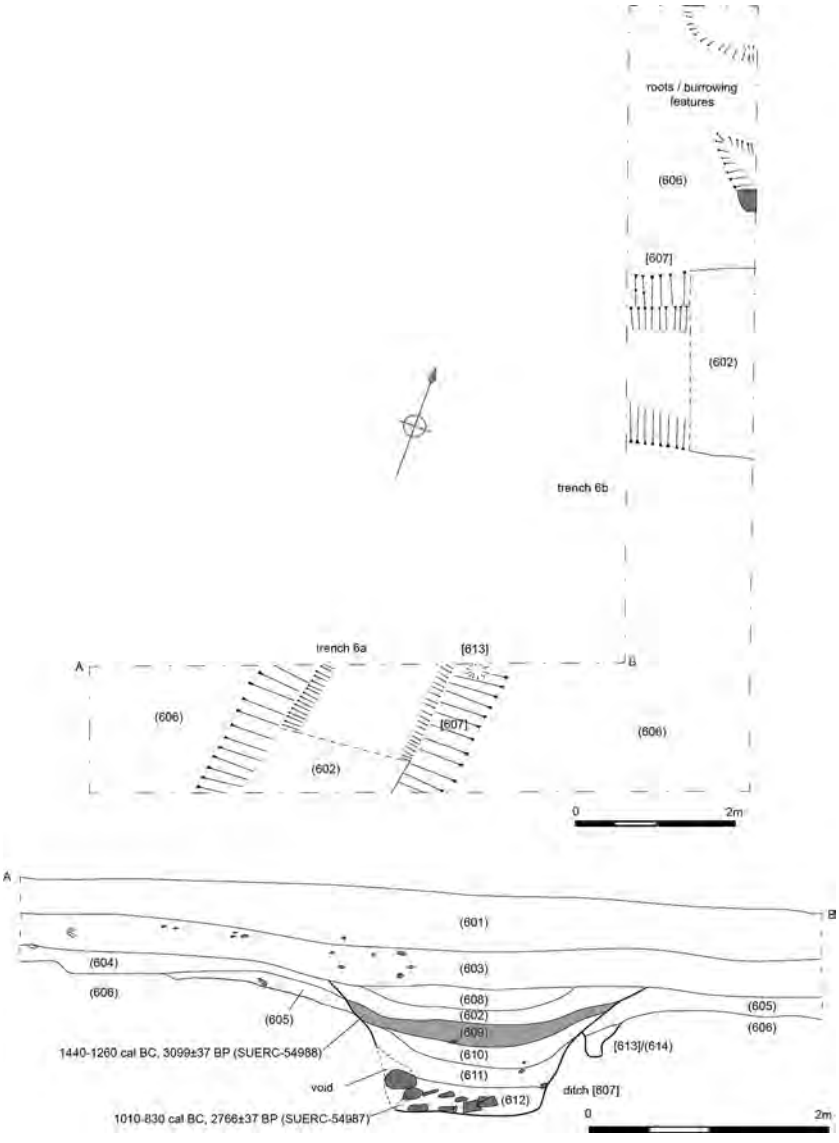

Fig 6 Ditch [607], plan and south-facing section in trench T6a. The void shown in the west side of the base of the ditch in the section resulted from the removal of some of the stones in deposit (612) during excavation.

of 1010–830 cal BC, 2766±37 BP (SUERC-54987), was obtained from charcoal of an unidentified species.

The primary deposit in the ditch in T6b was (611), a mid reddish-brown clay, which lay over deposit (612) in T6a. Above this deposit (610), a mid yellowish-brown silty clay, formed a secondary fill, representing the gradual silting up of the ditch over a number of years. In T6b the section appeared to show that this deposit was recut, whereupon it silted up again with deposit (609). However, in T6a there was no evidence of a recut with (609) continuing the silting up of the ditch over (610).

Deposit (609) was distinctive in being a very dark fill, a dark reddish-brown silty clay, and there can be no question of a misidentification of two different layers. A small piece of slate that appears to have been cut was recovered from this deposit. Soil samples were also taken from deposit (609) in the hope of recovering material suitable for radiocarbon dating and palaeoenvironmental analysis. Initial examination of the flots recovered from this sample indicated around 20 charcoal

fragments plus two wheat grains (Julie Jones, pers comm). A radiocarbon date of 1440–1260 cal BC, 3099±37 BP (SUERC-54988), was obtained from a wheat grain from this deposit. It seems that the dark colour of the deposit was not due to the presence of charcoal as was initially thought during fieldwork. Instead the deposit may be rich in organic material, as was the case in several fills from a Late Iron Age enclosure at Camelford (Jones and Taylor 2015, this volume).

Above (609) the silting of the ditch continued with the deposition of fill (602), a light yellowish-brown clay. The final fill of the ditch, (608), was a mid reddish-brown silty clay.

The fills of ditch [607] were sealed by a substantial subsoil horizon, (603), a dark reddish-brown silty clay up to 0.4m thick. A holed slate object, possibly a small pot lid, was recovered from this deposit (below). Ploughsoil (601), a mid brown loam, sealed all deposits and features.

Slate object
Henrietta Quinnell

A perforated artefact from subsoil (603) (Figs 7 and 8) measured 105mm × 104mm × 10mm and weighed 190g. It was worked from local Devonian silty slate with an hourglass perforation 15 × 12mm much worn, as is the trimming around the edge. Perforated stone discs of this broad size are fairly frequent finds on Later Iron Age and Roman-period sites (Quinnell 2004, 142; 2011, 11.7). They have generally been interpreted as pot lids, with

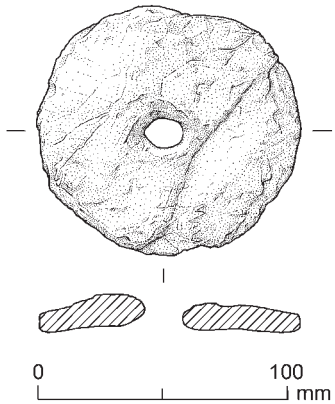

Fig 7 The Pennare Farm slate 'pot lid'. (Drawing: Jane Read.)

Fig 8 The slate 'pot lid'. (Photographs: Cornwall Archaeological Unit.)

the perforation intended to take an organic handle, but their use as weights is also possible. They have not been securely dated to a period earlier than the Later Iron Age and their size range matches with the vessel neck sizes of Later Iron Age and Roman-period jars. It is just possible that the artefact may relate to the Bronze Age activity indicated by the radiocarbon determinations of 1010–830 cal BC, 2766±37 BP (SUERC-54987), from (612) in ditch [607] or 1440–1260 cal BC, 3099±37 BP (SUERC-54988), from (609) higher in the same ditch, but more probable that it is the sole indicator of Later Iron Age or Romano-British activity in the immediate area.

Radiocarbon dates

Two samples of organic material were submitted for accelerator mass spectrometry (AMS) radiocarbon dating. A burnt grain of *triticum* (wheat) from upper fill (609) and a piece of unidentified charcoal from primary fill (612) were submitted to the Scottish Universities Environmental Research Centre (SUERC). The dates given below (Table 1) have been calibrated using OxCal 4.2 and are given at the 95.4 per cent probability level. Date ranges have been calculated using the maximum intercept method (Stuiver and Reimer 1986) and quoted with the endpoints rounded outward to 10 years in line with draft Historic England guidance on reporting radiocarbon dates.

Results

The wheat grain from fill (609) produced the earlier radiocarbon date of 1440–1260 cal BC, 3099±37 BP (SUERC-54988). The unidentified charcoal from primary fill (612) returned a date of 1010–830 cal BC, 2766±37 BP (SUERC-54987).

Clearly at least one of these dates is anomalous, since the lowest fill in the ditch returned a more recent date. This may represent intrusive material moved to its final position through bioturbation. This might also be said of the *triticum* grain in the upper fill, although the presence of two grains within this deposit may indicate that they were *in situ*. If this is the case then we have a Middle Bronze Age date for one of the final silting episodes within the ditch. An alternative explanation is that one or both dated deposits derive from the buried soil horizons cut by the ditch. In that case the ditch, and the associated field system, could be of Iron Age date or even later.

Discussion

The angled ditch revealed in trench 6 was substantially larger than the investigated portions of the ditches of the field system surrounding it. The most probable explanation is that it represents a localised variation within the contemporary field system. Alternative interpretations are that it marked an important land division or just possibly formed part of an enclosure, the rest of which may lie adjacent to the extant settlement of Pennare.

The size of the ditch contrasts with those defining adjacent, apparently contemporary fields, although these were admittedly subject only to limited investigation. Evidence for a wall or bank associated with the ditch is limited to the western side, on the outer edge of the angle, diminishing the likelihood that it forms part of an enclosure. A possible explanation for the greater depth of the ditch here compared to other elements of the field system is that the construction of a bank around the outside of the angle simply required more material to be excavated from the ditch. Alternatively, the ditch may have deviated around a feature which required a more substantial barrier to protect it.

The *triticum* grains recovered from the Pennare ditch provide evidence, however slight, for the cultivation of cereals there, specifically wheat, in the Middle Bronze Age. The limited evidence available suggests that cereal production

Table 1 Radiocarbon dates

Laboratory Number	*Context*	*Sampled material*	*Radiocarbon Age (BP)*	*δ13C (relative to VPDB) (‰)*	*Calibrated date (95.4% probability)*
SUERC-54987	(612), primary fill ditch [607]	Unidentified charcoal	2766±37	–27.1	1010–830 cal BC
SUERC-54988	(609), upper fill ditch [607]	*Triticum* grain	3099±37	–21.4	1440–1260 cal BC

supplemented and gradually replaced the use of gathered wild foods during the Early Bronze Age, as for example, in the Tregurra valley, Truro (Taylor, forthcoming), gaining momentum from the middle centuries of the second millennium cal BC (Jones and Quinnell 2011, 220).

Field systems scientifically dated to the Middle Bronze Age are rare in Cornwall but not unknown. Examples include those at Trethellan, near Newquay (Nowakowski 1991), Gwithian, on the east side of St Ives Bay (Nowakowski *et al* 2007), and at Harlyn Bay and Bossiney in north Cornwall (Jones and Quinnell 2014, 10–14, 98, 134–7). Many field systems on the uplands of Bodmin Moor and in west Cornwall probably also date to the Middle Bronze Age (Jones and Quinnell 2011, 220) but few have been dated. However, the evidence from almost all of the known sites is for fields enclosed by banks or stone walls rather than ditches. Ditched fields identified at Gover Farm, St Agnes, are suggested as potentially Bronze Age on morphological grounds but are not dated other than being earlier than Roman-period features (Good 2015, this volume). Substantial ditches up to 1m wide and 0.7m deep at Trenowah, St Austell, running for at least 300m and dated to the Early Iron Age, were interpreted as the axial component of a field system (Johns 2008) and an apparently similar axial element in a field system at Penhale, St Enoder, extended for at least 400m; it was undated but appears to have pre-dated a round established *c* 400 BC (Nowakowski and Johns 2015, 171–2). There is some evidence for early ditched field systems from Devon. A substantial Middle Bronze Age ditch flanked a droveway at Old Rydon Lane, Exeter, and other contemporary ditches forming a field system were found in the same area (Pearce *et al* 2011). A Middle Bronze Age field system at Castle Hill, between Exeter and Honiton, was bounded by ditches with large variations in size, ranging between 0.13m and 0.65m deep; an associated enclosure attached to one side had a ditch up to 0.72m deep (Butterworth 1999a).

The Pennare ditch was part of a boundary dividing the field system to the north from an apparently 'blank' area to the south, possibly rough ground or woodland during the prehistoric period. Boundaries between areas of different land use have been recognised in the 'terminal reave' components of coaxial field systems on Dartmoor, Bodmin Moor and in West Penwith (Fleming 1988; Brisbane and Clews 1979; Herring 2008). These are in upland locations, however, and take the form of stony banks. Only a few examples of substantial ditches which could represent comparable land divisions in lowland contexts are currently known in the south west. A ditch similar in size to that at Pennare traced over several hundred metres east of Polruan (Lanteglos-by-Fowey) remains undated, although it pre-dated an early medieval structure built over it (Taylor 2011). A V-shaped ditch at Trevone varied between 1.5m and 2.8m in width and 0.75m and 1m in depth and contained distinctive deposits incorporating Trevisker pottery, animal bone and marine shells between layers of slates; a radiocarbon date of 1493–1266 cal BC (AA-26413) placed it firmly in the Middle Bronze age (Jones and Quinnell 2014, 101–2, 116). A probably truncated example from Liskeard was perhaps originally of similar size to the ditch at Pennare; radiocarbon dates spanning the period 1396–840 cal BC (AA-29745-6) were obtained from an upper fill, possibly lying in a recut (Jones 1998–9). It is not clear, however, whether this feature represented a land division or was part of an enclosure (*ibid*).

If the Pennare ditch was part of an enclosure it may have bounded an area adjacent to the present farm, potentially a significant example of settlement continuity. Bronze Age enclosures defined by ditches are rare in Cornwall, and indeed over much of south-west Britain, although a recently excavated segmented enclosure enclosing a knoll at Woodcock Corner east of Truro has given an Early Bronze Age determination of 1950–1740 cal BC (SUERC-56534) from its primary ditch fill (Taylor, forthcoming). At Tremough, Penryn, a sub-circular ditched enclosure surrounded pit and posthole groups thought to represent structures. A Late Bronze Age date of 1006–843 cal BC (SUERC-47283) was obtained from the primary fill of the ditch and comparable dates came from some of the internal features (Jones *et al* 2015). The ditch of a D-shaped enclosure open to the west at Scarcewater, St Stephen-in-Brannel, was thought to represent a palisade slot and enclosed a group of posts and pits interpreted as forming a roundhouse. A date range of 1189–922 cal BC (Wk-21449-50) was obtained from a pit within the roundhouse (Jones and Taylor 2010). At Hayne Lane, in east Devon, an elliptical enclosure containing two roundhouses was associated with Middle to Late Bronze Age radiocarbon dates

and pottery (Butterworth 1999b). At Rydon Lane, Exeter, a small trapezoidal enclosure bounded by a ditch containing Bronze Age pottery contained at least one roundhouse and was set within a contemporary field system (Gilbert 2012).

Finally, it is worth noting that the field system revealed by the geophysical survey at Pennare is a very close fit with the historic fields on the site (Fig 2). Other than in west Cornwall and on the Lizard the perpetuation of fields from the later prehistoric and Roman periods to the medieval period and beyond has been considered rare; the focus has rather been on instances where late prehistoric field systems were clearly swept away by the creation of new agricultural landscapes in the early medieval and medieval periods (Rose and Preston-Jones 1995; Young 2012, figs 19–23, 39–41; Herring 2008, 92; 2011, 267–8). However, evidence from air photographs (Young 2012, fig 42) and recent fieldwork at Higher Besore, west of Truro (Gossip, forthcoming), Scarcewater, St Stephen-in-Brannel (Jones and Taylor 2010), in the Tregurra valley east of Truro (Taylor, forthcoming), and at Pennare, suggests that it may be more common than has been previously recognised.

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An assemblage of Middle Bronze Age pottery and stonework from Parting Carn, St Mary's, Isles of Scilly

CHARLES JOHNS AND HENRIETTA QUINNELL

with contributions from DANA CHALLINOR and ROGER TAYLOR

Archaeological recording during groundworks at Parting Carn, St Mary's, Isles of Scilly, revealed a shallow hollow containing a large quantity of Middle Bronze Age pottery and a small pit containing some stonework.

In March 2014 Historic Environment Projects (now Cornwall Archaeological Unit), Cornwall Council, was commissioned by URS Infrastructure and Environment UK Ltd (URS) to carry out archaeological recording during groundworks at the site of a temporary tarmac batching plant in a field near Parting Carn, St Mary's, Isles of Scilly, in order to fulfil a planning condition. The tarmac was needed for improvements to the runway at St Mary's airport and for resurfacing the island's roads.

Location, context and geology

Centred at SV 9178 1078, the site covered an area of about 3300 sq m at the foot of a north-facing hillslope in agricultural land approximately 0.25 km north west of St Mary's airport and 0.25 km east of Parting Carn farm (Figs 1 and 2).

The Historic Landscape Assessment for Scilly defines the farmland within which the site lies as Anciently Enclosed Land; that is, land which was enclosed before the nineteenth century and which includes field systems which can be as early as the Bronze Age in origin or as late as the eighteeenth century (Land Use Consultants 1996). The Ordnance Survey 25in: 1 mile maps of *c* 1880 and *c* 1906 indicate that during the late nineteenth century the project area was subdivided into small enclosures (bulb strips) for the cultivation of early flowers.

As elsewhere in Scilly, the underlying geology is granite; the natural subsoil is weathered periglacial head, known locally as *ram*, which is typically overlain on St Mary's by dark and minerogenic soils.

Results

An initial watching brief was carried out during soil stripping of the field in early March 2014, followed by additional fieldwork later in the month to investigate the context of a concentration of prehistoric pottery in a small area of the site (Fig 2).

This concentration comprised an assemblage of 279 sherds embedded in a spread of dark greyish-brown sandy clay (2), which filled a shallow, amorphous, apparently natural hollow [3] in the ram measuring 3m by 2m by 0.12m deep (Figs 3 and 5). Context (2) also contained a number

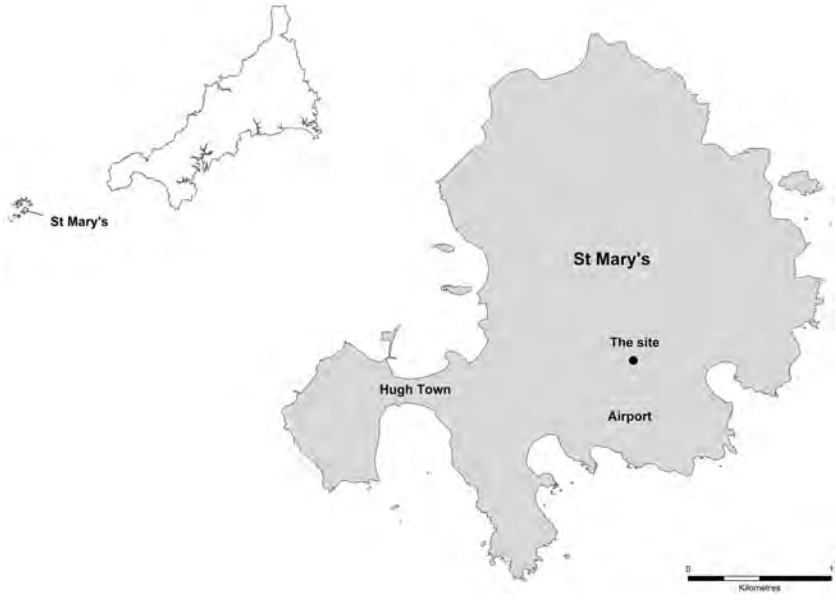

Fig 1 Parting Carn: location.

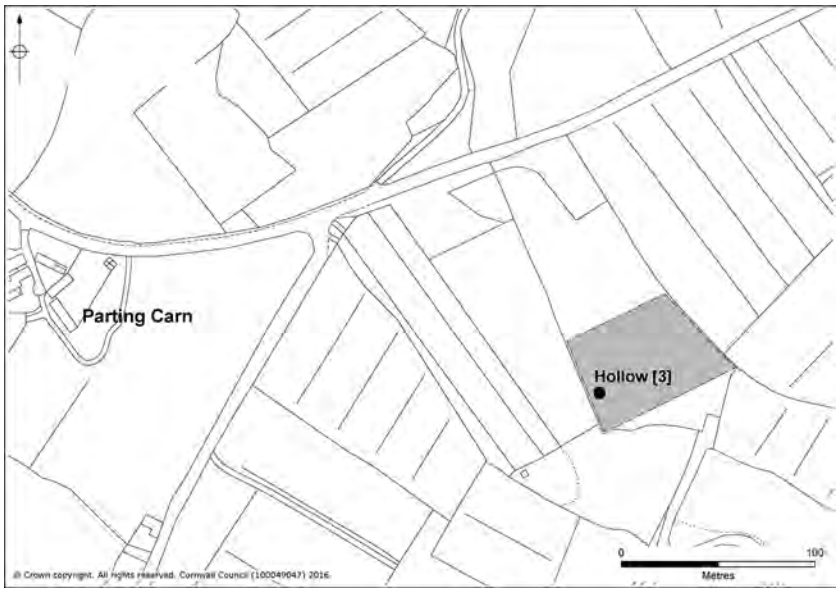

Fig 2 The site and environs.

of loose stones, including a fragment of a stone muller, used for grinding cereals (**S1**), and three cobbles apparently used as rubbing stones (**S3**, **S4** and **S5**), one of which **(S4)** had also been used as hammerstone. A small quantity of charcoal fragments was recovered during sieving of bulk soil samples from layer (2) but there was no other occupation debris.

Immediately south west of the pottery concentration was a shallow, sub-circular pit [5], 0.9m by 0.7m and 0.1m deep, cut into the *ram* at the base of hollow [3] (Figs 3–5). The pit was packed with medium-sized stones (4), visible once fill (2) had been removed (Fig 3). These were mostly granite rubble but including a muller fragment (**S2**) and a rectangular stone with a worn

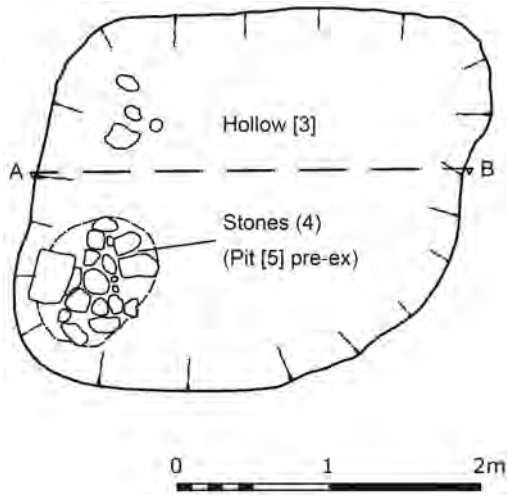

Fig 3 Plan of hollow [3], showing stones (4) prior to excavation.

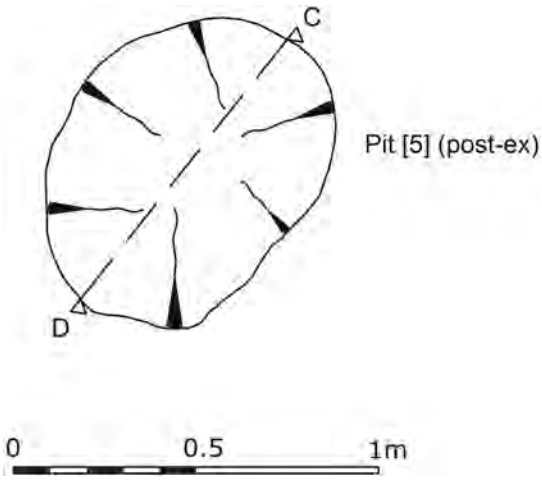

Fig 4 Plan of of pit [5] post-excavation.

groove on one side (**S7**). Fragments from a fired-clay object were also recovered from this feature. Elsewhere, similar objects have been described as loom weights or spindle whorls (below).

No other archaeological deposits, features or structures were revealed in the field except for traces of a linear north–south aligned stone-filled feature in the middle of the field. This was parallel to the existing field boundaries and was interpreted as a removed post-medieval field boundary.

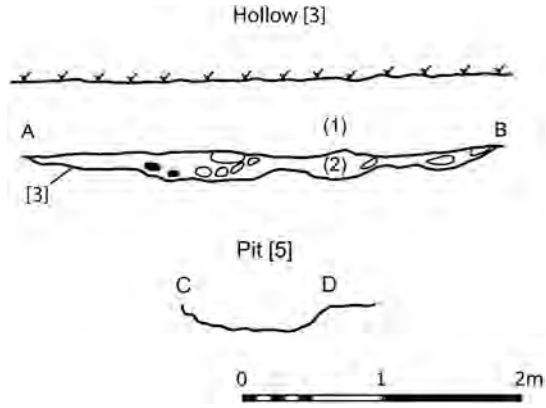

Fig 5 Section through hollow [3] and profile of pit [5].

The finds

Henrietta Quinnell, with petrographic comment by Roger Taylor

The pottery

A total of 279 sherds weighing 8915g came from context (2), the fill of hollow [3]; two sherds totalling 120g were unstratified. The pottery probably all comes from three vessels, **P1–3**, although only parts of these were present. The fabric, although competently made, was coarse with a high mineral content; it was generally reduced 5YR 4/1 dark grey with smoothed surfaces. Because the vessels were simple and undecorated joins were difficult to find, but parts of the bases / base angles of **P1–2** were present in addition to the illustrated rims and girth. The sherds are generally fresh and unabraded considering that their coarse fabric makes edges very fragile. However, parts of some sherds have noticeable use wear, notably the lug on **P2**.

Petrography of the granite derived fabric

The fabric of all three vessels is very similar, although **P3** contains fewer and smaller inclusions.

Quartz, transparent, translucent, angular 0.2–3.5mm; *feldspar*, translucent, angular 0.2–2.5mm; *muscovite*, cleavage flakes up to 1.2mm; *tourmaline*, sparse black grains 0.5–0.7mm; *matrix*, sandy clay with much fine muscovite. Mineral

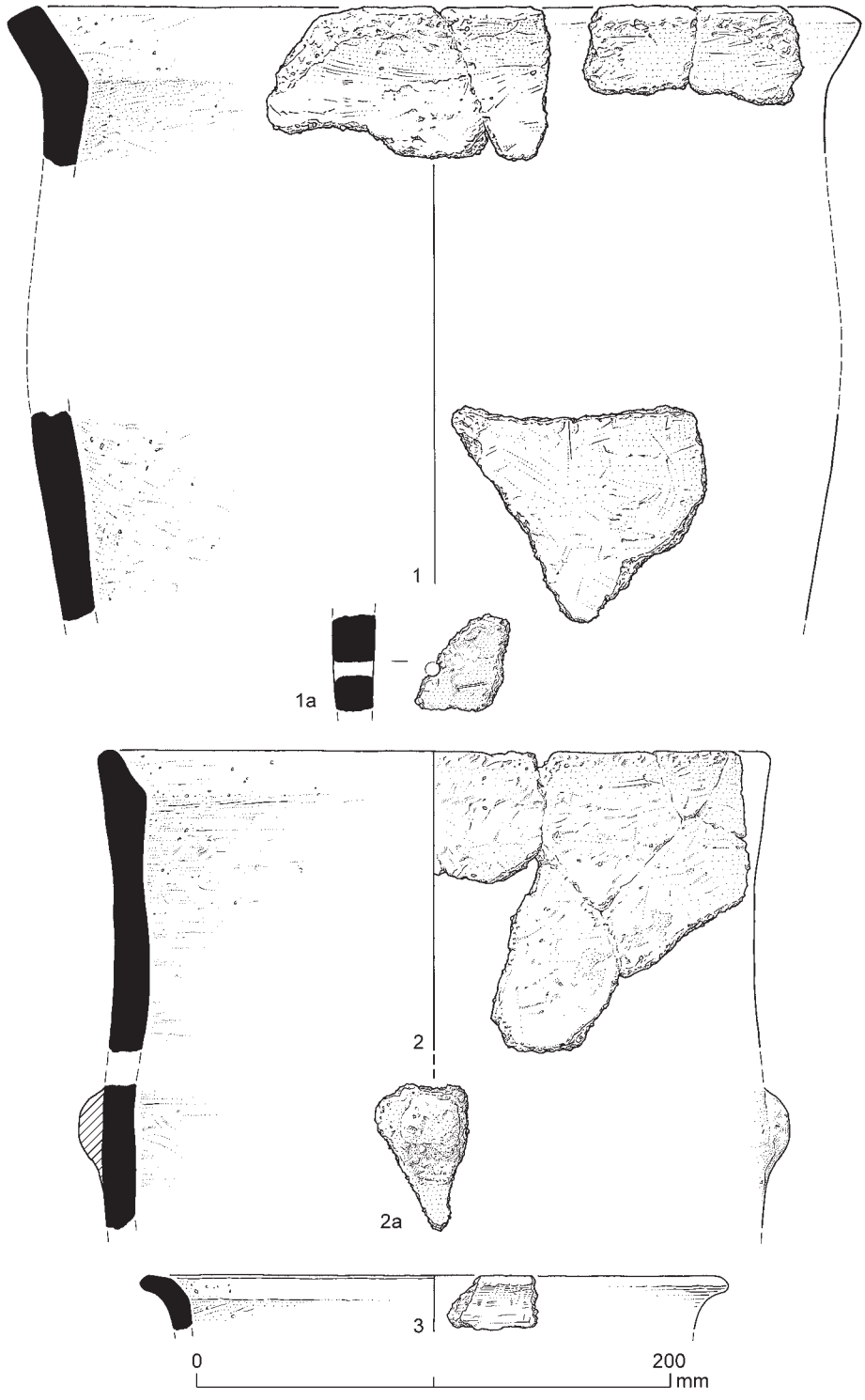

*Fig 6 Middle Bronze Age pottery **P1**, **P2** and **P3** from hollow [3]. Scale 1:3. (Drawing: Jane Read.)*

content approximately 70 per cent. No marine sand evident. Probably derived from a small pocket of clay weathered down from the granite bedrock.

The vessels

P1 (Fig 6) Everted flat-topped rim with internal bevel, approximately 330mm in diameter, with simple, slightly curved, biconical shape. About one third of the rim diameter is present and probably about a third of the vessel as a whole. Three sherds with parts of perforations made before firing appear to be from this vessel (one drawn as **P1a**), but their position on the vessel is uncertain: perforations appear occasionally on Scillonian Bronze Age vessels, as on Nornour P95 (Butcher 1978, fig 31).
P2 (Fig 6) Rounded rim with internal bevel, approximately 270mm in diameter; vessel shape slightly curved, biconical. Eight sherds make up approximately one third of the rim diameter, and probably about a third of the vessel is present. A single imperforate lug, squarish in shape with rounded profile, appears to come from the girth of this vessel (**P2a**), and may have been one of either two or four originally present.
P3 (Fig 6) Everted rim with slight internal bevel, probably approximately 225mm diameter, of appropriately finer fabric; only a few featureless sherds belong to this vessel.

The granite derived fabric is the first of those examined for the Isles of Scilly by Roger Taylor to be suggested as coming from a weathered granite pocket. Those from Dolphin Town, Tresco (Quinnell 2009, 109–11), and from Higher Town, St Agnes (Quinnell, forthcoming), were of a rather siltier clay containing inclusions of crushed granite and of beach sand respectively.

Fired clay weight

Seven fragments weighing 22g from context (2) and one, 37g, from context (4) are made of the same fabric as the pottery but oxidised. That from (4) is part of a small perforated bun about 100mm across and 40mm thick: it is generally similar to, although smaller than, the objects usually interpreted as 'loom weights' or sometimes spindle whorls on Middle Bronze Age mainland sites; for example, Trethellan Farm, Newquay (Nowakowski 1991, fig 55, no 77). No similar object has previously been published from the islands.

Stonework

S1 (Fig 7), context (2), infill of hollow [3]. Muller, medial segment 175mm across, 150+mm long, 70mm thick, surface worn almost flat; this surface has re-dressing pecking which is still quite fresh. Upper surface either dressed or worn smooth over all of its surviving area. Non-megacrystic biotite muscovite granite, weathered and comparatively soft, which would have facilitated the dressing of the upper surface. A softer granite would also provide a better grinding surface because use keeps this uneven as mineral grains fall out and this maintains a good grinding surface. Damage marks indicate deliberate breakage.
S2 (not illustrated), context (4), fill of pit [5]. End of muller with similar profile to S1, 205+mm long, 190mm wide, 100mm thick, surface worn but more curved than **S1**. Non-megacrystic biotite muscovite granite, similarly weathered to **S1**. End of an oval boulder; the upper surface has areas of pounding damage which may have resulted in the object breaking across.
S3 (Fig 7), context (2), infill of hollow [3]. Cobble, triangular, suitable handhold size, 105mm × 100mm × 70mm thick; one surface worn from rubbing use with some pecking in the centre; corners a little damaged in use. Fine grained aggregate of quartz and chlorite with some fine quartz veins. Beach cobble, possibly deriving from some offshore source around Scilly.
S4 (not illustrated), context (2), infill of hollow [3]. Broken cobble with parallel flat surfaces, 170+mm long × 110mm wide × 60mm thick; one flat surface has some use as rubbing stone, some battering around periphery. Hammerstone use. Medium- to fine-grained muscovite granite.
S5 (not illustrated) context 2, infill (2) of hollow [3]. Broken small granite beach cobble 45+mm × 35mm × 25mm, possibly used for rubbing.
S6 (Fig 8), context (4), fill of pit [5]. Chunk of cavernous textured rock composed of feldspar and black schorlaceous tourmaline, no apparent quartz; feldspar distinctly crystalline, probably a metasomaticaly altered granite. Survives 240mm × 170mm by 120mm thick. Part of a circular depression 120m across and 65mm deep worked on one side with a smaller depression on the opposite side. Most probably a broken weight. Rock selected for cavernous quality which makes for ease of working, Probably found on a local beach.

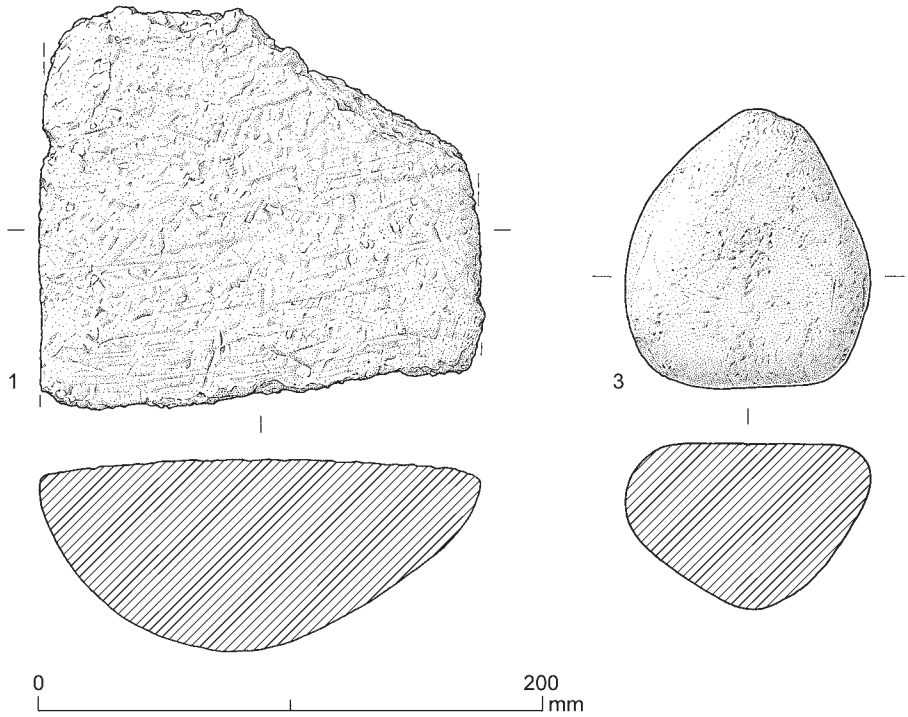

*Fig 7 Stonework **S1** and **S3** from hollow [3]. Scale 1:3. (Drawings: Jane Read.)*

*Fig 8 Stonework **S6** from pit [5]. (Photograph: Henrietta Quinnell.)*

S7 (Fig 9), context (4) fill of pit [5]. Block rough-dressed to a trapezoidal shape, 340mm × 185/230mm × 100mm; a broad groove 90mm long and 40mm wide on one surface, with wear along its length. Quartz feldspar porphrytic elvan, feldspar up to 15mm long, predominantly 5–10mm, quartz more equi-dimensional 1–2mm, very fine grained matrix; abundantly feldspathic for an elvan; slab of surface rock. The function of this artefact is not known.

Comment

All the stonework was sourced locally and demonstrates a detailed understanding of the suitability of local materials available for different purposes. The two mullers **S1** and **S2** are of the very large size found in the later Bronze Age assemblage at Higher Town, St Agnes (Quinnell, forthcoming), and, like these, demonstrate decommissioning by deliberate breakage. Such breakage, frequently found in mullers from structured deposits, has received extensive comment by Watts (2014). **S3–5** are 'rubbing stones', general-purpose tools with a probable principal use in leather preparation. These are very common on prehistoric sites; these examples, like those from Higher Town, showed some additional use as hammerstones. **S6** is best interpreted as a weight. Published prehistoric stone weights are rare on Scilly, the best examples being those of rather smaller size from Nornour (Butcher 1978, fig 42).

*Fig 9 Stonework **S7** from pit [5]. (Photograph: Henrietta Quinnell.)*

Table 1 Charcoal from context (2)

	Feature number	*[3]*
	Context number	*(2)*
Quercus sp.	oak	1
Cytisus/Ulex	broom/gorse	11r

Wood charcoal

Dana Challinor

A small bag of charcoal was recovered from a sample taken from layer (2). Standard methodological procedure was 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. The absence of large pores ruled out the possibility of confusion with *Ulmus* sp. (elm), which has some characteristics common to the Leguminoseae taxa. There were also some other fine fragments of twig or root wood which were too small to be positively identified, but exhibited diffuse porous characteristics similar to the Ericaceae (heather family) or Maloideae type (hawthorn group). One modern weed seed and rare pupa cases were observed.

Radiocarbon dating

Two samples from internal residues on pottery sherds were submitted for Accelerator Mass Spectrometry (AMS) dating at the Scottish Universities' Environmental Research Centre (SUERC). The determinations for the two samples are shown in Table 2. The probability distributions for the radiocarbon determinations have been calculated using OxCal 4.2. The 95 per cent level of probability is used throughout this report.

Table 2 Results from the Parting Carn radiocarbon dating

Feature	*Lab. no*	*Material*	*Age BP years*	*Calendrical years 95.4%*
Hollow [3]	SUERC-55169	Residue	3074 ± 31	1418–1260 BC
Hollow [3]	SUERC-55170	Residue	2973 ± 31	1285–1057 BC

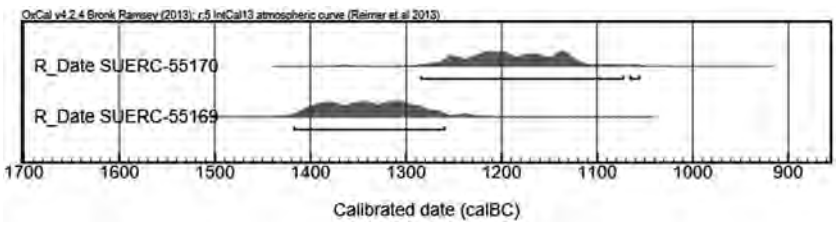

Fig 10 Radiocarbon determinations.

Discussion

Most known prehistoric settlements on Scilly are distributed around the coastlines of the islands, where excavation has been restricted to narrow strips close to the modern cliff edge. There has been comparatively little archaeological study of the interior of the islands, although an evaluation of geophysical anomalies has revealed evidence of settlement activity provisionally dated to the Late Bronze Age at Normandy Farm, St Mary's (Mulville *et al* 2007, 26–35), while excavations in 2009–10 revealed a Late Bronze Age settlement near Higher Town, St Agnes, some 200m inland from the present coast (Taylor and Johns, forthcoming).

The Parting Carn site provided a rare opportunity to date and study a small assemblage from an inland location which could be tied to a single point in time. This has allowed the dates to be transferred with confidence to the artefacts and is an important building block in helping to understand the Bronze Age ceramic sequence for Scilly.

The radiocarbon determinations 1420–1260 cal BC (SUERC-55169; 3074±31 BP), and 1285–1060 cal BC (SUERC 55170; 2973±31 BP), are both derived from internal ceramic residue on pot sherds, probably although not certainly from towards the base of **P1** and **P2** respectively. These dates provide a broadly Middle Bronze Age date – from the thirteenth to the eleventh century cal BC – for the assemblage from hollow [3]. It appears highly unlikely that sherds of vessels of a different date are present in this feature.

Broad comparanda for **P1**–**3** occur in the assemblage from Dolphin Town, Tresco, part of which is associated with a ceramic residue date of 1420–1130 cal BC (Wk-19902; 3045±42 BP) (Taylor and Johns, 2009–10, 120–1). The Dolphin Town pottery report includes a discussion of lugged Middle Bronze Age Scillonian vessels (Quinnell 2009–10, 112–5) while more recent work related to the settlement at Higher Town, St Agnes (Quinnell, forthcoming), argues that lugged vessels may belong to the earlier rather than the later Middle Bronze Age. If this argument is supported by future work, then the earlier part of the radiocarbon dating for **P1**–**3** may be appropriate.

Nothing about the arrangement of the finds in hollow [3] suggests structured deposition but their fresh condition indicates rapid covering and therefore deliberate burial. The size of **P1** and **P2** indicates use for cooking and for storage, the smaller **P3** for cooking or for serving (Woodward 1995). The practice of depositing broken ceramics near roundhouses suggests that there may have been occupation nearby (*cf* Johns *et al* 2012, 86). Certainly the site is in a sheltered location with access to both terrestrial and coastal resources so would have been a favourable place for settlement.

It is unclear whether the charcoal in the hollow derived from wind-blown material, captured in a dip of the old land surface, or from a waste deposit. Given the lack of material the former seems more likely. In either case, the taxa identified would have been locally available. Oak is recorded from early prehistoric pollen records and also in the charcoal assemblages of prehistoric and later periods in Scilly (Ratcliffe and Straker 1996, 33; Charman *et al* 2016). Pollen of heathland plants is rare, but the identifications of charcoal of heather and gorse or broom at Bonfire Carn, Bryher, and Porth Killier, St Agnes, indicate that they were used as fuel from as early as the Middle Bronze Age (Ratcliffe and Straker 1996, 33). Whether or not the gorse or broom charcoal from Parting Carn represents deliberate use for fuel, it does suggest that heathland was present in the vicinity during the Middle Bronze Age. This is reflected in pollen sequences from other sites which indicate that woodland clearance on the islands had largely been completed by *c* 900 cal BC (Charman *et al* 2016, 196–7, 212).

Acknowledgements

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The Cornwall Archaeological Unit project number was 14657. The archive has been deposited at the Isles of Scilly Museum, Church Street, St Mary's.

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A Late Bronze Age pit, burnt bone and stones at Manuels, Quintrell Downs, Newquay, Cornwall

ANDY M JONES AND RYAN P SMITH

with a contribution from RICHARD MIKULSKI

In December 2013 archaeological investigations were carried out at Quintrell Downs, near a large cropmark enclosure at Manuels, in advance of the construction of a housing estate. A few small pits were uncovered and were notable for containing selected stones. One pit contained some probable cremated human bone, which gave a radiocarbon determination in the period 997–844 cal BC. This paper considers the wider context of the pit and its significance and also discusses the undated pits, which are also likely to have prehistoric origins.

In 2013 Cornwall Archaeological Unit was commissioned by Dawnus Construction to undertake an archaeological watching brief at Quintrell Downs, near Newquay, in advance of a housing development. Various archaeological features were uncovered, including a number of pits which are reported on here.

Location and background

The project area (SW 84617 60160) is located on the south-west side of Quintrell Downs within the parish of Colan (Fig 1), on a gentle south-east facing slope (65m to 62m above sea level) at the eastern end of a ridge. Prior to the development the field was down to pasture and had been used for grazing. The field had been ploughed in the past and the Royal Cornwall Show was held in it in 1951 (Taylor 2013).

The settlement of Quintrell Downs is of post-medieval origin, although much expanded in the last 50 years, and the area in which it is situated was still a mixture of open rough ground and enclosed fields at the time of the 1st edition Ordnance Survey 25 inch to 1 mile map of *c* 1880. Both Quintrell Downs and the development area itself fall within a historic landscape character zone that has been classified as Recently Enclosed Land (Cornwall County Council 1996); that is, land which was enclosed from rough ground in the eighteenth or nineteenth centuries. It is often found to contain upstanding archaeological sites such as Early Bronze Age round barrows (Kirkham 2011, 82).

In fact, in the immediate area of the development the field-name 'Burrow Down' may refer to a removed Bronze Age barrow (Cornwall Historic Environment Record reference number MCO 2277), the location of which is now lost. Approximately 250m to the west at Manuels, on the highest part of the ridge, is a very large, multiple-ditched cropmark enclosure (MCO 8228), the eastern side of which is partially fossilised in a hedge boundary. This enclosure has not been investigated archaeologically but is probably of

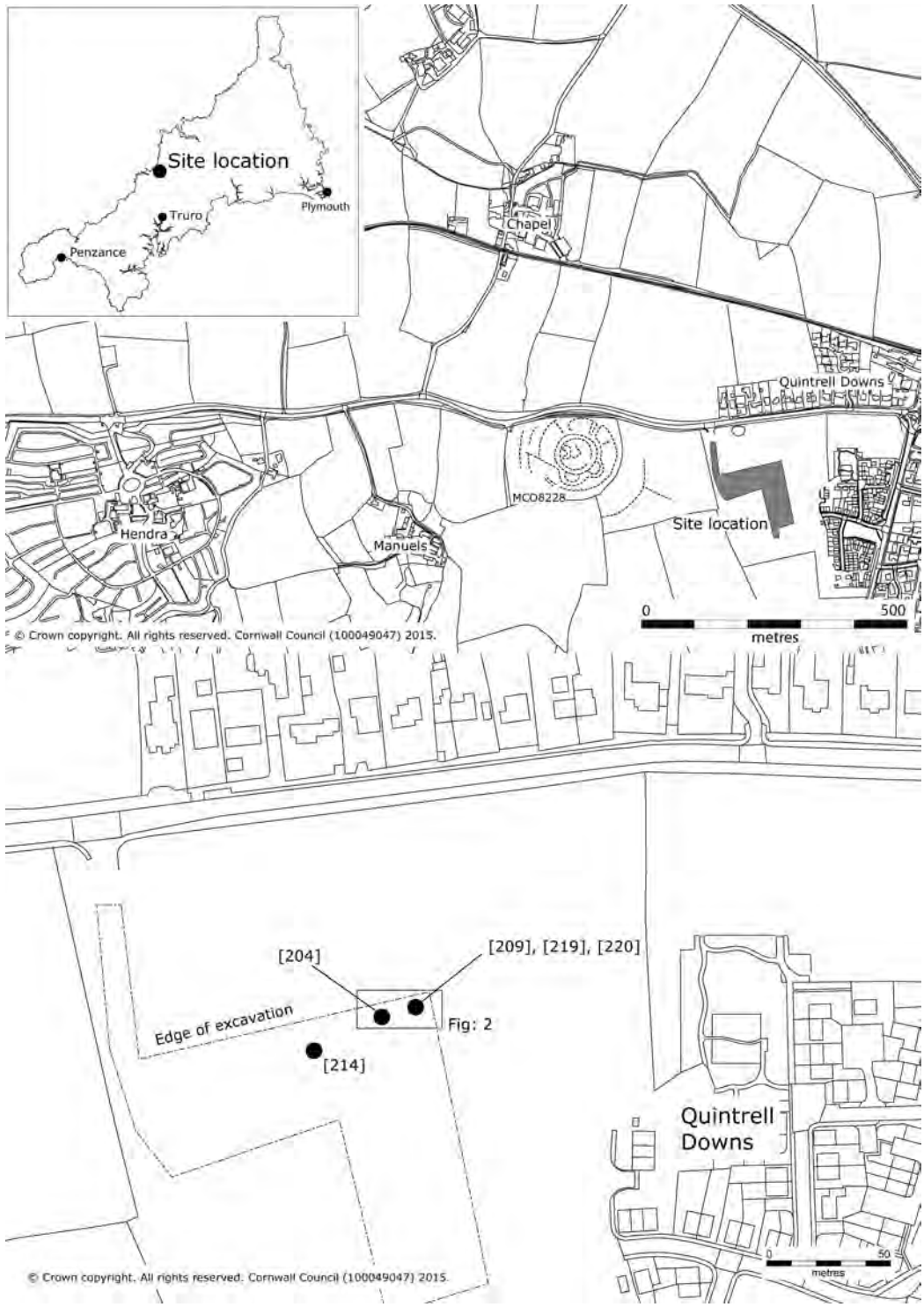

Fig 1 Top, location of the site and enclosure MCO8228 at Manuels; bottom, the overall distribution of the excavated pits.

first millennium cal BC or Romano-British date (see discussion below).

Although the site itself is situated in what was rough ground, it is encircled by farming settlements of medieval origin. The settlement at Manuels, approximately 550m to the west of the project area, was first recorded in AD 1289 as 'Maenhulwols' (Gover 1948). The name is Cornish and contains the elements *men* meaning 'stone', and *huel-gos* meaning 'high clump' (Padel 1985, 162, 237). Further to the west is Hendra (MCO14821), which was first recorded in 1221. The settlement of Chapel (MCO 13936) 500m to the north west was first recorded in 1302 and approximately 400m to the south of the site is the settlement of Trethiggey (MCO 17778) (not illustrated), first recorded in 1284.

Results from the watching brief

The archaeological watching brief recorded a number of features, including modern postholes, tree throws, removed field boundaries, probable natural hollows and pits. A single struck flint was recovered from the topsoil as an unstratified find. This find is not diagnostic and is only indicative of activity in the area during the Neolithic or earlier Bronze Age.

All of these features are described in an archive report (Smith 2014). This paper reports upon a number of pits which are likely to be of prehistoric date and in particular on a cluster of three intercutting pits, one of which, pit [209], produced a small amount of cremated bone that has been dated to the Late Bronze Age.

The five pits discussed in this paper were located at the northern end of the project area and extended in a rough east-west line over approximately 50m (Fig 2). The three eastern pits, [209], [219] and [220], appeared to be an intercutting cluster. The only finds were burnt bone in pit [209] and an undiagnostic flint in pit [214], which could have been redeposited.

Isolated pits [204] and [214]

Pit [204]

Pit [204], about 14m west of the eastern pit cluster, was sub-circular in shape, 0.54m in diameter and 0.21m deep. The cut had a profile with near vertical sides and rounded bottom. The fill, (203), was a dark grey silty clay. No artefacts were recovered but the pit did contain six large quartz cobbles, which filled most of the space within it (Fig 3). The majority of these were smooth and appeared to be waterworn.

Pit [214]

Pit [214], the westernmost pit, was sub-oval, 0.8m long, 0.7m wide and 0.15m deep. The cut had a steep-sided profile, with an uneven base. The top fill (212) was a dark silty layer which contained an undiagnostic piece of flint, probably a waste

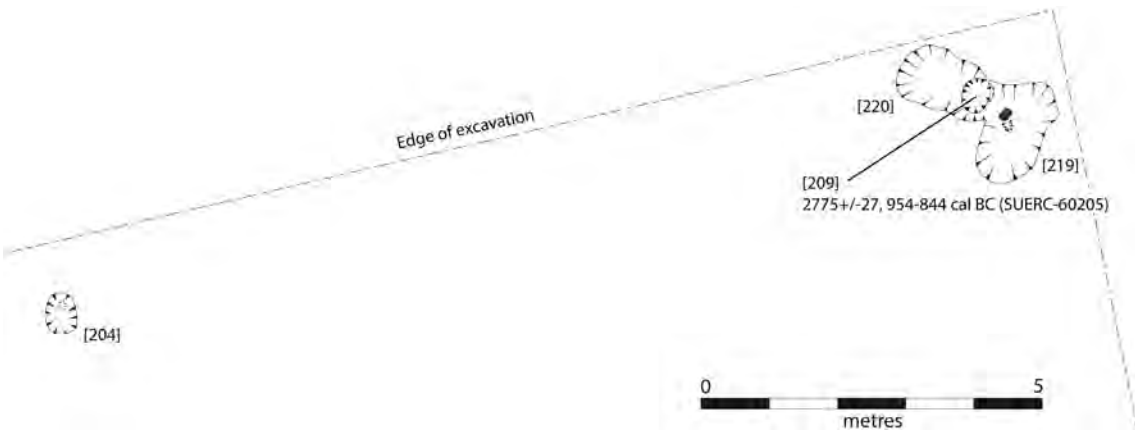

Fig 2 Plan of pits [204], [209], [219] and [220].

Fig 3 Pit [204], view from the east showing smooth quartz cobbles inside it.

Fig 4 Photograph from the south showing the pit cluster, [209] (deep central feature fully excavated) [219] and [220] (partly excavated either side).

flake. The lower fill (213) was a pale grey clay mixed with a dark deposit and quartz pieces which are likely to have been derived from the natural geology.

The pit cluster [209], [219] and [220]

The three pits forming this cluster overlapped with one another. Pit [209] was the central and deepest, pit [219] the easternmost and shallowest, and pit [220] the westernmost (Fig 4). The fills were identical to one another and it was not possible to determine a stratigraphical sequence; they may be contemporary with one another.

Pit [209]

Pit [209] was sub-circular, approximately 0.4m in diameter and 0.45m deep. The cut had a profile which was steep sided, with a rounded base. The

pit contained fills (202), (206), (207) and (208). The top fill (202) was similar to the natural subsoil and fill (206) was a pale redeposited natural clay; both were devoid of artefacts. However, fill (207), a dark grey-brown clay silt, contained fragments of cremated bone and further fragments of bone were also found in the bottom fill (208), a dark grey compact clay silt. Charcoal flecks were also present in this layer. A radiocarbon determination was obtained on the burnt bone, 2775 ±27 BP, 997–844 cal BC (SUERC-60205), which dates the pit to the early first millennium cal BC.

Pit [219]

Pit [219] was a shallow depression. It was sub-circular, approximately 1.3m long, 0.7m wide and 0.15m deep. The cut had shallow sides and a concave bottom. The fill was identical to (202), the upper fill of pit [209]. The fill produced no artefacts but contained two smooth quartz cobbles.

Pit [220]

Pit [220] was a poorly-defined irregular oval feature, up to 0.8m in diameter and 0.15m deep. The profile of the cut had steep concave sides and an uneven bottom. It was again filled by deposits which were identical to layers (202) and (207) in pit [209]. The pit did not contain artefacts; however, 13 stones of various sizes and shapes were recovered from it. These included two granite pieces, one blue coloured mudstone and ten pieces of quartz.

Cremated bone

Richard Mikulski

Small quantities of cremated bone were recovered from fills (207) and (208) within pit [209].

Methodology

All fragments were examined macroscopically, using a hand lens (x10) where necessary. All analyses, where possible, were undertaken in accordance with current established standards and guidance (Brickley and McKinley 2004; English Heritage 2002).

Results

The bone consisted of a small quantity of white, reasonably well-calcined cremated bone fragments. General preservation was poor, with all fragments moderately to significantly eroded.

The majority, by weight, of the cremated fragments were greater than 5mm in size (85 per cent of the total mass), with 52 per cent of the total mass exceeding a measurement of 10mm (Tables 1 and 2). The maximum fragment size (maximum length) was 28.6mm.

The total weight of the sampled cremated material from contexts (207) and (208) was 33.9g, which is far below the typical 57–3000g range for an undisturbed burial of a single cremated adult from a prehistoric context (McKinley 2000).

A separate small bag of material recovered from wet sieving and thought to be cremated bone contained an additional 15.2g of charred material, thought to include at least some cremated bone. This additional material consisted of fragments under 5mm in size and consequently more specific identification was not possible.

The majority of fragments appeared to constitute unidentifiable cortical bone, but were of similar character and density to highly fragmented cremated human bone.

Three fragments from 10mm fraction were tentatively identified as possibly deriving from the cranium (with possible evidence of both the outer table cortical bone and exposed diploë bone). Several fragments were also identified as possibly belonging to rib shafts, but again this attribution is not certain.

Table 1 Distribution of fragment size by mass (g)

	Fragment size (maximum length)			
	< 5mm	*5–10mm*	*10–15mm*	*> 15mm*
Mass (g)	5.2	11.1	5.4	12.2
% (of total mass)	15.33	32.74	15.93	35.99

Table 2 Distribution of fragment size by number

	Fragment size (maximum length)			
	< 5mm	*5–10mm*	*10–15mm*	*> 15mm*
Mass (g)	–	118	26	7
% (of total mass)	–	78.14	17.22	4.64

Only a single large fragment (28.6mm and 1.3g) appeared to retain any indication of the structure of the bone it originally belonged to. This piece derived from a long bone with a sub-angular section, although heat action had obviously affected the original shape of the bone. There was also evidence of incomplete transverse fracturing along the cortical bone surface in this fragment.

Due to the small fragment size in general and the level of post-depositional erosion of the assemblage, more specific identification was not possible.

Conclusion

The bone could not be definitely identified as human, although the density and form of the fragments were typical of cremated human bone and some of those from contexts (207) and (208) were identifiable as potential cranial and long bone fragments. Only a single fragment (the largest) could be positively identified as belonging to a long bone. If the presence of cranial material was confirmed (for example, using microscopic analysis), this might suggest the material is unlikely to be animal derived.

The reasonably well-calcined nature of the bone from pit [209] suggests deliberate cremation. Bone becomes white and well-calcined when exposed to temperatures above 600°C, which is usually considered to indicate an efficient cremation process, employing a well-made pyre (Brickley and McKinley 2004). The incomplete transverse fracture patterning observed in the largest bone fragment suggests that the bone was wet or non-dehydrated (that is to say, fresh, either fleshed or de-fleshed) when it was subjected to high temperature burning / cremation.

The sample of cremated bone should therefore be considered as potentially human, either as a burial where the majority of bone has not survived or as only a token deposit.

Radiocarbon dating

In the absence of artefacts the key aim was to obtain secure dating evidence from pit [209] as it had produced a small quantity of probable cremated human bone.

The cremated bone was the only organic material recovered from the site which was suitable for radiocarbon dating. It was submitted to establish when the cremation had taken place and to build up knowledge of funerary practice in Cornwall.

A sample of burnt bone from pit [209] was submitted for accelerator mass spectrometry dating (AMS) at the Scottish Universities Environmental Research Centre (SUERC) (Table 3). The probability distribution has been calculated using

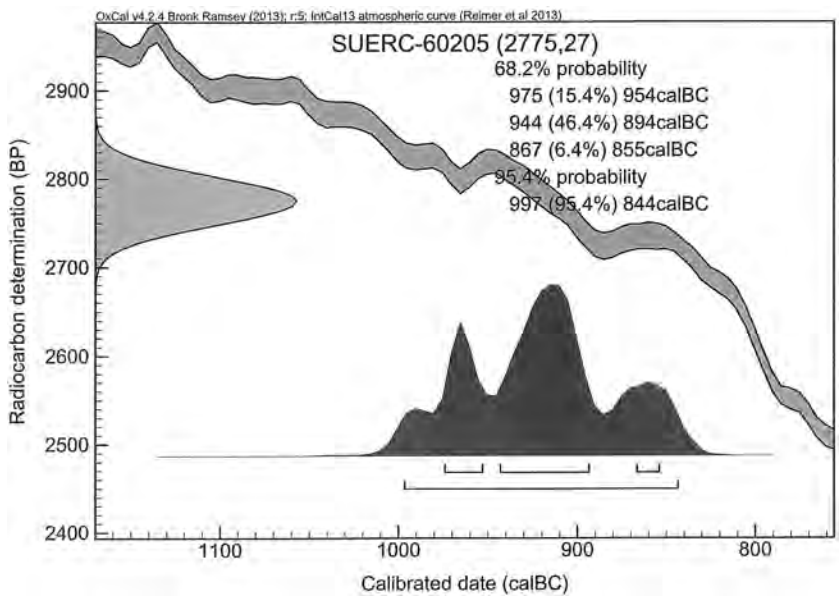

Fig 5 Results from the radiocarbon dating.

Table 3 Radiocarbon dating from pit [209]

Feature	*Lab. no*	*Age BP*	*Material*	*Calendrical years 95.4%*
Pit [209], fill (207)/(208)	SUERC-60205	2775 ±27	Cremated bone fragment	997–844 BC

OxCal (v4.2) and all radiocarbon determinations are quoted at 95 per cent throughout this paper unless otherwise stated.

Results

The radiocarbon determination (Fig 5) fell in the early centuries of the first millennium cal BC, or the Late Bronze Age. This is a period for which there are few known burial deposits in the south west and the significance of the dating is discussed below.

Discussion

Although the archaeological watching brief did not lead to the discovery of any major archaeological sites, a small number of the excavated features are of interest and one, pit [209], is of particular importance because the cremated bone recovered from within it represents a very rare instance of probable human remains dating to the Late Bronze Age being discovered.

The following discussion briefly considers the wider regional context for the pit cluster, the characteristics of the pits themselves and an interpretation of their possible functions.

The Late Bronze Age context in Cornwall

The radiocarbon determination from pit [209], 2775 ±27 BP, 997–844 cal BC (SUERC-60205), falls in the Late Bronze Age and by implication the remaining pits in the cluster ([219] and [220]) also belong to this period. This date is significant for two reasons.

The first area of significance is that the date contributes to a slowly emerging picture of activity in the early first millennium cal BC. Until recently there was very little evidence for Late Bronze Age activity in Cornwall (*c* 1000–800 cal BC) beyond the discovery of metalwork finds, which are for the most part without associated contexts (for example, Knight *et al* 2014). This picture is beginning to change as over the last decade a small number of settlements consisting of post-ring roundhouses and other structures have been recorded. These include an open settlement comprising four roundhouses at Higher Besore, Kenwyn, and a porched roundhouse partially set within a palisade enclosure at Scarcewater, St Stephen-in-Brannel (Gossip, forthcoming; Jones and Taylor 2010, 35–9). At Trenowah, St Austell (Johns 2008), an unenclosed rectangular building, although devoid of diagnostic artefactual associations was, through radiocarbon dating, found to be of Late Bronze Age date. By contrast, at Tremough, Penryn, several rectangular structures, together with burnt mounds and pits, were found within a substantial ditched enclosure or ring-fort, which has been dated to *c* 1000–800 cal BC (Jones *et al* 2015, 38–48). The characteristic pottery of this period (*c* 1000–800 cal BC), Late Bronze Age Plain Ware, is also known from the long-lived settlement site at Bodrifty, Madron (Quinnell 2011, 233), and residually at Trevelgue Head cliff castle, Newquay (Jones and Quinnell 2011, 223). In spite of these discoveries there are still far fewer identified occupation sites than are found in the preceding Middle Bronze Age (*c* 1500–1000 cal BC).

The second point of significance resides in the fact that the cremated bone may provide information concerning the treatment of human remains in the Late Bronze Age, which regionally and nationally is a period when evidence for formal burial is scanty (for example, Fitzpatrick *et al* 2008, 126; Schulting and Bradley 2013). During the Middle Bronze Age burials within barrows became increasingly uncommon and human remains, usually in small amounts, began to appear within settlements. At Trethellan, Newquay, for example, a body was found buried beneath a hearth within a Middle Bronze Age roundhouse (Nowakowski 1991). By contrast, at Scarcewater a small quantity of cremated bone was recovered from a ceramic vessel in a pit outside the roundhouse settlement and at Gwithian cremated remains were found both within field walls as well as in one of the buildings (Jones 2015; Nowakowski *et al* 2007). More recently, small amounts of cremated bone and pyre material were found within a pit group

at Tresavean, Gwennap (Jones and Thorpe 2014). However, as with widespread settlements, evidence for the deposition of human remains in Cornwall disappears at around 1000 cal BC and it is not until the Early to Middle Iron Age (for example, Jones and Quinnell 2014, 149–52) when the cist tradition (re)emerges that formal burial practices again become identifiable in the archaeological record.

The latest closely dated burial in Devon is a cremation from within a stone-capped pit at Rose Ash in the north of the county. Unlike the fragmentary remains from Quintrell Downs, those from Rose Ash represented the partial cremation of an adult which had been placed within a plain vessel and they therefore denote a formalised burial (Wainwright 1980). However, although original calibration allowed for the possibility that it was of later Bronze age date, the recalibration of the radiocarbon determination on charcoal from inside the urn to 2980 ±70 BP, 1402–1013 cal BC (HAR-2992) means that this burial is significantly earlier than Quintrell Downs and falls within the Middle Bronze Age.

Securely dated evidence for the burial or deposition of bone in the wider south-west peninsula at around 1000–800 cal BC is currently without parallel. At Dainton in south Devon, excavation of cairn B4 led to the recovery of Bronze Age or Early Iron Age pottery and fragments of human and animal bone (Willis and Rogers 1951, 80–1). Another cairn, site 2, contained fragmentary human bone and may have become the focus for the deposition of Late Bronze Age metalworking debris into a pit near to the southern edge of the mound (Needham 1980, 179; Silvester 1980, 20). The human remains from Dainton are, however, not well dated.

The recovery of cremated bone from inside pit [209] is therefore significant as it implies that in Cornwall during the Late Bronze Age small amounts of burnt bone continued to be deployed in ritualised contexts rather than in formal burials.

Interpreting the pits

The pit cluster

The pit cluster comprised two shallow sub-circular pits, [219] and [220], and a central deeply cut feature, pit [209]. All were filled with near identical deposits of dark grey-brown clay silt which may imply that the pits were broadly contemporary with one another, but also means that it was not possible to establish a stratigraphic sequence to determine which of the features was the earliest. The paucity of artefactual evidence also makes any relative dating impossible.

If the focus of the pit cluster was the central feature pit [209] into which cremated bone was incorporated, then it is probable that the remaining pits represent near contemporary activity. Pit [219] was a shallow depression and pit [220] a poorly-defined feature (above). It is possible that they were shallow 'scrapes' which were created during the digging of pit [209]. Some selected stones do seem have been placed into pits [220] and [219] – one contained quartz cobbles and the other pieces of granite, which outcrops several kilometres to the east of the site – but otherwise there was no evidence for any deliberate backfilling. The near identical deposits found within all three pits suggests that they were filled at the same time, although care seems to have been taken not to spill any of the cremated bone beyond the confines of pit [209] and, by contrast, not to place any of the assorted stones outside the cut for pit [220].

It is possible that pit [209] could have been marked above ground. Although there was no post-packing or trace of a post-pipe to confirm that the pit had held a post, the depth and shape of the cut mean that it could have done. Both standing stones and timber posts are associated with the deposition of human remains throughout the Bronze Age in Britain, although timber posts dating to the Late Bronze Age are usually located on the margins of wetland areas and are frequently associated with the deposition of metalwork (Williams 1988, 27; Parker Pearson 2012, 184–5; Pryor 2001, 330–49; Schulting and Bradley 2013). Single posts of Bronze Age date are unusual in Cornwall, although at Trenoweth (Illogan), near Portreath and close to the north Cornish coast, a much larger pit dating to the Early Bronze Age was interpreted as having held a substantial timber post which had been deliberately removed from its socket (Reynolds 2006). Individual standing stones are commonly found across the county, and several have been found to have deposits of cremated bone located near to them (Jones 2016). For example, at Pridden, St Buryan, a small pit containing 'splinters' of bone was found close to the foot of the stone (Borlase 1872, 101). However, although not radiocarbon dated, these deposits of human bone are, based on occasional ceramic associations (*ibid*, 104), usually

considered to be of Early rather than Late Bronze Age date. The placing of human remains close to, but not beneath the stones means that they may well post-date the erection of the standing stones.

By contrast with the evidence from both timber posts and standing stones, the bone in pit [209] is likely to have entered the open pit early on: fragments of bone were identified in (208), the fill in the base of the cut. The bone could therefore have been inserted into the open pit before a post was inserted into it. Given the widely occurring evidence for the ritualised treatment of human remains in the Late Bronze Age (Schulting and Bradley 2013) and the long-standing regional tradition of depositing small amounts of bone into a range of contexts, it is likely that bone was considered to be imbued with supernatural properties. Its deposition could therefore have represented an act of dedication and the same may have been true of the stones in the adjacent pits [219] and [220].

If the burnt bone and possibly the stones were marking the erection of a post, then why should a timber upright have been erected in a field without any major archaeological feature or sign of obvious Late Bronze Age settlement activity? Unlike the wetland sites which have produced human remains, the pit at Quintrell Downs was not located at a transitional point in the landscape between wet and dryland conditions and had no associated metalwork deposition. It was, however, located at the eastern end of a ridge, and one possibility is that it was related to the enclosure at Manuels (MCO8228), which is located on higher ground approximately 250m to the west. This site is a very large multiple-ditched enclosure with an approximate diameter of around 200m, and cropmark evidence and geophysical survey (Van Horn 2000) suggest that further ditches may be found to the east of the enclosure. The enclosure is very unusual and completely unlike the enclosed settlements (rounds) of the later Iron Age and Romano-British periods which are far smaller and typically have single ditch circuits (Quinnell 2004, 211–4). The Manuels enclosure is unexcavated; it is, however, possible that some multi-ditched enclosures may not have been used as occupation sites, and could have fulfilled a ceremonial function. The multiple-ditched enclosure at Bogee, St Issey, for example, has an Early Bronze Age round barrow outside it and a possible mound inside it as well (Young 2012), which would suggest that the focus of the enclosure was not for settlement. Although the dating of Manuels is not established, it has been argued that ceremonial enclosures were being constructed in Cornwall from the onset of the first millennium cal BC (Jones 2010) and recent excavations have revealed that enclosures were being constructed during the Late Bronze Age and Early Iron Age (Jones *et al* 2015, 205–8; Jones 2014). In common with Manuels, these sites are often set in elevated positions, but not too far away from settled areas, and have features such as multiple ditches or external banks which would have made them visually distinctive places in the landscape. If the enclosure at Manuels does indeed have its origins at the start of the first millennium cal BC it would be tempting to see pit [209] as holding a post marking the eastern approach to the site.

Isolated pits

By contrast with the pit cluster, the two isolated pits [204] and [214] were discrete features which had been infilled with selected stones. In the case of pit [204], a well-defined circular cut had been almost entirely filled with rounded, potentially water-rolled quartz cobbles. Pit [214] was not as neatly dug as [204] but it did contain an undiagnostic flint flake as well as a number of quartz pieces, although in this case they were not water-worn. In terms of their fills there are similarities with pits [219] and [220], both of which contained selected stones, quartz cobbles in the former and pieces of granite in the latter.

Interestingly, neither pit contained the range of artefacts or deposits which are normally found in prehistoric pits both in Cornwall and the wider south-west region (for example, Jones and Quinnell 2014, 127–34). In particular there was a complete absence of charcoal, which is a characteristic component of many of the pit fills in the region, especially those associated with barrows. Recently recorded pits include, for example, the Early Bronze Age pits at Headon Down on Dartmoor (Dyer and Quinnell 2013) and the Middle Bronze Age pits associated with pyre material at Tresavean (Jones and Thorpe 2014). The pits at Quintrell Downs therefore do not appear to have been associated with cooking or the clearing away of domestic debris. Instead, both pits, and particularly [204], seem to have been dug for the purpose of holding selected stones which had been gathered from the surrounding area. The smooth cobbles in pit [204]

are likely to have been collected from a stream or perhaps the coast and there could have been a symbolic association with water or the watery place from which they were taken. By contrast, pit [214] held a single flint and the quartz pieces were not waterworn and probably derived from a much more local source; if not accidentally included in the pit fill their significance may reside in the luminescent properties of the quartz itself (for example, Lewis-Williams and Pearce 2005, 256–60).

The dating of [204] and [214] is exceptionally difficult given the absence of any associated finds and because the placing of selected stones into pits has a very long pedigree. Pits containing lithics, for example, have been recorded elsewhere in Britain dating back to the Mesolithic period (Chatterton 2006). However, it is from the subsequent Neolithic and Bronze Age periods that pits and other ceremonial contexts containing quartz are most widely found in western Britain (for example, Darvill 2012; Neighbour 2005), and it seems likely that quartz was perceived to have magical properties and was therefore appropriate for burial in pits.

The current evidence for the formal deposition of stone artefacts in Mesolithic Cornwall is extremely sparse, with only one site at Poldowrian, St Keverne providing evidence for the placing of three pebble tools together as a group (Smith and Harris 1982). However, Neolithic and Bronze Age pits containing quartz are well documented in Cornwall, especially in association with Early Bronze Age cairns and barrows (Miles 1975; Christie 1985; Jones 2005, chapter 5), as well as in Middle Bronze Age settlement sites (Jones 2015). More rarely quartz pebbles and pieces have also been found in other Middle Bronze Age contexts which appear to have been of an overtly ritual character. For example, at Trenowah, St Austell, a pit within a shallow hollow dating to the Middle Bronze Age was found to contain 24 white quartz fragments and a single sherd of pottery (Johns 2008). The depositing of the visually distinctive smooth quartz cobbles within pit [204] also has resonances with a ring of waterworn tourmaline quartz pebbles found inside a cut-down ceramic vessel found beneath a Middle Bronze Age mound at Scarcewater (Jones and Taylor 2010, 68). In both of these cases the stones were visually distinctive and may have been considered to possess symbolic and supernatural properties.

Unfortunately, the complete absence of any associated datable finds or organic material means that neither pit [204] nor pit [214] can be dated, and beyond noting the deliberate selection of particular stones it is not possible to situate them within their wider context. The deposition of selected quartz pieces and cobbles has similarities with the selected stones found [219] and [220] which suggests a possible unity and they could all be contemporary. The waste flake in pit [214] is also indicative of a prehistoric date, possibly in the Neolithic or the Bronze Age, but it is not possible to substantiate this.

Conclusion: stones and bones

The excavations at Quintrell Downs were interesting as they provided evidence for the gathering and burial of selected stones and for the deposition of burnt bone. Unfortunately, unlike many prehistoric pits which have been excavated in Cornwall, there was no indication of burning and charcoal was exceedingly sparse. The near absence of charcoal has meant that radiocarbon dating was limited to pit [209], which contained cremated bone. Likewise the dearth of pottery or any other kind of closely diagnostic artefact from the excavated features renders relative dating impossible.

The dating of pit [209] is, nonetheless, a significant development as it provides a first glimpse of the treatment of cremated remains during the Late Bronze Age in Cornwall. This evidence suggests that following the Middle Bronze Age, bodies were still being cremated and that bone and selected stones remained a symbolically charged material which could be used to fill pits and mark places in the landscape.

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An ogam inscription from Paul, West Penwith

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with a contribution from KATHERINE FORSYTH

A piece of slate bearing an inscription in the early medieval ogam script found in Paul, west Cornwall, is the first instance of an ogam inscription on a portable artefact known from Cornwall or Scilly. The form of the characters indicates that it was created at a relatively late stage in the development of the ogam writing system. Other known examples of ogam in southern Britain are earlier and occur on large inscribed stones but similar portable items with ogam are known from Scotland, Ireland and the Isle of Man. The find represents a link between west Cornwall and the wider early medieval literate Christian culture of the northern and western parts of the British Isles.

In November 2009 Mr David Edwards, a skilled fieldwalker and metal-detectorist, examined a ploughed field just south of Paul parish church (NGR SW 46459 26933). Paul is the mother church of the West Penwith harbour village of Mousehole, an ancient landing-place west of Newlyn and Penzance and effectively the south-west limit of Mount's Bay. Mr Edwards discovered as a surface find a small piece of the local Devonian slate or 'killas', a fragment about 11 by 7 cm and barely 1 cm thick. On what might be called the 'upper' surface, some of the face had flaked off in the past but, on the comparatively smooth remaining part, there could be seen various lines; these were clearly man-made, distinct from minor wear-and-tear scratches, and apparently incised with a metal point, perhaps a knife or pin. The rest of the stone, which may originally not have been larger than, say, an A5 sheet, about 15 by 20 cm, had been broken off in the past. Omitting surface scratches, Figure 1 is an accurate depiction.

The little slate, which the owners of the land are kindly donating to the Royal Institution of Cornwall, Truro, is a remarkable find. It appears to carry an entirely genuine inscription in the writing system or script known as *ogom*, *ogham* or (preferably) *ogam*, the first to be found on a portable artefact in Cornwall or Scilly. The near-certainty is that its date lies in the latter part of the first millennium AD, somewhere between AD 600 and 1000; the strong possibility is that it was incised, in this near-coastal setting, by someone other than a native of West Penwith, or by a native who had travelled and learnt ogam elsewhere.

Ogam

The word ogam refers to a linear script or writing system employing long and short lines and, when used on any form of stone, including rough granite, avoiding all the 'curves' of Roman capitals B C D G O P Q R. Today it is broadly agreed that ogam was formed in southern or perhaps south-western Ireland, conceivably as early as *c* AD 300, certainly before the fifth century, by some individual (or group) familiar through commercial and intellectual contact with Roman Britain, and therefore with

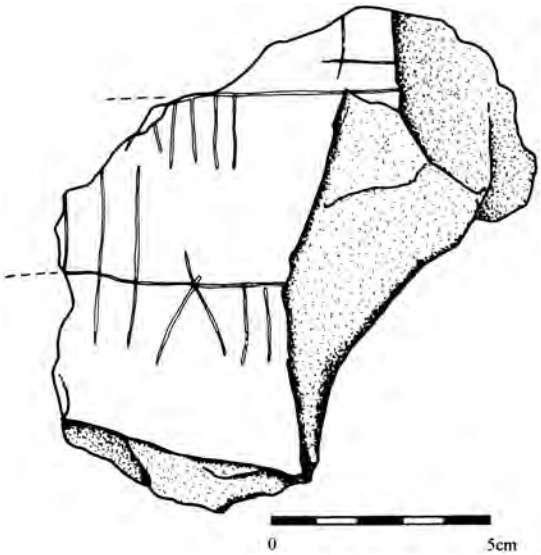

Fig 1 The ogam stone from Paul. (Drawing: Carl Thorpe.)

various forms of Roman script, notably *capitalis* (our own capitals), and with such things as Roman linear tally-marks and 'incremental' numerals (1 to 4 written I, II, III, IIII).

While ogam could have been employed on almost any surface, the surviving early examples are nearly all on stones of substantial size. Ogam stones in Ireland and parts of Atlantic Britain, notably Wales and the south west, are dominated by memorials, with anything from one to five or six proper names and formulaic words; in this respect they largely imitate the individual memorial stones of Roman Britain, which must surely have inspired the idea. Earlier ones, dating to the fourth–fifth century, are sometimes arguably pagan; later ones, up to the seventh century, arguably Christian. The standard guide is Damian McManus's *A guide to ogam* (McManus 1991), with a helpful smaller follow-up by Catherine Swift (1997). A simplified summary is given in my *Christian Celts, messages and images* (Thomas 1998, 123–31). For Dumnonia, that is pre-Norman Devon and Cornwall, full illustrated discussion of the early memorial stones with Roman (and less so) ogam scripts appears in my *And shall these mute stones speak?* (Thomas 1994). Elizabeth Okasha's *Corpus of early Christian inscribed stones of south-west Britain* (1993) contains exhaustive bibliographies for each inscribed stone but, in the present respect, is unhelpful because too many inscriptions are described as 'illegible', erroneously so in the instances of ogam. In the following discussion the preceding key or 'CIIC' numbers for individual monuments in the south west are those given by R A S Macalister in his *Corpus Inscriptionum Insularum Celticarum* (Macalister 1945; 1949) (hereafter *CIIC*).

The Dumnonian ogam stones: a summary

There are six (or just possibly seven, if Lewannick 3 is included) large inscribed stones in north-east Cornwall and south-west Devon. Note that, despite Macalister's suggestions of 'faint traces', there are not and never were any ogam markings on *CIIC* 473 St Clement (churchyard) or on *CIIC* 478 St Endellion (Doydon).

The acceptable and still-legible stones with both Roman and ogam script date from the late fifth to early seventh centuries and are mostly associated, unless recorded as having been moved, with known early Christian sites. These are personal memorials. They form an aspect of the migration and settlement of groups, Christians by now among them, from south and south-west Wales, the main entry being through the Camel estuary by Padstow. Because of earlier (*c* AD 400) Irish settlement across south-west Wales, the ogam script was known to a literate minority; in Wales and Dumnonia some Irish personal names survived in use alongside continuing Roman names (that is, names of Roman origin and form which continued in use in the post-Roman period) and British ones. Several of these south-western stones may mark the burials, in the forerunners of enclosed Christian cemeteries, of priests or clerics.

Before listing the stones in question, however, we return to ogam.

The ogam script

At this period inscriptions on stone used a 20-letter alphabet of Roman capitals, later (post-AD 600) degenerating into cursive or book-hand letters. The alphabet was

A B C D E F G H I L M N O P Q R S T V X

(where written V = our sounds for *u*, short and long, *v* and *w*). K, Y and Z were known and appear

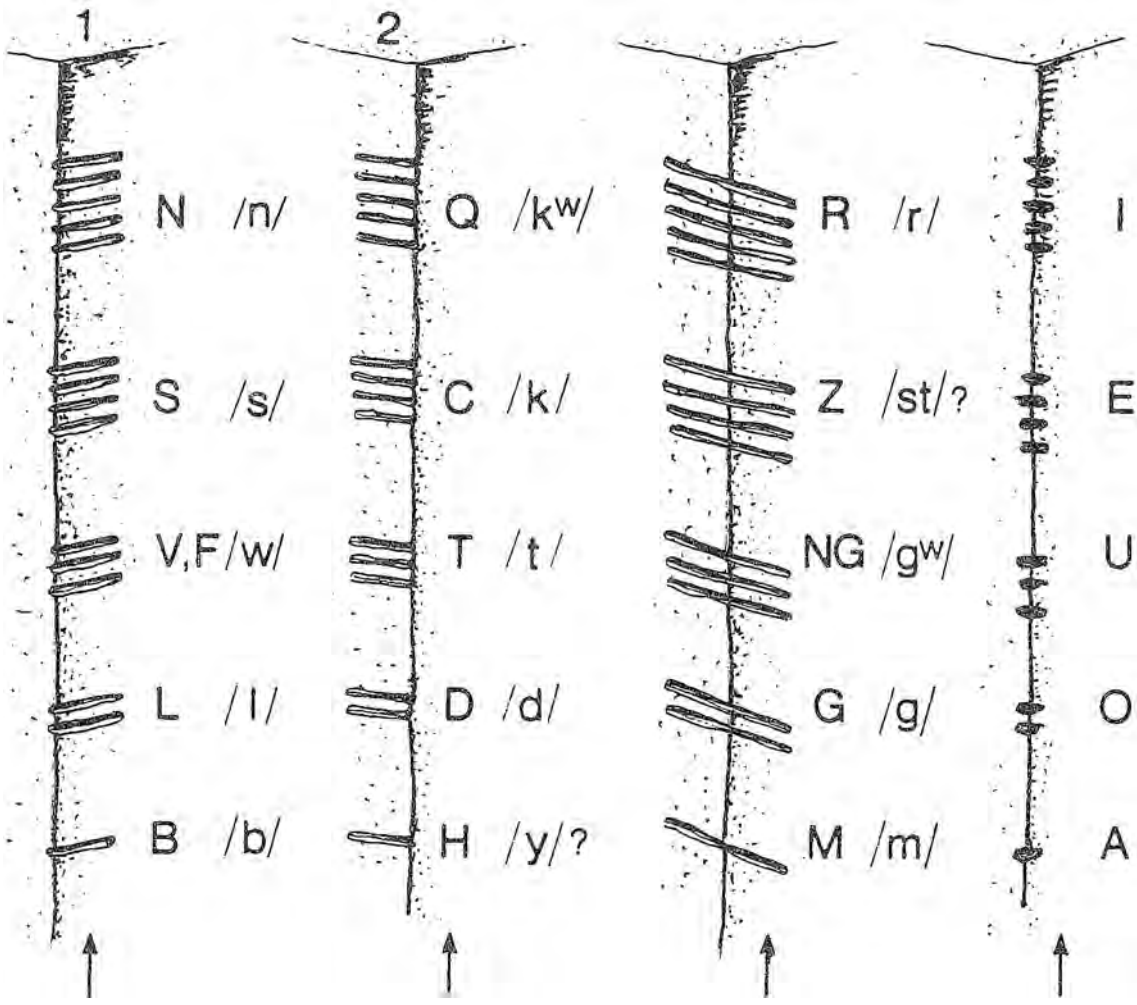

Fig 2 The ogam script, a 20-letter system as cut on the angle or arris of stones. Capitals show the usually-accepted written values as found on memorial stones; lower-case letters (for example, /k/) indicate the earliest likely Primitive Irish phonetic values (after McManus 1991). Face 1 is sometimes called the 'B-surface' and face 2, 'H-surface'. (Drawing: Thomas 1998, fig 44.)

in contemporary biblical manuscripts but were not at this stage used in such inscriptions.

Ogam, when first invented, also used 20 'letters', all linear, in four groups of five. All required a base-line or 'stem-line', either actually incised (as on the Paul slate fragment) or, rarely, implied, or, for almost all the larger inscribed stones, represented by an angle or 'arris' between the face or front surface of a stone and either of the sides. The dominant convention was that ogam was read upwards, from bottom to top, along such an arris.

While the 20-letter Roman alphabet could represent the sounds of spoken Late Latin and to a large extent those of British or neo-Brittonic (ancestor of Welsh and Cornish), contemporary spoken Primitive Irish had a different sound system – it lacked the spoken P /p/, for instance – and the ogam groups reflected this (Fig 2). The five vowels are short 'ticks' across the line: A = 1 stroke, O (2 strokes), U (3), E (4), I (5). Using the probable sound values of *c* AD 500, which, according to McManus (1991), may not have been the original

ones, B L F S N are longer strokes, at right angles to the right, and H D T C Q similarly to the left. The fourth group displays longer lines diagonally across the stem-line. One now sees the reason for suggesting that Roman numerals like I, II, III, IIII, perhaps seen on imported goods, helped to inspire the idea of ogam.

The Dumnonian inscribed stones with ogam

Mainly to emphasise the distinction between these stones and the later, smaller, ogam-inscribed slate from Paul, and also to provide a handy updated guide to the stones in question, all of which are accessible, there follows a list of the inscribed stones in the south west. These entries are preceded by Macalister's *CIIC* numbers (Macalister 1945; 1949) and also references to Thomas (1994) for more recent illustrations. Ogam inscriptions are transcribed in *italics*.

CIIC 484 St Kew

Thomas 1994, fig 15.3, photograph.

Granite 'pillow-stone' with I V S T I in small cartouche; an unusual form of letter S. Above it, first letter now missing, *(I) V S T I* in ogam. No visible stem line. Context: the very early monastery at St Kew, **Lann Docco*, encountered by Samson of Dol landing from Wales, *c* 520–530 (Thomas 1994, ch 14).

The stone was probably placed on a priest's grave; the meaning of the inscription is 'of-Iustus', a Latin (or continuing Roman) name.

CIIC 470 Worthyvale, Minster (the 'Slaughterbridge' stone)

Thomas 1994, fig 16.3, photographs.

Very large pillar now lying in stream bed. It reads, in two lines vertically,

LATINI IC IACIT/FILIUS MACARI

'(Stone) of Latinus – here he lies – a son of Macarius'.

Up the original top-right arris, ogam *L A T I N I*. Both names are continuing Roman. Context unknown, possibly an isolated Christian burial. The much-vaunted link to 'Arthur' and 'Camlann' is post medieval and unreal.

CIIC 466 Lewannick (1), in churchyard

Thomas 1994, fig 16.2, drawing.

Upright, much-eroded granite pillar. Inscription in four lines across face, which reads:

I N G E N / V I / M E M / O R I A

'The memoria [Christian grave monument] of-Ingenuus'.

Ogam up the left-side arris, reads:

I G E N A V I M E M O R

This is the same phonetic rendering of the name; *memor* is a Primitive Irish loan. The name is continuing Roman. The context of this and the next stone is the very early curvilinear Christian burial area (*lann*), surviving in the churchyard. Probably a priest.

CIIC 467 Lewannick (2), now in church

Thomas 1994, fig 16.2, drawing.

Incomplete, two pieces of granite from upright pillar, top missing. Reads vertically down, one line:

(H I missing) C I A C I T V L C A G N I

'Here he-lies; (grave) of-Ulcagnus.'

There are ogams on both angles, both reading down. That on the right is complete, *U L C A G N I*. That on the left has been botched and actually reads *U D S A G C I* (or *U D S A G Q I*); three of the letters comprise strokes going the wrong way. Context is as for *CIIC* 466. The name is Primitive Irish, again probably a priest.

It is just possible that a third stone, an incomplete pillar immediately outside Lewannick churchyard forming a separate gatepost, has remnants of ogam; these were seen by the writer and Carl Thorpe in the 1990s but are now too eroded to be made out.

CIIC 488 Buckland Monachorum, Devon

Thomas 1994, fig 16.5, photograph.

Now at Tavistock in vicarage garden. Context unknown (isolated burial, Roborough Down, near Buckland?); moved to Tavistock 1868. Large gritstone (?) pillar, inscription on face in three vertical lines reading down:

D O B U N N I / F A B R I F I L I I / E N A B A R R I

'(Stone) of-Dobunnus, *faber* – of-a-son of-Enabarrus'.

Latin *faber* probably = craftsman. Both names are Primitive Irish. On the lower left arris, reading upwards, ogam *E N A B A R R* (nominative: 'Enabarr(us)'). The son's memorial uses his father's (earlier) stone.

CIIC 489 Fardel, near Ivybridge, Devon

Thomas 1994, fig 16.6, explanatory drawing.

Excellent British Museum photographs are included in Okasha (1993, 104–5).

Context unknown; found as part of a Fardel stream bridge. Since 1861 in the British Museum. Very large thin slab. On 'front' face an inscription reading down in two lines:

FANONI/MAQUI RINI

'(Stone) of-Fanonus – of-a-son' (Irish *maqui*, not Latin *fili*) 'of-Rinus'.

Both names are Primitive Irish. There is also ogam reading upwards on both angles, left and right respectively

*SVAQQ*UCI

MAQI CICI

Again, this is botched, like one of the ogam inscriptions on *CIIC* 467 Lewannick. The intended ogam must have been

*SVANN*UCI MAQ*I RINI*

'(Stone) of-Swannucas – of-a-son of-Rin(us)', where *Swannucas* represents a spoken, hypocoristic or 'pet' form of the name *Fanonus*, like 'Jackie' for 'Johnnie'. On the reverse face is another, probably slightly later, vertical inscription,

SAGRANVI

'(Stone) of-Sagranuus', apparently another Irish name.

Discussion

These are the only inscribed memorial stones in Dumnonia with early ogam. Their distribution indicates a spread from a Welsh-originating migration inflow through the Camel estuary and into Devon (Fig 3). This map also shows the location of Paul, distant in the far west of Cornwall. *CIIC* 484 *Iusti* may date to *c* 500–550; *CIIC* 470 *Latini* at Worthyvale and the two stones at Lewannick are sixth century. The Devon stones are rather later, with *CIIC* 489 at Fardel probably after AD 600.

What these texts show is the presence, manifest in the happy but accidental survival of a mere half-dozen such memorials, of immigrants retaining Irish names, and one supposes of some literate priests: *CIIC* 484 at St Kew and both the Lewannick stones are arguably for the graves of priests whose only father was God Almighty. The occurrences of ogam *MEMOR* and *MAQI* are of much linguistic interest, as is the apparent fact that, of the (male) personal names, four are Latin or continuing Roman (*Iustus*, *Latinus*, *Macarius* and *Ingenuus*) and the rest Irish. For British names we look to the (non-ogam) inscribed stones across Dumnonia, more than 40 of them, which denote the spread of this particular custom up to about AD 700.

The ogam-inscribed slate from Paul

The wider Cornish context

Inspection of the slate from Paul and, to some extent, common sense, tells us that it has been inscribed by human effort, and that if the markings spell anything they do so in a form of ogam, not in runes or conventional letters. Comparison of Figure 1, the stone, with Figure 2 shows that if the 'letters' are ogam-type at least two of them – the three or more parallel lines crossing a stem-line at right angles, not obliquely, and the sideways V (or X with one half curtailed) – may be later developments of the original 20-character script. They are, and we return to that later.

The inscriptions on early (pre-AD 700) Dumnonian inscribed stones without ogam, using the Roman ABC and showing continuing Roman and British names and Latin funerary formulae, are large – letters may be from 5 to 10 cm high – and are mostly on granite or other hard stone. Most are linked to what became churchyards. An instance near Paul would be *CIIC* 462 Gulval, Bleu Bridge. This is a massive pillar with two vertical lines of lettering reading

QUENATAVCI IC/DINVI FILIVS

'(Stone) of-Quenataucus here – of-Dinuus a son'.

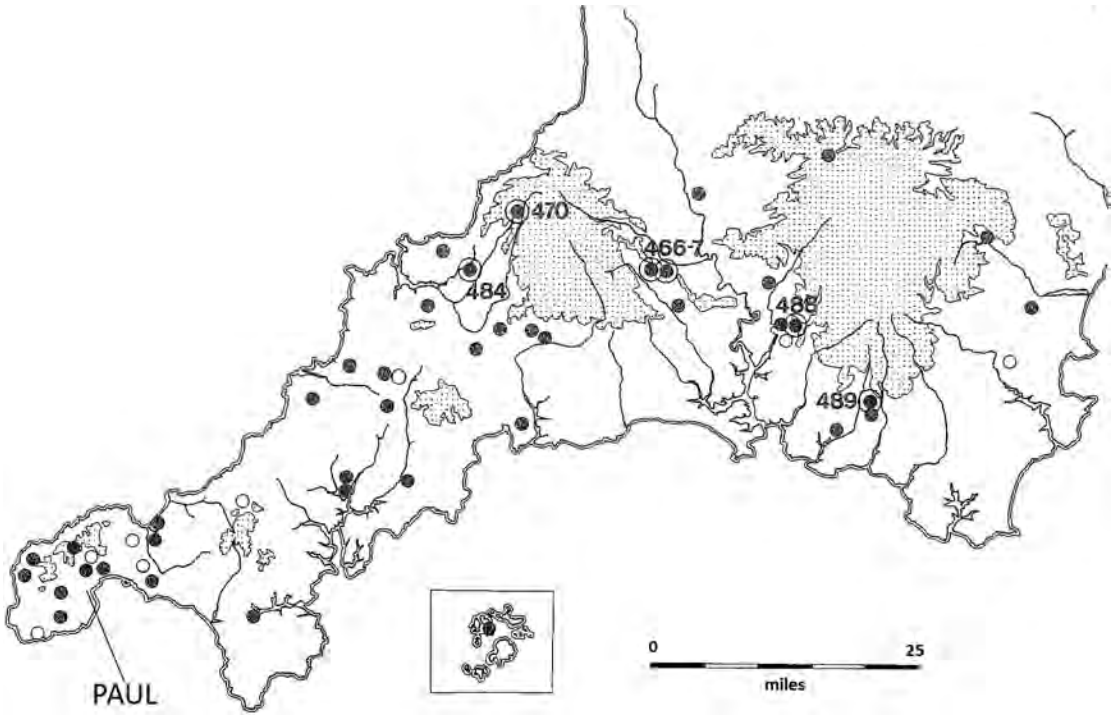

Fig 3 Post-Roman Dumnonia, showing the inscribed memorial stones, late fifth to early eighth centuries, and the location of Paul. Stones with ogam are marked by larger circles and with their CIIC numbers (466–7, 470, 484, 488, 489). (After Thomas 1994, fig 15.1.) (Scale: 25 miles; 40km.)

Both names happen to be Irish in this late sixth-century monument. Nearby, Madron church has another long granite slab, a horizontal grave cover, Macalister's *CIIC* 1048 (Macalister 1949), but unhappily wrongly read. This stone (Thomas 1994, 290–1, fig 17.13) is headed with a form of cross and reads along its length in two lines:

VIR QONFAL FILV (S missing) /
VENNORCIT

Early seventh century AD, with unusual spelling, it probably conveys the sense of '(My) husband, Qonfal – son of-Wennorgid', where the first name is a muddled version of older *Conmael (from *Cuno-maglos*) and the second means 'Fair Slayer'. These were local chieftains, the deceased commemorated by his wife.

But now we return to the archaeological or practical context and, as a kind of parallel to the Paul stone, note another small but non-ogam inscribed stone found in Cornwall not so long ago. This is the so-called 'Artognou' piece from Tintagel, recovered during the University of Glasgow's 1990 excavations on Tintagel Island (Barrowman *et al* 2007, 191–200). Found as a drain-cover during excavation of an early house or hut, it is a local slate fragment (incomplete) now measuring about 27 by 30 cm.

At the top are the remains of four large capitals: H A U G. If the original slate was a crude antefix, an external 'label', on some kind of *statio* or taxing office located here in Late Roman times – entirely likely – the letters are for H(onorius) AUG(ustus), emperor AD 393–423. Between AD 550 and 600 (and the letter-forms allow a close dating), some men on the Island picked this slate up and, using knife-points, decided to write on it. Again this was in Roman capitals, some devolved, about 2 to 3 cm high. The first person wrote P A T E R N I (perhaps P A T E R N I N I, because the edge is broken, but let us assume the shorter version of the name), and then, a short way below it, A R T O G N O V. A second hand then got to work and, below PATERNI , wrote C O L I A V I

FICIT. The FICIT was rather cramped so, below ARTOGNOV, he wrote again C O L(I A V I broken off) over FICIT.

What this means is something like '(The mark, or name) of-Paternus', '(The name) of-Artognous', and '(The name) of-Coliavus. he made it.' Paternus (or Paterninus) is continuing Roman; Artognous, so spelled, but at this date spoken something like /arth-no/ or /arth-noo/, was a British name originally meaning 'Known-as-a-bear'; Coliavus ('Coliau') is Celtic, again probably British, and FICIT, for correct *fecit*, is a common Late Latin form.

Who were these fellows? Not Dumnonian chieftains; not priests. Probably skilled craftsmen or people in the visiting Dumnonian royal retinue. One, Paternus, knew enough to give an older (correct) spelling of *Arthnou's name. Another, Coliau, knew enough Latin to write *ficit* for 'he made this, he did this.'

Three men, A, B and C, sit on the Island during the lunch-break talking about *writing*. A picks up a slate, writes his name and then the name of B (who may have been illiterate). C, not to be left out, adds his name, twice. Then they ditch the slate and get back to work. The letters they use are the same as the large formal letters cut into memorial stones all over Cornwall at the same period, AD 550 or thereabouts. If it had ever been possible to examine every one of the thousands of slates disturbed during years of excavations at Tintagel, would the Artognou stone still be unique? Note, by way of postscript, that ARTOGNOU, sixth century, has nothing whatsoever to do with Tintagel as a setting for 'King Arthur' six centuries later, despite commercial exploitation.

When, now, we return to the small inscribed slate from Paul, may one suggest a near parallel? Persons A and B are conversing, in whatever language. Both may be able to read or write at least their own names in the 23-letter Latin ABC, by now book-hand or cursive letters, not capitals. A, who may be a visitor, knows another secret and mysterious script, ogam. B, who is a local native, invites A to spell either of their names. A picks up the slate and proceeds to do so. B is fascinated, but the slate gets lost until David Edwards finds it centuries later.

One important distinction here is that the ogam system shown in Figure 2 was not static. It underwent changes through time (below).

The local context

In a purely archaeological context, not an epigraphic one, one notes first that the location of the find at Paul, just inland from Mousehole, is many miles from the centre of the distribution south east of the Camel estuary of the half-dozen memorial slabs and pillars with ogam (Fig 3). Second, we are looking here at a small fragment of slate, not a half-ton granite pillar. It can also be pointed out that, for Paul, there is no clear connection (as at St Kew and Lewannick) with a known early Christian burial site.

However, Ann Preston-Jones has recently recognised that the fine cross-head and decorated shaft at Paul church should be seen as part of a wider Penwith group of crosses which may be approximately dated to the mid-tenth to eleventh century (Preston-Jones 2010, 10–11; 2011, figs 8, 9; Preston-Jones and Okasha 2013, 88–91, 182–4). This group of crosses shows links to and parallels with contemporary religious art elsewhere in the British Isles and it seems plausible to regard such links to the wider pre-Norman Christian world as paralleling those which are implied by the Paul ogam stone itself, particularly taking account of the date for it later in the pre-Norman period which is indicated by the use of *forfeda* characters in the inscription (Forsyth, below). Preston-Jones (2010) has observed that although a church at Paul is not documented until the mid-thirteenth century, the presence there of the cross and shaft strongly suggests pre-Norman origins for the site. Other crosses in this group occur at what were clearly high-status sites and she also notes that the curving southern boundary of the churchyard at Paul hints at a possible *lann* enclosure (Preston-Jones and Okasha 2013, 90, 183). Olson (1989, 26) has previously suggested Paul as a candidate early monastic foundation in Cornwall, although if this was the case it is likely that it no longer held this status by the time the Paul cross or crosses were shaped (Preston-Jones 2010, 13).

The find-spot for the ogam-inscribed stone lay in a field which was evidently part of the early medieval and medieval field system associated with Paul churchtown (Fig 4). This is likely to have been manured with domestic midden material from farms and dwellings there and, potentially, from any pre-Norman religious foundation; this offers a plausible means by which the stone may initially have been deposited where it was found. Grass-marked

Fig 4 Paul church and churchtown from the south, set within a field system with origins in the early medieval or medieval period. The fragment of ogam-inscribed slate was found close to the near corner of the extension graveyard in the foreground. (Photograph: © Historic Environment Record, Cornwall Council, 2008; F84-157.)

pottery dating to the later early medieval period has been recovered from a field a short distance to the west of the find-spot for the slate (Portable Antiquities Scheme (PAS) CORN-B58117).

In a slightly wider setting, the assemblage of material recovered from the Clodgy Moor area nearby in Paul by another highly skilled fieldwalker, Graham Hill, includes, in addition to an impressive collection of early prehistoric lithic material (Jones *et al* 2013), numerous finds datable to the later first millennium. Among these are Grass-marked pottery (although not the earlier imported wares), and recently another and tinier piece of slate with a near-microscopic depiction of part of a sailing vessel (Pitts 2010; Mossop 2010, 33).

Development of the ogam script

No script, no system of representing spoken sounds by written marks, remains static. A script will be enlarged or modified to express new, or other, spoken forms. In Modern English our own originally Roman and Latin ABC now includes J as in 'jug', formerly marked by I which could stand for vowels /i/ and /j/ and even semi-consonant /y/. Similarly, the overworked V has given way to round-based U (vowel) and also to W for spoken /w/, a letter developed from writing VV side-by-side.

The ogam script, too, underwent modification through time (Fig 2). At an uncertain date, but probably some time after AD 600, five new symbols, the *forfeda*, were added to the original 20. These could express a range of sounds, including P as /p/, absent from spoken Primitive Irish but present in the Brittonic languages, Pictish, Cumbric, Welsh and Cornish. *Forfeda* also stood for various dipthongs. This extremely difficult, not fully resolved topic is discussed by McManus (1991, especially chapter 7 on ogam after the seventh century) and in a highly technical

paper by Patrick Sims-Williams (1992). None of this affects the (early) Dumnonian inscribed memorials examined above. Instances of late ogam in the north, Scotland and the Northern Isles, have been covered by Katherine Forsyth in relation to (Brittonic) Pictish (1997). We must also note that in addition to inscriptions on pillars or boulders, these northern regions and Ireland provide instances of ogam inscriptions on small portable objects.

The relevance of these comments is to point out that the ogam characters on the Paul slate cannot necessarily be explained using their earlier values. Nor, in Figure 2, will one find the letter-form like a truncated 'X' across a stem line. Dr Forsyth examines below what we have on the slate and offers possible transliterations and ideas. Readers will bear in mind that, while it is impossible to put forward anything more than tentative explanations, this remarkable object so happily found in 2009 is a most notable addition to Cornwall's pre-Norman heritage, to be publicly displayed with the Tintagel *Artognou* stone.

Note on an ogham inscription from Paul, Cornwall

Katherine Forsyth

The following description is based on a detailed examination of photographs kindly supplied by David Edwards and of the skilful drawing by Carl Thorpe (Fig 1). Unfortunately, I have not been able to examine the stone in person but have benefitted from Andrew West's thoughtful discussion and detailed photographs posted at http://babelstone.blogspot.co.uk (West 2009).

The inscription consists of the remains of two lines of ogham lettering, written across the flat surface of the slab on drawn-in stem-lines. These parallel stem-lines abut the fractured edges of the stone and appear to be incomplete at both ends. The ᚈ-shaped character which features in one line gives a clue to the correct orientation; this seems to be with the ᚈ so oriented; that is, below the stem-line of the lower line of lettering (or, if the stem lines are arranged vertically, to the right of the right-hand line of lettering). Ogham inscriptions read from left to right, if running horizontally, or, if vertically, from bottom to top (with the reader's head inclined to the left). In the following, the lettering is described as if arranged horizontally.

The upper line exhibits the remains of two letters, the first of which is incomplete. It is likely that a portion of text of unknown length has been lost prior to this. All that survives of the first letter is the lower (distal) tips of two oblique strokes which would have met at the stem to form a ᚈ or would have continued across it to form an X. In either case, this is a *forfid*, one of the additional characters (*forfeda*) which were invented to represent sounds not covered by the initial inventory of 20 ogham letters. The *forfeda* appear to have been created piecemeal over a long period, starting as early as the sixth century (Sims-Williams 1992, 40). Although rare in the earliest monumental inscriptions, they are more common in post-seventh-century inscriptions, especially from Scotland (Forsyth 1996), and in manuscript oghams from the ninth century (Sims-Williams 1992).

If the initial character in the upper line of this inscription is ᚈ, like the middle character on the lower line, then it may be compared with a character of identical form which occurs in the fourteenth-century Irish manuscript, the Book of Ballymote, in the text *Auraicept na nÉces* (Calder 1917, line 5921), which gives a list of ogham characters. Included in this list are four different forms of '*p* or *ui*', one of which is ᚈ, which Sims-Williams interprets as 'probably another sort of BB monogram for /p/' (1992, 44); that is, a pair of single strokes below the line each representing /b/ which together are made to stand for the related sound /p/ which was not catered for in the original ogham alphabet. Sims-Williams has identified a number of different forms of BB monograms for /p/, the earliest example of which is the saltire cross *below* the stem-line on the sixth-century dual-script inscription from Crickhowell, Breconshire (*CIIC* 327). The sound value of this character as /p/ is confirmed by the equivalent letter in the Latin inscription TURPILLI. Another possible example of this /p/ character occurs on an ogham inscription from Valencia Island, Co Kerry (*CIIC* 231), discussed by Sims-Williams (1992, 40). If the initial character on the upper line of the Paul ogham is an incomplete × on the line, rather than a complete ᚈ below it, then it is probably the unrelated × *forfid* which occurs quite widely in Ireland and Scotland, with both consonantal value (/χ/as in Scottish loch) and also as a vowel (/eä/) (Sims-Williams 1992, 51–6).

Whichever *forfid* this character is, it is followed immediately by four short parallel strokes below

the stem. The area above the stem has been lost but just sufficient remains visible above the final stroke to show that this stroke, and therefore—we may take it—all the strokes in this bundle, did not continue across and above the stem. Therefore, this is a single bundle of four *b*-group strokes; in other words, this is the letter S (Fig 2 gives a key to the ogam alphabet). The stem continues for several centimetres beyond this point to the broken edge of the slab with no traces of any further letters, although there is room for two or more. The S therefore appears to be the final letter of the word. It is curious that such a large portion of stem is empty, although this is not unprecedented. Presumably the stem was carved in advance and, in the event, not all of it was needed. Given the ample room at the end, it is interesting that there was no attempt to space the two rather cramped extant letters more generously. At the end, there is what appears to be a single horizontal stroke parallel with and above the stem running into the fractured edge. Perpendicular to this horizontal stroke and intersecting it near its other (left) end is a second, vertical stroke. Although deliberate, these both appear somewhat slighter than the strokes of the ogham inscription. They do not resemble any known ogham characters and may relate to some other box-like design or frame, potentially – although this is no more than a guess – the bottom corner of an outline cross-shaft. If these strokes are indeed part of a coherent design then that may account for the lettering stopping well short of them on this line.

The extant carving on the lower line comprises the remains of at least three letters. The first stroke is visible only above the stem as the equivalent space below has been lost. Its upper distal tip is also damaged. Given the regularity of the spacing between this stroke and the next two it is likely that they are part of a single bundle of long strokes.

The lack of comparable characters within this inscription means that it is not possible to tell if these long strokes are meant to be a consonant (and therefore a member of the *m*-group) or a vowel, although the former is perhaps more likely as long-stroke vowels are unusual outside Scotland. The bundle contained at least three strokes, so the first two members of the *m*-group (M, G) can be discounted, leaving 'NG' if the bundle is complete at three, or, if it is the remains of a group of four or more, then 'Z' or R. Although the character R is common, the preceding two letters of the *m*-group are very unusual. There is doubt over their sound-value as they became linguistically redundant at an early date (Sims-Williams 1993). The values 'NG' and 'Z' are purely conventional; it is likely that they represented the sounds/g^w/ and/s^t/ respectively. I know of only one epigraphic example of the S^t character in practical use (rather than as part of an alphabet), from St Ninian's Isle, Shetland (Forsyth 2012; Scott and Ritchie 2009, 26).

In any case, it is possible that these long strokes are not *m*-group consonants after all, but vowel-strokes. Early examples of ogham inscriptions tend to have very short vowel-strokes or notches on the stem. Later ones, including many of the post-seventh-century examples from Scotland, have long strokes perpendicularly across the stem (with the long cross-strokes of the *m*-group set at an oblique angle to maintain the visual distinction between the two groups). As there are neither oblique strokes nor vowel notches for comparison in this inscription, it is not possible to be certain which is intended here. If they are vowel-strokes they would represent U, E or I (if three, four or five strokes respectively).

There remains the formal possibility that the damaged first stroke on this line is not part of the bundle of long strokes but is a short stroke complete in itself (H), or the final stroke of another bundle (D, T, C or Q), leaving the pair of long strokes separate as either G or O; the close and even spacing of all these strokes, however, makes this unlikely.

The next letter is intact: two oblique strokes which meet at the stem to form a ∧. In fact, they overshoot the stem slightly, especially the right-hand diagonal stroke, but nonetheless it seems likely that they were intended as ∧ rather than ×. In the light of the discussion above, this is probably /p/. The final letter consists of two (or more) short parallel strokes below the stem. The edge is fractured just where the next stroke would fall and it is therefore unclear whether the letter was complete (L) or not (a subsequent letter of the *b*-group; that is, F, S, or N).

Too many uncertainties remain concerning the individual letters of this transcription to attempt a reading. In any case, too little remains for a textual interpretation. It is not known how much has been lost, whether the two lines are part of a single text or to be taken separately, nor is it clear which order they are to be read in. Despite this, a number of points may be noted. Given how few

extant letters there are, there is no significance in the lack of vowels (or *m*-group consonants if that interpretation is preferred). If the incomplete initial character on the upper line is indeed ᚩ rather than ×, then it is possible that both lines contain the sequence ᚩᚋᚋ. However, this is not certain as the lower line is incomplete. The identification of a /p/ character might tempt the identification of the language as either British or Latin, as Primitive Irish lacked P. However, as Sims-Williams (1992, 39) points out, Latin loan-words introduced /p/ into Irish as early as the fifth century, and sound changes in the language itself during the sixth century generated new /p/ sounds through syncope (dropping of intermediate syllables), so Irish cannot be ruled out on these grounds alone.

The use of a written stem-line arranged across a flat face of the slate, rather than a notional stem-line up the arris, reflects familiarity with book- or tablet-writing, but this is scarcely a help in dating. The ogham from Pool, Orkney, found in an archaeological context dated to the sixth century (Hunter 1985; Forsyth 1996, 456–66) is written on a stem-line across the flat of the stone. The Paul ogham could be as early as this, or as late as the tenth century, the date of the last examples from Scotland (Forsyth 1996). Comparison with the classical ogham pillars of fifth, sixth and early seventh-century Ireland is not particularly helpful. More appropriate is to compare the Paul ogham slab with other inscriptions on small, non-monumental stones, such as the example from Cunningsburgh, Shetland, incised with the remains of three (possibly continuous) lines of ogham on a written stem-line (Cunningsburgh 3, now in the National Museum of Scotland, IB 182; Forsyth 1996, 219–25; Scott and Ritchie 2009, 27).

A more recent discovery, still unpublished, is the ogham-inscribed stone unearthed by Channel 4's *Time Team* at Speke Keill, Isle of Man, written across the stone with a drawn-in stem-line. Also relevant are the various gaming-boards with ogham graffiti excavated at the monastic site of Inchmarnock in the Firth of Clyde, Scotland (Forsyth and Tedeschi 2008). (It is interesting to note that a collection of incised slates from Inchmarnock includes one with a detailed sketch of a sailing vessel, like the one discovered in Paul in 2008 (Pitts 2010; Mossop 2010, 33).) This kind of informal, ludic literacy seems a possible comparison for the non-monumental literacy exemplified at Paul. (Non-monumental in the sense of 'not a monument in the landscape', rather than necessarily 'not commemorative': its function remains moot.) It should be pointed out, however, that the scale of the letters on the Paul inscription is considerably larger than the examples just cited, implying that, unlike them, it may have been meant to be read at a distance. A conservative reconstruction of the inscription – consisting of only a single personal name on each line – would still have required a sizeable piece of slate. The function of such an artefact is hard to discern. Clearly it is very different from the upright, monumental pillars which bear ogham elsewhere in Cornwall, although the possibility that it was a recumbent grave-marker should not be dismissed. A series of slates inscribed in the roman alphabet with single names and placed *inside* graves of apparently sixth- and seventh-century date from eastern Brittany, provides another potential comparison (Davies *et al* 2000, 358–97).

The importance of the Paul ogham lies in the evidence it provides for knowledge of the ogham script in this part of Cornwall, away from the main concentration of ogham monuments further east. It is an important contribution to the growing body of evidence for non-monumental uses of ogham, to set alongside the portable objects (knives, a spindle-whorl, a comb, a brooch, a bead, a peg), graffiti and small stones carved with ogham (Forsyth 1996). Together these imply that the use of ogham was formerly far more widespread than the ogham-pillars alone might suggest, and that these uses included informal registers. The Paul inscription provides unexpected yet important non-manuscript evidence for the use of the /p/ *forfid*, thereby contributing to our understanding of the history of the ogham script, implying as it does that knowledge of the *forfeda* was more widespread than previously thought.

Conclusion

Cornwall, west of its River Tamar frontier, with the Isles of Scilly as an appendage, is a maritime land. The undulating coastline, replete with landing places and larger estuarine harbours, is more than five times as long as the land distance from the Tamar to Land's End. From Neolithic times, with the arrival of exotic stone axes, through tea and liquor during the Napoleonic wars, to the drugs

and duty-free cigarettes of today, archaeology and history reveal that any novelties in Cornwall's material contents are as likely to have arrived by sea as overland. Nowhere and at no stage is this more apparent than in post-Roman times. Tintagel, occupied at intervals by large parties – perhaps native rulers of Dumnonia, centred in Somerset, with their retinues? – yields evidence for hundreds, not just dozens, of imported amphorae (for wine? for olive oil?) shipped from the Mediterranean, together with finer wares and glass from Atlantic Gaul (Thomas 1993, ch 6).

Christianity, reaching Cornwall about AD 500, took at least three routes. At Tintagel, with the novel cross-decorated grave markers from the burial ground below Tintagel churchyard (Nowakowski and Thomas 1992), we seem to have a Christian focus of Dumnonian origin spreading from the Severn basin (Thomas 1993, ch 7; 1994, 233–4). But, as Figure 3 suggests, Christianity was also introduced as a feature of immigrant culture from Wales through the Camel estuary. Further west, a third isolated introduction at Hayle and Phillack points clearly to fifth-century Gaul (Thomas 1994, ch 12). The ships of traders and the smaller vessels of settlers happened also to bring those who spread the Gospel.

This little piece of slate from Paul churchtown may not be as spectacular as, say, a reconstructed large and shiny platter of African Red Slipware found (in fragments) at Tintagel, but as part of Cornwall's past it bears the same degree of interest. The stone itself is native, a bit of the Penwith landscape (the finder, David Edwards, reported that there were hundreds of such surface fragments in the ploughed field, although he did not find anything else of the same kind). But what has been incised on its face is not. The markings stand apart from, and are almost certainly later than, the memorial stones with Roman and ogam lettering from the other end of Cornwall and from Devon (Fig 3). The incomplete ogam inscription is an outlier or stray from a more northerly Atlantic world: Ireland, the Isle of Man, Scotland and the Northern Isles. This need not imply the presence in pre-Norman Penwith of Norsemen or Vikings, whose activities in Cornwall seem to have been very limited (see Wakelin 1977 for an overview). It is the inscription itself, what may be read, and what we might now surmise led to its making, that matters most. The Cornish proto-historic record has, indeed, been surprisingly enriched.

Acknowledgements

The authors are indebted to David Edwards, the finder of the Paul ogam stone, for reporting its discovery to Anna Tyacke, Finds Liaison Officer for the Portable Antiquities Scheme (PAS), based in Cornwall at the Royal Institution of Cornwall, Truro. The PAS database record number is CORN-E8C291. The database is online at www.finds.org.uk

Grateful thanks are also due to Janet Willcock and Wright Matthews, the owners of the land at Paul on which the ogam slate was found, for donating the piece to the Royal Institution of Cornwall, Truro. The RIC accession number is TRURI:2016.9.

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Editorial note

An edited text of this paper was sent to Charles Thomas in November 2014 with a small number of editorial queries and suggested clarifications and additions. The principal amendment proposed was that Charles' discussion of the significance of the inscribed stone could be strengthened by incorporating information about its possible local context which had recently been published in Ann Preston-Jones and Elizabeth Okasha's *Early Cornish sculpture* (2013). It was also suggested that an air photo of the area, including the church and find-spot, be included. Unfortunately, this was a period when Charles was particularly occupied with other projects and he had not agreed the suggested amendments at the time of his death in April 2016; when occasionally reminded of the outstanding queries in the intervening period he responded that he was 'getting round to it'! The editors firmly believe that Charles would have accepted the proposed changes and it is the 2014 text which is reproduced above.

Cornish Archaeology 54, 2015, 219–223

An incised Mesolithic pebble from Trevose Head, St Merryn, Cornwall

ANDY M JONES

In 2010 an incised pebble was discovered amongst the archived flint assemblage from Trevose Head. The flint scatter, which was published in Cornish Archaeology *in 1982, is of Mesolithic date and the find represents a significant addition to the small number of incised pebbles dating to this period in Cornwall. This note provides a description of the find and a brief outline of its background and context.*

In 2010 Emmett O'Keefe, a PhD researcher from University College Dublin, was undertaking analysis of the Mesolithic flint assemblage from Trevose Head as part of his doctoral thesis. During this work he found an elongated pebble which had not been described in the publication of the site (Johnson and David 1982). Closer inspection revealed that a series of shallow parallel lines ran down one side of the stone. Emmett reported the find to the author and it was sent to Laura Ratcliffe at the Royal Cornwall Museum who took a series of images at high magnification. These images confirmed that the stone had indeed been incised along one side.

This short note provides a brief background to the discovery of the incised pebble, a description of the artefact and a concise review of the comparanda for it in Cornwall.

Background

Trevose Head is located on the north Cornwall coast in the parish of St Merryn. Many flint scatters are located along the stretch of coast between Harlyn Bay to the east and Constantine Island to the west of Trevose (Norman 1977; Wymer 1977, 43–4; Johnson and David 1982). However, most of these scatters are of mixed period (Berridge and Roberts 1986) and the only one that has seen systematic recording is the site known as TV1 (SW 8535 7582) which lies in a field to the south of the headland (Johnson and David 1982).

Fieldwalking over this site led to the recovery of over 8000 flints, the majority being derived from beach pebble material. These were scattered over an area of approximately 60m by 100m, although there were marked concentrations within this overall area. The assemblage included microliths, cores and scrapers, as well as a mass of waste material. The scatter was interpreted as being of mostly later Mesolithic date, although an earlier element was also recognised (Johnson and David 1982). In addition to the flints, a small number of bevelled and elongated pebbles were also illustrated (*ibid*, fig 7). The incised pebble which forms the focus of this report was not illustrated or described at that time.

A description of the pebble

It is an elongated 'pebble' of metamorphosed siltstone which has not changed completely into a quartzite, measuring 98mm × 23mm × 20mm (Carl Thorpe, pers comm.). It was recovered from grid square 495/500. Some damage has occurred to the surface and end of the pebble; the lower

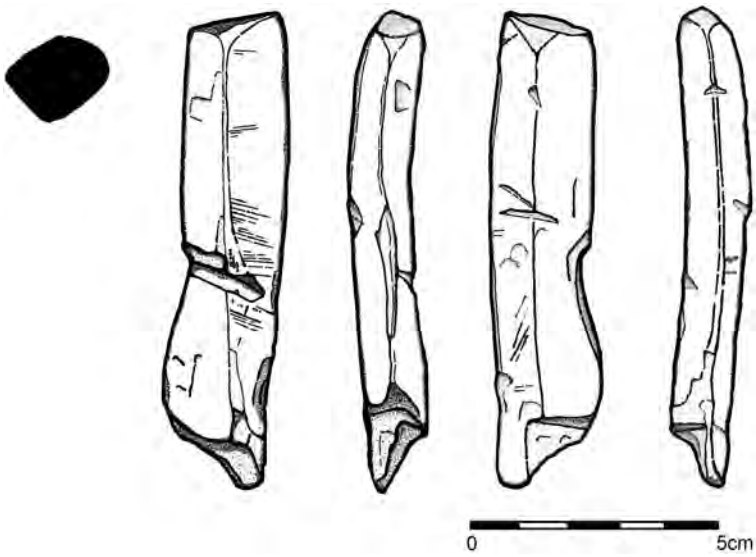

Fig 1 Illustration of the incised pebble. (Drawing: Carl Thorpe.)

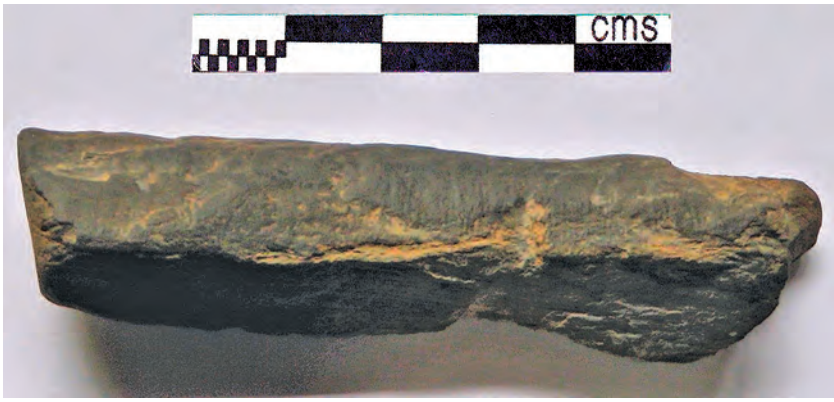

Fig 2 Photograph of the incised pebble. (Photograph: Andy M Jones.)

end has been broken (Figs 1 and 2) and there are several deep grooves which may be the result of plough strikes. One of these, in the central section of the stone, cuts through the area of the incisions. In addition to this more recent damage, some exfoliation is also evident in places. Aside from the incised lines, there is no evidence for any use wear on the pebble and none of the damage can be associated with any functional utilisation.

Figures 1 and 2 show that the incised lines can be seen to run down the long edge of one side of the pebble. The majority of the lines are not quite at right angles to the edge, but are instead slightly diagonal to it. Most are not clearly visible with the naked eye, although they are unmistakably discernible under low magnification. The spacing between lines is fairly regular, although there is a concentration in the central part of the pebble, where the greatest number of the more discernible lines are also found. The majority are under 4mm long and despite being quite faint, they appear to be a similar width, and where visible have a slightly squared profile. This would be compatible with the incisions being made by a flint edge (*cf* Berridge and Roberts 1994, 120), although much higher resolution examination under a microscope would be needed to confirm this. Additional lines are visible on the reverse side but are of a different character and unlike the main concentration.

Comparanda

Given the association with the flint scatter it is reasonable to suggest that the Trevose pebble was incised in the Mesolithic period, and in light of the regularity of the incisions it is worth considering possible parallels for it. Deliberately decorated pebbles dating to the Mesolithic period are exceptionally scarce in Britain (Clarke *et al* 2012), although some rare examples have been recorded such as those from Rhuddlan in north Wales (Berridge and Roberts 1994, 115–19) and from Hengistbury Head and Culver Well on Portland in Dorset (Palmer 1977, 132; 1984). These examples are quite decorative and could be considered to be pieces of 'art' in their own right. By contrast, an incised bevelled pebble from the Mesolithic midden at Camas Daraich, Skye, could have been functional, representational or intended to carry a message (Clarke *et al* 2012).

There are no unequivocal examples of Mesolithic 'art' from Cornwall. Despite displaying regularity, the lines on the pebble from Trevose Head are rather simpler than those on the pebbles from Rhuddlan and they do not form a pattern. Nonetheless, there are other examples of Cornish pebbles with incised and grooved lines on them (Palmer 1977, 174), although most of these examples do not display any signs of organization. There are, however, two published examples which bear some similarities to the Trevose Head pebbles.

The first is an unstratified bevelled pebble from Davidstow Moor barrow XXVI (Christie 1988, 128). This pebble was broken and had been utilised, but displays incised lines on both sides (Fig 3). Unlike the Trevose pebble, most of the incised

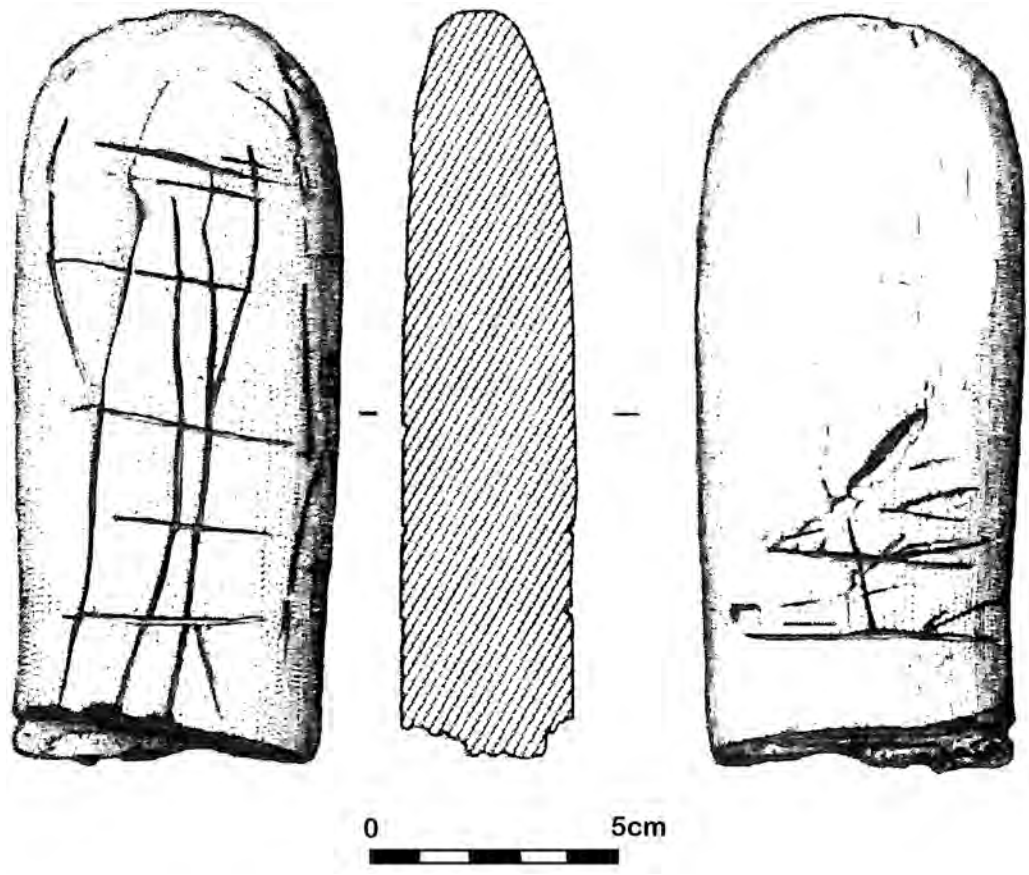

Fig 3 Incised pebble from Davidstow Moor barrow XXVI (after Christie 1988, fig 77).

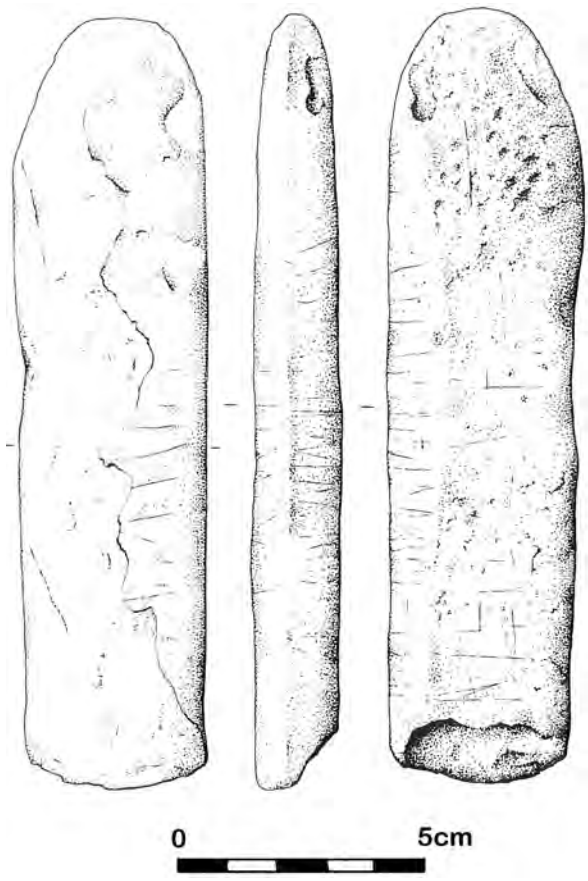

Fig 4 Incised pebble from Poldowrian (after Smith and Harris 1982, fig 17).

lines are much longer and several run parallel with the length of the stone, instead of being short strokes at right angles to the edge. Although not in a secure context, the stone was interpreted as being of Mesolithic date and comparable to an incised pebble from Poldowrian, St Keverne (*ibid*, 147).

The Poldowrian find was a complete bevelled pebble of slate, which was found during the excavation of a Mesolithic flint scatter (Smith and Harris 1982). This pebble has incised lines which are, like those at Trevose, predominantly evident along one edge and at right angles to it (Fig 4). There is, however, evidence to suggest that these lines extended further across the surface of the pebble, but much of this had been lost due to exfoliation. The spacing of the lines is rather greater than on the Trevose pebble, which are much more closely set.

The function of these incised pebbles is uncertain. The excavators at Poldowrian suggested that the pebble could have been a tally stick or possibly a gauge for net or harpoon making (Smith and Harris 1982, 47). The surviving lines on the pebble from Davidstow Moor look like they could have formed a decorative pattern, but this is not certain and the pebble was broken and had been used in a percussive way. Another possibility is that the stones were distinctively decorated because they belonged or were associated with particular individuals, and the lines were a means of identifying them with their user.

None of these interpretations is, however, helpful for the Trevose pebble. As noted above, the pattern made by the lines is not decorative and the stone itself is not distinctive or of an aesthetically pleasing shape. The lines on it are also very close together and faint, which probably rules out its use as a tally stick or gauge. Indeed there is no use wear on it to suggest that it had been utilised. The use of the pebble and the reason for scoring

it therefore remains a mystery. The lines could have been caused by the sharpening of a flint, but perhaps they represent no more than an episode of casual scoring of a stone with a flint to while away time during a quiet moment.

Acknowledgements

The author would like to thank Emmett O'Keefe for identifying the pebble and to Carl Thorpe for illustrating it and identifying the geology. Thanks are also owed to Laura Ratcliffe for taking the images at higher magnification and to Freya and Anna Lawson-Jones for reading the text.

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Cornish Archaeology 54, 2015, 225–232

Romano-British settlement and enclosures at Gover Farm, St Agnes, Cornwall

OLIVER GOOD

with a contribution by LORRAINE MEPHAM

Archaeological investigations were carried out on land adjacent to Gover Farm, St Agnes, during late 2013 in advance of the development of a solar energy park. A geophysical survey identified at least three phases of field system together with several enclosures and a number of small pit-like features. A subsequent evaluation confirmed the presence of two early phases of field system and enclosures, at least one of them of probable Romano-British date, with Roman pottery and a quernstone recovered from a spread of rubble in the south-west corner of the site indicating nearby settlement. The post-medieval field system was also identified, elements of which could potentially be of medieval origin.

In 2013 Wessex Archaeology carried out a geophysical survey and archaeological trial trench evaluation on land north east of Gover Farm, St Agnes, centred on NGR SW 7242 4820, in advance of the development of a solar energy park. Given the limited below-ground impact of the development, a single phase of trial trenching was agreed as the appropriate mitigation. The trenches were targeted on a variety of anomalies recorded during the geophysical survey with the aim of clarifying the extent, nature and date of the archaeological remains identified.

Gover Farm lies within St Agnes parish north east of Mount Hawke and 2 km south of the settlement of St Agnes (Fig 1). The site, which consists of three arable fields covering 17.2 ha, occupies the south west facing slope of a hill surrounded by minor watercourses, the land dropping from 154m OD at the north east to 122m OD at the south west. The underlying geology is Middle Devonian mudstone, siltstone and sandstone (Ordnance Survey 1957), overlain by generally shallow brown earths of the 541k (Denbigh 2) association, with brown podzolic soils of the 611c (Manod) association to the south (Soil Survey of England and Wales 1983).

Archaeological and historical background

A desk-based assessment identified a range of heritage assets in the area (CgMs 2013). Two Bronze Age bowl barrows, both Scheduled Monuments (National Heritage List Entry (NHLE) 1016059 and 1016060), lie immediately to the east of the site. A four-sided enclosure, possibly prehistoric, is recorded as a cropmark at Penhallow Farm, 0.2 km south of the site, while a Scheduled late prehistoric or Romano-British 'round' (enclosed settlement) lies to the west of Coosewartha Farm (NHLE 1019744), 1.5 km south west of the site, with a series of cropmarks to its north indicative of field systems.

There are no references in Domesday Book to any settlements close to the site. A medieval settlement named Gover is first recorded in 1516 (Gover 1948). The modern site of Gover

Fig 1 Gover Farm, St Agnes: location.

Farm, however, was the location of the medieval settlement of Trenithick, the earliest known record of which dates to 1526 (Institute of Cornish Studies place-names index). During the medieval and post-medieval periods it is likely that the area comprised a series of dispersed rural settlements and farmsteads interspersed with agricultural or common land. The 1809 Ordnance Survey drawing (reproduced in CgMs 2013, fig 5) shows the site forming the north-eastern part of a large block of enclosed land around Trenithick, surrounded to the north, west and south by unenclosed land. The farm is shown on later nineteenth-century maps as comprising a farmhouse and outbuildings; Trenithick only became Gover Farm in the twentieth century.

Cornwall's Historic Landscape Characterisation characterises the site's two eastern fields as 'Farmland: Medieval' (together with the three fields to the immediate north), and the western part of the site as 'Modern Enclosed Land', the latter classification indicating extensive removal

of historic field boundaries. The Chacewater to Newquay line of the Great Western Railway, completed in 1905 (Jenkins and Loader 2014), crossed the western part of the site.

Geophysical survey

A detailed gradiometer survey of the site was carried out using a Bartington Grad601-2 dual fluxgate gradiometer instrument, which has a vertical separation of 1m between sensors (Wessex Archaeology 2013). Data were collected at 0.25m intervals along transects spaced 1m apart with an effective sensitivity of 0.03nT, in accordance with English Heritage guidelines (2008).

The greatest concentration of features was in the central and western parts of the site (Fig 2). At least three phases of field system were identified, together with several enclosures and a number of small pit-like features of probable archaeological origin, with the enclosures in the south-west portion of the site extending beyond the survey area. The survey results suggest that some plough damage has taken place, with discontinuous ditch sections visible. The former railway line which crossed the western part of the site had also had an impact on the buried remains. Few archaeological features were apparent in the eastern field (not shown on Fig 2), although these may have been obscured by a wide range of geological responses.

Archaeological evaluation

Seventeen 30m × 1.8m machine trenches were excavated, targeted across geophysical anomalies as well as positioned in apparently blank areas, to test the survey results. Although several features were revealed which had not been recorded by the survey, overall the geophysical results were broadly consistent with the archaeological features identified (Fig 2). Some anomalies listed as 'probable archaeology' were not found, possibly due to the shallow depth of most of the archaeological features on the site.

The archaeological features have been assigned to three phases: undated (phase 1), Romano-British (phase 2) and post-medieval (phase 3). Due to the limited extents of the trenches, the lack of clear stratigraphic relationships and the paucity of dating material, this sequence is largely informed by the geophysical data. While the post-medieval ditches are clearly later than the others, distinguishing between the phase 1 and 2 features, and determining their chronological relationship, has been more problematic, particularly when considering the site as a whole; some features, particularly isolated ones, cannot be assigned to either phase 1 or 2 with certainty.

Undated (phase 1)

A number of ditches in the western half of the site had their main axis aligned south west – north east, on a different alignment to those of phase 2 (below), and there was clearly an overlap between the two arrangements in the vicinity of trenches 6, 7, 8 and 9. Which set was the earlier, however, could not be established and no dating evidence came from any of the excavated ditch sections assigned to this phase. However, on morphological grounds these ditches could form part of a Bronze Age field system.

The principal element in the south west comprised an elongated, sub-rectangular field or enclosure, which from the geophysics data appears to be at least 220m long and 55m wide. However, the only ditch identified was in trench 10 (Fig 2), where ditch [1004], 0.8m wide and 0.2m deep, formed the southern side; this was not found in trench 8 due to the presence of a post-medieval ditch. The northern ditch was not observed in either trench 6 or trench 7, although in the latter it could also have been destroyed by a post-medieval ditch. An offshoot from the southern ditch towards the south east shown by the geophysics was not observed in trench 9, perhaps due to a break in the ditch at that location; this ditch then turned eastwards near the southern edge of the site before appearing to terminate.

In the centre of the site a somewhat sinuous anomaly ran roughly south west – north east for 130m between trenches 11 and 13, but was not recorded in either trench; in trench 11 at the south west this may have been due to the presence of a post-medieval ditch; the geophysics data appear to show at least two clear breaks in this boundary. At the north east, the feature appears to join the north-west side of a trapezoidal enclosure, 40–50m long and 30–40m wide, on a broadly similar alignment to the other phase 1 ditches (Fig 2). In trench 14 the enclosure ditch [1404] was 0.9m wide and 0.5m deep.

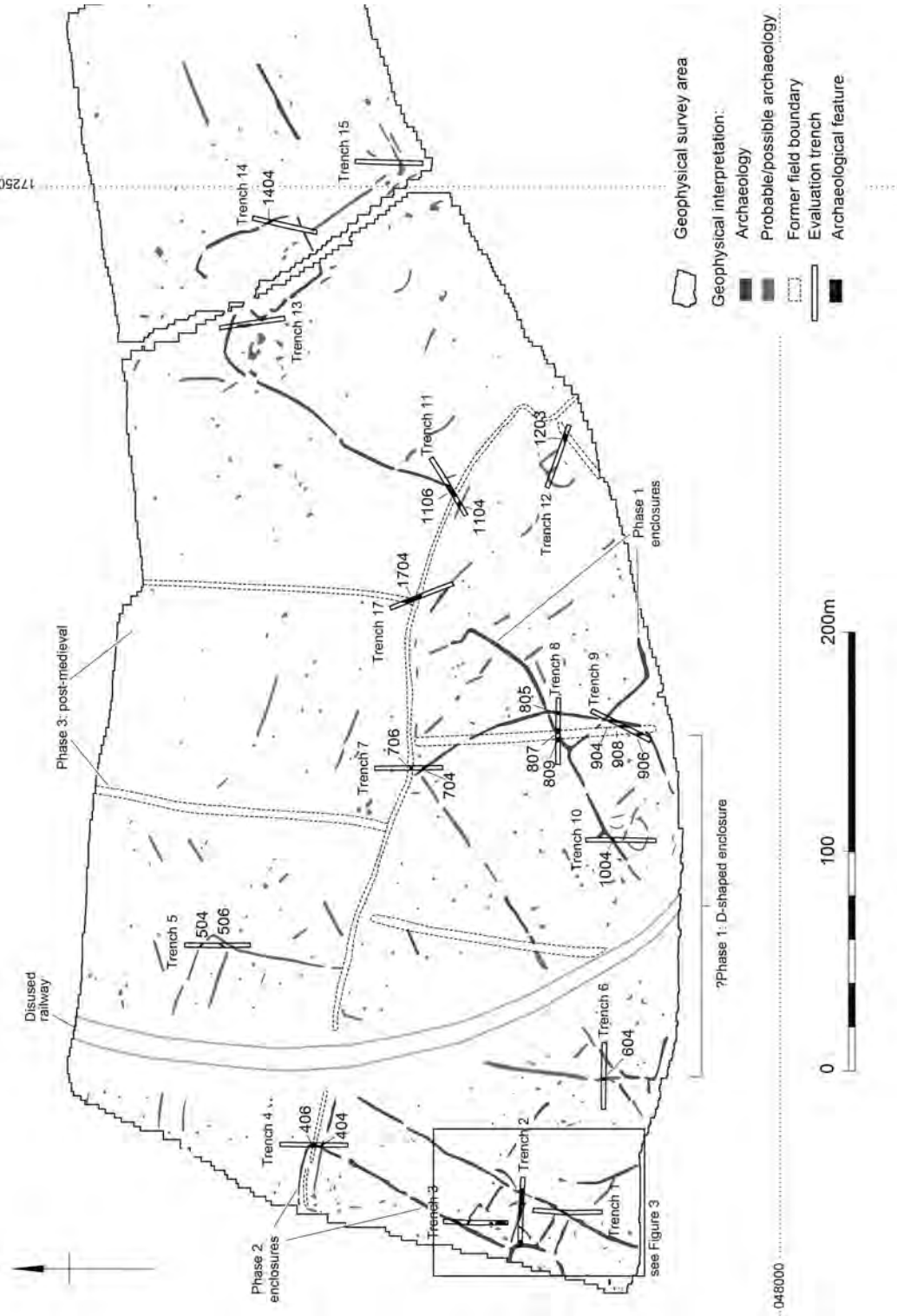

Fig 2 Geophysical survey results and trench locations.

Romano-British (phase 2)

A separate phase of field and enclosure system revealed by the geophysical survey was targeted by trenches 1 to 4 at the western end of the site. This comprised what appears to be the eastern end of a subcircular enclosure, possibly with a south east-facing entrance, associated with which were two parallel ditches, approximately 30m apart and aligned south west to north east, extending for at least 160m and continuing beyond the south-west corner of the site. Between the parallel ditches close to the enclosure were at least four cross-ditches, with another near their northern end, creating a ladder-like series of divisions (Fig 3). The layout of these features suggests that they were all broadly contemporary.

The evaluation examined the two parallel ditches, [104] and [311], and part of the subcircular enclosure ditch [204] (Fig 3). The latter, which was only partially revealed in trench 2, was at least 1.5m wide but only 0.16m deep although its full extent was not revealed in the section. A sherd of Roman pottery was recovered from its single fill (205). If projected, ditch [204], as identified in the geophysical survey, would enclose an area measuring in the region of 18m by 30m. This projected size would be considerably smaller

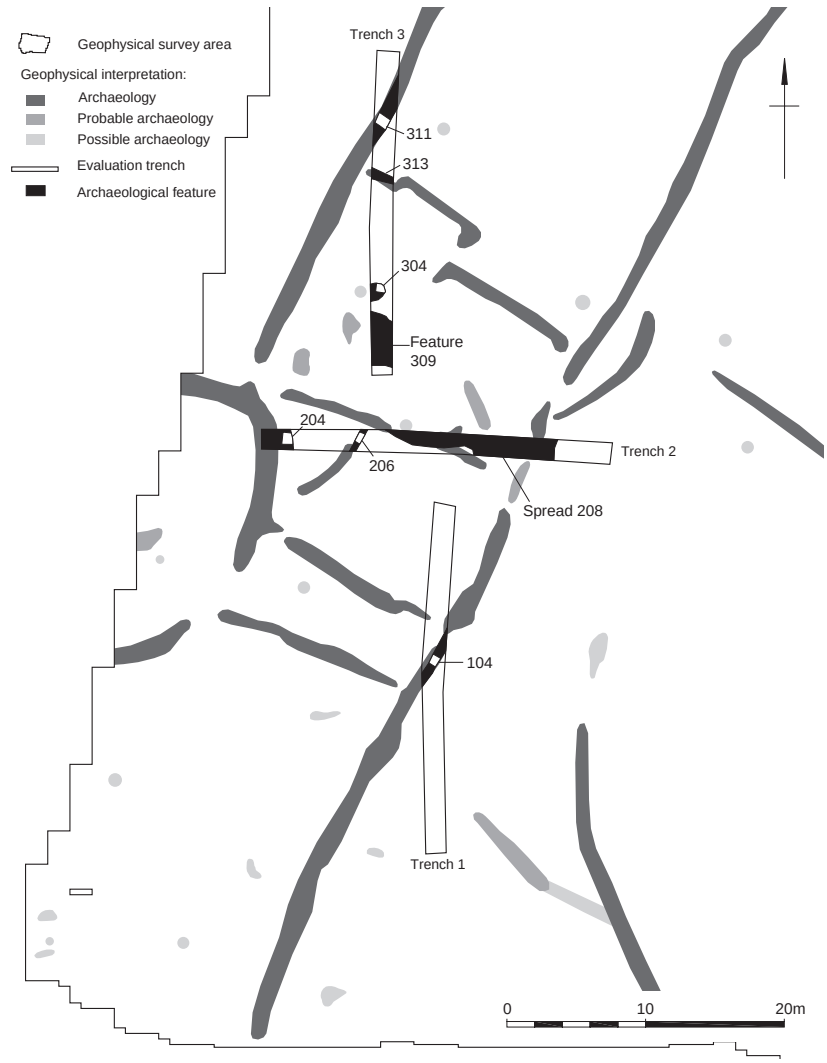

Fig 3 Geophysics and excavated features on the western part of the site.

than is typical of a round or enclosed settlement, but little more can be said of this feature given the limited nature of the excavation (Fig 3). Two anomalies within the area enclosed by ditch [204] may represent archaeological features but these were not investigated.

The eastern parallel ditch [104] was 0.75m wide and 0.15m deep, the western one [311] 1.3m wide and 0.5 deep; both had single fills. The western ditch further north, in sections [404] and [406] (Fig 2), was of similar dimensions, but the layout in this area was obscured by the presence of a post-medieval ditch. However, the geophysics shows the western ditch, and the northern cross-ditch, extending to the west beyond the site. Cross ditch [313] was exposed but not excavated, and a curvilinear gully [206] also corresponded with the geophysics results.

A shallow depression [309] in the southern end of trench 3 contained Roman pottery and a complete rotary quernstone (from layers 306 and 307), as well as stone rubble and charcoal fragments (Fig 4). An unexcavated but probably associated spread of soil (208), from which no finds were recovered, was observed in trench 2. A small pit [304] was also excavated in trench 3.

Post-medieval (phase 3)

The post-medieval field system, which the geophysical survey showed extending across the site, was distinctive in both its consistent form and regular layout, and was targeted by several trenches (Fig 2). The layout of the principal field boundaries is depicted on historic mapping, including the 1809 Ordnance Survey drawing (reproduced in CgMs 2013, fig 5) and the 1841 St. Agnes tithe map (*ibid*, fig 6), and they continued in use largely unchanged until the late twentieth century.

These boundaries included, in the western half of the site, a slightly meandering axial ditch that ran approximately west – east for at least 400m, curving south east at its east end. The ditch was observed (west to east) in trenches 4, 7, 17 and 11 ([706], [1704], [1106], but was not archaeologically recorded in trench 4. Two parallel field boundaries, approximately 100m apart, ran perpendicular from it to the north, while another two, 80–100m apart, ran perpendicular to the south, the eastern one double-ditched ([807/809], [906/908]) and the western one (not shown on the historic mapping) cut by the early twentieth-century railway line. A further ditch [1203] ran south west from a marked kink in the axial ditch at its eastern end. All of these ditches were relatively broad and shallow, approximately 2.3m wide and 0.3m deep, with dark-brown fills. None contained any finds, and their stratigraphical relationships with the phase 1/2 ditches were not clearly established at their intersections in trenches 4 and 8.

A number of other geophysical anomalies lying perpendicular to the east – west axial boundary may be associated with it, possibly representing an earlier phase of enclosure. These included a ditch running to the north before turning to the west, represented by ditches [504] and [506] in trench 5, which appeared to form the corner of a sub-rectangular enclosure more than 110m wide, with a parallel ditch 12–15m south of its north side (Fig 2). Similarly, south of the axial ditch, ditches [604], [704], [805] and [904] may all have formed part of a D-shaped enclosure, measuring 160m east–west by 150m north–south (Fig 2). Ditch [704] was 1.45m wide and 0.4m deep, ditch [805] 1.85m wide and 0.45m deep, and ditch [904] 0.85m wide and 0.25m deep. A number of discrete pit-like anomalies are indicated within this possible enclosure, but a curving feature, investigated in trench 10, was probably of geological origin.

There were two parallel, roughly east–west ditches, 70m apart, in the eastern field (not shown in Fig 2), although trench 16, positioned over the northern ditch, failed to locate it.

Finds

Lorraine Mepham

A very small quantity of finds was recovered from the evaluation, comprising 27 sherds of pottery and a rotary quernstone. These finds derived from three contexts, (205), (306) and (307), in trenches 2 and 3. All of the pottery is in a similar fabric, containing rock fragments in varying sizes. Some of the inclusions are quite degraded, but can be identified as gabbroic, typical of clays originating on the Lizard peninsula and used for much Neolithic and Iron Age pottery in the south west (for example, Quinnell 1987). This lengthy currency renders the dating of these sherds somewhat problematic, but the presence of two rim sherds in context (307) (a small everted rim, not particularly distinctive, and a probable flanged rim)

suggest a Romano-British date. There are parallels for the flanged rim (broadly comparable to the flanged or dropped flange rims seen in south-east Dorset Black Burnished ware) in the assemblage from Trethurgy, St Austell (Quinnell 2004, 123–5, figs 59–60, types 21 and 22), dated from the end of the second century to the fourth century AD.

The quernstone, also recovered from context (307), is a complete example of a lower rotary quernstone, in granite. It has a complete central perforation worked through from both surfaces.

Discussion

Overall, the evaluation was able to broadly confirm the presence and layout of features identified in the geophysical survey, which appear to represent three phases of activity: undated, Romano-British and post-medieval. However, due to the paucity of finds and lack of clear stratigraphic relationships uncertainty remains as to the sequence of phases 1 and 2.

Phase 1 is undated and could pre-date phase 2, being comparable to a Bronze Age field system. It comprised a variety of ditches, similar in size to those of phase 2 to the west, making up a small trapezoidal enclosure and at least one larger field or enclosure, both on a different alignment to the phase 2 ditches. The full extent of the phase 1 complex may have been defined by the geophysical survey, with no linear features extending onto the higher ground in the north-east part of the site. While more extensive excavation might recover finds from the phase 1 enclosures and fields, there is currently no evidence for any settlement directly associated with them.

All the finds came from phase 2 features and suggest that there was a mid–late Romano-British settlement extending into the lower-lying south-west corner of the site, comprising a subcircular enclosure, and an associated 'ladder' field or enclosure system. The pottery and quernstone found in shallow feature [309] to the north east of enclosure [204] suggest that there was domestic activity within or close to this part of site, and the stone rubble may represent the remains of a collapsed structure in the immediate vicinity. Two possible archaeological features were identified within the enclosed area by the geophysical survey, although as these were not investigated they do not assist with interpretation. The form and function of the enclosure are uncertain; the size of the projected ditch is smaller than would be consistent with rounds or enclosed settlements (Quinnell 2004, 311). However, parallels can be made with a C-shaped ditch at Tremough, Penryn (Gossip and Jones 2007, 23–5, fig 20; Gossip and Jones 2009–10, 20–4, fig 14), located at the western

Fig 4 Hollow [309] in trench 3, with (right) complete lower stone from a rotary quern. (Photograph: Wessex Archaeology.)

end of an Iron Age field system (Gossip and Jones 2009–10, 20). The enclosure had been remodelled a number of times but in its original form measured 48m by 28m, with a ditch 0.4m deep. In its second phase the enclosure was reduced in size to 25m by 28m with a ditch up to 0.7m deep (Gossip and Jones 2009–10, 23–4). More definitive evidence for settlement was found at Tremough as the enclosure contained an oval post-built structure [338] and associated features such as hearth-pits of second to fourth century date (Gossip and Jones 2009–10, 20). The recent National Mapping Programme around the Camel estuary has identified a number of comparable small enclosures (Young 2012, 77–9, fig 4), and it is possible that the remains at Gover Farm fall into this class of monument, some of which may have had different functions to the larger rounds (*ibid*, 77).

The post-medieval ditches formed a fairly regular arrangement of fields which extended across the entire site. Although undated by finds the ditches can confidently be assigned at least a post-medieval date, given the correspondence of many of them to field boundaries shown on historic mapping. Other geophysical anomalies, some identified in the evaluation trenches, may define enclosures associated with the main east–west axial ditch, possibly representing an early phase of enclosure. These include a possible D-shaped enclosure to the south and a sub-rectangular field or enclosure to the north. The 1st edition Ordnance Survey 25in: 1 mile map of *c* 1880 suggests that the axial ditch formed part of a large, approximately oval circuit around Trenithick, perhaps marking the early (possibly early medieval) extent of its cultivated land. In the early twentieth century the field system was cut across, in the west of the site, by the Chacewater to Newquay railway line, which closed in 1963. A number of the field boundaries were removed in the later twentieth century and the fields amalgamated.

Acknowledgments

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The archive is currently held at Wessex Archaeology's office in Salisbury (under project code 101470–1) until a suitable repository in Cornwall can be identified.

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A posthole structure and post-Roman pits at Gloweth, Truro, Cornwall

ANDY M JONES

with contributions from DANA CHALLINOR and HENRIETTA QUINNELL

In the summer of 2014 archaeological investigations were carried out at Gloweth on the western edge of Truro in advance of the construction of a housing estate. Most of the uncovered features were field boundaries of later medieval and post-medieval date. In addition a posthole structure and a small number of pits were recorded which had the potential to be earlier. A twig from a posthole within the structure produced a radiocarbon determination which fell in the post-medieval period, and is therefore likely to be unreliable. A second date, obtained on residue from a sherd of Grass-marked pottery within pit [252], fell in the period cal AD 537–645. This is an early date for this type of pottery and is a useful addition to the evidence for its start date.

In 2014 Cornwall Archaeological Unit was commissioned by Bovis Homes to undertake archaeological recording during controlled topsoil stripping at Gloweth, Truro (Kenwyn parish), in advance of a housing development covering approximately 1.4 hectares. Earlier geophysical survey had recorded a number of responses, including field systems and sub-circular pit-type features (GSB Prospection 2008). In June and July 2014 the archaeological recording took place and a number of archaeological features were uncovered including a cluster of postholes and three pits which are reported on here.

Location and background

The project area (SW 79221 44585) is located on the western side of Truro (Fig 1), on the upper part of a quite steep south-east facing valley slope (90m to 75m above sea level) overlooking the River Kenwyn. Prior to the development the field was under pasture.

Gloweth is situated within what has become, since the later twentieth century, a suburban area of Truro. Housing estates lie to the immediate east of the development area, and playing fields, a main arterial road and Treliske hospital lie to the north. To the west is the Richard Lander School and beyond that housing estates associated with the settlement of Threemilestone. Only the area to the south remains open with rural views.

Field patterns across and around the project area on maps of the nineteenth and early twentieth centuries (Goacher 2014, figs 7–10) are suggestive of fossilised medieval strip fields, but in the project area these were removed later in the twentieth century meaning that its former character was no longer apparent (as a result of which the area was characterised as 'Recently Enclosed Land' in the Cornwall-wide landscape assessment; Cornwall County Council 1996).

The fields would have been farmed from the shrunken medieval settlement of Lower Besore, which lies immediately south east of the development area. The name Besore is first recorded

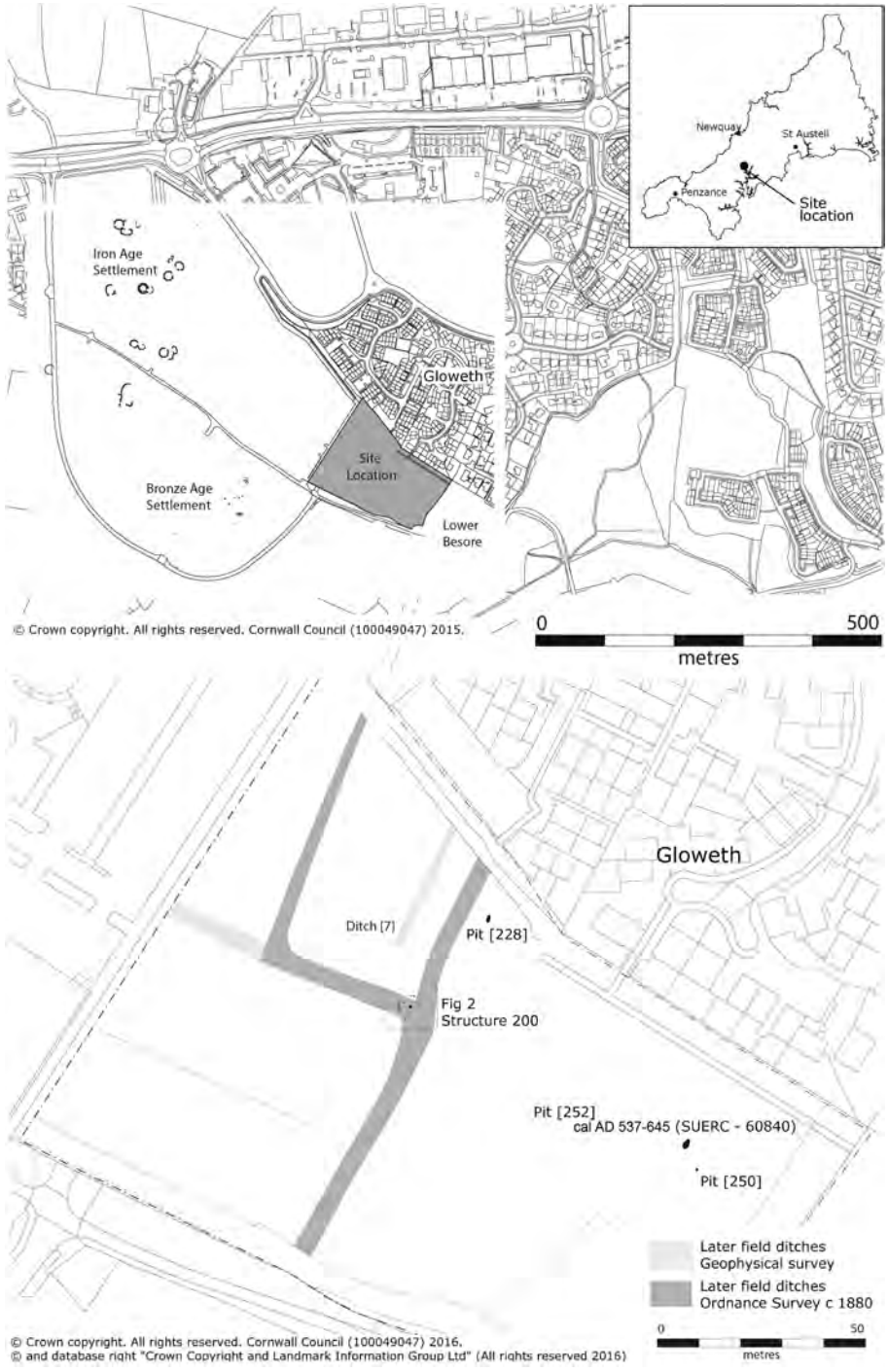

Fig 1 Location of the site and nearby excavated prehistoric settlements (top); and investigated features (bottom). An underlying field system recorded by geophysical survey, but not identified during the controlled topsoil strip, is not shown.

in 1303 as 'Boswoer', a Cornish name containing the elements *bod*, meaning 'dwelling' and a suffix meaning 'sister' (Padel 1985, 245). Settlements with the element *bod* are likely to be of early medieval origin (*ibid*, 24). The geophysical survey (GSB Prospection 2008) revealed at least two phases of field systems. One system was that shown on the nineteenth-century maps, which, although post-medieval in its final form, is thought to be of medieval origin. The boundaries are mostly marked by double ditches, which would have run on either side of Cornish hedges. Underlying this field system was a somewhat irregular rectilinear pattern of single ditches.

The archaeological potential of the immediate area has been demonstrated by numerous discoveries made as a result of the westward expansion of Truro since the mid-twentieth century. To the north of the A390 at Treliske, 600m north east of the development site, a linear barrow group consisting of eight sites was excavated in advance of building work for the hospital (Cornwall Historic Environment Record reference numbers MCO 3676 to MCO 3683; Dudley 1960) and a settlement dating to the Late Bronze Age was recorded to the west of the project area (Gossip, forthcoming).

However, the most extensive evidence for prehistoric activity in the area dates to the Iron Age. An enclosed settlement or round is located to the west of the site at Threemilestone (Schwieso 1976) and excavations in 2004 at Higher Besore to the north west of the site led to the identification of an extensive open settlement (Gossip, forthcoming). Cropmark evidence has also revealed further enclosures and fields which are likely to be of Iron Age or Romano-British date. The project area therefore had the potential to contain features associated with later prehistoric settlement as well as offering the opportunity to extend the detailed study of an area of lowland Cornwall.

Results from the archaeological recording

The archaeological fieldwork led to the recording of a number of features, which included ditches associated with removed field boundaries, pits and a posthole structure (Figs 1 and 2).

Field systems

The archaeological recording identified a series of ditches on the line of boundaries which were shown on Ordnance Survey mapping up to 1932 but subsequently removed. These ditches were also recorded by the geophysical survey. Where investigated they were found to contain pottery of the eighteenth and nineteenth centuries, although they are thought to preserve the outline of a medieval field pattern. Although the geophysical survey also identified what appears to be an underlying ditched field system of rectilinear fields (not shown on Figure 1), only one of the ditches, context [7], was identified and investigated in the watching brief. This contained a sherd of a Cornish medieval coarseware jug of thirteenth- or fourteenth-century date. The others were not located, possibly because they were very shallow. If both of the field systems were of medieval origin this might imply a reorganisation of the field system during the medieval period. It is possible, however, that the investigated ditch was a component of the later medieval field system rather than underlying it (for example, marking the edge of a cultivation strip), and that the earlier, underlying field system is of prehistoric, Roman or early-medieval date; unfortunately this could not be established.

The ditched boundaries and the finds from them are described more fully in an archive level report (Goacher 2014). This paper focuses on a posthole structure and three pits, one of which contained pottery of post-Roman date.

Structure 200

To the north of the central part of the site was structure 200, an irregular arrangement of postholes. The structure had been cut by later field boundary ditches, being at the junction of two trackways shown on the Ordnance Survey 1st edition 25in map of 1880 (Goacher 2014, fig 8), a west–east trackway joining a north–south trackway (shown in outline on Figure 2 as ditches [224] and [9]). Given that it was located on the upper part of the slope it is also likely to have suffered plough damage.

The structure consisted of ten sub-circular postholes ([202], [204], [206], [208], [210], [214], [216], [218], [222] and [226]) arranged in a roughly sub-circular shape with a diameter of approximately 8m. An eleventh posthole [212]

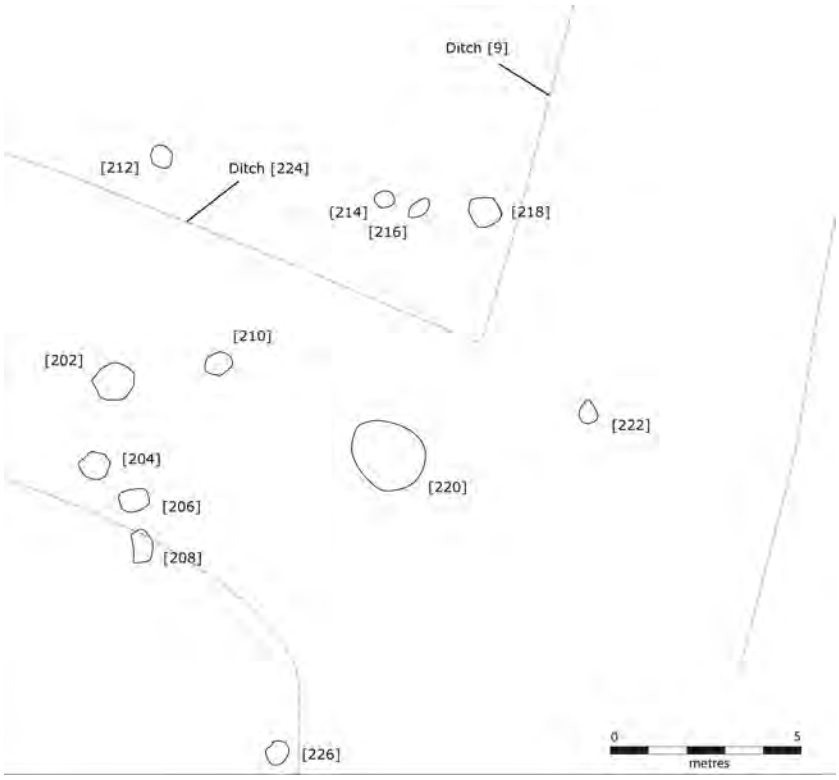

Fig 2 Plan of structure 200. The dashed lines show the approximate location of the field boundaries defining the junction of the two lanes, after the 1st edition Ordnance Survey 25in: 1 mile map of 1880.

was located outside the ring to the north west. The spacing of the posts was very irregular, especially on the west and south sides, where there were large gaps in the circuit. This irregularity in layout may be due to later truncation, although it is possible that there was an entrance on the south side of the structure.

The postholes were dug into the slope, with no evidence of a levelling cut to contain the structure. Most were steep-sided and flat bottomed, measuring between 0.25 and 0.35m in diameter and up to 0.3m deep. By contrast, posthole [218] in the north-east part of the ring was more substantive. It had a tapering profile with a rounded base and was much deeper, reaching a depth of 0.8m. The postholes were shallower on their southern, downslope sides and postholes [206] and [208], which were located on the southern side of the structure, were the shallowest. This pattern is consistent with truncation through downslope ploughing.

All the postholes were filled by deposits of grey-brown loamy silt with occasional slate fragments. None had been recut, which might imply that the structure was short-lived.

No floor surfaces survived inside the structure, although pit [220] was located close to its centre. The cut was sub-oval, measuring 0.7m by 0.85m and 0.16m deep. In profile the sides were irregular and gently sloping, and the base uneven. It was filled by (219), a compact reddish-yellow clayey silt with frequent slate fragments and occasional charcoal flecks. The pit was situated in the appropriate place for a hearth but the absence of burning and paucity of charcoal rules out this interpretation and its function is uncertain.

No artefacts were recovered, and charcoal was exceptionally sparse. An unidentified twig was recovered from posthole [218], and a radiocarbon determination obtained of cal AD 1650–1918, 188 ±29 BP (SUERC-60841). This is not considered to reliably date the structure (below).

Isolated pits [228], [250] and [252]

In addition to structure 200 there were three isolated pits, [228], [250] and [252], which had the potential to be of medieval or earlier date. Pit

[228] was 30m north-north-east of structure 200, and [250] and [252] were 80m to the south east. There was no pattern to their distribution, although [250] and [252] were less than 10m apart.

Pit [250]

Pit [250] was sub-circular, measuring 0.5m by 0.7m and 0.15m deep. The cut had a bowl-shaped profile with shallow sides and a rounded bottom. The fill (251) consisted of brown clayey silt with a high frequency of charcoal fragments.

Pit [252]

Pit [252] was large and sub-oval, measuring 2.5m long by 1m wide and 0.55m deep. The cut had gently sloping sides and a rounded bottom. The fill (253) was a grey-brown silt with fragments of slate, quartz and charcoal. It was the only feature to produce any artefacts, nine sherds of Grass-marked pottery of post-Roman date (Quinnell, below). A radiocarbon determination was obtained on ceramic residue of cal AD 537–645, 1483 ±29 BP (SUERC-60840).

Pit [228]

Pit [228] was sub-oval, measuring 1m by 0.5m and 0.4m deep. The cut had sloping sides and a rounded bottom. The fill (227) was a grey-brown clayey silt with frequent charcoal, especially near the base. It was partly cut and overlain by a later field boundary.

The pottery

Henrietta Quinnell, with petrographic comment by Roger Taylor

Fill (252) of pit [253] contained nine sherds (135g) in fairly fresh condition, some conjoining. These include base angle sherds and a grass-marked base sherd. They contain common coarse / very coarse inclusions and are oxidised with reduced interiors, and most probably all come from a single vessel.

Examination with a petrological microscope indicated a gabbroic fabric with additional slate. *Rock fragments* – light grey weathered, soft micaceous slate mainly as tabular fragments, some with narrow quartz veins, 0.5–5mm; *feldspar* – white, soft altered angular grains, 0.1–0.6mm; *quartz* – transparent colourless to translucent white, mainly angular to rounded grains, 0.1–1.3mm; *magnetite* – a scatter of black glossy angular to sub–angular magnetic grains, 0.1–1mm; *amphibole* – sparse light grey soft fibrous cleaved sub–angular grains, 0.4–0.6mm; *mica* – sparse muscovite cleavage flakes, 0.1mm; *matrix* – silty clay with fine quartz, feldspar and mica. *Comment*. A gabbro admixture fabric. The slate fragments may have been slaty hornfels, although the degree of weathering makes this interpretation uncertain. The hornfels interpretation could indicate a place of manufacture some 15–20 km to the east around the St Austell granite.

The interior of most sherds had adhering residue and this provided a radiocarbon determination calibrating to cal AD 537–645. This date provides a useful contribution to the ongoing discussion on the chronology of early medieval ceramic styles in Cornwall. 'Grass-marked' ware was until recently considered to be a late sixth century AD introduction but re-evaluation of data from Gwithian supported by new radiocarbon dates suggests a seventh-century date might be more appropriate (Thorpe and Thomas 2007, 45–6). A sample of raw gabbroic clay from contexts at Gwithian with Grass-marked fabrics examined by Roger Taylor demonstrated that clay rather than completed pots was sometimes moved around the coast in the early medieval period (*ibid*, 47) but the Gloweth sherds are the first gabbroic Grass-marked sherds to have mixed gabbroic and non-gabbroic components.

The charcoal

Dana Challinor

Five charcoal samples were submitted for analysis. The sample from posthole [218], fill (217), within structure 200 proved to be almost sterile of charcoal, with only one indeterminate twig fragment and some unidentifiable flecks present. The remaining samples came from pits [252], [250] and [228]. The sample from pit [228] contained only a sparse assemblage of charcoal, which was identified in full; the others were randomly sub-sampled to a minimum of 30 fragments. A small number of cereal grains were also identified.

Table 1 Charcoal from pits (showing fragment count)

	Feature	*Pit [252] (east)*	*Pit [252] (west)*	*Pit [250]*	*Pit [228]*
	Context number	*(253)*	*(253)*	*(251)*	*(227)*
	Sample number	*1*	*2*	*3*	*5*
Quercus sp.	oak	18 (hr)	14 (hrs)	16 (hs)	6 (r)
Betula sp.	birch	1	6		
Corylus avellana L.	hazel	8 (r)	3r	33 (r)	4
Alnus/*Corylus*	alder/hazel				1
Populus/*Salix*	poplar/willow	1			3
Maloideae	hawthorn group	1r	6r	1	
Cytisus/*Ulex*	broom/gorse	1r	1		1r
Total		30	30	50	15

h = heartwood; s = sapwood; r = roundwood; (brackets denotes presence in some fragments only)

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, 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

The condition of the charcoal was fair, albeit with a covering of sediment and high levels of roots in (227). Fragment size was generally mid-small, with some larger pieces in pit [252]. Six taxa were positively identified: *Quercus* sp. (oak), *Betula* sp. (birch), *Corylus avellana* (hazel), *Populus*/*Salix* (poplar or willow), Maloideae (subfamily: hawthorn, apple, pear, whitebeam) and *Cytisus*/*Ulex* (broom or gorse) (Table 1). No complete stems with pith and bark were preserved, but a number of fragments exhibited moderate or strong ring curvature consistent with roundwood. Both heartwood and sapwood was observed in the oak. Some strong vitrification was recorded in contexts (253) and (251), and a few small insect tunnels were noted in hazel fragments from (251).

Discussion

Cereal grains in pit [228] suggests that the assemblage may have derived from cooking or food preparation and it is likely, generally, that the charcoal derived from the waste ashes of domestic fires. All of the specimens examined would have been locally available. Oak–hazel woodland dominated the region in prehistory (Wilkinson and Straker 2008) and it is clear that these taxa, which provide excellent fuel, were utilised at Gloweth, with some supplementary fuel sources. Willow and poplar prefer damp ground and would have flourished on the floodplain of the River Kenwyn. Birch is known as a coloniser tree, frequently inhabiting open spaces, while the trees and shrubs of the Maloideae subfamily are common in hedgerows and woodland margins. The trace presence of broom or gorse is indicative of the use of heathland.

Radiocarbon dating

In the absence of artefacts, a major aim was to obtain a secure radiocarbon date from structure 200. However, only posthole [218] produced an indeterminate twig which was suitable for radiocarbon dating.

Pit [252] contained sherds from a vessel which could initially on the basis of grass-marking only be assigned a broadly post-Roman to early medieval date. The pit contained charcoal but the decision was taken to sample residue from the vessel in order to provide a direct date for the ceramics.

The unidentified twig from posthole [218] and a sample of ceramic residue from pit [252] were submitted for accelerator mass spectrometry dating

Table 2 Radiocarbon dating from posthole [218] and pit [252]

Feature	*Lab. no*	*Age BP*	*Material*	*Calendrical years 95.4%*
Posthole [218], fill (217)	SUERC-60841	188 ±29	Charcoal, twig unidentified species	AD 1650–1918
Pit [252], fill (253)	SUERC-60840	1483 ±29	Ceramic residue	AD 537–645

(AMS) at the Scottish Universities Environmental Research Centre (SUERC) (Table 2).

Discussion

The archaeological recording at Gloweth provided an opportunity to examine a block of land adjacent to later prehistoric settlements dating to the Bronze Age and Iron Age (Gossip, forthcoming). In the final event, the fieldwork demonstrated that there is a drop-off in prehistoric settlement activity and the dating of pit [252] revealed an unexpected phase.

Structure 200

Structure 200 did not produce any finds and had suffered a degree of truncation which is likely to have removed shallower features and deposits, such as floor surfaces. Radiocarbon dating was therefore the only means of establishing its date. However, there was an almost total absence of charcoal, and the date returned from a twig fell in the post-medieval period, cal AD 1650–1918, 188 ±29 BP (SUERC-60841). The structure was cut by field boundaries but, while these form part of a field system with medieval origins, individual boundaries in the form of Cornish hedges may date to any time up to the nineteenth century. The radiocarbon determination from posthole [218] may be accurate or may be on intrusive material, possibly from one of the boundaries. Structure 200 is therefore undated and the lack of associated deposits renders interpretation of its function impossible.

Consequently, all that can be stated with any certainty about the date of structure 200 is that it pre-dates the boundaries which cut through it. However, some indications for its date can potentially be gleaned from the fact that it is located not far from the prehistoric settlements at Higher Besore.

Approximately 300m to the north west was a large settlement of later Iron Age date. This comprised 12 roundhouses and a ditched field system. However, there are few similarities between these roundhouses and structure 200, which is less regular and, unlike the Iron Age houses, was not surrounded by a ring-gully (Gossip, forthcoming). Even allowing for truncation, had a gully been present around structure 200, it should have been identifiable. Furthermore, the houses at Higher Besore were associated with later Iron Age pottery.

A second possibility is that structure 200 is of Late Bronze Age date, as four post-ring roundhouses of this period were also excavated at Higher Besore (*ibid*). These were much closer, lying only around 200m to the west. At 8m in diameter, structure 200 is of a broadly similar size to Higher Besore structure 1, which also comprised a less regular arrangement of posts and pits. However, the roundhouses were associated with Late Bronze Age pottery and have been radiocarbon dated to the tenth to ninth centuries cal BC.

Alternatively, it is possible that structure 200 is of post-Roman date and contemporary with pit [252], which was approximately 75m to the south east. Post-Roman structures are uncommon, although there are a few recorded examples, as at Gwithian, where non-domestic buildings were revealed (Nowakowski *et al* 2007) and at Trethurgy, St Austell, where oval stone-walled residential structures within the round continued in use from the Roman centuries (Quinnell 2004, 178–80). Post-built structures are more difficult to parallel. A flimsy post-built structure of earlier medieval date was uncovered at Tremough, Penryn (Gossip, in preparation). This structure was sub-oval and associated with Grass-marked pottery which has been radiocarbon dated to between AD 1000 and 1200; this, however, is much later than the date from pit [252].

Isolated pits

By contrast with structure 200, the three pits [228], [250], and [252] all produced charcoal, and are likely to pre-date the later medieval period. Pit [252], and by implication its neighbour [250], are of post-Roman date and pit [228] was partially

sealed beneath a field boundary of later medieval date.

In the case of [228], the quantity of charcoal was less frequent than in the other pits; a small quantity of grain was present, which might imply that the contents were associated with food preparation (Challinor, above). However, given that it was an isolated feature devoid of finds it will not be discussed further.

Pits [250] and [252] were located in the same part of the site. Both produced charcoal and pit [252] also had a small assemblage of post-Roman Grass-marked pottery (Quinnell, above). The date of the assemblage is supported by the radiocarbon determination cal AD 537–645, 1483 ±29 BP (SUERC-60840).

Pits containing charcoal, pottery and other finds are a common feature of the prehistoric and Romano-British periods in Cornwall (for example, Jones and Quinnell 2014, 127–33). Post-Roman pits are less common, although since the 1990s a number have been recorded, mostly along linear developments such as pipelines. Most have not been found in association with occupation deposits and they seem to have been used for a variety of purposes (Herring 2011; Taylor 2012).

Many of these pits are rather different in shape and character from those at Gloweth, although they have produced similar radiocarbon determinations. At Black Cross, St Columb Major, two dates, cal AD 420–660, 1490 ±57 BP (Wk-9848), and cal AD 420–660, 1496 ±57 BP (Wk-9849), were obtained from a substantial stone-lined pit which was thought to be a corn dryer (Nowakowski and Johns 2015, 270–4). Two large, deeply-cut pits, interpreted as corn dryers were also investigated at Penlee House, Tregony, and a radiocarbon determination was obtained from one of them of cal AD 385–545, 1605 ±35 BP (Wk-19959) (Taylor 2012). At St Blazey Gate, St Blazey, a rectangular charcoal-packed feature interpreted as a possible cooking pit was associated with two radiocarbon dates, cal AD 130–440, 1721 ±66 BP (Wk-10975), and cal AD 340–620, 1575 ±62 BP (Wk-10974) (Lawson-Jones 2012), and a similar pit at Ruthvoes, St Columb Major, produced a fifth- or sixth-century cal AD date (GU-8754) (Lawson-Jones 2001, 77).

Smaller pits, closer in size to those at Gloweth have also been recorded. At Stencoose, St Agnes, 11 pits were found close to a small structure interpreted as a transhumance shelter dating to the fifth to seventh centuries AD (Jones 2000–1). They were charcoal-rich but did not contain pottery, and some may have been hearths associated with camp fires. Most, however, are likely to post-date the structure, as one radiocarbon date was obtained which fell in the period AD 900–1200.

Investigations at Bossiney (Tintagel) led to the excavation of six pits. The majority contained only charcoal but one contained dog whelk shells, cattle bones, the jaw of a pig and a Neolithic flint core. The latter find must have been residual or a collected 'curio' as two radiocarbon determinations both fell in the period cal AD 430–640 (Jones and Quinnell 2014, 10–12). The assemblage may have been collected together for deposition, and it appears to have been infilled with more formality than the others.

Deliberation is also likely to be a factor in the filling of two pits which were excavated at Hay Close, St Newlyn East (Jones 2014). These pits were associated with a ditched enclosure. The site has its origins in the earlier Iron Age but was reused in the post-Roman period. A significant aspect of the reuse took the form of deposits in pits. A large pit, cut into the enclosure ditch, was infilled with quartz blocks and finds that included pottery, glass and a cattle jaw. The pit is associated with a radiocarbon determination of cal AD 392–538, 1610 ±30 BP (SUERC-19887), which is a little earlier than that from Gloweth. The second pit was a small feature inside the enclosure. It was found to contain a perforated stone weight and sherds of post-Roman Gwithian Style pottery (*ibid*). The selection of artefacts in both the Hay Close pits appears to have been deliberate and a continuation of deposition practices from the Romano-British and prehistoric periods.

From this brief summary of Cornish data, it is evident that in the period from *c* 500 to 1000 AD, a range of pits were dug and backfilled. Some were associated with cooking and others with the more formalised marking of activities. In the case of pit [252], the scale of the activity does not imply that it was associated with a major event or that it held a formally structured deposit. Instead, the charcoal and small number of pottery sherds might suggest an episode of 'tidying', possibly after a meal. Why this should have occurred is of interest, as it would have been easier to scatter the remains over the fields or dump them on a midden heap. Perhaps it owed much to the ingrained pit digging tradition of the later prehistoric and Romano-British periods.

No further early medieval finds or features have been recorded in the immediate vicinity. Pit [252] is, however, just 70m north of Lower Besore, which is thought to be a settlement of early medieval origin on the basis of its place-name, and it is perhaps of significance that the only finds and features of this period are found here, close to the settlement. This might imply that Lower Besore was contemporary with the pits, or that it was established later but in an area which was already the focus of some form of activity by the sixth or seventh century.

Grass-marked pottery

The radiocarbon determination of cal AD 537–645 from carbonised residue on a base sherd of Grass-marked pottery from pit [252] is, alongside another from Penhale round (St Enoder), the earliest date for this type of pottery. The Penhale sherd was dated to cal AD 540–660, 1465 ±35 BP (NZA-32927) (Nowakowski and Johns 2015, 269–79). This is consistent with suggestions of a seventh-century origin for Grass-marked ware (for example, Thorpe and Thomas 2007; Thorpe and Wood 2011; Thorpe 2011), or might also allow for a slightly earlier origin in the later sixth century. The tradition of Grass-marked pottery was long-lived, continuing through to the twelfth century (Thorpe and Wood 2011).

The dates from Gloweth and Penhale also help to confirm that Grass-marked ware overlapped with Gwithian Style pottery, which is thought to date from the late fifth century or the sixth century to the late seventh century; the dating is based on association with imported Mediterranean wares and supported by radiocarbon dates of cal AD 550–650 (OxA-14528) at Gwithian and cal AD 590–670 (OxA-14560) at Boden, St Anthony-in-Meneage (Thorpe and Wood 2011; Thorpe and Thomas 2007; Gossip 2013). Gwithian Style appears to have been in use for some time before Grass-marked pottery was introduced; this is suggested by finds of Gwithian Style without Grass-marked pottery at a number of sites (Thorpe and Thomas 2007, 46) and by the early date at Hay Close, St Newlyn East, where Gwithian Style pottery and imported wares were found in a context dated to cal AD 390–540 (SUERC-19887) (Jones 2014). This sequence and overlap is also suggested at Penhale round (Nowakowski and Johns 2015) where, although both Gwithian Style and Grass-marked pottery were present, only Gwithian Style sherds were found in the late ditch fills of the round but both types were found in final infill deposits around the entrance.

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Recent work in Cornwall, 2013–2015

Cornwall Archaeological Unit

2013

Poltesco Mill, Ruan Minor

Cornwall Archaeological Unit was commissioned by the National Trust to carry out an archaeological assessment of the mill holding and a historic building survey of Poltesco Mill in order to better inform the maintenance and interpretation of the site. The mill complex and holding date to at least the eighteenth century in their present form but parts of the complex may be much older. The area retains its eighteenth-century or earlier mill, mill pond and associated features and also the eighteenth-century Mill House, together with additional nineteenth-century buildings. The mill itself is important because, despite a period of disuse and neglect, the mill components remain virtually complete. The mill machinery illustrates the mechanical development that took place in Cornwall from the mid-eighteenth century to 1925. It is the only surviving mill of this type in west Cornwall and one of few comparable examples in the county and therefore considered one of the more important historical buildings in Trust ownership.

- Project Manager: Nigel Thomas. Project Officer: Jo Sturgess.

Lantoom Quarry, Liskeard

Archaeological recording was carried out in fields adjacent to Lantoom Quarry ahead of its redevelopment. Features recorded included a pit containing burnt quartz fragments and charcoal. A similar pit found during monitoring of the nearby Dobwalls by-pass was dated to the Early Bronze Age. Ditches forming a rectilinear field were also recorded and as these were on a different alignment to the present-day field system they may be prehistoric in origin.

- Project Officer: Carl Thorpe.

Quintrell Downs, Newquay

In a programme of archaeological watching briefs carried out during redevelopment of land at Quintrell Downs groups of pits and a series of ditches were recorded. None of the ditches produced artefacts so were not datable, although some were clearly removed field boundaries of probable post-medieval origin. Two of the pits contained flints which were possibly Neolithic in date and a third pit contained a quantity of burnt bone which analysis suggested is likely to be human. Radiocarbon dating of a sample of the bone places it in the Late Bronze Age. (See report in this volume.)

- Project Officers: Carl Thorpe, Ryan Smith.

Trekenning Farm, St Columb

A watching brief was undertaken during the construction of a solar farm on land belonging to Trekenning Farm. Features recorded include a possible Mesolithic or Neolithic soil horizon, a number of removed field boundaries of possible medieval origin, a leat and a probable prospecting pit.

- Project Officer: Sean Taylor.

Victoria, Roche

A planning condition on a development adjacent to the A30 at Victoria, Roche led to the full excavation of a site covering almost 2 ha. An archaeological assessment of the site had indicated that it was adjacent to a possible medieval deer park and geophysical surveys identified two enclosures and possible field boundaries.

The excavation revealed three broad phases of activity. A post-ring surrounding a central hearth and posthole, with several outlying pits was identified towards the centre of the excavation. Artefacts recovered dated the feature to the Bronze Age and it is likely to represent a timber post circle. One of the enclosures identified by the geophysical survey proved to be a working area surrounded on three sides by a ditch. Two further working areas were located to the west of this. The function of the working areas is likely to be industrial but the precise nature of the activity is yet to be identified. Artefacts from these features date to the Roman period. A third phase of activity was represented by the other enclosure identified by the geophysical survey, which was tentatively interpreted as a stock enclosure associated with the deer park.

- Project Manager: Andy Jones. Project Officers: Sean Taylor, Laura Ratcliffe, Graham Britton, Fiona Fleming, Hayley Goacher, Richard Mikulski, Francis Shepherd, Ryan Smith.

Camborne, Pool, Redruth road corridor

A programme of archaeological recording was undertaken along the route of the Camborne to Pool (CPR) Link Road. The corridor of this road runs through some of the most important former mining areas in Cornwall. This area, and especially the Red River Valley, was at one time part of the most heavily and intensively industrialised area of Cornwall; today, following the re-processing of tailing dumps for their mineral content and more recent land reclamation and landscaping projects, very little evidence remains visible at surface.

The archaeological monitoring of the CPR road scheme provided a window into some of this earlier history and has provided important insights into the mining history of the area. In particular, at the west end of the road corridor it was possible to

Fig 1 The excavated post-ring at Victoria with some of the excavation team. (Photograph: Cornwall Archaeological Unit.)

identify and record mining activity on two major lodes that included initial prospection, exploitation via outcrop shafts, the digging of deep shafts, and finally the working of the lode at depth utilising extensive stopes. These features are likely to date from the late seventeenth or early eighteenth century through to the late nineteenth century and possibly into the early twentieth century, and were associated with Dolcoath mine. Evidence for parts of a major underground leat system, developed to power machines and pumps using underground waterwheels, was also recorded.

- Project Manager: Adam Sharpe. Project Officer: Carl Thorpe.

Scheduled Monument Management

Cornwall's Monument Management project continued throughout 2013 and 2014. The emphasis was on the repair, assessment and conservation of Scheduled Monuments on the Heritage at Risk (HAR) register. The project was funded principally by English Heritage and Cornwall Heritage Trust, with the support of a range of other partners and volunteers.

Two projects in east Cornwall focused on contrasting sites. At Fursnewth, Liskeard, a medieval stone cross which had been re-used as a gatepost and acquired for a private garden was repaired and restored as a publicly-accessible feature in a position very close to its original location. Meanwhile, high above the estuary of the river Tamar, on Maker Heights, a series of Napoleonic redoubts benefitted from scrub clearance to reveal their original form.

In west Cornwall, two medieval monuments were conserved and temporary repairs carried out at an industrial site. Trelill holy well, near Helston, had been at high risk and in declining condition for many years but in 2013 masonry repairs were carried out which enabled it to be finally removed from the Heritage at Risk register. Meanwhile a fragment of ruined masonry at Glasney College, Penryn, was consolidated and repaired so that it is now more of a feature than it has been for some period. At Tolgus Arsenic Works near Redruth, however, it was only possible to carry out holding works to slow the decline of the vandalised calciner.

Finally, in partnership with The Conservation Volunteers, scrub was cleared from a range of prehistoric sites in Cornwall suffering from gorse and bracken growth and at risk from root and rhizome damage. These were principally but not exclusively on Bodmin Moor, and as a result one very large Scheduled Monument on Garrow Tor has been removed from the HAR register.

- Project Manager: Ann Preston-Jones.

The Hurlers, Minions

During September, Cornwall Archaeological Unit, the Roseland Observatory and the Caradon Hill Area Heritage project ran a full programme of activities focused on The Hurlers at Minions in south-east Cornwall as part of the *Mapping the Sun* project. This unique triple stone circle is one of Cornwall's best known prehistoric monuments. The Hurlers lies in an exceptionally well-preserved prehistoric landscape which includes the famous Rillaton Barrow.

The last significant study of the Hurlers was in the 1930s when two of the three circles were partially restored by C R Ralegh Radford and local archaeologist C K Croft Andrew. One of the most significant discoveries of the 1930s work was a stone 'pavement' which once existed between the central and northern circles and was interpreted by Radford and Croft Andrew as a 'processional way'. During the September excavation the pavement was exposed again for the first time in over 80 years. It is a remarkable feature, tightly compacted with an uneven surface made with a variety of granite and quartz stones. It incorporates a distinctive protruding (angled) white quartz block for which there is no simple interpretation, although the pavement is on a shared alignment with the circles and Rillaton Barrow. It links the central and north circles and can be considered an integral part of the architectural design of the entire complex. Its potential role in sight-lining significant tors, other landmarks and the stars was one aspect studied during the project and astronomical surveys were undertaken to map the progress of the sun across day and night using the Calendar stone (in the central circle).

Mapping the Sun is a community archaeology project and all the work was carried out by local volunteers who were guided by a small professional team. Up to 1,000 visitors came to see the excavations and learn about The Hurlers. Equally large numbers of visitors dropped into Minions Heritage Centre to see an exhibition where photographs of the 1930s excavations

were on public display. Other activities included educational workshops, guided walks, geological field trips and a night-time survey on the equinox.

- Project Manager: Jacky Nowakowski.

Isles of Scilly

Churchtown Farm, St Martin's

In the spring of 2013 a void opened up in one of the farm's bulb fields. Closer inspection revealed that it contained the remains of an Iron Age or Romano-British south-western cist burial. While the cist remained open the contents were exposed to the elements and vulnerable to contamination and would ultimately deteriorate and disintegrate. The cist was therefore excavated and recorded.

The Churchtown Farm cist was small but very well constructed and was the grave of a child aged between six and eight years at death. In the south-west corner of the cist was a copper-alloy brooch which may have been used to fasten a shroud. This brooch belongs to the large group of T-shaped brooches produced in south-west Britain in the later first century AD. Formal child burials were generally rare in the British Iron Age so it may suggest that this child was considered special in some way or that formal child burial is one of the characteristics of the Porthcressa and wider south-western cist burial traditions, or perhaps that both of these inferences are true. At the end of the excavation the cist was carefully backfilled and the capstones replaced.

- Project Manager: Charles Johns. Project Officer: Sean Taylor.

Porthloo, St Mary's

Cornwall Archaeological Unit was commissioned by the Duchy of Cornwall to a carry out an archaeological investigation of the area of the Boat Park Improvement Scheme at Porthloo, St Mary's, to satisfy a planning condition.

A test pit dug on the beach adjacent to the existing slipway contained a sequence of peat deposits from which a 2.1m deep series of samples was recovered. A number of radiocarbon dates were obtained from plant macrofossils and pollen analysis records a transition from high levels of woodland at the base of the sequence to an open, grass-dominated, pastoral landscape by 1170–865 cal BC (95 per cent probability). The presence of a former shallow lake or lagoon in this part of St Mary's, as suggested by other data, is confirmed by the aquatic types recovered in much of the sequence. An aged-depth model constructed using the radiocarbon dates indicates that peat began to develop at Porthloo around 1490 cal BC (3440 cal BP), at the transition between the Early Bronze Age (*c* 2500–1500 BC) and the Middle–Late Bronze Age (*c* 1500–800 BC). A major drop in tree pollen (particularly hazel), indicating near complete clearance of woodland or scrub, occurred during the Late Bronze Age, around 1060 BC (3010 cal BP).

The model also allowed the timing and duration of two significant episodes of blown sand deposition to be estimated, possibly the remnants of dunes that encroached onto the wetland as a result of storms. The lower deposit is dated to between cal AD 595–685 and cal AD 615–715 (both 95 per cent probability). This is likely to represent a very short interval of sand deposition; the model estimates it to have lasted between 0 and 25 years (68 per cent probability). The upper sand deposit was deposited between cal AD 675–835 and cal AD 1055–1380 (both 95 per cent probability). This is likely to represent a much longer period of sand deposition, estimated to have continued for between 410 and 555 years (68 per cent probability).

- Project Manager: Charles Johns. Project Officer: Sean Taylor.

St Agnes Island Hall, St Agnes

A programme of archaeological mitigation for the Council of the Isles of Scilly and the Island Hall Committee was undertaken to satisfy a planning condition for the refurbishment and extension of the Island Hall, St Agnes. The mitigation took the form of evaluation trenching and a building record of the Island Hall prior to the start of works and a watching brief during the construction phase. Although no significant archaeological features were identified during the fieldwork, many finds were recovered from the topsoil and subsoil, including two flint flakes, a sherd of early medieval pottery, and sherds of medieval and post-medieval pottery.

- Project Manager: Charles Johns. Project Officer: Sean Taylor.

2014

Geevor tin mine, Pendeen

Since its closure in 1991 Geevor Mine has been developed into a prestigious heritage site which annually attracts more than 35,000 visitors and currently employs 26 local people. In recent years almost all the physical remains of both Wheal Jane and South Crofty – the only other two large twentieth-century tin mines in Cornwall – have been lost, and much of what survives at Geevor is now exceptionally rare; some components represent the only surviving examples anywhere in Britain. In 2002, following initial safety works to the site, a Conservation Management Plan was drawn up to guide its short- and medium-term development. Many of the aims and objectives set out in that first Plan have now been achieved.

Twelve years on Cornwall Archaeological Unit was commissioned to update the Plan in order to chart the way forward for the site and ensure that any proposals for development retain the values which make the site so significant. The Plan sets out, in summary, what is known about the Geevor site and what is significant about it, issues and vulnerabilities affecting it, a conservation philosophy for the site with linked vision and aims, together with a series of policies which will be adopted jointly by the site owners and managers to ensure appropriate management and development. The aim is that the document will prove a useful tool in taking the Geevor site forward, further developing the unique resource which it represents. In particular, focus has been given to considering uses for empty or under-used buildings, especially those making up the early historic core of the site around Wethered Shaft, in order to make the site more financially viable, sustainable and enjoyable for all.

- Project Officer: Adam Sharpe.

Tregargus china stone mills, St Stephen

China stone was quarried and milled in the Tregargus valley from 1870 until 1965, when the market for lower grades of china stone collapsed and the mills were abandoned. The site includes the remains of five china stone mills which, together with their associated stone quarries, are the finest assemblage of stone mills in western Britain. They include Wheal Arthur, with its quarry, stone mill and pan-kiln, the partial remains of Blacksmith's Shop Mill and Big Wheel Mill with their associated infilled quarries, mills, tramways and leats, Trevear Mill with its attached pan-kiln and miller's cottage, and Lower Tregargus / Mica Mill with tramway and leat at the southern entrance to the valley. The Tregargus Valley Trust has for many years been attempting to preserve these important remains.

Previous reports and a management plan informed a Natural England-funded project to consolidate and conserve high-priority structures within the valley, namely limited consolidation and conservation works to Wheal Arthur Mill and Big Wheel Mill, and complete conservation of Trevear Mill and the adjacent cottage. An archaeological record was undertaken before, during and after these works. In addition, historic building site consultancy ensured that each structure's special qualities were mitigated, preserved and enhanced by the conservation project.

- Project Manager: Colin Buck.

Pennare Farm, St Allen

A programme of archaeological mitigation was undertaken prior to and during construction of a solar farm at Pennare Farm, St Allen. The site had been the subject of an assessment and geophysical survey, the latter having identified what appeared to be enclosures and ditches and a trackway belonging to an underlying field system pre-dating the present landscape. The fieldwork took the form of evaluation trenching over features identified by the geophysical survey prior to the construction phase of the project; a watching brief was also undertaken during the construction phase. Both phases of work confirmed that some of the anomalies were field ditches thought to be of late prehistoric or Romano-British origin. These included a large ditch which is likely to have been a major land division. The presence of the trackway was also confirmed. Few artefacts were recovered during the works but these did include a Neolithic greenstone axe and a slate spindle whorl of later prehistoric or Roman date. (See report in this volume.)

- Project Officer: Sean Taylor.

Hallenbeagle, Scorrier

Hallenbeagle was one of a group of copper mines in western mid-Cornwall which were among the earliest to adopt the steam pumping technology

Fig 2 Investigation of outcrop shafts at Hallenbeagle, looking north west towards the two surviving engine houses on the site. (Photograph: Cornwall Archaeological Unit.)

which was subsequently to transform Cornwall's mining industry. Operations were underway in the area in the late seventeenth century, and did not fully cease until the late decades of the nineteenth century. An archaeological assessment and two subsequent phases of archaeological recording of the site were commissioned in advance of redevelopment as a business park. It became apparent over the course of the watching briefs that the scale of past mining activity within the site was far more extensive than had initially been thought, with a very large number of mining features revealed, recorded and mitigated. The surveys of these features reveal a long and complex history of mining from an initial prospecting phase which probably took place during the late seventeenth century, through phases of exploitation of the lode outcrops utilising both openworks and closely-set outcrop shafts during the eighteenth century and the culmination of work on site in the form of deep shaft mining using steam pumping and winding engine houses during the nineteenth century.

The extent and quality of the archaeological evidence for mining activity continuing across more than two centuries on this site is, to date, unique, and has allowed for the first time the full evolution of part of Cornwall's mining landscape to be extensively documented and interpreted.

- Project Manager: Adam Sharpe. Project Officer: Carl Thorpe.

Mount Ambrose, Redruth

An archaeological watching brief was carried out on the site of a new housing development at Mount Ambrose, near Redruth. The remains of several post-medieval field boundaries were recorded together with the lime and ash floor of a cottage demolished prior to 1877 and an associated cobbled surface.

- Project Officer: Ryan Smith.

St Petroc's church, Bodmin

Archaeological recording was carried out in the churchyard during ground works for the installation of water and gas pipelines. The current church was built in the twelfth century with alterations and additions made in the fifteenth century. It underwent major renovation and a partial re-build in the nineteenth century. The project provided considerable evidence for the history and archaeological potential of the churchyard. Details of 44 graves were recorded and bone preservation was shown to be good. The burials were of both adults and children and six were within coffins, with the remainder shroud burials. One burial was possibly that of a priest. There was little dating evidence for the graves but shroud burials are likely to be of fifteenth to seventeenth century date. In addition to the graves a culvert was recorded to the north west of St Guron's Well and may be part of the water

system associated with this feature. Alternatively it may be part of a drainage system recorded as having been built in the sixteenth century or part of a drainage system emplaced in 1817.
• Project Officer: Carl Thorpe.

St Piran's Oratory, Perranporth

Cornwall Archaeological Unit was commissioned by St Piran Trust to undertake project management of a programme of conservation at St Piran's Oratory. The site acquired fame in the nineteenth century when excavations completed the discovery of what many claimed was the oldest four-walled Christian building in mainland Britain. Despite early attempts at conservation, problems with vandalism and flooding led to a decision to bury the oratory beneath an artificial sand dune in 1980. Since then the iconic status of the site has grown because of its association with St Piran and, although buried beneath the sand, the structure was considered a 'building at risk' by Historic England.

Over a five-week period more than 80 volunteers helped to remove the sand covering the Oratory by hand, slowly revealing first the walls of the 1910 concrete structure (designed by Edmund Sedding) and then the surviving fabric of the medieval building. Work was halted due to high water levels in March but completed in November–December when the ground was dry. The Oratory turned out to be in remarkably good condition and for the first time it was possible to undertake detailed recording of the building, carried out using a combination of photogrammetry (Tom Goskar) and traditional building analysis (John Allen). The surviving fabric suggests a building of Norman date, almost certainly replacing an earlier structure.

The exposure of bones at the site has been documented many times and it was not surprising when clearance of sand to the west of the Oratory revealed the remains of 12 skeletons. Bones have been analysed by osteo-archaeologist Richard Mikulski and details will appear in a future report. With one exception the burials were aligned east–west in the Christian tradition, with their limbs extended and their heads at the western end of the grave. Some of the graves had been marked with upright stones at the head and feet and the bodies are likely to have been wrapped in shrouds before being placed in grave pits dug into the sand.

Samples from two burials were selected for radiocarbon dating. The skeleton of a child buried on its side in a flexed position produced a date suggesting burial in the eighth or ninth centuries AD; another child appears to have been buried around the same time, perhaps a little later in the ninth century AD. These dates confirm the presence of a Christian site pre-dating the surviving Oratory and it is possible that the Oratory is the site of *Lanpiran*, a possible enclosed monastic complex associated with St Piran and recorded in the Domesday Book of 1086. It is hoped that a future research excavation project will add more information on the chronology and extent of the site.

Planning is currently underway for a drainage trial in early 2017 which will test whether it is possible to permanently drain the Oratory, which floods to the full height of its walls every winter. Following this trial a decision will be made on how best to conserve this important monument. Discussions are currently taking place between St Piran Trust, Cornwall Archaeological Unit, Historic England and Natural England on the best way to protect, conserve and present the Oratory.
• Project Officer: James Gossip.

Jory's Meadow, St Tudy

Cornwall Archaeological Unit was commissioned by Ocean Housing to undertake evaluation trenching of three enclosures and other anomalies identified by a geophysical survey in advance of a proposed housing development. Six trenches were dug and these confirmed that the enclosure ditches were deeply cut and well preserved and that all three features are likely to be enclosed settlements or 'rounds' from the Iron Age–Romano-British period; pottery of this date was recovered from two of the enclosures. One of the enclosures overlay another, suggesting prolonged use of the site. Postholes found in one of the trenches indicate that post-built structures are likely to be present and the good preservation of the ditches and relatively undisturbed agricultural history of the site suggests there is potential for the survival of significant prehistoric and Romano-British remains.
• Project Officers: Hayley Goacher, Ryan Smith.

Gloweth, Truro

An archaeological watching brief was carried out in advance of a housing development at Gloweth, Truro. The Phase 1 development covered an area

of approximately 1.4 ha and affected an area which had been shown by a geophysical survey to have potential for significant archaeology. Previous excavations nearby have identified extensive buried prehistoric archaeological remains. During fieldwork, field boundaries shown on the geophysical survey results were located, an undated post-ring structure was identified pre-dating these boundaries and one of three isolated pits was found to contain early medieval grass-marked pottery. (See report in this volume.)

- Project Officers: Hayley Goacher. Ryan Smith.

A30 Longrock to Innis Downs CHAMP

Cornwall Archaeological Unit was commissioned by EM Highway Services Ltd to produce a Cultural Heritage Asset Management Plan (CHAMP) for the section of the A30 trunk road through Cornwall from Longrock near Penzance to Innis Downs near Bodmin. The project involved researching the background history of the road, the collation of GIS data for the roadline, field visits to all sites located in the road corridor, and photographing and preparing condition and management reports for them. The roadline from Longrock to St Erth station has been widened to accommodate twentieth-century traffic levels, but still passes through a number of small settlements and retains its turnpike era milestones, as well as a pair of medieval wayside crosses and one early bridge. The section of the A30 from Chiverton roundabout to Carland Cross still largely follows the route of an ancient road along Cornwall's upland spine, has only been widened to a limited degree and incorporates only one bypass, at Zelah. Although milestones survive along this length of the A30, only a few other extant assets were identified. Only a small number of cultural heritage features were found to survive within the hard estate (the road itself) and the soft estate (land flanking the highway under the management of the Highways Agency), these consisting of one bridge, a pair of Scheduled medieval wayside crosses, one guide stone and a group of turnpike trust milestones.

- Project Manager: Adam Sharpe. Project Officers: Adam Sharpe, Richard Mikulski.

Tregonning Hill brickworks, Breage

A building record, excavation and watching brief were carried out in advance of consolidation work to stabilise and protect the Grade II Listed beehive Scrivener kiln at Tregonning Hill, Breage. The excavation and watching brief provided substantial information regarding the design, construction and layout of the kiln, revealing the location of its adjoining chimney and flue as well as the entrance to the stoking chamber and details of the internal floor and below-floor structure. The granite and brick structure with its original domed roof (for the most part intact) is a fine example of a nineteenth-

Fig 3 Tregonning brick kiln, looking south-west in June 2013. (Photograph: Cornwall Archaeological Unit.)

century beehive Scrivener kiln, once common in Cornwall, but now a rare survival.
- Project Officer: Jo Sturgess.

Shrubberies Hill, Porthleven

Archaeological recording was carried out during the construction phase of a redevelopment of 2.2 ha of land on the outskirts of Porthleven. Four areas containing dense concentrations of pits and postholes were identified in the western half of the site. Two post-rings were clearly identified among these concentrations and artefacts recovered dated these features to the Bronze Age. On the south-east side of the site several pits were identified in close proximity to a removed field boundary. These pits contained flint, parts of a saddle quern and prehistoric pottery.

The northern area contained a sub-rectangular enclosure measuring approximately 75m by 50m. Structures used for the smelting of non-ferrous material were found within the backfills of the enclosure ditch and several structures were recorded in the interior of the enclosure, including a hearth within an area defined by postholes. A further hearth flanked by postholes and pits to its south east was also recorded, while two drains (one stone-lined, the other stone capped) were identified within the north-east and south-west sections of the enclosure's interior. Artefacts recovered from this area date the features to the Romano-British period.
- Project Manager: Andy Jones. Project Officers: Ryan Smith, Hayley Goacher, Megan Val Baker.

Carwynnen Quoit, Camborne

A team consisting of Cornwall Archaeological Unit staff and 20 volunteers carried out further archaeological work at Carwynnen Quoit, Camborne. The team reopened the site in order to prepare the ground for the re-erection of the two remaining uprights – stones 2 and 3 – so that they could join upright stone 4, which was placed in its original socket hole at the end of the excavation in 2013. Further exploration of the robber pit which had been sunk into the chamber floor took place. The pit, oval in shape and over 1m deep, was backfilled with a massive quantity of stones, some of which were large blocks. There were no finds so the exact date of this pit still remains uncertain. What is striking was the large quantity of stone at the heart of the monument, suggesting that alongside the pavement and the open chamber there may well have been a stony cairn platform.

A number of test pits were dug in parts of the field which had not been explored before. A fine Neolithic flint blade, some pottery and a hammerstone were the highlight finds. While no physical remains of other features were found in the areas explored, there was the interesting discovery of a stone surface at the bottom of the field; this requires some future exploration. On Friday 2 May, stones 2 and 3 were mechanically lifted with great skill and care and repositioned on site. The whole event took a couple of hours and was watched by a large crowd. Throughout the project a series of outreach and educational events took place and the field was visited each day by classes from local schools. .
- Project Manager: Jacky Nowakowski. Project Officers: James Gossip, Richard Mikulski.

A391 Carluddon by-pass, St Austell

Cornwall Archaeological Unit was commissioned to undertake a programme of archaeological recording during ground works involved with the construction of a new stretch of the A 391 road to by-pass the village of Carluddon. The new road corridor ran from the present A391 to the north of the village and cut through fields and areas of china clay working on the western side of the settlement. A series of 13 prospecting pits was recorded and a large granite stamps anvil recovered from a drainage trench. The anvil was found in an unstratified context but is likely to be medieval or possibly post medieval in date.
- Project Officer: Carl Thorpe.

The Cider House, Godolphin, Breage

Historic building recording was carried out in advance of conservation work on the Cider House at Godolphin. The present building was purpose-built as a cider house in the eighteenth century. Projecting footings along part of the present west wall indicate that it replaced an earlier, smaller building of unknown date. A total of four major construction phases were identified by the study. Phase 1 (seventeenth or eighteenth century) comprised a building at the northern end of the present structure which was extensively

demolished or ruined before the erection of the present building during phase 2 (eighteenth century, pre 1786). Phase 3 occurred as a series of repairs and minor alterations in the nineteenth century. Phase 4 (twentieth century) saw the removal of the mill and press and the conversion of the building into a pottery. The survival of this building is significant as it is a relatively rare early example of a cider house in Cornwall.

- Project Officer: Jo Sturgess.

Newquay Strategic Route, Newquay

Archaeological recording was undertaken along the route of a new road and roundabout located north of the A392, directly opposite Hendra Tourist Park on the outskirts of Newquay. Numerous features were recorded throughout the site, to most of which broad dates can be attributed on the basis of artefacts recovered. Evidence for Bronze Age activity consists of a post-ring roundhouse located at the south-west corner of the site. This was over 11m in diameter and contained several interior postholes and pits. Several sherds of Middle Iron Age pottery were recovered from the fill of a curving ditch which may have been the drip gully of a roundhouse.

The majority of the features encountered dated to the Late Iron Age and Romano-British periods and appear to have had an industrial function. These comprised two hollows, one of which was possibly enclosed by a bank. This hollow contained a ring-gully encircling a series of pits and postholes. A third industrial area was partially enclosed by a ring-gully and contained three sub-rectangular pits which had been exposed to extreme heat. Metal slag was recovered from several ditches across the site, most notably from one into which a large quantity of slag had been deliberately deposited.

- Project Officers: Ryan Smith, Anna Lawson-Jones, Graham Britton, Megan Val Baker, Richard Mikulski.

Eastern District Centre, Truro

Continuing from the 2012 excavations at the Truro Eastern District Centre development, a watching brief was undertaken across the remainder of the site, covering an area of approximately 16 ha. The stripping of soil during the watching brief revealed a large number of small pits. Two particular concentrations contained numerous artefacts dating from the Early Neolithic to Early Bronze Age: a substantial quantity of Middle Neolithic

Fig 4 A conserved Grooved Ware bowl from one of the many pits discovered on the Truro Eastern District Centre site. (Photograph: Cornwall Archaeological Unit.)

Peterborough Ware represents the most important assemblage of this material yet found in Cornwall, and an even larger quantity of Late Neolithic Grooved Ware, probably the largest assemblage found in Cornwall to date, was also recovered. Continuity of use of the area was demonstrated by the identification of Trevisker ware and other Bronze Age pottery forms from a small number of artefact-rich pits. Several of the pits displayed evidence of structured deposition.

Some of the pits also contained large amounts of flint debitage, demonstrating not only that flint knapping occurred on the site, but also that the material for backfilling the pits may have come from middens. Various specialised forms of flint tools were recovered from the pits including leaf and barbed arrowheads, blades, scrapers, and an unusual Y-shaped object closely resembling a rare implement known as a tribrach.

A considerable assemblage of burnt hazelnut shells, often an indicator of Neolithic–Bronze Age activity, was recovered from the site. Thirty pits contained this material, a remarkable number for Cornwall. Two pits also contained cassiterite pebbles in large quantities. In one pit these were found in association with Trevisker pottery. In the other the residues from wet sieved soil samples were found to be unusually heavy and may represent crushed tin ore. This may potentially be the earliest evidence for the source of tin used in copper-alloy artefacts yet discovered in Cornwall. A larger number of pits contained slag of unidentified provenance, some of which may also represent tin processing. In addition the remains of two iron smelting furnaces, probably of Iron Age or early medieval date, were found. One retained an arch of an opening into the furnace, a rare survival of such a feature. Other Iron Age features included elements of a field system and several pits.

Post-medieval features were also identified including a brick production site close to the Tregurra stream and an engineered road running almost parallel to the Newquay road.

- Project Manager: Sean Taylor. Project Officers: Anna Lawson-Jones, Graham Britton, Ryan Smith, Fiona Fleming, Hayley Goacher, Richard Mikulski.

St Mary's airport, St Mary's, Isles of Scilly

Archaeological recording was carried out during groundworks on the site of a temporary tarmac batching plant near St Mary's airport and Parting Carn farm. A large number of pottery sherds and three stone artefacts were recovered from a soil layer filling a shallow hollow in the natural substrate. A pit filled with medium-sized stones, including a muller fragment and a shaped rectangular stone with a worn groove on one side, was also recorded. A fired clay weight was also recovered from this feature. Radiocarbon determinations indicate a Middle Bronze Age date for the deposits. Broken ceramics were often deposited near prehistoric houses in Scilly and it is likely that the pottery and worked stone indicates the presence of a settlement in the close vicinity. (See report in this volume.)

- Project Manager: Charles Johns. Project Officer: Graham Britton.

2015

King Edward Mine, Camborne

King Edward Mine is now the oldest complete tin mine site left in Cornwall. The site contains a number of buildings, many of which are grouped into larger complexes: for example the Count House and Carpenters' Shop complexes (all unoccupied and deteriorating) and the very significant Mill complex. All of the main buildings on the site are Grade II* Listed due to their individual or group value. The entire site is within the Cornwall and West Devon Mining Landscape World Heritage Site.

A detailed Conservation Management Plan was produced for the site by Cornwall Archaeological Unit in early 2013 to inform proposals for adaptive reuse of the Count House and Carpenter's Shop complexes. The site works were carried out between June 2014 and October 2015. An archaeological record was taken throughout the duration of the works, which included the excavation of a small mine shaft and stope within the Counthouse complex, and all the works relating to the conversion of a mid-nineteenth-century collection of mine buildings to workspace units (retaining the Grade II* designation). In addition, historic building site consultancy ensured that each building's special qualities and importance were mitigated, preserved and enhanced by the building conservation project.

The King Edward Mine work units were opened by HRH Prince Edward, Earl of Wessex, on 17 September 2015, and the entire project received

a Commendation from the Cornish Buildings Group in May 2016 for the quality of its heritage conservation.

- Project Manager: Colin Buck.

Cubert Vicarage, Cubert

The investigations were designed to inform plans for renewed use of the Vicarage, a Grade II Listed Building. Building record and assessment showed that the complex includes a vicar's house and adjoining store, documented in the seventeenth century, with a mid-nineteenth century vicarage greatly extending this and incorporating it as a service range. The archaeological work was required to ensure appropriate recording and protection of known or potential elements of the post-medieval core of the complex. In addition to the building recording the work included the digging of test pits to assess the archaeological potential of the site and a watching brief ahead of ground works in the former linhay. The watching brief recorded some remnant wooden flooring, an earthen floor surface and bone-rich midden deposits.

- Project Officers: Cathy Parkes, Anna Lawson-Jones.

A30 Innis Downs to Dunheved Bridge CHAMP

Cornwall Archaeological Unit was commissioned by Kier Highways Ltd to produce a Cultural Heritage Asset Management Plan (CHAMP) for the section of the A30 trunk road through Cornwall from Innis Downs near Bodmin to Dunheved Bridge, near Launceston. The methodology for the project was the same as that carried out in 2014 for a similar CHAMP for the section of the A30 between Longrock and Innis Downs (above). Only one cultural heritage feature was found to survive within the hard estate (the road itself), this being a turnpike-era bridge. Other assets lie within or immediately adjacent to the soft estate (the land flanking the highway under the management of Highways England), these consisting of a turnpike-era double bridge, turnpike trust milestones, medieval wayside crosses, post-medieval guidestones and boundary stones, a former coaching inn, a disused church, a prehistoric barrow and a possible barrow and a cropmark of a late prehistoric settlement. Other features survive beside or flanking now by-passed sections of the original route of the A30. A number of designated features were found to no longer be in their documented locations; their current locations are unknown.

- Project Manager: Adam Sharpe. Project Officers: Adam Sharpe, Richard Mikulski.

Penmadown House, St Germans

Penmadown House is a small country house built in the Gothic style to the design of John Samson in 1905. During an air raid in 1941 the house was hit by an incendiary bomb and gutted by fire so that for the most part only the walled shell survives. Its new owners intend to refurbish the house and restore it as much as possible to its original appearance. One of the conditions of the planning consent to achieve this was the requirement for an archaeological record of the building prior to its restoration.

The findings of the recording plus access to original plans and elevations show that sufficient survives of the building to enable a surprisingly high level of understanding of the original design and the way that it functioned. A particular aspect of the design of the building is the extent to which it incorporated innovative construction techniques and technology of its period.

- Project Officer: Nigel Thomas.

Roundwood Quay, Feock

Cornwall Archaeological Unit carried out archaeological assessment and recording for a lane to Roundwood Quay, Feock, ahead of it being resurfaced. The study was required by Historic England as a condition of Scheduled Monument Consent for the works at Roundwood, where the lane runs through a prehistoric promontory fort. The project comprised desk-top study of historic maps and other documentary sources, fieldwork combining photography, description and profile drawing in advance of the roadwork, and watching brief and monitoring during the works. During the course of the work a previously unrecorded ridgetop enclosure, interpreted as a hillfort, was discovered. The study showed the lane to be a good example of a historic routeway maintained and modified through time. It shows relationships with many archaeological or landscape features, among them nationally important sites including the Listed Roundwood Quay and the Registered Park and Garden of Trelissick, as well as the Scheduled

Roundwood promontory fort, the newly discovered hillfort west of Roundwood, and inland mining areas in the Cornwall and West Devon Mining Landscape World Heritage Site.
- Project Officer: Cathy Parkes.

Trethosa, St Stephen in Brannel

Archaeological recording was carried out during the construction of a solar farm at Trethosa. A geophysical survey of the development site had identified a sub-rectangular enclosure and associated field system likely to be of Iron Age or Romano-British date. As a result a no-build area around the enclosure was incorporated into the design of the development. Some elements of the ditched field system were recorded from the cable trenches, confirming the existence of the features. In addition several removed field boundaries of medieval or post-medieval date were identified.
- Project Officer: Hayley Goacher.

Trease, Pendeen

Cornwall Archaeological Unit was commissioned by the National Trust to undertake an archaeological watching brief during decontamination and consolidation works at the Trease property at Boscaswell, Pendeen. The property contains the remains of North Boscaswell Mine, which worked for little more than a decade from 1906 and which incorporates the remains of the only known Merton Furnace to survive in Britain. The operation of this element of the mine dressing floors had resulted in significant levels of contamination by arsenic and other heavy metals within and immediately surrounding its remains.

Contaminated material was removed from the Merton Furnace and its surroundings by specialist contractors, the remains of the structure subsequently being jet washed to allow eventual consolidation and public access. Some masonry elements of the dressing floors were repointed using a lime-based mortar during this phase of works and extensive scrub clearance was undertaken by contractors and National Trust staff.

A measured sketch survey of the complex was produced during the watching brief, whose results are summarised in a report to the National Trust which also includes outline recommendations for future management of this element of the site.
- Project Officer: Adam Sharpe.

Redruth Brewery, Redruth

A series of projects are underway at the site of the former Redruth Brewery in advance of its redevelopment as the *Kresen Kernow* archive facility. These include a Historic Environment Impact Assessment, evaluation trenching, watching briefs and building recording of the malthouses, brewhouse and other historic buildings. The Impact Assessment targeted the potential for buried archaeology within the former brewery site, a built environment assessment to qualify the retention of historic buildings within the brewery site, and an assessment of the site's setting and Outstanding Universal Value, particularly in relation to its status as part of the Cornwall and West Devon Mining Landscape World Heritage Site. Part of the association with mining is the former British & Foreign Safety Fuse Works (1848), the remaining buildings of which include the stump of a chimney and Chymbla House. A range of stone-built outbuildings east of Chymbla House also represents expansion of the fuseworks in the early twentieth century. A sawmill was also formerly located between the brewery and Chapel Street.

The assessment of the buried archaeology indicated the likelihood for good survival of below ground remains which have the potential to provide greater understanding of the former safety fuseworks factory and the saw and bone mill, the historic course of the Wheal Silver adit, the Tolgus stream and Foundry leat, and the phasing and development of the historic brewhouse.

The built environment assessment identified that in addition to the brewhouse there are historic buildings key to the brewery's function and in sound architectural order that merit sensitive restoration and integration into the planned redevelopment.
- Project Manager: Jo Sturgess. Project Officers: Fiona Fleming, Hayley Goacher.

Tintagel Castle, Tintagel

Cornwall Archaeological Unit was commissioned by English Heritage to undertake a series of small-scale assessments and watching briefs at Tintagel Castle. The most interesting find resulting from these was a short length of walling on the lower part of the island, on the pathway just outside the medieval gate into the Inner Ward. The walling was similar in form to that of post-Roman

buildings identified nearby in 2007 during previous archaeological recording. It was not clear whether the walling uncovered during this phase of work is part of one of the buildings recorded in 2007 or is a separate structure. A sherd of amphora was associated with the walling. Other post-Roman pottery was recovered from elsewhere on the site during this programme of works.

- Project Officer: Carl Thorpe.

Chysauster, Gulval

English Heritage commissioned the production of a Conservation Management Plan for Chysauster Ancient Village near Newmill, Gulval. The Plan sets out how management of the site as a whole can be addressed in a sustainable, appropriate and long-term manner, following best conservation principles and avoiding unwanted and negative effects on significant aspects of the property. Chysauster Ancient Village is currently under the guardianship of English Heritage and forms part of a wider Scheduled Monument that extends onto the upland ground to the north of the site. The primary focus of the Plan is the area currently in Guardianship but it also takes into account the wider Scheduled area and the site in its landscape context.

The Chysauster settlement is significant in being the largest of the distinctive suite of courtyard house settlements in West Penwith. It contains at least ten upstanding houses and an underground chamber, or fogou, as well as a series of associated terraces and enclosures that form part of a wider contemporary field system. The management plan summarises the known historical development of Chysauster and the history of archaeological work carried out on the site since its discovery by J T Blight in the late nineteenth century. It describes the form and condition of the site's components and sets out a conservation philosophy for its future management.

- Project Manager: Adam Sharpe. Project Officer: Fiona Fleming.

Bude and Stratton Business Park, Stratton

A series of watching briefs were undertaken ahead of the extension of the Bude and Stratton Business Park. Field boundaries, possibly forming part of a field system associated with Binhamy Castle, were recorded. In some parts of the site traces of an old land surface were observed from which an assemblage of Late Neolithic to Early Bronze Age flints was recovered. The flints were in pristine condition and unabraded, suggesting they were in a sealed context.

- Project Officer: Carl Thorpe.

Bristol and Region Archaeological Services, 2013–14

Hornacott, North Tamerton (SX 30680 93904)

A desk-based assessment and geophysical survey were undertaken on the site of a proposed solar farm. The geophysical survey revealed a probable prehistoric henge-type monument with a central post ring and an external pit. It is located on the western end of an east–west ridge of level ground which has far-reaching views to Bodmin Moor and Dartmoor and may have been the location of a prehistoric barrow cemetery. Other features identified include possible pit fills or areas of extensive burning, an earlier, perhaps medieval, course or courses of the modern road between Hornacott and Boyton and possible prehistoric or medieval enclosure ditches.

- Project Officer: R Jackson.

Willsworthy, North Tamerton (SX 27530 95894)

A desk-based assessment and geophysical survey were undertaken on the site of a proposed solar farm. The geophysical survey revealed a number of features including a probable track or road and possible land divisions. These do not relate to tracks and field boundaries shown on the 1842 tithe map and early Ordnance Survey plans and therefore may have prehistoric or medieval origins. Other features can be identified as the ploughed-out remains of field boundaries recorded on the tithe map and possibly medieval in date, and the remains of later nineteenth-century field divisions.

- Project Officer: R Jackson.

West Ditchen, North Tamerton (SX 28874 94198)

A desk-based assessment and geophysical survey were undertaken on the site of a proposed solar farm. The geophysical survey revealed a number of linear and curved features which may represent former field boundaries, a headland and a track.

- Project Officer: R Jackson.

West Curry and Villaton, Boyton (SX 28874 94198)

A desk-based assessment and geophysical survey were undertaken on the site of a proposed solar farm. The geophysical survey revealed the ploughed-out remains of field boundaries and several ditches which may be parts of field systems. These pre-date the 1843 tithe map and could be prehistoric or medieval in origin.

- Project Officer: R Jackson.

Northmoor and Southmoor, Whitstone (SX 27787 97533)

A desk-based assessment and geophysical survey were undertaken on the site of a proposed solar farm. The geophysical survey revealed the ploughed-out remains of field boundaries recorded on the 1839 tithe map and 1st edition Ordnance Survey plan and a few ditches which may pre-date the tithe map.

- Project Officer: R Jackson.

Trevoole Mine Engine House, Jynjy, Botetoe Hill, Trevoole (SW 64002 37209)

Building recording and a watching brief were carried out before the mine engine house was converted to residential use. Trevoole mine was in production in 1827, although it had probably been operating before that date. No mine buildings were shown on the 1840 tithe map, the area being described as 'destroyed by mining waste'. The mine was working again between 1856 and 1861, and it has been suggested that an engine house was built at that time. Certainly a section through the mine dated 1859 refers to the 'Engine Shaft'. In the late nineteenth century an attempt was made to reopen Trevoole mine, which was re-named as West Wheal Grenville. Capital for the reopening seems to have been obtained on the assumption that the mine lay on the Great Flat Lode.

No engine house is shown on the 1st edition Ordnance Survey plan, surveyed in 1877, the area around the present engine house being occupied by mine waste dumps. A mine plan of 1890 shows an engine house at the top of the Engine Shaft, so it can be assumed that the existing engine house was built between 1877 and 1890. This can be narrowed down further as histories of the mine suggest that it was reopened between 1886 and 1887, meaning that the engine house formed part of the £30,000 spent 'almost entirely on surface erections' between 1886 and 1890. The mine finally closed in 1892.

A watching brief on a service trench dug south-eastwards from the north-east wall of the engine house showed that the engine house had been built on or through earlier mining waste.

- Project Officer: R Jackson.

Land to the rear of Argel, Kenwyn, Truro (SW 82160 45790)

A desk-based assessment was carried out due to the proposed development of the site for housing. The area had formed part of the glebe lands belonging to Kenwyn church since the medieval period. A parsonage house was first recorded on the glebe lands, to the north of the study area, in 1570. The land would have been used productively, probably as pasture, by the rector or vicar of Kenwyn to supplement his income.

In the 1770s the parsonage was completely rebuilt as a substantial residence and re-named Copeland Court. The glebe land around Copeland Court was laid out as parkland and the study area formed part of that park, being described in 1840 as 'lawn and plantation'. By 1880 a gently curving driveway had been laid out from the north west to the south east, leading from the Court to the public road.

In about 1880 Copeland Court became the home of the Bishop of Truro and was re-named 'Lis Escop'. By 1907 the driveway no longer crossed the study area but had been re-routed to curve round to the north and east. It seems likely that this modification took place at the time that the house became the Bishop's residence or shortly after.

During the twentieth century the house became part of the Truro Cathedral Grammar School, then a convent for the sisters of the Community of the Epiphany and in 2003 a retreat and conference centre. It seems probable that during its occupation as a school a feature interpreted as a lawn tennis court, now preserved as a flat, rectangular area, was laid out on the western side of the study area. By 1986 the lawn tennis court had gone out of use and the study area had assumed its present form, having been separated by fences or hedges from the rest of the park.

- Project Officer: R Jackson.

Cotswold Archaeology, 2014–15

Garlenick estate wind farm, Grampound (SW 9476 4883)

A watching brief by Cotswold Archaeology identified a ditch corresponding to a cropmark which dates to the late prehistoric period. This ditch, which extends approximately 400m beyond the south west of the site, appears to be associated with an enclosure and other features of probable Iron Age and / or Roman date. An undated pit identified to the north of the ditch may have been broadly contemporary. Features associated with medieval and / or post-medieval field boundaries were also identified.
- Project Supervisor: Jay Wood.

Wheal Harmony, Redruth (SW 6987 4318)

A watching brief revealed mine workings, comprising shafts and lode working trenches. These correspond to known mine workings at the Wheal Harmony or Treleigh Wood mines. No dating evidence was recovered during the watching brief but documentary evidence indicates that mining took place on the site from at least the 1760s. Extant Cornish hedges demarcated a mid-nineteenth-century field system across the site. Standing remains of structures pertaining to the last phase of mining activity on site in the late nineteenth century were also recorded.
- Project Officer: Christopher Leonard.

Pencoose Farm, Stithians (SW 7313 3825)

A watching brief identified boundary ditches and a possible pit.
- Project Supervisor: Emma Mossop.

Land at Lanyon, Gwinear (SW 6042 3757)

An evaluation revealed ditches, pits, hearths and postholes. These were poorly dated although one group of intercutting pits, ditches and a hearth may date to the Roman period while other ditches may belong to a field system depicted on the 1842 tithe map.
- Project Supervisor: Peter Busby.

Carloggas Farm, St Stephen (SW 9552 5412)

An excavation and watching brief identified a possible fogou constructed within a trench over 13m long and 4m wide. The depth of the feature could not be investigated but parts of the internal drystone walling were visible where the roof had collapsed. The construction cut backfill contained Roman-period finds.

Beyond the area of the fogou, excavation revealed pits, postholes and ring ditches indicative of prehistoric settlement, although no dateable finds were recovered from these. During a watching brief, two features which may have been house platforms were identified, one of which truncated a posthole containing Roman pottery. Two voids recorded during the watching brief probably relate to mine workings recorded on Ordnance Survey mapping.
- Project Supervisor: Peter Busby.

Garvinack Farm, Truro (SW 7750 4847)

A watching brief revealed no archaeological remains.
- Project Supervisor: Peter Busby.

Mendennick Farm, Millbrook (SX 4078 5300)

An evaluation identified undated ditches.
- Project Officer: Jonathan Orellana.

Wilton Farm, Trerulefoot (SX 3108 5843)

A watching brief on the site of a new solar farm revealed field boundary ditches and hedge banks. Three of the field boundaries were shown on the 1840 tithe map. A curvilinear ditch was also identified but all of the features remained undated.
- Supervisor Designate: Sikko van der Brug.

Context One Archaeological Services (COAS), 2014–15

Carvinack Farm, Shortlanesend (SW 80936 47697)

Context One Archaeological Services carried out an archaeological field evaluation through trial trenching on land at Carvinack Farm, Shortlanesend, near Truro. Previous archaeological investigations within the development area consist of a geophysical survey (Archaeophysica Ltd) and desk-based assessment (Cornwall Archaeological Unit), both carried out in 2014. The desk-based

assessment demonstrated that the site lies within an area of Anciently Enclosed Land (AEL), the agricultural heartland of Cornwall from the late prehistoric period onwards. The surveys clearly identified a considerable number of features of potential archaeological interest, including some indicative of prehistoric settlement and associated field systems.

Despite this the results of the evaluation trenching were confined to evidence for low-key agricultural activity, with only a single trench yielding any dateable material. This comprised the base of a Late Bronze Age vessel placed directly on the natural soil. The almost complete absence of other material culture is probably partly a result of the highly acidic soils, although certain objects (for example, stone implements) would be expected had there been settlement here. As such, it seems most probable that the site was purely used for agriculture, with field system boundaries criss-crossing both fields, and small enclosures possibly for penning animals. Two post-holes adjacent to one of several small circular enclosures may possibly represent a structural element, possibly providing shelter. Two parallel wall bases or track metalling running across the full width of one field are likely to be more recent in origin, although both were sealed beneath the subsoil, perhaps suggesting a medieval or post-medieval date as opposed to modern.

Wessex Archaeology, 2015

East Taphouse, Liskeard (SX 18000 63280)

A detailed gradiometer survey on land to the west of East Taphouse, detected a number of probable ditches, a trackway and possible pit-like features. The result led to further investigations (below).

- Field Technician: Alistair Salisbury.

East Taphouse, Liskeard (SX 18000 63280)

Land to the west of East Taphouse was subject to an archaeological evaluation, following earlier investigations (above). Five shallow, undated ditches, each of which corresponded with geophysical anomalies, were recorded. A post-medieval or later square-sectioned copper alloy nail was recovered from the topsoil.

- Project Officer: Piotr Orczewski.

Marine Drive, Looe (SX 25113 52209)

Works associated with repairs and extension to the sea wall, re-profiling of the hillside and installation of surface drainage were monitored at Marine Drive, Looe. Drainage trenching revealed a gravelled surface, a continuation of one found in 1936, which lay parallel to a field boundary and overlay the medieval site of Monk's House. A series of undated pits and a 1930s road surface were observed along the edge of the collapsed cliff.

- Supervisor: Michael Fleming.

Treveale Farm, Ladock (SW 87410 52100)

An archaeological evaluation was undertaken on land at Treveale Farm, Ladock, ahead of construction of new agricultural facilities. A geophysical survey undertaken before the evaluation identified a number of potential archaeological features although upon excavation only a small proportion proved to be archaeological. Spreads of charcoal-rich material within the topsoil and loosely filling ring-shaped ditches and an associated pit are thought to have been associated with woodland clearance and possibly stock management. A further ditch was probably once a field boundary; an adjacent pit contained pieces of animal bone. No other artefacts were recovered from the site.

- Supervisor: Steve Winterton.

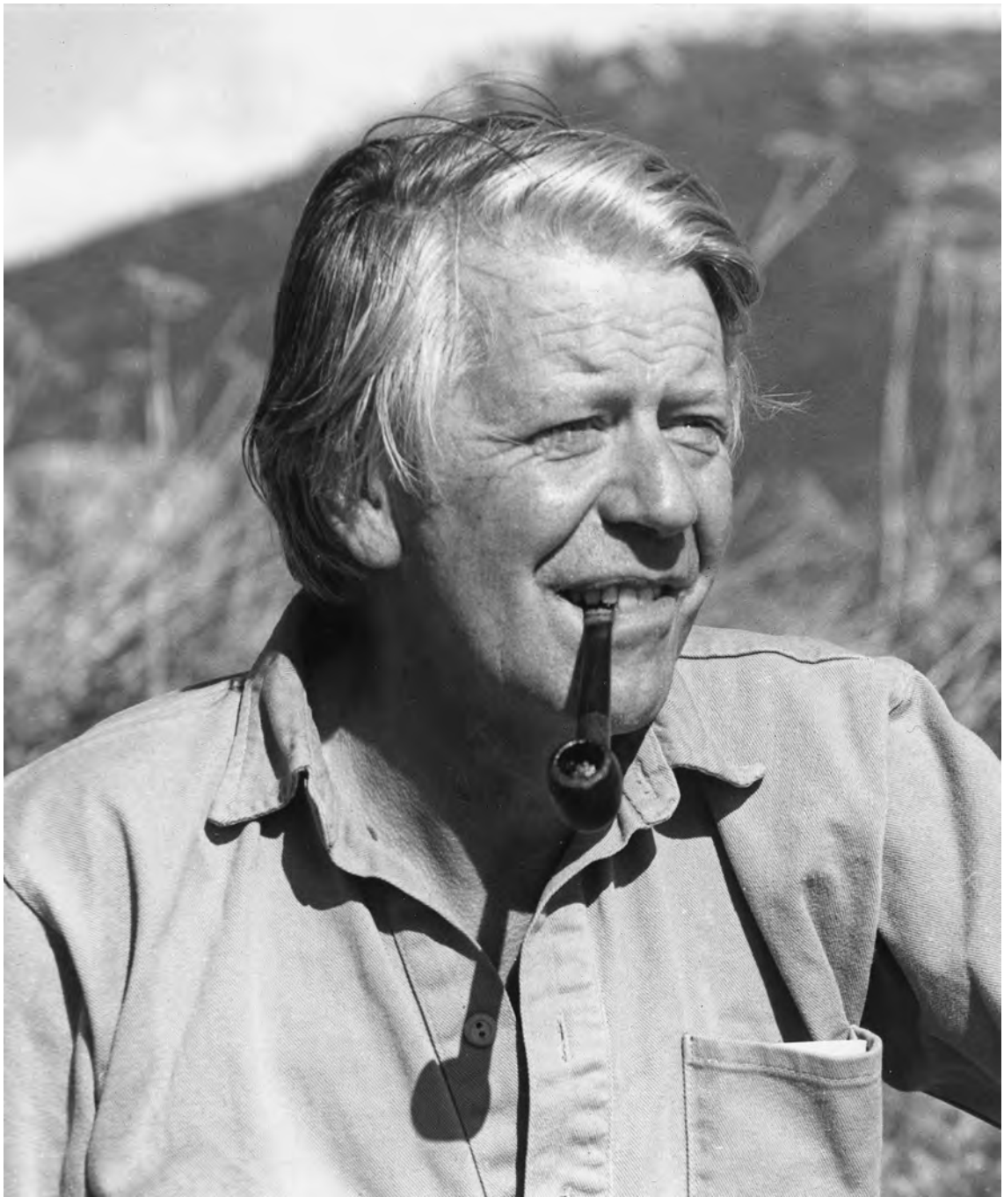

Fig 1 Charles Thomas on Scilly in 1985, helping with the archaeological watching brief on trenches created for the electrification of the islands. (Photograph: Thomas family.)

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Obituary

ANTHONY CHARLES THOMAS

CBE, DL, BA, MA, Dipl Inst of Arch, DLitt (Oxon), DLitt (NUI), FBA, Hon MRIA, FSA, Hon FSAS, Hon FRSAI, FRHistS

1928–2016

Anthony Charles Thomas (ACT) was born on 26 April 1928 to Donald Woodruffe Thomas, a solicitor, and Viva Warrington Thomas (née Holman), both from illustrious mining and manufacturing families in Camborne. His great-great-grandfather Captain Charles Thomas, great-grandfather Captain Josiah Thomas and grandfather Captain Arthur Thomas (to all of whom he often referred) had been managers of Dolcoath Mine from 1844 until 1928, the largest and most successful mine in Cornwall. He died on 7 April 2016, aged 87, at Lambessow, Truro, after a short illness.

His library contained a battered leather-bound book with handwritten yearly lists of everything he had published since 1948 (Fig 6). Over a long and distinguished career as an archaeologist, an academic, and as a bibliophile and collector he wrote 800 publications including 16 books (of which four were unpublished), 15 booklets, three short stories, 166 reviews of books and hundreds of articles, pamphlets and notes for academic journals, newsletters and conference proceedings and festschrifts.

While the number of publications is prodigious, it is the breadth of subject that is particularly striking. Much of the subject matter is well enough known – prehistoric, post-Roman and early Christian archaeology, with inscriptions a particular interest; less well known are his many articles concerning the development of professional archaeology, of military insignia and military units in Cornwall and elsewhere, local folklore and dialect studies, nationalism and politics in Cornwall, the history of Methodism, the importance of local history studies and last but not least poetry (unpublished) and fiction. He taught at three universities, edited three journals, chaired many committees, held offices in national institutions and local societies and was rewarded with doctorates, fellowships, honorary positions and civil honours of great distinction. He was a polymath by inclination and a collector by nature. In fact it was his obsessive collecting of books, badges, archaeological sites and inscriptions that enabled him to write knowledgeably and widely, based on his own resources. A most remarkable achievement – he came as close to being an archaeological 'search engine' as it is possible for a pre-computer scholar to be. His lucid and attractive writing style and great generosity in sharing his knowledge with others were added blessings. Indeed, for many of his students and correspondents it was his enthusiastic willingness to help them in their researches that marked him out as a special person.

Early beginnings

His grandfather, the first chairman of the Cornwall Excavation Committee, under the wing of the Royal Institution of Cornwall, fostered his early interest

in archaeology. As a boy, he became fascinated by local folklore and history including Carwynnen Quoit, the Neolithic chambered tomb also known as 'The Devil's Frying Pan'. It collapsed in 1966 and 48 years later he was thrilled to be the Patron of the Sustainable Trust that created the project that enabled the re-erection of the monument in summer 2014.

Charles Thomas attended Elmhirst Preparatory day school, Camborne, and Upcott House School, Okehampton. During the holidays he would collect Mesolithic flints from the cliff-side fields above Gwithian and Godrevy. In 1940 he attended Winchester College on a 'Headmaster's Nomination'. In 1945 at the age of 17 he joined the army as a Young Soldier and later was an ammunition examiner in the Royal Army Ordnance Corps; he would serve in Northern Ireland, Portsmouth, Scotland and Egypt; the latter posting helped deepen his interest in archaeology.

He completed his National Service in 1948 and matriculated into Corpus Christi College, Oxford, receiving a BA Honours degree in Jurisprudence in 1951. He was an active member of the Oxford Archaeological Society. During vacations he helped sort finds at the Wayside Museum in Zennor. In the last vacation before his finals he and some friends excavated a Bronze Age barrow at Godrevy (Fig 2). They discovered an underlying surface, rich in Mesolithic flint objects and typical Late Mesolithic pebble-tools. 'No surprise,' he recalled later, 'that my [law] degree was a poor Third' (Lawson-Jones 2014). This was followed in 1951 with the excavation of a prehistoric settlement at Carwynnen (Thomas 1954a).

He then studied under V Gordon Childe at the UCL Institute of Archaeology and was awarded an Academic Post-Graduate Diploma in European Prehistoric Archaeology in 1953. Over a long and successful archaeological career he met and was friends with many of the prominent archaeologists of the post-war period, including Sir Mortimer Wheeler and Glyn Daniel (he appeared on the popular television programme *Animal, Vegetable, Mineral?* with both of them), Richard Atkinson, and Stuart Piggott, with whom he shared a house in Edinburgh in 1958.

In the last three decades of the twentieth century, with several of his fellow students from the Institute and many of his early digging companions and students, Charles would help shape the archaeological world that we know today: opening up new research horizons that combined science, fieldwork, documentary research, linguistics and topography; and recognising the need for a new national professional archaeological structure

Fig 2 Excavation at Godrevy Barrow, Gwithian, September 2012, by Cornwall Archaeological Unit on behalf of the National Trust. ACT (in blue jumper on right) revisiting the barrow where he carried out his first-ever archaeological excavation in 1950. (Photograph: Cornwall Council.)

with appropriate archaeological legislation and university teaching to tackle the growing pressures from development.

When interviewed in 2015 for the University of York's *The Post Hole* (Lawson-Jones 2014) he said that of all the periods that he had studied it was the Mesolithic period around the Cornish coast, and the early Christian period of the fifth to eighth centuries which had grabbed his attention the most. It is therefore entirely fitting that in the months before his passing he was involved with Cornwall Archaeological Society's own project to revisit the Mesolithic site on North Cliffs, Camborne, where he had first started collecting flint tools 70 years before; he was also looking forward to examining the seventh-century inscription on a newly discovered inscribed stone in west Cornwall. In reality of course his interests were much wider than this.

When he came down from the Institute, archaeology as a profession, outside universities, museums and the Inspectorate of Ancient Monuments (Ministry of Works), did not really exist. Despite this, determined to be an archaeologist, he spent the next four years as a tutor with the Workers' Educational Association in Cornwall while excavating sites mostly in west Cornwall. In 1953 he excavated a Bronze Age cist on Emblance Downs, Bodmin Moor (Thomas 1975), at the suggestion of local archaeologist Dorothy Dudley, and the following year he and Bernard Wailes investigated the ruined Sperris Quoit chambered tomb (Thomas and Wailes 1967) and Mulfra Vean Courtyard House settlement (Thomas 1963c). Following his discovery of flints around Gwithian Pond in 1949 and the 1950 excavation at Godrevy Barrow, in 1953 he noticed bone and shell fragments thrown up by rabbits on land that his family owned at Gwithian (Thomas 1954b). This was not a previously-known archaeological site but it was soon reported, in *The Cornishman* (23 April 1953), that he had found below, and therefore earlier than, an overlying pre-Norman structure, 'fragments of a reddish sandy ware. These have been identified with some from the Celtic monastery at Tintagel, and are imported Mediterranean wine-jars of the 5th–7th centuries AD.'

Conceived not solely as an academic study, the excavations among the sand dunes at Gwithian provided technical training for a generation of archaeological fieldworkers when little was available elsewhere outside university courses. By doing so, 'Gwithian' became one of the major national archaeological field fixtures of the post-war era. His excavation skills were refined further that autumn on two Bronze Age barrows at Snail Down on Salisbury Plain (Thomas and Thomas 1955) under the direction of his fellow student at the Institute, Nicholas Thomas (Fig 7).

The 20-year Gwithian campaign, involving over 70 sites, was one of the first multi-period projects in the country and his careful analysis of the occupation of the landscape there from Mesolithic to medieval times provided a template for many archaeological projects that followed. Perhaps most famously they were to reveal in 1958 the marks of cross-ploughing made by an ard in the sandy subsoil (a feature previously known only from Scandinavia and the Netherlands), and to his enormous delight, also the triangular spade-marks made by an early but traditionally shaped 'Cornish shovel' (Megaw *et al* 1961; Thomas 1970). It was a model excavation for its time, carried out with technical competence and boundless academic curiosity. Results were shared with visitors and the wider public and the enthusiastic volunteer excavators were given frequent *ex tempore* talks on what it all meant in a much wider context. The name 'Gwithian' resonates in British archaeology (Fig 3).

Charles was already thinking and working here within a new idea which 20 years later came to be called 'landscape archaeology', still now the basis of much field research, particularly in the public sector. That was the concept that those who took part, many of whom went on to illustrious careers in archaeology, absorbed there: Charles taught by example and enthusiasm. 1955 saw the publication of the historian W G Hoskins' *The making of the English landscape*, one of the most archaeologically influential books of the twentieth century. It was Hoskins who gave him (as he much later acknowledged to Peter Fowler) the theoretical structure on which to develop his investigation of the Gwithian landscape in the belief that the whole of the British landscape is man-made. Thus an area of undulating, not obviously significant sand dunes were to prove one of the turning points in his life. The dig also sparked a lifelong interest in imported post-Roman Mediterranean pottery and its close association with Tintagel, a connection that was to result eventually in his complete rewriting of the post-Roman history of that iconic site.

Fig 3 Excavations at Gwithian, 1956. Left to right: Dr C A R Radford, ACT, H R Mason, Vivien Russell. (Photograph: Thomas family.)

From an early age he was interested in languages and soon mastered the Cornish language under the gaze of one of his early heroes, Robert Morton Nance, the Grand Bard of the Cornish Gorseth. Charles was made a Bard (*Gwas Godhyan* – Servant of Gwithian) in 1953. He learnt enough French, German, Italian, Spanish and Portuguese to help translate extracts from foreign books and journals for Gordon Childe while at the Institute and in time he mastered Latin and, much later, Occitan, as well as investigating ogam script and Pictish symbols. The Cornish language and the dialect of different areas of the county, its place-names, its ancient inscriptions and the meaning of them were a constant feature of enquiry throughout his life, and he published frequently on the subject. For him this was not just academic study for the sake of it, but also a conscious attempt to reveal the early life of Cornwall through language and archaeology. This is perhaps one of his greatest legacies – he had an intrinsic understanding of the formation of the countryside and could observe a landscape and interpret its history, its place-names, and the use it had been put to over the centuries. His finds, his research and detailed archaeological discoveries were highly influential in determining the history and the living conditions and habits of our forebears. This is a skill that very few possess. It is therefore particularly appropriate that he was elected President of the Society for Landscape Studies in 1993.

The years before 1960 were the foundations for all that came after and a few examples of his early writings give a clear idea of where his interests were to lie. He regularly wrote articles about local history for the *Old Cornwall* magazine, and his first describes and reinterprets the fifth-century *Cunaide* inscription on the Carnsew stone at Hayle (Thomas 1953b). Another article in the journal *Folklore* concerned a rat-charmer then living in west Cornwall who could hypnotize rats by whistling at them (Thomas 1953a). The next year he wrote a heartfelt plea as a Cornishman that Cornwall should remain neutral in the armed struggles then taking place in Ireland (Thomas 1955). At about the same time the West Cornwall Field Club (of which he was now editor) published the first of 16 editions of his field guide, *Principal antiquities of the Land's End district* (Thomas 1954c). Shortly afterwards came the first of eight articles detailing

the Cornish Volunteer and Militia companies in the Revolutionary and Napoleonic Wars (Thomas 1957a). This variety of subject went on year after year after year, as his bibliography testifies. His insatiable curiosity led him far and wide: into local history, folklore, archaeology, the early Church and inscriptions (including their hidden cryptic meanings), post-Roman pottery, Tintagel, language, dialect, place-names, Methodism and militaria and military history. To these can be added his researches on early photography in Cornwall, his fascination with monsters and, at one point, crop circles. From his earliest years he wrote and published privately very accomplished short stories and enjoyed writing poetry that he unfortunately never brought into print.

Early Christian archaeology

By the time he took up his first full-time academic post in 1957 in the Department of Archaeology at Edinburgh University (replacing Richard Atkinson who left to found a new Department of Archaeology at Cardiff), Charles had already made his mark in the landscape archaeology of Cornwall. Moving north, he began his long association with the holy island of Iona in 1956, but also continued work in the south west. His excavation in 1957 and 1960 of the early eighth-century chapel on the island of Tean, Scilly, with its evidence of earlier burials and settlement with associated post-Roman pottery (Thomas 1985, 183–5), strengthened his fascination with islands and in particular their attraction for the fathers of the early Church.

In Edinburgh his distinguished academic career was recognised for his detailed and informed teaching. Thomas was keen to broaden his students' views and encouraged them to join him on his numerous excavations of Pictish remains, notably in the north east of Scotland. In Edinburgh he began to contribute to the new subject of early medieval archaeology in Britain, and indeed continued to contribute for his whole life afterwards. There were plenty of distinguished prehistorians in Scotland, but the study of the archaeology, as opposed to the architecture, of the semi-historic first millennium AD had hardly begun. The exception was Ralegh Radford's work, and in this Thomas followed him, and extended or corrected his conclusions. He visited, sketch surveyed, and considered almost every known early Christian site in Scotland, northern England and Ireland.

From 1956 to 1963 Thomas excavated a substantial number of small trenches on Iona: within the abbey precinct, across the vallum, on Tòrr an Aba and on the Iron Age hillfort at Dùn Cul Bhuirg (Thomas 1957b; 1958a; 1959c; 1959d; 1960a; 1963a). His work at the abbey funded by the Russell Trust produced artefacts which help illuminate aspects of the early monastery, including window glass and evidence of fine metalworking. One tiny object was especially important – a 5cm-long cast bronze lion, which probably adorned a reliquary and is identical to lions depicted in the *Book of Kells*. Interest in early Christian inscriptions continued with work on the burial site at Beacon Hill on Lundy Island in 1969, with Peter Fowler also surveying and excavating the surrounding field system and earlier settlement (Thomas 1969; 1991; Thomas *et al* 1970).

His book *The early Christian archaeology of North Britain* (Thomas 1971a), based on the Hunter Memorial lectures (University of Glasgow) given in 1968, is a classic and demonstrated the engagement of archaeology with documentary evidence. For the material culture, however, his studies of shrines, altars and memorials were taken further in later works and survive as essential reference to this day. His rapid surveys of monastic sites have been largely superseded by more detailed survey and excavation, but his excavation of Ardwall Island and its chapel was ground-breaking at the time and it is still a classic site (Thomas 1962a; 1964b; 1965a; 1965b; 1967a; 1968c). While examining a hillfort near Gatehouse of Fleet he came across an eleventh-century cross-slab which had come from Ardwall some years before. He visited the island and was astonished at what he unearthed over two seasons in 1964–5. These investigations uncovered early Christian burials and an oratory or chapel; and he proposed there was sufficient evidence to suggest an early and influential Irish settlement. This was hitherto unknown and went some way towards clarifying the course of early Christianity in that part of Scotland.

For its interpretation he ranged widely in his parallels from Britain, Ireland and the Continent, and several of his themes such as the continuity of the sacred place, as expressed in the superimposition of stone on timber chapels, or the commemoration of the dead with variations which interacted and influenced one another, remain vital

research themes today. In so much of his work it is the tossed-aside comments which make one appreciate his intellectual vitality and range, as when he mentioned that memorials to the dead were social actions by surviving relatives, friends or admirers, 'with all the implications of ostentation, status, prestige or superstition' (Rosemary Cramp, pers comm).

He pursued this in more depth, however, in his controversial interpretation of Pictish symbols (Thomas 1964c). For many his conclusions were compelling, both in that the origin of some of the symbols was in later prehistoric art, and in the influence of Roman and ogam monuments in provoking their inception. The former proposition was closely argued by him, and the latter reasonable, when one considers the period in which they first appeared. He was not dogmatic concerning the meaning of the symbols, whether looser concepts such as status, tribal descent, filiation or occupation or as boundary markers. His was a massive intellectual endeavour, which brought together in a very interesting way the Irish and North British archaeological evidence. His interests had always been in the west and the north and in *Britain and Ireland in early Christian times: AD 400–800* (Thomas 1971b), also in 1971, he explored the themes of migration and settlements, the rise of Christianity and the diversity of written and spoken languages, outside the world of the Anglo-Saxons.

Ten years later Thomas published another speculative work in the form of a large book, *Christianity in Roman Britain* (Thomas 1981a), the result of a series of four Lent lectures in Truro Cathedral, and dedicated to Ralegh Radford. It was again a book of great intellectual depth, which asked big questions and tried to provide answers. It is a scholarly book, which reflects wide meditative reading. He argued that, far from being limited to a few Roman settlers, Roman Britain had seen a widespread evangelisation that put paganism on the defensive and then into decline. Although the Anglo-Saxon invasions put a halt to this spread, the continuity of Christianity remained unbroken and, he argued, British in its practices. He ended disarmingly by saying 'We possess so little direct information that we must be wary of exceeding proper inference.' Always willing to push academic boundaries he challenged accepted wisdom, yet scholars such as Richard Morris and John Blair have reinforced many of his indications since.

He had a lifelong fascination with this extraordinary period, particularly in the west and north, when the structure of the Roman Empire in Britain disintegrated and transitioned, via the Irish and Ionan traditions to the Roman Church we are familiar with today. While many others used excavation and fieldwork to explore this period, Charles also used his deep knowledge of arcane languages, scripts and pictograms as powerful tools to cast fresh light on the spread of Christianity in a pagan world, and the geographical and chronological variations and connections that provided the cultural foundations of Britain and Ireland today. *Celtic Britain* (Thomas 1986) was to be his last work that brought his own studies and those of others together into a coherent story that chronicled (between AD 400 and 700) the rise of native British kingdoms in Scotland, Wales and Cornwall, pressed on all sides by Scots, Picts and Saxons. The role of Tintagel within the kingdom of Dumnonia and other citadels such as Dumbarton Rock within the kingdom of Strathclyde were examined in the light of new research.

Edinburgh was a happy and productive place for him and despite moving south in 1967 he went on working on Scottish archaeology. He gave in 1992 the first Whithorn lecture and was involved in the research for Sally Foster's book (Thomas 1998a) on the St Andrews Sarcophagus which has been described as 'one of the most fascinating and beautiful monuments of pre-Romanesque art in Europe'. He also gave the prestigious Alexander Rhind Lectures in 1999, on *The origins of Insular monasticism*, which attracted the largest audience for a Rhind series recorded up to that date. *Deserts in the ocean*, the book that emerged from the six lectures, was never published.

In 1991 he was invited to give the Dalrymple lectures at Glasgow University and this was the beginnings of his magisterial book *And shall these mute stones speak? Post-Roman inscriptions in western Britain* (Thomas 1994b). He used evidence from inscribed memorial stones to compose the first history linking South Wales and south-west Britain in the post-Roman period. In *Christian Celts: messages and images* (Thomas 1998b), he took epigraphy even further, producing controversial new readings of the memorial stone inscriptions, claiming to show the survival of Roman learning in the form of 'letter games and codes' that alluded to the Bible. This was an extraordinary book, and was received in

shock by many archaeologists. The complex Latin cryptographic puzzles revealed by him seemed to lie more in the world of Bletchley Park than the more familiar world of traditional linguistics. Several other articles and booklets followed that delved further into the veiled spiritual world of the post-Roman educated elite, as evidenced on such monuments in Govan (Thomas 1994c), Penzance Market Cross (Thomas 1999a), and memorials in Wales (below).

In 1992 he was appointed Honorary Fellow of St David's University College, Lampeter, in recognition of his long interest in the early Church in Wales; he was also an external examiner in the Department of Archaeology for many years. As in Scotland and Cornwall, here also in Wales, he sought to interpret the cryptographic biblical messages on inscribed stones: the Llanddewi-brefi 'Idnert' stone (Ceredigion) (Thomas 1995; 1997), the double tomb at Llanlleonfel in *Silent in the shroud* (Thomas 1999b), and the Anglesey Catamanus inscription in *Whispering reeds* (Thomas 2002). For 20 years he was engaged, on and off, in the study of early Christian migration between Breconshire (Brycheiniog) and Cornwall, as shown by the evidence of inscriptions and the legends of saints (Thomas 1992). He hoped to re-imagine, in a topographical and temporal sense, the kingdom of Brycheiniog, and his book *Flight from Egypt* was to be the all-encompassing work that would achieve this. He could never quite bring himself to publish and a large bundle of drafts and re-drafts remains for scholars to pore over in the future.

As a footnote, it is ironic that at the end of a career studying the earliest origins of Christianity in the British Isles he should end it with his appointment as Cathedral Archaeologist (2002–11) of Truro Cathedral, the first new cathedral in England to be built since before the Reformation. It was paid for with help from the last gasps of the once mighty mining industry and as the final throw in the game of ecclesiastical 'Top Trumps' between the numerically dominant Methodist congregations in Cornwall and the lately resurgent Anglican Church.

RESCUE and beyond

After Edinburgh, Charles was much less happy in his next academic post as the first Professor of Archaeology at Leicester University, from 1967 to 1971. Forty-five years after he had been there, he published his inaugural lecture *The archaeology of mind* (Thomas 2012, 67–86), which he did not publish at the time because he was asked (and refused) to remove certain passages that were deemed to be critical of the staff there and overtly critical of the lack of adequate library facilities. This also explains why he dedicated his first book to the Edinburgh library and perhaps why he himself so assiduously built up a very large library at Lambessow. He had acquired many new archaeological books throughout his career by writing nearly 200 reviews for academic journals, the *Literary Review* and *Times Literary Supplement*. He chose to place his bed in his library shortly before he died. For him, books had always been a source of inspiration, information, reflection and finally a comfort.

In-between establishing the new department he found time to become increasingly involved in the beginnings of a new professional structure for archaeology. Over the next decade the foundations would be laid for the development of a professional public archaeological service delivered at local authority level. He was elected President of the Council for British Archaeology (CBA) from 1970 to 1973, with Peter Fowler (a veteran of the Gwithian, Iona, Tean and Lundy excavations) elected Honorary Secretary. With his experience of the parish surveys in Cornwall (pioneered by the West Cornwall Field Club (WCFC), and expanded by Cornwall Archaeological Society (CAS)), fanning out from the Gwithian landscape model, Charles encouraged the CBA to push field archaeology hard as a desirable function of local societies and groups.

In one encounter Thomas and Fowler went wearing official CBA hats to see the Director General of the National Trust with unsolicited advice that the Trust, simply because it was such was major landowner, really should be taking archaeology more seriously by surveying its lands and employing an archaeologist or two on its staff. Charles was in a unique position to advise as the land on which the Gwithian sites lay had been passed to the Trust for safekeeping some years before. They were told that their advice was not necessary as the Trust already had a list of all the archaeological sites on its lands. The list in fact merely copied out the statutory Schedule of Ancient Monuments for those sites, which lay on

Anthony Charles Thomas

Institutional appointments

1953–58	Part-time tutor in Archaeology for **Workers Educational Association**, Plymouth and Cornwall
1953–60	Elected editor of the *Proceedings* (New Series), **West Cornwall Field Club**
1958–67	Appointed Lecturer in Prehistoric Archaeology at **Edinburgh University.**
1959	Elected Committee member, **Devon & Cornwall Notes & Queries**
1962–1976	Elected editor of *Cornish Archaeology*, **Cornwall Archaeological Society**
1963	Elected President and Chairman, **Cornwall Branch of the Celtic Congress**
1963	Elected Chairman of the **International Celtic Congress**, Carbis Bay
1967–71	Appointed 1st Professor of Archaeology at **University of Leicester**
1969–1980	Member of Council, **Cornish Buildings Group** (Founder member)
1970–73	Elected President of the **Council for British Archaeology**
1970–73	Elected President of the **Royal Institution of Cornwall**
1972–91	1st Director of the **Institute of Cornish Studies**
1972–2009	Honorary Courtney Librarian, **Royal Institution of Cornwall**
1973–91	Editor of *Cornish Studies*, journal of the **Institute of Cornish Studies**
1974	Founder Trustee (1974–2005) and elected national Vice-Chairman of **RESCUE**: A Trust for British Archaeology
1974–79	Appointed Chairman of **Area Archaeological Advisory Committee, Area 13 (SW Britain)**
1974–80	Appointed Chairman of the **BBC South West Advisory Council**
1975–88	Appointed Chairman of **Cornwall Committee for Rescue Archaeology** (later **Cornwall Archaeological Unit,** later **Historic Environment Service**)
1975	Honorary Vice-President, **Cornwall Archaeological Society**
1975	Organising Secretary, 5th **International Congress of Celtic Studies**, Penzance
1978–79	Appointed **National Rescue Committee**
1978	President of Section H (Anthropology), **British Association for the Advancement of Science** 140th annual conference
1981	Honorary Vice-President, **Council for British Archaeology**
1983–97	Appointed Commissioner with **Royal Commission on Historical Monuments, England**; Acting Chairman 1988–89; Vice Chairman 1991–97
1983	Elected Vice-Chairman, **Society for Medieval Archaeology**
1984–87	Elected President, **Cornwall Archaeological Society**
1985	Elected Honorary Vice-President, **Isles of Scilly Environmental Trust**
1986–98	Elected President, **Society for Medieval Archaeology**
1987	Appointed Chairman of the **Duchy of Cornwall Archaeological Advisory Group**
1987	1st Chairman of Executive Committee, **Royal Institution of Cornwall**
1992	Awarded Emeritus Fellowship, **Leverhulme Trust** (Pre-Conquest Christianity in Cornwall)
1992	Elected Honorary President, **Isles of Scilly Environmental Trust**
1993–98	Elected President of **Society for Landscape Studies**
1994–96	Elected Chairman, **Cornwall Military Collectors Circle**
1995–97	Elected 1st Chairman, **Society for Church Archaeology**
2002	Elected President of **Cornish Methodist Historical Association** (joined 1960)
2002–11	Appointed Cathedral Archaeologist for **Truro Cathedral** and member of Fabric Committee
2004–9	Trustee, **Royal Institution of Cornwall**
2006	Appointed Trustee and Chairman, **Gwithian Chapel Ltd**.
2009	Honorary Vice-President, **Royal Institution of Cornwall**
2012	Elected President, **The John Harris Society** (Camborne)
2012	Elected Life Member, **Cornwall Heritage Trust**
2012	Elected Patron of **The Sustainable Trust**

Also Trustee and or Patron of:
The Duke of Cornwall's Light Infantry Regimental Museum, Bodmin; **Newlyn Society of Arts**; **West Cornwall Arts Archive**; **Harvey's Foundry Trust**; **Bethany Homes**.

Honours and Degrees

1951	BA Hons Jurisprudence, **University of Oxford**
1953	Academic Post-Graduate Diploma in Prehistoric European Archaeology, **Institute of Archaeology, University of London.**
1953	Appointed Bard of the **Cornish Gorsedd** (Gwas Godhyan)
1958	Fellow of the **Society of Antiquaries of Scotland** (FSAS); 2000 Honorary Fellow (HonFSAS)
1960	Fellow of the **Society of Antiquaries**, London (FSA)
1973	Honorary Member of the **Royal Irish Academy** (Hon MRIA)
1975	Honorary Fellow of the **Royal Society of Antiquaries of Ireland** (Hon FRSAI)
1982	Fellow of the **Royal Historical Society** (FRHistS)
1982	Joint winner of the 1st William Frend Medal, **Society of Antiquaries of London**
1983	Awarded Honorary Doctor of Letters (D Litt Oxon), **University of Oxford**
1984	Appointed Senior Visiting Research Fellow (Sir John Rhys Visiting Fellowship), 1985–6, **Jesus College, Oxford**
1986	2nd Prize, British Archaeological Awards 1985–6, Colt Hoare Prize Archaeological book of the year: *Exploration of a drowned landscape*
1988	Appointed **Deputy Lieutenant of Cornwall** (DL)
1989	Fellow of the **British Academy** (FBA)
1991	Appointed **Commander (Civil Division) of the Order of the British Empire** (CBE) for services to archaeology
1992	Honorary Fellow of **St David's University College, Lampeter**
1993	Fellow of **University College London**
1993	Emeritus Professor, **University of Exeter**
1993–5	Emeritus Fellowship, **Leverhulme Trust**
1996	Honorary Doctor of Literature (**D Litt** (Honoris Causa)), **National University of Ireland, Galway**
2008	Awarded Jenner Medal, **Royal Institution of Cornwall**
2011	Awarded Lummis Cup, **Military Historical Society**
2012	Honorary Visiting Professor, **University College London**

Memorial Lectures

1968	Hunter Marshall Lectures (6), **University of Glasgow** ('The early Christian archaeology of North Britain')
1973	Jarrow Lecture 1300th anniversary of the birth of Bede ('Bede, archaeology, and the cult of relics')
1977	1st Beatrice de Cardi Lecture, **Council for British Archaeology**, Oxford ('After RESCUE what next?')
1977	Henry Lewis Lecture, **University College Swansea**
1977	**Truro Cathedral** Lent Lectures (5) ('The age of the Saints')
1978	O'Donnell Lectures (5), **University of Wales** ('Exploration of a drowned landscape')
1979	R R Marett Memorial Lecture, **University of Oxford** ('Hermits on islands or priests in a landscape?')
1983	1st Buchan Lecture, **Society of Antiquaries of Scotland** ('The unique significance of Pictish art')
1983	9th Holbeche Corfield Lecture, **Cornwall Archaeological Society** ('Paradise lost and regained: prehistoric settlement on the Isles of Scilly')
1984	The John Harris Lecture, **John Harris Society**, Camborne
1991	Dalrymple Lectures (4), **University of Glasgow** ('And shall these mute stones speak? Archaeology, history and the Insular memorials')
1992	1st Whithorn Lecture, **Friends of Whithorn Trust** ('Whithorn's Christian beginnings')
1995	1st Corfield Nankivell Lecture, **Cornwall Archaeological Society** ('Archaeology and the concept of Cornishness')
1997	1st John Jamieson Lecture, **Scottish Church History Society**
1999	Alexander Rhind Lectures (6), **Society of Antiquaries of Scotland** ('The origins of Insular monasticism')
2005	Sir John Rhŷs Memorial Lecture, **British Academy** ('What is Cornwall')

Trust land, a few thousand sites short of reality; it also took no account of 'historic landscape'. The visit, however, started the ball rolling and in 1974 a committee (Archaeology Panel) of Honorary Archaeological Advisers was established with Professor W F Grimes as chairman. This was an important step forward and since then archaeological recording and the conservation of the wider historic environment have become firmly embedded in the Trust's management practices.

Charles, by now back in Cornwall, was a significant mover in the formation and subsequent actions of RESCUE: A Trust for British Archaeology, being both a founder Trustee and Vice Chairman. In hindsight 1974 proved to be a seminal moment, a 'line in the sand' for archaeology; the concept of 'Rescue Archaeology' was born as represented on the iconic RESCUE logo by a bulldozer with Stonehenge in its bucket. There was widespread alarm as development destroyed ever more unrecorded archaeology. He was one of the few senior academics who publicly committed to this movement and, riding the tectonic plates which were now moving within the archaeological establishment at national level, he was appointed chairman (1974–9) of the Area Archaeological Advisory Committee, Area 13 (SW Britain), established by the Ancient Monuments Inspectorate and based on the CBA regional structure. The formation of county or multi-county professional archaeological units followed quickly thereafter. In 1975 he was appointed chairman of the newly created Cornwall Committee for Rescue Archaeology (CCRA), the Ancient Monuments Inspectorate and Cornwall Archaeological Society being the sponsors. One of the present authors (NJ) was interviewed for the post of Rural Survey Officer in May and started work in Cornwall in July that year.

Charles became a Commissioner of the Royal Commission on the Historical Monuments of England (RCHME) from 1983 to 1997, teaming up again with his old friend from Gwithian, CBA and RESCUE days, Peter Fowler who was Secretary of the Commission. As always Charles took his appointment very seriously, a notable advance in an organisation that still tended towards historical architecture as its proper task. He made it his job to get to know the archaeologists in the field and their projects, and a relationship developed which was later expressed in a book of essays dedicated to him by an appreciative archaeological staff of the Commission. He played a crucial role in holding the Commission together as Acting Chairman (1988–9) during an unfortunate gap between chairs. His CBE in 1991 for services to archaeology was triggered by his work with the Commission but surely was also in recognition of his outstanding record in academic studies and public archaeology.

He was a very successful and hands-on leader of the new archaeological Unit in Cornwall. His experience at the CBA, RESCUE and RCHME meant that he was a strong advocate of field survey. As elsewhere, excavations were carried out in advance of development, but under his guidance it was in landscape survey that the Unit forged a reputation for innovation and ambition. He was a firm promoter and facilitator of the Bodmin Moor Survey (1978–85). This joint project with the RCHME used air photo transcription and was the first time that a major moorland area had been systematically surveyed accurately at the same scale. He played a vital role in the ongoing and difficult negotiations with the Ancient Monuments Inspectorate (later English Heritage) over the funding of the West Penwith Survey from 1980. The struggles to find adequate national funding for the surveys in West Penwith and investigations and reinterpretation at Tintagel were an important part of his work throughout the 1980s and early 1990s.

CCRA seamlessly morphed into the Cornwall Archaeological Unit (CAU) as the team became more established and carried out contract work as well as its curatorial and advisory role within the County Planning Department. Many colleagues have commented on the eccentrically scruffy clothes he wore whilst in the field. County Hall proved no barrier to his preferred sartorial style, and he would attend meetings with sharp suited council officers, with his pipe in hand held together with masking or electrical tape, dressed as if ready to tackle an overgrown garden. Such eccentricity never hid the seriousness of the messenger nor his message, and he always got full attention; he almost always knew more about most aspects of Cornwall than anyone else in the room. After many years of tussling about budgets with English Heritage and Cornwall County Council, he was finally able to stand down as chairman in1988 when CAU was absorbed into the Council.

As a footnote to this important time in Cornwall, he both directly and indirectly played a significant but perhaps undervalued role in the formation and development of the Cornwall and Scilly Sites and Monuments Record (SMR, later the Cornwall and Scilly Historic Environment Record). The SMR was constructed out of four important datasets: 1. Parish Checklists of the WCFC and CAS which he helped pioneer and edit. 2. While he was a Commissioner at the RCHME he helped absorb the Archaeology Division of the Ordnance Survey that had been responsible for the index of all archaeological sites that appeared on their published maps. These index cards provided the first countywide record of the archaeology of Cornwall. 3. Using a Manpower

Services Commission (MSC) employment scheme he set up the joint ICS/CAU project that constructed a comprehensive set of archaeological records for Scilly. 4. In another joint ICS/CAU MSC project in 1981, all historic industrial sites shown on the first edition Ordnance Survey maps were identified. This was the first time that a whole county had been documented thus, and it formed the fundamental building block upon which the Cornish Mining World Heritage Site bid was built some 20 years later.

Cornwall and Cornish studies

When the opportunity arose to establish an Institute of Cornish Studies in 1971 as a joint venture between Exeter University and Cornwall County Council, Charles leapt at the chance and immediately resigned his chair at Leicester. Appointed the first Professor of Cornish Studies, his wide-ranging interests were invaluable in its early days. His inaugural lecture was entitled *The importance of being Cornish* (Thomas 1973) and took a hard look at contemporary Cornwall. He painted a pessimistic picture of a county that was losing its ethnicity through in-migration, its historical character through over-development, its cultural distinctiveness through underfunding and its linguistic heritage through neglect and internecine disputes within the Cornish language elite. But he believed that all was not lost and he consciously set the Institute the task of recording many vulnerable aspects of Cornish cultural distinctiveness and character.

His interests had always included an awareness of language, and particularly place-names, for historical and archaeological research. His early book *Christian antiquities of Camborne* (Thomas 1967c) made extensive use of both place-names and words found in texts for illuminating their subjects, including much place-name data in its various appendices. His attitude to the Revived Cornish language was always somewhat ambivalent. On the one hand he sympathised (perhaps especially when younger, in the 1950s, but without ever entirely losing that feeling) with the attempt to give Cornwall a 'Celtic identity', but on the other hand his scholarly awareness that the revival is necessarily artificial always prevented him from giving it whole-hearted endorsement. He felt much the same way about Cornish politics.

He was liberal by nature and Liberal in his politics. Following his wife Jessica's lead he was part of the plot to topple the incumbent Tory MP and elect David Penhaligon and then Mathew Taylor after Penhaligon's tragic death. He rarely talked politics in public and was not a Cornish nationalist in the modern political sense. He was however involved in the Celtic Congress of 1950 held at the Royal Institution of Cornwall, and was a committee member of Mebyon Kernow when it was founded the next year in 1951. His interest here was cultural and he parted with them when they became more overtly political. His interest in all matters Cornish never wavered and it is therefore unsurprising that the last article he wrote is a detailed description of the use of the Cornish flag in military badges. For him, Cornishness was always a more nuanced concept than the simple call for separateness.

Thomas had also always been very aware of the need to study Cornish (and English) dialect, and he greatly encouraged the dialect studies by David North and others at the Institute, aware of the deeper approach that it is not just non-standard words that matter, but that the precise analysis of pronunciations across the county can illuminate the historical process of the spread of English through Cornwall, as shown by Martin Wakelin in his *Language and history in Cornwall* (1975), which includes a generous acknowledgement to Thomas in its foreword.

Scilly, Tintagel and beyond

The Thomas family had been shareholders in Tregarthen's Hotel, St Mary's, since the 1920s and Charles had made trips to Scilly from an early age. From 1975 to 1985 he produced no less than 19 articles on the prehistory, development of early Christian settlement, language, dialect and place-names of Scilly. In 1978 the O'Donnell lectures at the University of Wales allowed him to turn his full attention on Scilly and these lectures provided the structure for his memorable book *Exploration of a drowned landscape* (Thomas 1985). Here was a compelling interdisciplinary narrative that ranged over archaeology, sea-level rise, palaeobotany, linguistics and place-names, historic documents and modern Scilly. What emerged was a tantalising glimpse of a large island named Ennor, with St Agnes offshore,

being gradually overwhelmed by the sea within the early historic period. This model of sea level change was tested through field observation of the well-known 'submerged' prehistoric field walls on the intertidal flats between the islands, through the number and disposition of the extraordinary number of prehistoric burial chambers and through close examination of the location of earlier Cornish place-names around the edges relative to the newer English ones on the inland bays. This was an attractive model told in a scholarly but very readable style. Subsequent studies prompted by his work have pushed back the dates of the 'drowning' (Charman *et al* 2016) but his model of landscape change and the historical development of the Islands remains a powerful narrative today. His important work on recording and interpreting Scillonian place-names, including sea marks, rocks and reefs, continued from the early 1970s until very recently and it is to be hoped that this may be collated and published in due course. In recognition of his long association with Scilly he was elected Honorary Vice-President of the Isles of Scilly Environmental Trust in 1985 and made Honorary President in 1992.

Since his encounter with post-Roman Mediterranean pottery on his first dig at Gwithian in 1953 Charles had been fascinated as to why Tintagel has more such pottery than the rest of the country put together. Over the years away in Edinburgh he would return in print to this pottery, becoming a leading authority on the subject. With the publication of his list of post-Roman pottery from western Britain (Thomas 1976; 1981b), Thomas began to focus on Tintagel. He and others had become doubtful of Radford's interpretation that the post-Roman remains that lie around Earl Richard's thirteenth-century castle were monastic in origin and a disastrous, although fortuitous, fire in 1983 cleared a large part of the Island of its vegetation and turf and revealed the foundations of many rectangular buildings. A complete survey of the Island was carried out by the RCHME (Fowler and Thomas 1985) and this revealed an extraordinary number of buildings and building platforms across the plateau as well clinging to precarious cliff terraces. Gradually the view that this was a citadel emerged and in 1986 English Heritage asked him to write a new guide book that replaced the monastic model with a story that was much more dramatic. The story of the reinterpretation continues until the present day.

Among the C K Croft Andrew archaeological archive being examined by CAU in 1988 were four photographs taken of a 'dig' undertaken in 1942 by the vicar and some off-duty airmen on mounds in Tintagel churchyard. Charles speculated that these might be post-Roman graves and as luck would have it, in 1989 Mobil Oil named their new North Sea gas field Camelot and were looking for an Arthurian project to sponsor. Without hesitation Thomas leapt at the opportunity and suggested that to celebrate this they might like to sponsor an excavation at Tintagel church. They agreed, hoping to find King Arthur, and he agreed hoping to banish King Arthur and find the graves of the Cornish royal dynasty. Charles was at the dig every day and when a significant discovery was made he would turn up the following morning waving a detailed, fully researched report, typed up on his trusty typewriter, that outlined what this meant in a national context. Graves of fifth- and sixth-century date were found in the churchyard and are therefore contemporary with the post-Roman occupation on the island (Nowakowski and Thomas 1990; 1992).

A new book about Tintagel sponsored by English Heritage was subtitled *Arthur and archaeology* (Thomas 1993) and tackled the Arthur legend in the same robust style as he had the monastery explanation. Here was a vexing subject that he loved to argue about, and yet the more he argued, the more the public associated the castle with King Arthur and his story! Excavation work by Glasgow University between 1990 and 1999 (Barrowman *et al* 2007) confirmed much of Thomas's conclusions, and in 2015/6 English Heritage completely revamped the introductory exhibition at the site and is sponsoring a three-year excavation to examine hitherto untouched structures on the Island cliff terraces, to confirm their character, their date, function and state of preservation. In the months before he died Charles was excited about the upcoming excavations at Tintagel, that have since proved to be a vindication of his radical rethinking of this most iconic site.

A little known facet of his work is on a familiar subject but in unfamiliar territory: on the calcareous uplands of the *Causse Méjean*, on the southern edge of the *Massif Central* in Languedoc in southern France. Not, at first glance, Thomas territory, but he and his family had been holidaying in the Cèvennes during the 1980s, venturing occasionally north onto *les Causses*. He saw remarkable relict landscapes there, introduced Peter Fowler to them,

Fig 4 ACT examining a cairnfield during fieldwork on the hot, dry limestone plateau of le Causse Méjean, Lozère, Languedoc, France, on 23 August 2000. (Photograph: P J Fowler.)

and together they then explored and recorded their field archaeology (Fowler 2004) (Fig 4). His signal contribution to the Méjean project was not, however, in the field. It was his study of the development of language there since late Roman times, including *langue d'oc*, the tongue of the people of Oc, the western Roman province, spoken into the twentieth century on *les Causses* (Thomas 1994a; Fowler 2004). *Inter alia*, and apparently from nowhere, he produced a unique English dictionary of Caussenard place-names, a remarkable achievement even for someone so comfortable with antique languages and which gave an added dimension to our landscape understanding of this increasingly empty area, a sad example of rural depopulation.

Local Societies and Cornish society

For many years Charles was a very active member of the Cornwall Archaeological Society, having been a prime mover in the transformation of the West Cornwall Field Club into the countywide Cornwall Archaeological Society. While a lecturer in Edinburgh and then Professor at Leicester he edited the *Proceedings of the West Cornwall Field Club* and then *Cornish Archaeology* from 1952 to 1975, and *Cornish Studies* from 1973 to 1991, a staggering 40 years. It is no wonder that he declined the opportunity to edit *Antiquity* when an offer was discussed in 1982 with Barry Cunliffe and Richard Atkinson on the anticipated retirement of Glyn Daniel. During that time he not only wrote the editorials, contributed articles, short notes, excavation news, and book reviews but also many of the Society's field and site guides. In addition he was responsible for several initiatives that indicate his ability to gather together and organise huge amounts of data.

From 1958 he encouraged the West Cornwall Field Club and later Cornwall Archaeological Society, to be the first in the country to publish parish checklists of archaeological sites and monuments; he himself compiled the checklists for Gwithian, Gwinear and Camborne. Parish checklists were an important influence in the later development of Sites and Monuments Records (now Historic Environment Records) that underpin archaeology today.

He initiated the annual *Cumulative index of Cornish archaeology* in 1952 with a retrospective list of all archaeological publications since 1932. This continued for 20 years amounting to an astonishing 1118 archaeological references. His lists of published material from 1932 to 1972 give us a real insight into the width and depth of his interests and the access he had to libraries in Edinburgh, Leicester, at the Royal Institution of

Cornwall and of course at his various homes. It is easy to forget that in a pre-computer age these bibliographic reference lists were an essential part of research – a pre-computer search engine. In addition, when he took on the editorship of *Cornish Archaeology* he compiled an annual *Digest of Cornish periodicals* from 1960 to 1974. These 12 lists comprised a summary of each periodical for that year and the range usually covered more than a dozen periodicals and reflected his eclectic yet broad interest in Cornish history, culture and natural history. The Camborne Printing Company printed many of these periodicals, and in recognition of the importance of local printers to future local historians he wrote a short article (Thomas 1971c) documenting the huge variety of publications that this company was responsible for, from church guides to biographies, from folklore to poetry.

As well as being editor of *Cornish Archaeology* he also excavated with the Society during the summers at St Dennis hillfort (Thomas 1963b; 1965c) and Castilly Henge, a supposed henge monument that appeared to have been reused as a medieval *plen an gwary* (playing place) and Civil War battery (Thomas 1962b; 1963b; 1964a). In 1962 he rediscovered St Ia's chapel and holy well, Troon, and partially excavated the site in 1966 using his Early Christian archaeology extramural class from Truro (Thomas 1966; 1967b; 1967c). It is a measure of the man that he found time to teach an extramural class in Truro during his last year as a lecturer in Edinburgh and that in his first year as Professor of Archaeology in Leicester he used students as well as CAS members to investigate the medieval chapel built inside an Iron Age round at Merther Uny, Wendron in 1968 (Thomas 1968a; 1968b). He never quite lost his interest in megalithic tombs and was very pleased to be able to excavate the Early Bronze Age entrance grave at Bosiliack, Madron, when in 1984 a moorland fire burnt off the vegetation from the nearby Middle Bronze Age settlement and field system. Bosiliack was the first entrance grave to have its chamber excavated under modern conditions (Jones and Thomas 2010). The excavation coincided with his Presidency of CAS and he used this to launch the Society's Megalithic Project. Little did he know at the time that the megalithic monument closest to his home and heart, Carwynnen Quoit, was to be re-erected within his own lifetime with substantial input by the Society.

Continuing the theme of his wide-ranging interests, a glance at his appointments and offices (listed above) shows just how well connected he was. By the time the Society's annual Corfield (later Corfield Nankivell) memorial lecture was started in 1975 he was able to provide the names of eminent speakers who were his friends and colleagues. Those who accepted are a roll-call of the great and good of British and Irish archaeology: Ralegh Radford, Peter Fowler, Stuart Piggott, Etienne Rynne, John Wymer, Aubrey Burl, Leslie Alcock, Martin Biddle, Seamus Caulfield, John Coles, Peter Addyman, Peter Ucko, Philip Rahtz, John Wacher, Roger Mercer.

There were few Cornish societies and institutions that Charles did not write for, or give talks to. There were several that he helped found and this included the Cornish Buildings Group. Although he seldom wrote about vernacular architecture he was deeply interested in the future of the historic environment including the built heritage. His 1973 lecture *The importance of being Cornish* (Thomas 1973) makes this very plain. The Group was set up in 1968 through the efforts of local conservation activist John Schofield in order to press for the conservation of historic buildings and to encourage better new design. Charles was on the Council until 1980.

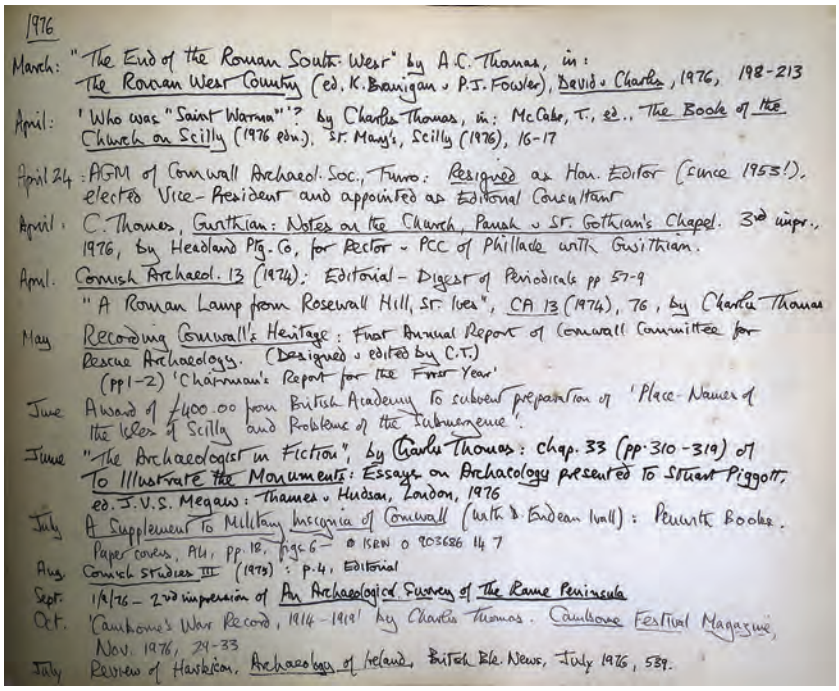
He was a great communicator and, apart from his hundreds of lectures to students and public alike, Charles often broadcast on radio and television. From 1956 he appeared on panel shows such as *West Country Queries*, *Coastal Magazine* and *Looking for Wrecks* (BBC Plymouth), and nationally *The Archaeologist* on the Home Service, where he chaired discussions on recent archaeological work across the country. He was in constant demand for his opinion on new discoveries. In 1975 he was appointed chairman of the BBC's South West Advisory Council and in 1978 he chaired the panel of BBC South West's *Peninsula: Word for Word* popular discussion programme. In 1987 he was appointed chairman of the Duchy of Cornwall Archaeological Advisory Group, and was particularly pleased to accompany Prince Charles on the first visit to Tintagel by a Duke of Cornwall since the Black Prince. He was particularly pleased to be made a Deputy Lieutenant by Lord Falmouth in 1988 and enjoyed taking part in the ceremonial tasks that came with the post, always being able to recognise a friend or two in the crowd almost anywhere in the county.

Charles the collector

The contributors to this tribute have had the pleasure of visiting Lambessow on many occasions and have each in turn been amazed by the size of the library that Charles amassed over the years. There cannot be many people who having entertained an Archbishop of Canterbury to dinner was able to prevail on him to bestow a blessing on the recently enlarged stacks! What is less well known is that he also amassed a staggeringly large and nationally significant collection of military insignia and other militaria, comprising over 60,000 badges, buckles, and shoulder flashes. He had been a member of the Military Historical Society for decades and was a founder member of the Cornwall Military Collectors Circle and chairman 1994–6. He wrote the first comprehensive accounts of the organisation and insignia of the Cornwall Artillery, Infantry, Mounted Yeomanry and Sea-Fencible Volunteer Companies and Royal Cornwall Local Militia from 1745 to 1836 (Thomas 1957a; 1958b; 1958c; 1959a; 1959b; 1959e; 1960b; 1960c), and also wrote about successor Cornish units to the present day. For many years he was a trustee of The Duke of Cornwall's Light Infantry Regimental Museum, Bodmin. Less well known is that he was a regular visitor at RAF Hendon, where he researched RAF badges. He and fellow collector Margaret Nobbs made available a catalogue of RAF badges and their researches are in the RAF Hendon archives (Nobbs and Thomas 1969; Thomas 2006). Since a young age he had loved making models and in his private museum at Lambessow, in addition to the insignia, were half a dozen tableaux of some of his large collection of model soldiers along with contemporary military documentation and ephemera (Fig 5). Collecting militaria was his passion while buying books was his habit.

He was a compulsive collector and fortunately he was also an inveterate cataloguer. He loved making lists, and several of his publications are indeed lists; lists of post-Roman pottery, lists of Cornish military insignia. His library was catalogued on index cards and well ordered with typed shelf markers; his archaeological collections were catalogued and the artefacts marked up; every book, booklet, article, review or note he wrote, no matter how small, is identified year by year in a handwritten ledger (Fig 6); thousands of buttons, badges, shoulder flashes and his regiments of lead soldiers are all identified, described and catalogued, his many hundreds of slides and photographs are all marked and identified, and the Thomas family archive of his mining forbears has also been catalogued with the help of his

Fig 5 Military tableau depicting a battle in the Sudan in the mid 1880s. ACT's military museum at Lambessow, St Clement, Truro, 2016. (Photograph: N D Johnson.)


1976

March: "The End of the Roman South-West" by A.C. Thomas, in: The Roman West Country (ed. K. Branigan & P.J. Fowler), David & Charles, 1976, 198-213

April: 'Who was "Saint Warna"'? by Charles Thomas, in: McCabe, T., ed., The Book of the Church on Scilly (1976 edn), St. Mary's, Scilly (1976), 16-17

April 24: AGM of Cornwall Archaeol. Soc., Truro: Resigned as Hon. Editor (since 1953!), elected Vice-President and appointed as Editorial Consultant

April: C. Thomas, Gwithian: Notes on the Church, Parish & St. Gothian's Chapel. 3rd impr., 1976, by Headland Ptg. Co, for Rector - PCC of Phillack with Gwithian.

April. Cornish Archaeol. 13 (1974): Editorial - Digest of Periodicals pp 57-9
"A Roman Lamp from Rosewall Hill, St. Ives", CA 13 (1974), 76, by Charles Thomas

May Recording Cornwall's Heritage: First Annual Report of Cornwall Committee for Rescue Archaeology. (Designed & edited by C.T.)
(pp1-2) 'Chairman's Report for the First Year'

June Award of £400.00 from British Academy to subsidise preparation of 'Place-Names of the Isles of Scilly and Problems of the Submergence'.

June "The Archaeologist in Fiction", by Charles Thomas: chap. 33 (pp. 310-319) of To Illustrate the Monuments: Essays on Archaeology presented to Stuart Piggott, ed. J.V.S. Megaw: Thames & Hudson, London, 1976

July A Supplement to Military Insignia of Cornwall (with D. Endean Hall): Penwith Books. Paper covers, A4, pp. 18, pgs 6 — @ ISBN 0 903686 14 7

Aug. Cornish Studies III (1975): p.4, Editorial

Sept. 1/9/76 - 2nd impression of An Archaeological Survey of The Lizard Peninsula

Oct. 'Camborne's War Record, 1914-1918' by Charles Thomas. Camborne Festival Magazine, Nov. 1976, 29-33

July Review of Hawkins, Archaeology of Ireland, British Ele. News, July 1976, 539.

Fig 6 Sample page (March–July 1976) from ACT's album of early press cuttings and the complete year-by-year list of his own published works (1948–2014). (Photograph: N D Johnson, July 2016.)

Camborne friend David Thomas. In fact every purchase he ever made was meticulously listed with its price and dealer. He had catalogues of lists and lists of catalogues. Everywhere were hundreds and hundreds of typed-up labels stuck on to artefacts, files, and boxes whether boxes of photo negatives or boxes of spare arms, legs or 'heads with turbans' for his soldiers. And then there were the sets of card indexes that record inscribed stones around the country, and the place-names of Scilly.

As the Honorary Courtney Librarian of the Royal Institution of Cornwall Charles had access to the extensive collection of early photographs of Cornwall. Having some early family photographic portraits himself, he wished to draw attention to the hitherto under-appreciated collection of the RIC and so in 1988 he published *Views and likenesses: early photographers and their work in Cornwall and the Isles of Scilly 1839–1870*. This brought together his fascination with early photography and an ability to identify the photographers as well as the people, places and occasions illustrated that few could match. He successfully demonstrated that there was an early regional school of photographers in Cornwall during the formative years of this burgeoning art form.

Charles the man

There are many qualities that determined Charles' character, just as there are many mineral lodes that thread the rock beneath his hometown of Camborne. He was devoted to his family, he was unfailingly loyal to his friends, he was exceptionally generous with his knowledge to all who asked of it, and he encouraged young and old in their attempts to understand better the history and meaning of the places in which they lived. Of course, as a scholar he was critical of others and yet he was always charming and unfailingly polite, answering numerous enquiring letters in great and often illuminating detail. Many of his friends can recall taking a call from Charles, eager to discuss the latest planning abomination, local scandal and historical breakthrough . . . or simply to have a gripe about the weather. Always generous, always interested in others, like the best scholars he liked to share his knowledge – as fascinated by the idiosyncratic quirks of Cornish life as in the latest university paper on an obscure field of archaeology.

He was a Methodist by birth and a Methodist by inclination, and while not being a particularly active member he was a noted scholar of nonconformist history, a collector of Methodist literature and

ephemera. He joined the Cornish Methodist Historical Association a few months after it was founded in 1960, and was proud to be President in 2002. He was a keen admirer of John Harris (1820–1884), the miner, poet and Methodist preacher from Bolenowe. The Thomas family had supported Harris at Dolcoath Mine, where he worked, with the loan of books and later, when he became a popular poet and preacher, with subscriptions to his publications. Charles contributed many articles about Harris' life and work and was president of the John Harris Society from 2012. What is less well known is that Charles and his family had bought and renovated, and by doing so had kept open, the modest thatched Gwithian chapel in the village that he loved, where his family owned land, where he had lived, excavated and thoroughly researched. His funeral service was held in the chapel and he is buried in Gwithian churchyard a few yards from the chapel, thus bringing together so many strands of his life – family, Methodism, the early Church, archaeological excavation and documentary research.

For many he was the archetypal 'Renaissance man', and indeed he was privately delighted that others might regard him as such; and yet his restless energy and eagerness to embark on new avenues of research had a 'downside'. It is a problem that affects many of us in archaeology: the unwillingness or inability to finish off one project before embarking on another. The necessity of writing up and publishing the results of excavations has long been accepted as a fundamental principle of good practice. Whilst today 'Post-Ex' (post-excavation writing up, archiving and publication) is a normal part of project planning and funding, in the 1960s all such work was expected to be carried out in one's 'own time'. In Charles' case he was effectively part running the Edinburgh Department with Stuart Piggott or running the Department of Archaeology at Leicester as its first Professor.

It is perhaps ironic that he never made the time to fully write up and publish the results of his pioneering work at Gwithian and the important Iona campaign. These two projects provided the very foundations upon which his career and reputation were built, but have remained tantalisingly elusive for 50 years, gaining almost mythic status as time went on. Fortunately, all is not lost. The entire Gwithian archive, with the help of the Aggregates Levy Sustainability Fund (via English Heritage), with Charles close at hand, was appraised, audited,

Fig 7 Charles Thomas at Snail Down, Everleigh, Wiltshire, in 1955. (Photograph: Thomas family.)

ordered, indexed, boxed and filed to modern archive standards (Nowakowski 2004), with assessments and descriptive summaries made of the key Bronze Age and post-Roman excavations (Nowakowski 2007; Nowakowski *et al* 2007). The entire Gwithian archive is now safely stored in the Royal Cornwall Museum. Although everything is now accessible for future research, the archive still deserves and awaits full analysis and publication. The Iona archive was until recently stored at Lambessow, and like the Gwithian archives the material has been 'adopted' and is now with Glasgow University. The Glasgow Iona Research Group, funded by Historic Environment Scotland, will publish the Iona excavations in 2017. Always tempted by the excitement of new discoveries, both these projects were put to one side with the start of the Ardwall excavations in 1964. Charles moved his enquiring gaze to the world of early Christian memorials, their mysteries and their meanings, and following his move to Leicester he focused much

more on the south west and his home county of Cornwall.

His work on Lundy was also only published in part. The National Trust recently commissioned the publication of the pre-Christian prehistoric and Roman remains from the Beacon Hill excavation (Quinnell 2010), although the archive of the early medieval Christian site still needs further work. The archive of his Merther Uny churchyard excavation only ever appeared in interim note form (Thomas 1968a; 1968b). Fortunately, others are now working on his archive, with a view to publication. His last excavation, at Bosilliack in 1984, was eventually published in 2010 (Jones and Thomas 2010). Thus, through luck and the enthusiasm of colleagues, most of Charles' excavations have been, or will shortly be, published in full. It says something about the quality and interest of the sites he investigated, as well as the quality of his records, that this has been both desirable and possible, decades after the sites were excavated.

Valete

Great as his achievements have been Charles was nevertheless at heart a surprisingly shy man who at every opportunity returned to his home county, unwilling to detach himself from his family roots. His spiritual home was the Royal Cornwall Museum, the home of the Royal Institution of Cornwall. He had been on its Council since 1967, was a past President and long-time Honorary Librarian of its Courtney Library. For many years he would pop in at least twice a week to gossip about local affairs with Leslie Douch the curator and his assistant Roger Penhallurick, and any other local historian friends who happened to be in. He was awarded many honours and fellowships, including the Frend Medal by the Society of Antiquaries, but it was the Jenner Medal presented to him by the Royal Institution of Cornwall (RIC) in 2008 of which he was most proud. It is all the more pleasing therefore that the RIC is the recipient of a substantial part of his Cornish library (Fig 8), and the artefacts and archives from his Gwithian excavations as well as all his Tintagel research material. After the death of the historian A L Rowse, Charles was referred to as the 'Greatest living Cornishman', a title that privately he was very pleased with. He did have a sense of his own worth – for example, being a Fellow of the Royal

Fig 8 ACT's library at Lambessow, St Clement, Truro: Angela Broome and Oliver Padel identifying books destined for the Royal Institution of Cornwall's Courtney Library, 7 July 2016. (Photograph: N D Johnson.)

Academy – but not in any outwardly boastful sense. He put together a miscellany of his writings and a pretty full CV in his 2012 book *Gathering the fragments*. This was to be his own personal pat-on-the-back.

Charles met Jessica Mann in the trenches of the Gwithian excavations and they married in 1959. She became a prolific and successful crime novelist, author of non-fiction, a journalist and book reviewer and a respected member of many public institutions and tribunals; he was to become one of the most respected archaeologists of the late twentieth century. Together they had four children, Richard, Martin, Susannah and Lavinia. They made a formidable couple, and the book that they co-wrote in 2009, appropriately called *Godrevy Light* (Mann and Thomas 2009), perhaps best illustrates this. This brought together many of the paintings featuring the lighthouse that they had collected together over 50 years. After all, the lighthouse had

provided the backdrop to so much of their lives. It includes Charles' typically erudite and detailed history of the monument and how it is represented in literature, poetry, on screen and in art and craft. It illustrates how wide were his interests and how a lifetime of insatiable curiosity and compulsive collecting, coupled with a thorough immersion in the liberal arts, can produce a study which is both erudite and accessible, and at the same time romantic.

Nicholas Johnson
with Professor Rosemary Cramp,
Professor Peter Fowler and Dr Oliver Padel

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NB. Charles published variously as 'Charles Thomas', 'C Thomas' and 'A C Thomas' during his career. For the sake of convenience and simplicity all references to his published works are listed here as by A C Thomas.

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Obituary

SARNIA ANNE BUTCHER FSA

1930–2016

Sarnia Butcher died unexpectedly on 12 July 2016 at her home on the Isles of Scilly. She was born in Croydon on 20 August 1930 and went on from Hove County Grammar School for Girls to study history at Royal Holloway College, University of London. In 1951 she went to the Institute of Archaeology where her lecturers included Mortimer Wheeler, Max Mallowan, Gordon Childe and Kathleen Kenyon; lecture notes from this period were found among her papers.

Sarnia worked for Kathleen Kenyon for several months as site supervisor on excavations in Jericho

Sarnia on the boat returning from a monitoring visit to Nornour in May 2012, her last visit to the island. (Photograph: Amanda Martin.)

and she retained vivid memories of her time in the Middle East. At the end of the Jericho excavation, Sarnia and a colleague went via Damascus to Homs and Palmyra. This required negotiating a special permit and the visit to Palmyra was meant to take place escorted by a Syrian policeman. Sarnia was determined to be rid of him and, communicating in French, explained that that there would be a lot of walking involved in visiting the temples and other sites, a ploy which succeeded! Her diary records glowing descriptions of the area that now provide a tragic backdrop to the ongoing Syrian conflict, news of which caused her particular sadness in recent years.

Thereafter, Sarnia worked for Kathleen Kenyon at the Institute of Archaeology on the pottery from excavations at Sabratha, Libya, until she accepted a permanent job in the Ancient Monuments Inspectorate, dealing with, among other things, excavations on Roman sites; her first publication was an interim report on excavations in St George's Street, Winchester, in 1954 (Butcher 1955). Sarnia was among the first women to be appointed as Assistant Inspectors and was the first female Principal Inspector. Although notably mild-mannered in her later years, it is said that even seasoned excavation directors would quake in their boots in advance of a site visit from her! On several occasions, Sarnia was invited to advise on excavations abroad, most notably, perhaps, at Thorikos, a fortified Attic city on the Aegean coast of Greece. In 1964 she was elected a Fellow of the Society of Antiquaries.

As a Principal Inspector Sarnia had responsibility for backlog excavations and for publications more generally. She was eventually a member of the Backlog Working Party of the Ancient Monuments Advisory Committee of English Heritage and, with Paul Garwood, compiled *Rescue excavations 1938 to 1972* (Butcher and Garwood 1994), a work which, as Barry Cunliffe pointed out in its preface, demonstrated the achievements, and the end, of a 'Heroic Age' of government-supported rescue fieldwork. She saw the move of the Inspectorate from the Civil Service, latterly the Department of the Environment, to English Heritage in 1984, but retired soon afterwards to live in Hugh Town, St Mary's.

Sarnia was involved with the archaeology of Scilly over a long period. She is particularly remembered for her work on the small uninhabited island of Nornour in the Eastern Isles. The site, a settlement extending from the Bronze Age to the Roman period, was first exposed by marine erosion in 1962 and excavations were carried out by Dorothy Dudley from 1962 to 1966 (Dudley 1968). Gales in 1968–69 exposed further buildings and a second excavation campaign from 1969 to 1973 was directed by Sarnia and sponsored by the Isles of Scilly Museum Association and the Ministry of Public Buildings and Works. The investigations identified a settlement of 11 roundhouses, showing evidence of rebuilding, additions and alterations from the Bronze Age to the Romano-British period; associated middens contained limpet shells, bones of sheep, cattle and many querns (Butcher 1978). Early in the Roman period most of the settlement was abandoned but a large and enigmatic collection of Roman artefacts dating from the late first to fourth centuries AD was found in the upper levels of two of the buildings. These comprised more than 300 copper-alloy brooches, 25 finger rings, 10 bracelets, 83 Roman coins, about 22 glass beads, 13 pipe-clay figurines, 30 miniature pots and a number of other Roman-period artefacts. Initially interpreted as a brooch-making workshop, it has since been reinterpreted as a shrine to a native marine goddess (Thomas 1985, 163–5; Butcher 2000–1) and remains one of the most iconic and mysterious archaeological sites in Scilly.

She also carried out investigations on sites at East Porth, Samson, in 1971 (Butcher and Neal 1971; Neal, in preparation), and at Bar Point, St Mary's, in 1972 (Butcher and Johns, in preparation). A coastal settlement site at Little Bay, St Martin's, again exposed by marine erosion, had been excavated by B H St J O'Neil, then the Chief Inspector of Ancient Monuments, in 1952–3 but the work remained unpublished. In 1974, following new storm damage to the site, Sarnia undertook a limited excavation on behalf of the Department of the Environment (Butcher 1974). Further work took place in 1980 led by David Neal. His report (Neal 1983) acknowledged the help which Sarnia had given not only with the archive from her earlier work but also on site and in commenting on the report. Coincidentally, Sarnia was working in the islands at the same time as two of her contemporaries from the Institute of Archaeology, Charles Thomas and Paul Ashbee. She acted as Curator of Archaeology for the Isles of Scilly Museum and later served as a Museum Trustee for many years. She edited three volumes of *Cornish Archaeology* in the early 1990s. Sarnia was still active in the Isles of Scilly

Sarnia in building 1 on Nornour during the 1969–73 excavations. (Photograph: Evelyn Palmer. Isles of Scilly Museum archive.)

Museum, working on the archives located there until four days before her death.

During the excavation by Cornwall Archaeological Unit in October 1999 of the sword and mirror cist burial at Hillside Farm, Bryher, Sarnia came over from St Mary's every day to help. Charles Johns first met her at that time and remembers her as very patient and hardworking. One very stormy morning during the excavation he and Carl Thorpe thought that the sea would be much too rough for Sarnia to come over . . . shortly afterwards they saw the bows of a boat breaking through the waves half way across from St Mary's! A photograph of Sarnia at work on the cist excavation appears in the report (Johns 2002–3, fig 15).

Sarnia wrote widely on Roman brooches and enamels, making many specialist contributions to excavation reports. Examples include her reports on brooches from Henrietta Quinnell's excavations at Trethurgy and a villa site at Cosgrove in Northamptonshire (Butcher 1991; 2004), from the temple site at Lamyatt Beacon, Somerset (Butcher 1986), and Churchtown Farm, St Martin's (Johns and Taylor, in preparation), and on a possible brooch or clasp from Trenowah, St Austell (Butcher 2008). She also wrote at greater length on these topics, notably her chapter on enamelling in *Roman crafts* (Butcher 1976) and *Roman brooches in Britain* (Bayley and Butcher 2004), published by the Society of Antiquaries; the latter was the culmination of more than 25 years of collaboration with Justine Bayley. Retirement did not stop her working and she took great satisfaction in the publication in *Cornish Archaeology* early in 2016 of her final paper on the Roman brooches from Nornour (Butcher 2014).

Archaeology aside, Sarnia led a very full life, with interests including gardening, travel (a large collection of maps, brochures, timetables and other material relating to her travels was found among her papers), music (especially opera) and reading; Jane Austen and Virginia Woolf were particular favourites. She is greatly missed by her many friends and colleagues. Sarnia requested that no funeral service be held for her and was cremated at Penmount Crematorium, Truro.

Amanda Martin and Charles Johns

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Remembering Sarnia Butcher

Sarnia was very much part of my life as a working archaeologist from 1969, when we first met, onward. At that time I had just obtained my degree in archaeology at University College, Cardiff, and was directing rescue excavations for the Ministry of Public Buildings and Works. Organising these excavations was the responsibility of three Inspectors of Ancient Monuments, for prehistoric, Roman and medieval sites; Sarnia looked after Roman sites. In the summer of 1969 she asked me to excavate two Roman villa sites, each for about six weeks, at Seaton in Devon and then at Cosgrove in Northamptonshire (Miles 1977; Quinnell 1991). I was living in London at the time and had several meetings with Sarnia at her office, then in Smith Street in Westminster, setting out what needed to be done and the resources available. She shared her extensive expertise willingly and was easy to talk to from the beginning. Ever since that time, whenever we met, even after a long interval, that ease in companionship was there.

Exeter University advertised that autumn for applicants for a new post of Staff Tutor in Archaeology in their Extra-Mural Department and Sarnia agreed to be one of my three referees. The other two had been staff at Cardiff but she was crucial in demonstrating that I could manage the practical side of archaeology. I have always known that I owed her a lot because, to my surprise, I obtained the post, starting in January 1970. Thereafter I moved to the West Country and gradually began to specialise in prehistory.

In familiarising myself with major archaeology projects in the area I became aware of Nornour, where Sarnia was conducting a series of annual rescue excavations in advance of coastal erosion. She had told me about this in London and suggested I visit and also read the account of previous work by Dorothy Dudley (1968). My first visit to Nornour took place in June 1970, at a time when Sarnia was not working there. On a lovely sunny day we were landed on Great Ganilly and made our way across at low water. A beautiful place to visit but the difficulties of carrying out a successful excavation were very apparent – and Sarnia did this for four successive summers. Sarnia and I finally met up on Nornour in 1974. At that time she had finished excavations and was working on the report, living when she did not have to be in London in Hugh House on the Garrison on St Mary's. I had brought a party of 30 adult archaeology students for a week to look at the archaeology of Scilly and the whole party spent a highly memorable afternoon on Nornour to which she had come especially for their visit. Another lovely sunny afternoon, September this time, and Sarnia's expertise made it especially memorable.

Nornour made a major impact on the Islands and those who visited and read about it. The need to provide appropriate local housing for the finds was a main driver in the establishment of the Isles of Scilly Museum. In subsequent years I took other parties at different times to Scilly and a visit to Nornour was always the principal highlight, although sadly the weather did not sometimes allow this. Sarnia published the main account of her Nornour excavations in *Cornish Archaeology* (Butcher 1978). By that time I was editor and was also in the position to contribute a small specialist report; this was on the worked flints which are, as with most things, rather different on Scilly to those from other areas. Sarnia and I had several working sessions in her office, by this time in Fortress House in Savile Row, while the report was in preparation. And while the work was in the

process of publication, Sarnia was a pleasure to deal with, always meticulous with proof correction and timing.

Archaeology in Britain was changing quite rapidly in the 1970s and new arrangements were being made for rescue archaeology and appropriate publication. No provision was made in terms of paid time for preparing excavations reports until the mid-1970s and many archaeologists who had carried out rescue work for the 'Ministry', soon to become the Department of the Environment, had accumulated long backlogs of publication work; a number had died leaving a legacy of unpublished reports. Sarnia, now a Principal Inspector, became responsible for managing publication for government backlog work. In that capacity Sarnia organized appropriate archaeologists to take on the publication of backlog and provided a great deal of moral and practical support to those, such as myself, who had not been able to keep up with report preparation when they became involved in other work. Again quiet but good advice was always available.

One major tranche of archaeological work in Cornwall, by C K Croft Andrew, had been carried out during the last war and was reputed to have included 30 barrows; all of these and other work had remained unpublished and Mr Andrew had retired to Yorkshire with all the archives. In 1981 he died and in due course his daughter contacted me about the problem of her father's archaeological material. I rang Sarnia right away and she very quickly organised Evelyn Palmer, a member of her staff, to go to Yorkshire and work with Andrew's family so that the whole archive could be transferred to London. In due course Patricia Christie was approached to deal with the barrow and other excavations, and these were published in three papers in *Cornish Archaeology* (Christie 1985; 1988; Christie and Rose 1987).

Sarnia retired from the Inspectorate during this time, and subsequent publications of Croft Andrew's work took much longer to come to fruition. Sarnia's name hardly appears in the saga of these publications but there can be no doubt that her initial work in salvaging the archive made them happen. Typically Sarnia's input was quiet and generally unsung – as she herself would wish – but very important.

After retirement Sarnia moved to Cornwall for a while, for family reasons, and in the early 1990s edited volumes 31, 32 and 33 of *Cornish Archaeology* for Cornwall Archaeology Society. As a contributor to some of these volumes it was a pleasure to work with Sarnia as editor: just quiet support, no fuss and always good advice. Editors differ! Later Sarnia moved to Scilly and gave a great deal of time to archiving the archaeological collections in the Island Museum; their present order is largely due to her. In recent years I have visited Scilly frequently and, whenever I needed access to the Museum collections, I would spend happy and productive times with Sarnia as well as visiting at her home. She also continued to work productively on a subject she had made particularly her own, the brooches of Roman Britain. (She had throughout provided, where appropriate, reports on these for excavations I was publishing.) On my last visit to her, in June 2016, she talked of her pleasure in the appearance of her last piece of published work (Butcher 2014), updating the brooches from Nornour, which appeared in *Cornish Archaeology* 53 early in 2016.

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