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Excavations at the North Cliffs 2016: investigating Mesolithic flint scatters in Hudder Field

ANDY M JONES, ANNA LAWSON-JONES AND
HENRIETTA QUINNELL

with a contribution from RICHARD HOSKINS

In 2016 Cornwall Archaeological Society undertook test pitting at Hudder Field on the North Cliffs, Camborne. The field is associated with three flint scatters which had been identified and fieldwalked by Charles Thomas since the 1950s. Two of the scatters were targeted for investigation, the largest, HU/NE, and a smaller ill-defined scatter, HU/SS. Fourteen test pits in the area of HU/SS produced low numbers of flints, thereby establishing its ephemeral, short-term character. In HU/NE 24 test pits were excavated over the main scatter area. This produced 5332 flints and 190 items of stonework, as well as hundreds of small pebbles which may have been introduced into the field during the Mesolithic period as gastroliths within the stomachs of animals brought to the site for processing. The results from the test pitting largely concurred with those produced by the surface collection. Scatter HU/NE is identified as being a major occupation site of Late Mesolithic date, associated with the production of Group XIX stone tools and probably with the processing of animal carcasses. As such, the scatter is a site of major significance in both Cornwall and the wider south-west region.

In August 2016, archaeological investigations at the North Cliffs, Camborne (Fig 1), were undertaken by Cornwall Archaeological Society over five days. The site was chosen for excavation because fieldwalking by the late Charles Thomas from around 1950 until shortly before his death in 2016 had revealed an exceptional concentration of Mesolithic flints and worked stone tools in three discrete areas in Hudder Field, which Charles labelled HU/NE, HU and HU/SS (Thomas 2005; Jones 2018a). In 2016, Historic England funded an ‘archive rescue’ project to catalogue the more than 23,500 Mesolithic artefacts that had been amassed from the field by Charles Thomas and other collectors (Jones 2018b). This archiving project

confirmed that the Mesolithic flint assemblage was remarkable in its density and also revealed an exceptional number of bevelled pebbles and other greywacke tool forms, which had been collected from the beaches north of Hudder Field (Jones *et al* 2018). Subsequent petrological study of the stone assemblage has revealed that it consists almost entirely of Group XIX greywacke (Jones *et al*, forthcoming) and the assemblage is likely to represent an area where later Mesolithic stone tools were made.

Following the archive cataloguing project, Cornwall Archaeological Society decided to fund a project to find out more about the context of the surface collection. The main objectives of the 2016

fieldwork project were threefold. The first was to establish the significance of the Mesolithic sites by investigating the scatter areas in a controlled way, so that the results could be compared and contrasted with those from the surface collection. The second was to establish whether any below-ground Mesolithic features survived, such as pits or layers, comparable with recent discoveries at Penans Farm, Grampound, and along the Temple to Carblake A30 road scheme on Bodmin Moor (Jones 2016; Jones and Lawson-Jones 2018). Although the North Cliffs / Gwithian area has a rich environmental record and contains a large number of Mesolithic sites, environmental evidence and secure dating for the period prior to the Early Bronze Age is entirely absent (Walker 2018; Straker and Walker 2018). Radiocarbon dating of secure Mesolithic deposits was therefore a project goal. The third objective was to look for chronological depth in the lithic assemblage, to see whether it was possible to shed light on the Mesolithic / Neolithic transition in Cornwall and establish whether there was continuity into the Neolithic period.

Location and background

Hudder Field is a 5.5 ha, south-facing field located in western Cornwall on the north coast (at SW 60950 42930), approximately 3.5 km to the north west of Camborne. The site is situated on the North Cliffs, taken here to cover the coastline which extends for approximately 9 km from Portreath in the east to Gwithian in the west. The cliffs along this stretch of coast are sheer, with heights averaging 60m to 80m above sea level (Fig 1). Hudder Field, from which the flint scatters come, slopes down from the coastline. Site HU/NE is located on the highest ground and site HU on the lowest, close to the road which bounds the south-west end of the field.

The underlying geology is comprised of Devonian period slates, mudstones and sandstones, which are for the most part comparatively soft and prone to sudden erosion in stormy weather. There are, however, also outcrops of harder greywacke, a coarse sandstone or gritstone that was used for a range of stone tools in the Mesolithic period and which has been identified as Group XIX (Evens *et al* 1962; Jones *et al* 2018; Jones *et al*, forthcoming).

The Gwithian end of this stretch of coastline is the focus for more than 20 Mesolithic artefact scatters, the majority of which were identified by Charles Thomas from around 1949 until 2015 (Wymer 1977; Thomas 2005; Jones 2018a). Many of these were small-scale and sometimes found during the investigation of other later period sites (Thomas 2005). By contrast, two of the scatters in Hudder Field, sites HU and HU/NE, and a third site, CM, situated approximately 500m to the south west of Hudder Field, were large and located in close proximity to one another. A third scatter in Hudder Field, HU/SS appeared to be much smaller and was poorly-defined (Fig 2).

Hudder Field had been taken in from former coastal rough ground by at least the late nineteenth century (1st edition Ordnance Survey 25in: 1 mile, c 1880) and the field is surrounded on three sides by coastal rough ground. In recent decades the field has been ploughed and it was under cultivation right up until the 2016 fieldwork. It had been deep ploughed and used to grow broccoli and there were no traces of any archaeological features at surface, although a faint 'dish-like' natural depression was visible in the centre of the HU/NE site.

Three scatters were known in the field (Fig 2) from the surface collection. The largest site HU/NE is located at the level north eastern end of the field. The scatter site has extensive views over the coast and the valley to the south. HU/NE had been systematically fieldwalked over a number of years, and had been gridded out into 10m square boxes. Initially this grid consisted of four rows (lettered A–D), with six squares in each. Subsequently seven squares were added to row A, so that it extended to the south east and ended with square A13, where the scatter petered out (Fig 3). Dense concentrations of lithics, brought to the surface by ploughing, had resulted in the recovery of large collections of flints and stone tools of Mesolithic date, the majority of which were found in the centre of the scatter. Site HU is located on a rise along the field boundary to the south west. It is lower lying than HU/NE but is situated near to a spring line which rises in the winter and in wetter times of year. Surface collection in transects revealed that the area includes not only a significant Mesolithic component, but also later Bronze Age artefacts, which included a muller (Jones 2018a). It is likely that a barrow and / or a cist were also ploughed out from this part of the field (Thomas 2005). The third scatter site HU/SS, was, until the 2016 test pitting,

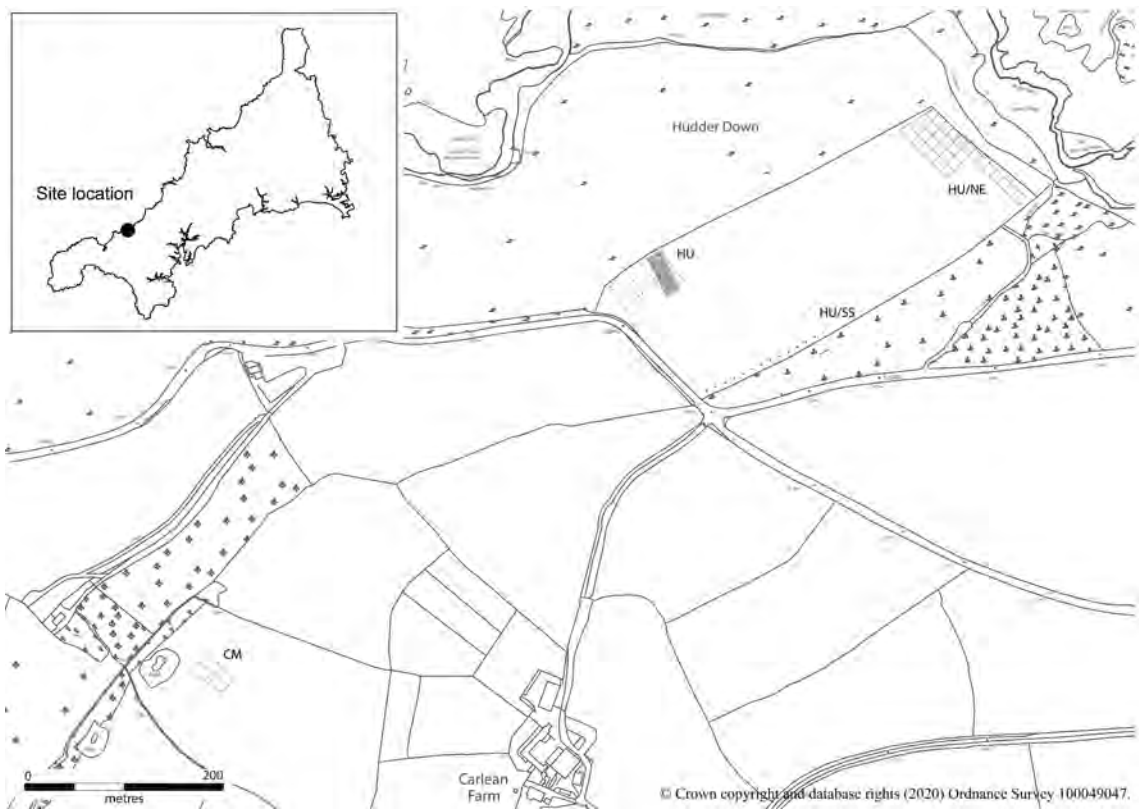


Fig 1 Location of Hudder Field and flint scatters HU, HU/NE and HU/SS, and scatter CM to the south west.

much more of an unknown quantity as it had been infrequently walked and only 238 flints had been recorded from it (Fig 2). This site is located close to the south-eastern side of the field on a slight spur, which is almost opposite site HU.

A geophysical survey at Hudder Field was undertaken by the late Pete Nicholas and Les Dodd in 2016, in advance of the test pitting. The survey did not reveal any anomalies at HU/NE or HU/SS which were likely to be of Mesolithic date, although several east–west aligned trends apparently lining up with the modern plough furrows were visible at site HU/NE. However, the geophysical survey did reveal some potential linear and pit-type features in the area of site HU which could have been of an archaeological nature. Surface collection across site HU had also produced stonework of much later, Bronze Age date and, given the suggestion that a Bronze Age barrow had been located in this area, it was decided not to investigate site HU

further in case complex archaeological deposits were uncovered.

The archaeological investigations

The fieldwork comprised the digging of 38 one-metre-square test pits which were excavated by volunteer members of Cornwall Archaeological Society. All the test pits were carefully hand-dug in spits until a change in layer was visible or the natural subsoil was reached. The soil from each of the test pits was dry sieved to recover small pieces of struck flint and to ensure that all stones were looked at before any were discarded. At site HU/SS, 14 test pits were excavated at 10m intervals along a 140m transect which ran from the south-west corner of the field along the field boundary at the margin of the currently cultivated area. At site HU/NE Charles Thomas' site grid was re-

established and a 1m square test pit was excavated in the north-western corner of each of the 24 ten-metre squares comprising the main scatter area (between squares A1–A6 and D1–D6). Time did not permit the sample excavation of the HU/NE extension area (squares A7–A13). Nonetheless, the excavated test pits represented an approximate 1 per cent sample of the main scatter.

HU/SS stratigraphical summary

The 14 test pits ranged in depth from 0.25m to 0.6m, although the average depth was approximately 0.3m. Two layers were consistently recorded within the test pits, ploughsoil (1) and natural subsoil (2); where present, other layers were given a unique

number in each test pit. The test pit stratigraphy will be described from top to bottom.

The uppermost deposit was the ploughsoil layer (1). This layer was a compact mid-yellowish-brown deposit, which was quite stony and rooty and contained a range of finds which included flints as well as modern objects such as tile and glass. Typically this layer was up to 0.2m thick. A lower ploughsoil was uncovered in several of the test pits: 1, 8, 5, 6, 9, 10, 11 and 14. It was a mid to dark, yellowish-brown firm silty clay soil, typically 0.1m to 0.2m thick. It was numbered: (3) in test pit 8, (5) in test pit 1, (9) in test pit 9, (10) in test pit 11, (11) in test pit 5, (12) in test pit 6, (14) in test pit 10, and (20) in test pit 14. The layer was largely devoid of finds although 11 flints were recorded

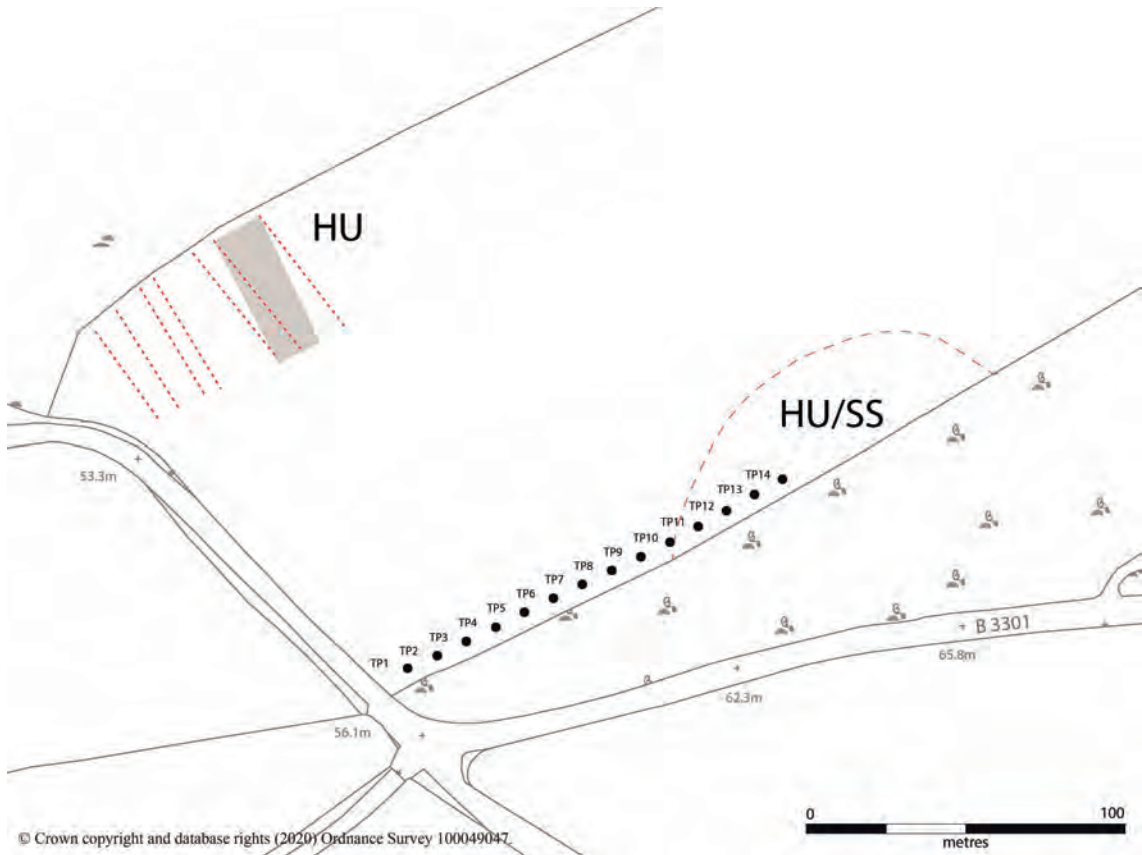


Fig 2 Lithic scatters HU and HU/SS in the southern part of Hudder Field. At scatter HU the shaded area indicates position of surface collection 'transect 7', and the dotted lines walked rows.

and 4 stonework pieces. By contrast with site HU/NE, no bevelled pebbles were recorded.

Furrows from ploughing were found in seven test pits (2, 3, 4, 7, 8, 12, and 13). These furrows were beyond the current edge of ploughing and, in contrast with the current ploughing regime, ran parallel with the adjacent north-east to south-west aligned field boundary. They averaged 0.2m wide and were typically 0.05m–0.1m deep. The fills within the furrows were similar, and typically comprised a dark grey-brown, firm stony clay loam. Most of the furrows were either directly below the ploughsoil or below the lower ploughsoil and cut into the natural subsoil (2). However, there was a greater depth of stratigraphy in test pit 2, which was the deepest, with an overall depth of 0.6m. Here the furrows were cut into a thin 0.1m band of yellowish-brown clay silt, (15), which overlay a thin 0.05m deep compact band of charcoal and silty clay loam (8). This in turn, was above (16), a 0.12m thick layer of stony greyish-brown clay loam containing patches of redeposited natural. There was no sign of a cut and no artefacts were recovered, which means that the date of the layers in test pit 2 is uncertain.

In test pit 11 a 0.05m thick band of redeposited natural yellow clay, (13), was recorded, which was likely to represent disturbance caused by ploughing. The natural clay subsoil, layer (2), was

yellowish-orange brown, which as noted above in several cases bore signs of deep plough scarring.

No archaeological features were encountered in any of the HU/SS test pits and comparatively few Mesolithic artefacts were recovered from this scatter (Lawson-Jones, below). Notably, the stone tool assemblage recovered from HU/NE (see below) was entirely absent. This implies that the HU/SS scatter is low density and of a different character to the HU and HU/NE scatters.

HU/NE stratigraphical summary

The 24 test pits excavated in scatter HU/NE ranged in depth from 0.25m to 0.45m, although the average depth was approximately 0.35m (Fig 3). As was found in HU/SS, two layers (1) and (2) were consistently recorded within the test pits, and again other layers were given a unique number in each test pit. The test pit stratigraphy will be described from top to bottom.

Layer (1) was identical to that found at site HU/SS; however, it tended to be deeper as most of the test pits fell within the cultivated area of Huddersfield. A lower ploughsoil was also found in the majority of the test pits (all except A1, C6 and D6). It was a mid to dark, yellowish-brown firm silty clay soil, typically 0.1m to 0.2m thick, but in some test pits less. It was given the following numbers, which are referred to in Table 1: (21), (22), (23),



Fig 3 The HU/NE scatter with positions of test pits marked.

(24), (25), (26), (27), (28), (29), (30), (31), (33), (34), (35), (36), (37), (38), (39), (41), (42) and (44).

Deeply cut plough furrows were less frequent than at the HU/SS scatter site. This was because they were cut from the top of the ploughsoil (1), which was thicker, and they followed the east-west aligned ridges within which the recent cropped broccoli had been growing. This meant that the natural (2) seldom showed signs of deep plough scars, although deep furrows were evident in a few test pits (A1, B1, C1, D1, D6 and D34) (Fig 4).

Within three of the test pits there was a layer below the lower ploughsoil and directly above the natural (2). In test pit C3 layer (32) was revealed, a 0.1m band of what appeared to be a redeposited natural clay, but possibly a remnant land surface. More interestingly, however, were the layers in test pits A3 and A5, which were located in the margin of the field, beyond the cultivated area. In test pit A3 layer (40) was a firm mid-yellowish-brown silty clay up to 0.07m thick, and a very similar layer (43) was also present in test pit A5 at the interface with the natural subsoil (2). Although no secure dating evidence was recovered from them, these layers both contained flints and potentially represent an old land surface that has escaped the deep ploughing which would have removed similar deposits from elsewhere across the field.

No archaeological features were encountered in any of the test pits; however, the potential residual buried soil/old land surfaces encountered at the

northern end of the field in test pits A3 and A5 and possibly C3, suggest that there is potential for below-ground archaeology to survive in the margins of the field and beyond the areas of cultivation, while the very large numbers of lithics (see below) confirm the major significance of the surface collection scatter.

Flint

Anna Lawson-Jones with Richard Hoskins

A total of 5332 worked flints were recovered from 38 test pits (Tables 1 and 2). Twenty-four test pits were excavated in HU/NE, which produced 5321 pieces, and 14 pits in HU/SS which produced a very small assemblage of 11 pieces. Brief reference is also made to a small unexcavated collection of material from HU, which includes 10 pieces mounted on perspex which had been collected by Simon Camm (Fig 5).

Almost without exception the flintwork is mottled grey pebble flint from the local beach, including some good-quality dark grey to black flint derived from the off-shore Haig Fraes Cretaceous



Fig 4 Evidence for deep ploughing in HU/NE test pit B1. (Photograph: Andy M Jones.)



Fig 5 Part of the HU assemblage collected by Simon Camm approximately 35 years ago. It includes nine microliths plus a miscellaneous retouched tear-shaped piece, bottom left.

EXCAVATIONS AT THE NORTH CLIFFS 2016

Table 1 All HU/NE flintwork by test pit and context.

Row	Test pit	Context	Count	Total flint	Row	Test pit	Context	Count	Total flint
A	1	(1)	283	283	C	1	-	-	30
	2	(1)	28	67			(21)	30	
		(25)	39			2	(1)	224	243
	3	(1)	259	406			(29)	19	
		(39)	64			3	(1)	207	267
		(40)	83				(30)	36	
	4	(1)	274	388			(31)	6	
		(35)	114				(32)	18	
	5	(1)	249	360		4	(1)	117	117
		(41)	81			5	(1)	191	201
		(43)	30				(38)	10	
	6	(1)	144	180		6	(1)	97	97
		(44)	36			U/S	U/S	55	55
B	1	(1)	130	151	D	1	(1)	219	221
		(27)	21				(26)	2	
	2	(1)	239	318		2	(1)	160	199
		(23)	79				(22)	39	
	3	(1)	339	650		3	(1)	100	114
		(24)	195				(28)	14	
		U/S	116			4	(1)	109	120
	4	(1)	201	232			(36)	11	
		(33)	31			5	(1)	37	45
	5	(1)	153	257			(34)	8	
		(37)	104			6	(1)	118	118
	6	(1)	173	188					
		(42)	15						
Totals		Row A		1684					
		Row B		1796					
		Row C		1010					
		Row D		817					
		Other U/S		14					
		HU/NE total		5321					

Table 2 Numeric breakdown of all flint collected during the HU/SS test pitting programme, plus additional material collected and/or donated during 2016 from site HU.

HU/SS test pits	1	2	6	9	10	11	U/S	HU	Camm Collection	Tranche 3	U/S
	1	1	1	4	1	1	2	46		10	7
Total: 11 flints								Total: 63 flints			

chalk deposits (Naylor and Shannon 1982). Very HU occasional Greensand chert was also noted in the assemblage, while the largest flints may be derived from flint cobbles found in nearby raised beach exposures, as for example at Godrevy.

The cataloguing and spreadsheet compilation (the results of which are referred to throughout this report) was carried out by Richard Hoskins. Ten basic forms with sub-forms were selected for identification, along with descriptive detail such as retouch, broken, complete, burnt. The ten basic forms (followed by their HU/NE count) were: Microcore (74), Microlith (40), Microburin (11), Microblade/Microflake (3637); and Core (292), Blade (94), Flake (1140), Scraper (12), Arrowhead (0), Flint pebble (21). This follows the classifications used for the analysis of the surface collection HU/NE assemblages (Jones *et al* 2018). As with the surface collection assemblage, the test pit material showed the use of hard hammers, soft hammers and anvils, while retouch was occasional and minimal, with the exception of the microliths.

The extremely low flint count for all HU/SS test pits limits detailed discussion, although it does confirm the scatter's Mesolithic date and lack of focus, suggesting that the main scatter lies further to the east beyond the ploughed field (and as such could be better preserved), or that it was only ever a short-term outlier set away from the main activity at HU/NE. As a result, the following discussion focuses almost entirely on HU/NE.

HU/NE: overall patterning

Test pitting has shown that HU/NE flint, as recorded for the surface collection assemblage (Jones *et al* 2018), consists of a dense concentration of predominantly Late Mesolithic material located in the north-eastern corner of Hudder Field. The site

fits within a wider landscape of Mesolithic scatters known to exist along this part of the Cornish coast, largely due to the work of Charles Thomas (2005). The densest part of the scatter extends north and east of Hudder Field into currently uncultivated ground. The scatter lessens in intensity and focus as it extends south and south east into the ploughed field (Table 1).

The 24 HU/NE test pits crossed the densest part of the scatter identified by Charles Thomas. Table 1 shows the test pit totals by context. It reveals that B3 produced the most flint, 650 pieces, followed by A3–A5, B2, A1, C3 and B5. Table 3 shows the simplified breakdown of those test pit totals by context with the most numerous flint counts shown as a dark grey swathe cutting through the scatter. Interestingly, this reveals that the upper and lower context density patterns differ markedly.

Two notably high counts separate from the main zone of the concentration came from A1 and D1 (Table 3), suggesting the start of further concentrations of material, although intriguingly their lower context counts are almost non-existent.

The upper ploughed topsoil counts inevitably reflect recent disturbance and will be the result of plough and contour-associated shift, while the variation in lower context flint counts implies at least the partial survival of original Mesolithic contexts including remnant old land surfaces (identified as contexts (40) and (43) in test pits A3 and A5), broadly dated on the basis of their Late Mesolithic flint content. Variations in counts in the lower contexts might reflect concentrations of lithic use or knapping activity focused around hearths, beneath covered structures or at their entrances, with the disposal of waste into hearths, middens or perhaps the storage of flint for further use.

When the totals for each 10m fieldwalked square are compared with their associated test pit totals

Table 3 HU/NE, topsoil and lower context counts by test pit. These totals imply survival of *in situ* old land surface contexts preserving original site layout and lithic use. The densest totals are shown as dark grey, the next densest totals are pale grey (test pits A1, C6 and D6 did not have lower contexts).

Test pit	1	2	3	4	5	6	1	2	3	4	5	6
Ploughed topsoil counts							Combined lower context counts					
Row A	283	28	259	274	249	144	-	39	147	114	111	36
Row B	130	239	455	201	153	173	21	79	195	31	104	15
Row C	55?	224	207	117	191	97	30	19	60	-	10	-
Row D	219	160	100	109	37	118	2	39	14	11	8	-

EXCAVATIONS AT THE NORTH CLIFFS 2016

Table 4 HU/NE, comparison of test pit and surface collection totals; top – total flint count by test pit; and bottom – total flint count by surface collection square. The densest totals are shown as dark grey, the next densest totals are pale grey.

1m ² test pits	1	2	3	4	5	6	Totals
Row A	283	67	406	388	360	180	1684
Row B	151	318	650	232	257	188	1796
Row C	85	243	267	117	201	97	1010
Row D	221	199	114	120	45	118	817
Totals	740	827	1437	857	915	583	5359
10m ² walked	1	2	3	4	5	6	Totals
Row A	363	290	275	688	321	201	2138
Row B	176	231	764	1035	593	241	3040
Row C	462	513	476	475	444	179	2549
Row D	236	270	255	257	205	79	1302
Totals	1237	1304	1770	2455	1563	700	9029

(Table 4) similarities and general differences can be seen. The test pits show a definite concentration of material at A3–A5 and B2–B3 mirrored by moderately dense totals in B4–B5 and C2–C3 to the south; the surface collection square counts (Jones *et al* 2018) show a really very pronounced single focus of activity at B4, followed in order by B3, A4, B5 and C2.

The surface collection totals are entirely based on material that has been displaced through ploughing. As shown by the test pit totals in Table 3, a high ploughsoil count was rarely mirrored by a high subsoil count. The density of flint from fieldwalked B4 was not, for example, mirrored in test pit B4 and in fact it may be more a reflection of the dense underlying lithic spread identified in test pit B3.

Interestingly, the test pit results and the surface collection from A1 both suggest the start of another focus of activity extending north and west of the field, but the test pit focus of material at D1 shifts to C2 with the surface collection material.

In general, as with the surface collection material, very few retouched tools were identified within the wider test pit assemblage, and most of those that were retouched were microliths or larger miscellaneous tools with a minimum of retouched working. This has in part dictated which broad categories are looked at below.

Not referred to elsewhere, but noted as present, were two finely worked awls (one is Mesolithic) found in D3 and D5 and a large later-dated chert burin in D6.

Microliths

Forty microliths were identified from the HU/NE test pits (Fig 7). The vast majority were small, narrow retouched forms of predominantly narrow blade type including 15 straight (including 1 rod type), 14 convex backed, 7 retouched bladelets, plus 1 lanceolate, all of later Mesolithic date, and 3 obliquely retouched pieces of possible earlier Mesolithic date. A near identical range of microliths was found in the 10m fieldwalked squares, examples of which are shown in Figure 6, which shows 3 straight (L1, L6, L7), 3 convex (L2, L8, L9) and 3 retouched pieces including a point (L3, L4, L5).

Length / width dimensions show that approximately 90 per cent fall within the 10–17mm length and 4–6mm width range. Occasional longer microliths tend towards tapered points and broader pieces towards obliquely retouched pieces.

The range of microliths is very similar to that identified in the surface collection assemblage, described as either short forms with narrow parallel bodies or as longer, tapered forms, all with straight, convex or oblique retouch (Jones *et al* 2018).

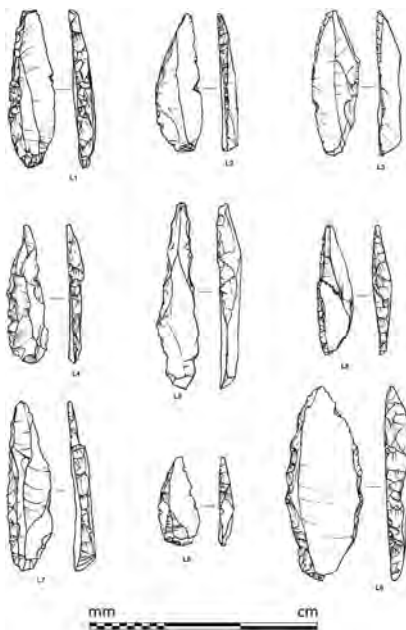


Fig 6 Microliths from the pre-2016 fieldwalking. Three straight (L1, L6, L7), three convex (L2, L8, L9), and three retouched pieces including a point (L3, L4, L5).

These small, sometimes slightly triangular forms and a single identified rod fall within a widely recognised pattern that made a sudden appearance from about 5000 BC (Barton and Roberts 2004).

All of the HU/NE forms can be found in varying quantities at other Cornish Mesolithic sites, including such classic sites as Trevoze Head, Poldowrian and Windmill Farm (Johnson and David 1982; Smith and Harris 1982; Smith 1984a), and further afield as for example at Nab Head in Pembrokeshire (David 2007; Walker 2016). Many show incipient patination and some a spotty dark brown discolouration, the origin of which is uncertain but was also noted for the surface collection material (Jones *et al* 2018).

HU/NE microliths (Table 5) occurred in 80 per cent of test pits. The highest number came from B5, followed by C5 and then B3, D1 and D6. The variation in microlith numbers is not a reflection of total flint counts by test pits – compare Table 3 with 5 – and as such may suggest specific patterning related to contemporary microlith use, manufacture or discard.

Five microburins (reflective of microlith production) were catalogued in A1, A6, C2 and two from C5, adding further to the suggested survival of task-associated material here (although there may be more microburins within the wider assemblage).

HU/SS produced a single microlith from test pit 2 which measured 19 x 8 x 3mm, while a further nine microliths from the HU collected by Camm (Fig 5) measured 13–24mm long and 4–7mm wide (five of them were in excess of 20mm long). HU microliths are generally slightly longer than those from HU/NE, which is indicative of differences between the sites. Previous analysis of material from HU by Jacobi (1979) identified ‘convex-backed and lanceolate’ forms.

Cores

Of the 346 cores identified during initial cataloguing, approximately 40 were subsequently identified as neat, classic Late Mesolithic forms with parallel narrow blade scarring on one or more faces (Fig 8). They show the organised removal of soft hammer detached narrow blades from managed cores, some of which showed crushed, prepared striking platforms. The pre-requisite for a core to become a blade-only core is uncertain. It did not appear to depend entirely on flint quality, size or colour in this assemblage. These cores, like those described in Butler (2005, 83–8) typify many Late Mesolithic sites, often occurring alongside less specialised cores. Classic blade and bladelet cores have been recorded at a number of Cornish coastal sites (Jones *et al* 2013) and elsewhere, such as at Caldey Island, Nab Head and Burry Holmes in Wales (David 2007; Walker 2016) or Ferriter’s Cove in Ireland (Woodman *et al* 1999).

The vast majority of North Cliff cores are variable, often multiplatform flake and blade cores, plus other poorly defined cores. Table 6 shows all the core forms and displays a clear increase in cores along Row A, particularly for test pits A4, A3 and A1. This would suggest either focused areas of contemporary knapping or areas of core disposal.

Occasional cores saw use as core tools, usually minimally worked scrapers. In general, very little flint from the assemblage saw later re-use, but one such piece was a core from C2, which saw later use as a scraper with the scraper edge cutting through the incipient repatination developing on the earlier worked faces.



Fig 7 The HU/NE microliths (arranged by row A to D and by test pit /context order).

Table 5 All microliths identified by test pit and context, plus the totals by row for the test pits (40 out of 5104 flints or 0.78 per cent) and for the surface collection squares (80 out of 13,544 flints or 0.59 per cent). The densest totals are shown as dark grey.

Test pits:	1	2	3	4	5	6	1	2	3	4	5	6	Test pit row totals	Walked row totals
	<i>Upper ploughsoil</i>						<i>Lower contexts</i>						<i>1m²</i>	<i>10m²</i>
Row A	1	-	1	2	1	1	-	-	1	1	-	1	9	18
Row B	1	1	3	-	2	-	-	1	-	-	3	1	12	37
Row C	1	1	1	-	3	-	-	-	1	-	1	-	8	17
Row D	3	1	1	1	1	3	-	-	-	-	1	-	11	8
Totals	7	4	6	3	7	5	-	1	3	1	5	2	40	80

Multiplatform flake and blade cores were quite often discarded long before exhaustion despite appearing to be of good size and quality. This was particularly noticeable for flake-only cores. Rejuvenation of cores, particularly blade cores

by splitting resulted in a number of thick chunky angular flakes with narrow blade scarring on their dorsal face. The very occasional cores that were reduced to near exhaustion were usually blade producing cores. The lack of frugality seen in



Fig 8 A small selection of cores from HU/NE, Row B, showing six cores from B4 and one (lower right) from B2. The top row shows neat opposed and single platform blade cores; the lower shows three flake cores, the middle and right one of which are small multiplatform types.

Table 6 Table showing undifferentiated HU/NE cores. The densest totals are shown as dark grey, the next densest totals are pale grey.

Test pit	1	2	3	4	5	6	Total
Row A	37	6	47	54	29	7	180
Row B	4	7	8	11	20	17	67
Row C	2	17	20	5	19	15	78
Row D	9	3	6	2	-	1	21

the frequent discard of cores and tried pebbles probably reflects the site's proximity to the beach. In contrast, the occasional use of anvils during core reduction (identified by the focused crushed flaking at the distal end of some flakes and blades), would have helped compensate for the relatively small size of the available pebble raw material.

Occasional large, often minimally patinated, multiplatform flake cores designed to produce controlled, uniformly thick flakes for use as cutting flakes and blanks for large tools were noted. Some of these were diagnostically later than the main

assemblage, dating to the Late Neolithic or Bronze Age period. Unfortunately a late core concentration was not identifiable.

Test pit 1 at site HU/SS produced a single undiagnostic core and site HU a further 16 variable cores.

Scrapers and other retouched pieces

As has been noted before (Roberts 1987), there are very few non-microlith, Late Mesolithic retouched tools. The majority of the tools in the assemblage are minimally retouched simple knives on flakes

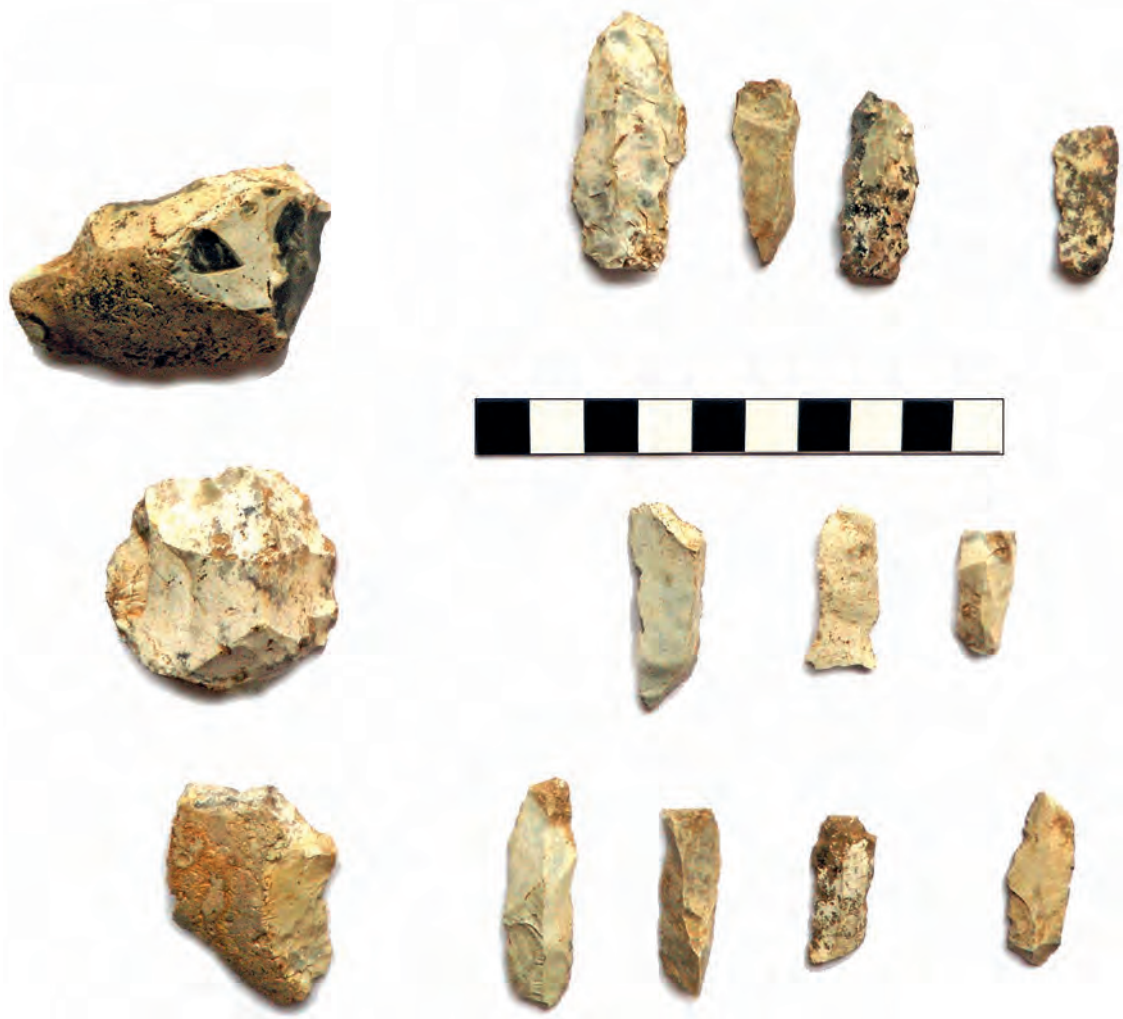


Fig 9 Scrapers and retouched pieces. Top left showing core reworked as a scraper, middle a steep round side and end scraper and below a simple knife / scraper. Above the scale are row A blades and below the scale row B and C blades.

or blades, combination knife-scrapers and a small range of scrapers including side, end and side-end forms made on occasional blades and, more frequently, flakes (Fig 9).

No classic, well-formed scrapers were found, with the exception of one short, delicate end scraper and two shallow edged button-like scrapers. These are all of Late Mesolithic type. As Berridge and Roberts point out (1986, 17), Cornish Mesolithic scrapers can be very varied and include flake or blade, convex or concave, steep or shallowly

retouched working edges. HU/NE has examples of all of them.

A small number of other chunky flake scrapers, including a large well-formed scraper from C5 were diagnostically Late Neolithic/Bronze Age.

Occasional very distinctive core-like scrapers were noted in the assemblage, which had a characteristically flared, markedly denticulated form. A good example came from A4 (Fig 10). Remnant cortex would have improved grip during use, as with many scrapers of all dates made on



Fig 10 Core-like scrapers. Left, a flared denticulated scraper, middle a nosed scraper and right a second flared denticulated scraper.

pebble flint. These were made on half-split pebbles and would have produced short, crested, tapered, or thorn-shaped pieces ideal for piercing. Some of these core-like scrapers showed slight macroscopic wear around their flat, denticulated working edges suggestive of scraper use on a non-abrasive or soft material. These tools would have perhaps made ideal fish de-scalers or seal skin scrapers (see gastroliths below). They may also have been used in the final preparation of skins for drying before use as clothing, waterproof containers, skins for framed boats, etc, in much the same way as the more traditional Inuit still do today (Rogers 2016). Bevelled pebbles form a significant component part of the site's lithic assemblage (Jones *et al* 2018, and see below), and some of these may well also have been used when processing seal carcasses (Fletcher 2005, 3; Waddington 2007, 193–96).

Burnt material

The burnt material was largely undiagnostic waste, including flakes of all types and size, some cores and occasionally blades. As identified in the site

spreadsheet Table 7 shows that concentrations of burnt material in the ploughsoil are seen in A4 and B6 followed by A5, B5, D1 and C4. A very marked lower context focus at B3 (25 from the middle context and 13 from the basal layer) may suggest a midden of burnt material or a nearby hearth, associated with knapping and tool manufacture or waste discard. Unfortunately, test pitting did not uncover *in situ* hearths, but that is not to say that they do not survive within the vicinity.

The majority of burnt flint identified was severely altered and easily recognisable, displaying blistering, fracturing, crumbling and occasionally dense hairline crazing. More elusive evidence for the controlled use of heat to improve working, such as soap-like changes to surface texture or subtle colour alterations, were disguised by incipient repatination.

Waste

Numerically the vast majority of the assemblage consists of what has been termed micro-flake and micro-blade waste of 20mm size and less. Just

Table 7 Burnt material. The pattern strongly suggests the survival of Late Mesolithic concentrations of burning/lithic activity in the lower contexts – perhaps associated with a hearth or nearby midden. Note the pronounced lower contexts count for B3, which is not reflected in the topsoil. The densest totals are shown as dark grey, the next densest totals are pale grey.

Test pit	1	2	3	4	5	6	1	2	3	4	5	6
	<i>Ploughed topsoil</i>						<i>Lower contexts</i>					
Row A	15	1	6	38	27	18	-	4	13	9	7	3
Row B	4	18	9	11	26	36	2	5	38	2	7	2
Row C	-	4	16	20	15	3	1	-	2	-	1	-
Row D	24	19	8	9	7	10	-	4	-	3	-	-

under 71 per cent of the entire HU/NE assemblage is composed of this small (complete, broken and deliberately snapped) waste, with 63 per cent of this coming from the ploughsoil. It is tempting to see this as a consequence of mounded Mesolithic midden material being mixed into the later ploughed horizon.

Test pit B3 produced 36 per cent of the entire combined lower context micro-waste. This test pit clearly overlay or was close to a pronounced focus of knapping activity or perhaps the base of a midden of flint waste. The results from surface collection were a little different, with the adjacent 10m square B4 showing a very marked high flint waste count, while the next highest counts were from squares B3 and then A4 (Jones *et al* 2018).

The micro-flakes and blades are unused and unmodified. They are predominantly the result of core reduction and specific tool production. Larger messy waste also features within the assemblage, but this shows an all-over presence.

Patination levels

Approximately 75 per cent of the assemblage showed variable levels of patination, often mottled mid-grey, occasionally slightly granular, comprising the bulk of the Late Mesolithic industry. A further distinctive group, less than 1 per cent, was heavily patinated and off-white to very pale blue. These pieces included the earliest material, including very occasional large well-formed blades of Early Mesolithic (or potentially earlier) date. All the remaining material was either undergoing patchy re-patination or was unpatinated; showing a range of near black or mottled grey flint and occasional greenish-brown chert.

Patina variation was not solely linked to date. The most densely patinated material was invariably Mesolithic, but not all the diagnostically Late Mesolithic material was patinated (see the microlith colour range – Fig 7). Similarly, not all the unpatinated material was diagnostically Neolithic or Bronze Age, although occasional fresh-looking pieces clearly were. The presence of patina allowed occasional identification of reuse as at test pit C2, where an end scraper was fashioned on a patinated remnant core piece (top left, Fig 9).

Gastroliths?

Anna Lawson-Jones and Henrietta Quinnell

During the course of test pit excavation it became apparent that many very small pebbles and large pea-grit pieces, identified in the field as gastroliths, were included within the soil that contained worked flint and utilised stones. 618 pebbles <30mm were recorded from HU/NE and 15 from HU/SS (see stonework, below). Of the total 633, 223 were <10mm, 325 were 10–20mm and 85 20–30mm. The composition appeared confined to the rocks represented by larger pebbles and cobbles but with rather more vein quartz.

It also became apparent that there was a correlation between the densest part of the flint scatter in HU/NE and the densest area of gastroliths, with both being most numerous along Rows A and B (see Tables 4, 8 and 11). There were particular concentrations in A3, B5 and A5 (Table 11), which together account for over half of the stones (337 of the total 618). Table 8 summarises the frequency of the three gastrolith sizes by row. It highlights the frequency of 10–20mm size pieces as compared to the other sizes.

Gastroliths of all sizes were recorded in both the upper ploughsoil and lower layers. In the case of test pit A5, which produced 87 gastroliths (see Fig 11), the upper ploughsoil contained 54 (15 small, 29 medium and 10 large) and lower context (41) produced 33 examples (15 small, 13 medium and 5 large). Like the gastroliths, the flintwork from this test pit (see Table 4) was more frequent in the upper ploughsoil (249 pieces) than the lower layer (111 pieces). The larger stone pebble tools (Table 10) are also most frequent in Rows A and B. Clearly the Mesolithic flintwork, the bevelled pebbles and the gastroliths are associated.

There is a distinct contrast between gastrolith numbers in HU/SS and HU/NE: a total of 618 from HU/NE, making 25.75 stones per pit compared to

Table 8 Table showing collected gastrolith counts HU/NE by row and by size.

<i>Gastroliths</i>	<i>>10mm</i>	<i>10-20mm</i>	<i>20-30mm</i>	<i>Totals</i>
Row A	107	138	47	292
Row B	73	131	37	241
Row C	5	20	1	26
Row D	24	35	-	59
Totals	209	324	85	618



Fig 11 All gastroliths identified from HU/NE test pit A5. A5 produced a notable number of gastroliths from the upper ploughsoil (above the scale) and from lower context (41). They are arranged according to size; the larger two sizes are in line with seal gastroliths (as suggested by Wings 2007).

15 stones from HU/SS, making 1.07 per pit. This reinforces the case that there is a concentration of these stones associated with HU/NE, rather than there being an even scatter through the field. It also strengthens the association of the small stones with Mesolithic activity and suggests that they are not the result of some other mechanism such as the introduction of small stones with sand or seaweed as part of the process of improving the field.

Many were irregular in shape and all were small, very abraded or waterworn (Fig 11). Many of these had a high degree of gloss. Because of the small size of so many the possibility of these being gastroliths, stones retained by mammals such as seals and birds such as corvids, was considered. Their range and appearance correspond closely with those identified and discussed by Wings (2007), who describes gastroliths as 'stomach stones' which are either accidentally or deliberately swallowed by various animal species, including birds, fish and seals among others. The stones aid the mixing of food stuffs in the stomach, stimulate the production of stomach juices, prevent deadly constipation for some species, cleanse the stomach and with many birds, including gulls,

will be regurgitated daily prior to eating. This could account for some of the smallest HU/NE gastroliths. Gastroliths can also have a pronounced hydrostatic function. Seals are known to carry large numbers of gastroliths in their stomachs to aid buoyancy and facilitate diving (Wings 2007). Seal gastroliths vary from 10mm to 30mm in size or more, while fish and gull gastroliths are smaller. Given the site setting, the presence of probable seal gastroliths adds a significant indicator of prehistoric (particularly Late Mesolithic) seal-related activity or processing on site, which would be closely associated with the lithic assemblage. Finding comparanda, however, is more difficult as most coastal sites in Cornwall, for example, have been investigated through surface collection as opposed to excavation. Even where excavation has taken place, unworked pebbles have attracted little comment other than the suggestion of importation through seaweed (Smith 1984).

Stonework

Henrietta Quinnell and Richard Hoskins

Some 190 pieces of potential stonework were collected from HU/NE and 21 from HU/SS. These were almost all water-worn cobbles/pebbles, and mostly of greywacke with some pieces of vein quartz, slate and quartzite (Tables 9 and 10). Of

these 21 were complete or broken bevelled pebbles from HU/NE and four other pieces had possible traces of wear or shaping. Four pieces with use or shaping came from HU/SS. There were in addition 22 fragments of quartz crystal, possibly struck. Roger Taylor examined pieces where identification was not certain and details are in the project archive.

Table 9 Stone retained and recorded from grid squares in HU/NE and HU/SS.

	<i>Bevelled pebbles</i>	<i>Possibly modified</i>	<i>Unused > 3cm</i>	<i>Pebbles <3cm</i>	<i>Quartz crystals</i>
HU/NE	21	4	146	618	20
HU/SS		4	15	15	2

Table 10 Bevelled pebbles.

Complete

<i>Test pit / context no.</i>	<i>Fig no.</i>	<i>Description</i>
A3 (40)	12	Greywacke with vein quartz, single end, single bevel, 95 x 33 x 14mm.
A4 (1)	-	Greywacke, single end, single bevel, damaged, 96 x 40 x 17mm.
B2 unstratified	12	Greywacke, single end, single bevel, 111 x 29 x 16mm.
B6	-	Greywacke, single end, single bevel, 133 x 36 x 20mm damaged.
C1 (1)	12	Slate with vein quartz, single end, single bevel, 132 x 57 x 22mm, damaged; slate cobble unusual shape, curved one side and sinuous the other.
Unstratified	-	Greywacke with vein quartz, single end, one bevel, on pointed piece, 112 x 34 x 24mm.

Broken

<i>Test pit / context no.</i>	<i>Fig no.</i>	<i>Description</i>
A3 (1)	-	Greywacke, double bevel.
A5 (1)	-	Greywacke with vein quartz, double bevel.
A5 (1)	-	Greywacke with vein quartz, double bevel.
A6 (1)	-	Greywacke, single bevel.
B1 (1)	-	Greywacke, double bevel.
B3 (24)	-	Greywacke, single bevel; width 44mm, thickness 12mm suggests piece flatter and thinner than usual.
B3 (24)	-	Greywacke, single bevel, plan more curved than usual.
B5 (1)	-	Greywacke, single bevel.
B5 (1)	-	Greywacke, double bevel, width 26mm so unusually narrow.
B6 (1)	-	Greywacke, single bevel.
B6 (1)	-	Slate, single bevel.
C1 (1)	-	Greywacke, double bevel.
C2 (1)	-	Greywacke, double bevel; cobble used is remarkably trapezoidal.
C5 (1)	-	Greywacke, double bevel, broken across and longitudinally.
D2 (1)	-	Greywacke, single bevel, fragment.

Many pieces were initially categorised as abraded but were judged to be natural, especially the ends of elongated pieces where the ‘abrasion’ was natural wear which tends to be less and does not form the facet which is found where abrasion is the result of human use. Many of the pieces suggested as having percussive use were the result of accidental damage and some of these and some suggested as flaked were the result of very recent damage. A few pieces have incised line(s) of varying thickness and length but all but one of these are likely to be the result of incidental damage; there appears to be some correlation between the softness of greywacke and scratches, best exemplified by test pit B4 (1).

HU/NE

Bevelled pebbles

Bevelled pebbles are characterised by the facets or bevels created at one or both ends of the pebble: these bevels can be on one or both faces. All six complete examples are worked at one end only. Eight of the 21 bevelled pebbles are bevelled on both faces but most (13) have only a single bevel. The numbers in different categories are broadly in accord with the larger sample of these pebbles previously published (Jones *et al* 2018).



Fig 12 Bevelled pebbles: left and centre, greywacke pebbles, from A3 (40) and B2 (unstratified); right, slate pebble, from C1 (1).

Both complete and broken examples fall towards the small end of the size range for these tools and some are on irregular shaped cobbles. Of the six complete bevelled pebbles, four were of greywacke, one of greywacke with vein quartz and one of slate. Of the 15 broken bevelled pebbles, 12 were of greywacke, two of greywacke with vein quartz and one of slate (Table 10).

Petrological analysis of the greywacke from the surface collection assemblage revealed that it is Group XIX and that the pieces are likely to have been collected from below the cliffs to the north of Hudder Field (Jones *et al* 2018; Jones *et al*, forthcoming).

Other tools

Test pit A5 (43) broken greywacke large flat cobble 26mm thick, one flat surface surviving 94 x 47mm, possibly part of rubber or similar.

Test pit U/S flat greywacke cobble 90+ x 49 x 15mm, naturally broken but possibly flaked to rough point.

Test pit C1 (1) coarse greywacke, broken cobble tip with break, worn flake from mortar/abrasion use, working surface 28 x 30mm, depth 34mm.

Decorated stone

Test pit C1 (1) (Fig 13) local silty slate with silty dark slate on either side producing dark surfaces, part of flat cobble 77+ x 64+ x 11mm, surviving part of geometric gridded design. Possible that this is part of a slate disc with worn edges. Roger Taylor considered the design on the piece to have been of considerable antiquity. Linear decoration has been noted on a number of other stones from HU/NE (Jones *et al* 2018) and more widely in Cornwall upon a very small amount of bevelled pebbles (Smith and Harris 1982; Christie 1988; Jones 2015). Most recently a slate bearing geometric lines was found on the platform at Trethevy Quoit (Jones 2019).

HU Unstratified

D2 Flat greywacke cobble 69 x 61 x 17mm, a little flaking around parts of edge, either deliberate or much abraded or naturally occurring.



Fig 13 Fragment of slate, possibly from a disc, with incised lines; C1 (1).

HU/SS

Other tools

Test pit 2 (1) slate with shallow notch coarsely flaked from both sides, 55 x 47 x 8mm.

Test pit 14 (20) buff slate fragment 50 x 49 x 11mm, parts of edge have flaking which could just be anthropogenic.

Test pit 11 (1) Two pieces of slate (a) 89 x 72 x 17mm, notch 30 x 11mm worked in one side, (b) 93 x 70 x 22mm with notch 30 x 5mm in one corner and several other irregularities which could be anthropogenic.

U/S flat broken greywacke elongated cobble 69+ x 52 x 10mm, with battering from *ad hoc* hammer use across end.

Discussion

A major aim of the test pitting project was to assist further interpretation of, and allow comparison with, Charles Thomas's surface collection from HU/NE (Jones *et al* 2018), and to characterise

the smaller scatter HU/SS. The second was to establish whether any below-ground Mesolithic features, such as pits or layers survived. The third was to look for chronological depth in the lithic assemblage, and to see whether it was possible to shed light on the Mesolithic / Neolithic transition period in Cornwall.

The first objective was fully met and the results will be discussed below. The second and third aims, to identify Mesolithic deposits and features and refine the chronology, were only partially achieved. A remnant old land surface was identified in two or three of the test pits in HU/NE. Test pits A3, A5 and C3 all revealed sealed contexts with varying numbers of flints, implying the *in situ* survival of Late Mesolithic layers. Most of the other test pits had a lower context producing flint (Table 1). The date of the formation of the lower ploughsoil contexts is uncertain; although test pit B3 produced many burnt flints which may be indicative of a nearby hearth or midden. Test pits A1, C1, C6 and D6, however, did not reveal any lower ploughsoil / contexts, which suggests that any Late Mesolithic deposits here had been

Table 11 Stone from HU/NE, by test pit.

<i>Test pit</i>	<i>Bevelled pebbles</i>	<i>Possibly. modified</i>	<i>Unused > 3cm</i>	<i>Pebbles <3cm</i>	<i>Quartz crystals</i>
A1				2	1
A2			4	34	2
A3	2		16	145	
A4	1		5	30	
A5	2	1	16	87	
A6	1		3	23	1
B1	1		10	24	3
B2	1	1	2	3	2
B3	2		2	12	1
B4			12	22	
B5	2		23	111	
B6	3		6	56	
C1	2	2	7	3	3
C2	1		3	2	3
C3			6	4	
C4			5	7	
C5	1		5		
C6			2	10	3
D1			4	3	1
D2	1		4	6	
D3			1		
D4			6	2	
D5			3		
D6			1	32	
US	1				
<i>Totals</i>	21	4	146	618	20

ploughed away. The lack of evidence, however, for hearths or other cut features associated with dwellings has meant that it is not possible to refine the broadly later Mesolithic chronology beyond that determined from the surface collection assemblage (Jones *et al* 2018). The survival of layers below the modern plough zone in HU/NE with markedly different flint concentrations implies the survival of early contexts. Mesolithic features have been found elsewhere in Cornwall and include the dark, possible midden layer at Windmill Farm (Smith 1984a), the old land surface at Temple on Bodmin Moor and a scattering of pits, as, for example, at Penans (Jones and Lawson-Jones 2018; Jones

2016). Only large-scale excavation, however, has the potential to reveal any remnant truncated features, comparable with those found elsewhere (for example, Lewis 2011; Lawton-Matthews and Warren 2015) which may have survived past ploughing regimes.

HU/SS

The paltry amount of flint from the HU/SS assemblage together with the near absence of stone tools and a total lack of bevelled pebbles suggests that either the scatter was very short-term or that the foci lay to the east, beyond the current field

boundary. The microlith and the core, however, are consistent with the adjacent later Mesolithic scatters HU/NE and HU.

HU/NE

Further research and analysis of the assemblage would undoubtedly identify and quantify variations in chronology, as well as providing a better understanding of how site HU/NE was organised, including the probable identification of different activity zones. This potential is suggested by pronounced variations in flint counts for lower ploughsoil contexts. As has been noted elsewhere (Cummings 2010), Mesolithic scatter sites tend to be dense, focused and well-defined, while later prehistoric flint scatters tend to be more dispersed and contain larger sized but numerically less frequent quantities of waste. This may well be what we are seeing at HU/NE, with a pronounced assemblage of Late Mesolithic flint and stonework being focused upon a slightly dished area at the highest end of the field (Fig 14), and a less numerous Neolithic and Bronze Age component being scattered much more widely.

Although the quantities recovered from the test pitting are less than those from the surface collection, the results from the test pitting probably give a more accurate characterisation of the site – at least for the flints – because of the more complete collection achieved through sieving the test pit samples. Together the test pitting and surface collections should give a very good representation of the overall character and range of the assemblage. Based on the sample size, which would be a minimum, as it doesn't include

the squares A7 to A13, it can be estimated that the scatter contains in the region of 532,100 flints and potentially 19,000 items of stonework.

Overall, it was found that in common with the surface collection there was a marked concentration of flints in the central part of the scatter but that interestingly there were differences between densities of flints found in the upper ploughsoil, and those in the lower ploughsoils and remnant old land surfaces. This has been interpreted as suggesting movement of artefacts over time from their original contexts through ploughing. The small number of diagnostically later pieces is also consistent with the fieldwalking information (Jones *et al* 2018), which suggests that HU/NE is overwhelmingly a scatter of Late Mesolithic date.

A range of suggested activities was identified from the flint assemblage. The presence of cores, waste and burnt flint are all indicative of onsite working of flint, the majority of which, along with the Group XIX greywacke pebbles, is likely to have been collected from the beaches to the north of the site. The quantity of burnt flint and waste, found within the lower levels of test pit B3 in particular, is perhaps suggestive of there being a ploughed-out midden containing burnt material.

Further activities are indicated by the small, but distinctive, number of heavy-duty scrapers and numbers of microliths which are suggestive of activities associated with the killing of animals and the processing of their carcasses. The North Cliffs and the beaches below would have offered a wealth of seasonal foods ranging from fish, shellfish, and the occasional beached whale, to seabirds and their eggs, seaweed and seal pupping grounds (Waddington 2007, 198; Lillie 2015, chapter 5).



Fig 14 Site HU/NE viewed from the south west. (Photograph: Andy M Jones.)

These resources would have made the coastal littoral very alluring for occupation. HU/NE together with the numerous other Mesolithic sites focused around the North Cliffs area and beyond, along the coasts of Cornwall and western Britain, reflect a much wider pattern of coastal and riverine resource exploitation involving different types of settlement in terms of scale, date and character (Jacobi 1979; Bell 2007, 327–34; Jones *et al* 2018).

This interpretation is supported by the large numbers of ‘bevelled pebbles’ (*cf* Clarke 2009) of greywacke which were recovered from the scatter during surface collection and a further 21 from the test pitting, which it has been suggested may have been used for the processing of seal carcasses (Fletcher 2005). Significantly, the test pitting also identified potential gastroliths, which were found in large numbers in scatter HU/NE, with particular concentrations in test pits A3, B5 and A5. These small, worn pebbles are consistent with those found in the stomachs of seals (Wings 2007). Seals consume more stones in the summer months to stave off hunger while unable to hunt during pupping and rearing, but also to help with deeper diving and a resultant greater hunting success rate. The large number of potential gastroliths (Table 8) cannot prove the processing of seal carcasses by the Late Mesolithic occupants of HU/NE, nor can they demonstrate that the occupation of the site was dictated by the seal breeding season, but they would support such an interpretation. Today, the beaches and caves around Godrevy see routine use by seals for pupping, and although the coastline will have changed since the Late Mesolithic, with the sea being perhaps about 1 km away in the Late Mesolithic (Johnson and David 1982), seals will almost certainly have formed a significant component of life and onsite activity at that time. While the link between the flintwork, the bevelled pebbles and the presence of gastroliths with seals has not yet been verified, it is hoped that future study will move closer towards a better understanding of this and other site use around the Cornish coast and beyond.

Since seals are heavy and HU/NE is located inland and above steep cliffs, much of the initial butchering probably took place on the beach, including skinning and some separation of meat from organs and other body parts. This would have allowed transportation of seal produce up to HU/NE for further processing for food and other uses. Just about all of a seal would have been

used. In addition to providing meat and bone for tools, seal skins can be used for clothing, storage containers, seal-skin rope, and boat construction. Seal intestines can be made into waterproof garments, and seal stomachs become water and oil containers (see <http://www.yupikscience.org/3coastspring/3-3.html>). Reference has already been made to the potential use of some scrapers for final seal skin processing, and Fletcher’s (2005) experimentation with larger worked pebbles and flensing tools concluded that some were very likely to have been used during seal skin preparation prior to stretching, drying and cutting.

The test pit stonework assemblage comprised 190 pieces, the majority of which were greywacke. Petrological analysis of four thin sections from cored tools matched this with Group XIX (Jones *et al*, forthcoming). Significantly, all the bevelled pebbles both broken and complete were found within HU/NE and this compares well with surface collection data, which also showed that the greatest concentration of worked pieces was in HU/NE. The large number of unworked pieces is also similar to the surface collected assemblage. In both cases this can be linked with the collection of stone from the beaches below, where there is an abundance of similarly shaped pebbles/cobbles on the shore (Jones 2018a). The unused material may represent caches of stone for future tools or discarded pieces deemed unsuitable. The number of unworked and worked greywacke tools is significant. Site HU/NE stands out because it has a far higher proportion of greywacke to flint tools than is found in studied Cornish Mesolithic flint scatters (for example Smith and Harris 1982). Even within the wider Gwithian area, the numbers of greywacke pieces diminish with distance from the HU/NE scatter. In addition, the sizable number of bevelled pebbles together with the large number of unworked cobbles/pebbles is especially noteworthy, as comparable lithic assemblages in the south-west region tend to comprise a few finished tools, as opposed to discarded unmodified pieces. In other words, we are probably looking at a tool production site; it should be remembered that Fletcher (2005) demonstrated that the distinctive bevelled facets were manufactured and not just the result of long-term wear.

There are, however, some contrasts between the stonework from surface collection and that from the test pitting; although this may largely be due to the huge differences in assemblage size, with

1434 pieces being recorded by the fieldwalking and 190 from the test pits. Most notably, the range of tool types from the test pits is smaller than that from the surface collection. In particular, pebble hammers and cupped pebbles are entirely absent from the test pit assemblage. The assessment of the surface collection assemblage led to the suggestion that greywacke pebble hammers may have been produced in Hudder Field and were distributed much further afield (Jones *et al* 2018). This was neither proved nor disproved by the test pit assemblage, but given that certain types of stone, such as Portland Chert or Group VI tuff (Stewart 2012; Brown *et al* 2019) appear to have been widely circulated in the Mesolithic, the movement of finished Group XIX artefacts from Hudder Field merits further study.

Similarly, the test pitting produced rather less in the way of decorated stones than were recovered from surface collection. An example with geometric patterns was, however, found on a possible slate disc within test pit C1. This piece has some similarities with the linear incised lines found on those from the surface collection (Jones *et al* 2018; Jones 2018a), although the identified decoration on the fieldwalked pieces was confined to greywacke pebbles. The find from the test pit, along with those from the surface collection, is significant as decorated Mesolithic stonework remains nationally scarce (Clarke *et al* 2012).

Incised Mesolithic pebbles are slightly more common, as at Rhuddlan in north Wales (Berridge and Roberts 1994), and at Star Carr in Yorkshire a pendant bearing incised lines has been discovered (Milner *et al* 2018b, 463–77). There are other examples of Cornish pebbles with incised and grooved lines on them (Jones 2015). An unstratified broken bevelled pebble from Davidstow Moor barrow XXVI (Christie 1988) displays incised lines on both sides and a pebble from the scatter at Poldowrian (Smith and Harris 1982) was found to have incised lines along one edge and at right angles to it. Most recently, a slate piece from the platform at Trethevy Quoit has been found to have incised lines, although this artefact may post-date the Mesolithic (Jones 2019). Mesolithic art is likely to have been far more widespread than is currently appreciated, with the recent find of a piece of wood with incised lines from Maerdy in south Wales (R Jones 2014) providing a vivid reminder of how much decoration on organic artefacts has been lost.

Significantly, from both the surface collection and the test pits there was a dearth of greenstone artefacts such as axeheads and nor was there any evidence for the manufacturing of stone axeheads from the greywacke. Greenstone working does not seem to have been a feature of the Mesolithic period, but it is characteristic of the onset of the Neolithic (Jones *et al* 2017), with Early Neolithic sites such as Carn Brea producing large numbers of greenstone axeheads (for example, Mercer 1981). Several lithic scatter sites in west Cornwall have produced both Mesolithic flints and later Neolithic greenstone tools and lithics (for example, Smith and Harris 1982; Jones *et al* 2013), which allows for the possibility of some form of continuity. However, the lack of greenstone artefacts together with the limited number of later prehistoric flints suggest that the HU/NE site was not a major focus for activity beyond the Mesolithic period.

It is more difficult to put the results from the North Cliffs into the wider picture in Cornwall. This is because very few similar large scatter sites have been systematically investigated and published so far in Cornwall. Large later Mesolithic scatters are known from along the north coast of Cornwall, especially in the area around Trevoze Head (St Merryn), sites Tv1 and Tv12 (Johnson and David 1982; Cave and Irwin 1990); however, the assemblages from these sites are only known as a result of surface collection and none have been excavated. In western Cornwall significant scatters have been identified on the Lizard at Poldowrian (St Keverne) and Windmill Farm (Landewednack) (Smith and Harris 1982; Smith 1984a), both of which were the subject of surface collection and excavation. In Penwith, a large number of scatters have been identified through surface collection but only one, at Clodgy Moor, Paul, has been systematically catalogued. The revealed evidence for activity spanned the Mesolithic into the Neolithic (Jones *et al* 2013). These larger scatter sites appear to be distinct from other scatters which are also suggestive of later Mesolithic settlements but which are on a decidedly smaller scale. In common with site HU/NE, which is surrounded by smaller scatters, the Lizard Project in the 1980s identified minor coastal sites at Beagle's Point, Black Head and Ponsongath (St Keverne), and the inland site at Croft Pascoe, Grade Ruan (Smith 1987; 1984b). Along the north coast there are smaller coastal scatters, as at Penhale Point (Perranzabuloe) and Constantine

Bay (St Merryn) (Smith 1988; Norman 1977). The pattern of frequent small scatters extends further inland, as was recently demonstrated at Temple on Bodmin Moor (Jones and Lawson-Jones 2018). This lends support to certain scatters, such as HU/NE, being persistent places within a widely utilised landscape. However, excavation and many more radiocarbon determinations are needed to understand site chronologies.

Concluding thoughts

In the past the study of lithic scatters has often resulted in dry accounts of ‘flint chippings’ with standardised assumptions on the character of hunter-gatherer societies, both ancient (for example Clarke 1954) and modern, as somehow timelessly unchanging groups (for example, Pascoe 2014; Griffiths 2018, chapter 1). More recently, however, less deterministic publications have appeared which both humanise the context of lithic use and consider the social complexity of Mesolithic communities (for example, Chan 2011; Conneller and Warren 2006; Driscoll 2017). The complementary ranges of lithic material recovered from the North Cliffs surface collection and test pitting projects have helped move interpretation of the scatters forward. The results suggest that, in contrast with the short-lived scatter HU/SS, site HU/NE was a dynamic place in the landscape associated with a variety of tasks, which arguably could have been undertaken either on a seasonal or a longer-term basis. Given the absence of cut features or of organic material suitable for radiocarbon dating, neither the absolute chronology nor the tempo of occupation at HU/NE can be determined for certain. Recent radiocarbon dating of Star Carr, for example suggests that Mesolithic sites could be occupied by large groups (Conneller *et al* 2012; Milner *et al* 2018a, chapter 9), rather than by small groups on an endless seasonal round over a long period.

The key characteristics of the assemblages from HU/NE reflect the activities associated with the site. Firstly, the finds show that quantities of flint and large numbers of Group XIX greywacke pebbles were collected and then brought to the site and worked into tools; discoveries on other sites suggest that some of the stone objects were then distributed in smaller numbers across the wider landscape. Secondly, midden heaps appear to have been a feature of the site, suggested by the burnt

flint, the debitage, the numbers of discarded / unworked discarded cobbles and the concentrations of possible gastroliths. Furthermore, in addition to being evidence for collecting and working stone, the bevelled pebbles and heavy duty scrapers might also be indicative of the butchery and processing of animals on the site. The discovery of gastroliths suggests that this included seals. The processing of seals would have provided meat and blubber and commodities such as hides and fur for clothing, bone for tools, and sinews which could be used for a variety of purposes (Hurcombe 2014, 79). Organic material does not survive, although ethnographic collections demonstrate the range of uses of animal products and the importance of seal products for recent hunting communities (for example, O’Hanlon 2014; Fienup-Riorden 2005, 39–40).

The density of lithics might imply that HU/NE was what might be termed a persistent place in the Late Mesolithic landscape (for example, Barton *et al* 1995), rich in food, stone and other resources, and may, like sites such as Howick in Northumberland (Waddington 2007, 196), have become a focal point. The site may have been used by extended groups or by several communities who came to make and exchange greywacke tools and flint artefacts, while taking advantage of the resources afforded by the cliffs and the coastal littoral.

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The project archive will be deposited in the Royal Cornwall Museum.

References

- Barton, N, and Roberts, A, 2004. The Mesolithic period in England: current perspectives and new research, in A Saville, ed, *Mesolithic Scotland and its neighbours*, Edinburgh, 339–58
- Barton, R N E, Berridge, P J, Walker, M J C, and Bevins, R, 1995. Persistent places in the Mesolithic landscape: an example from the Black Mountain uplands of South Wales, *Proc Prehist Soc*, **61**, 81–116
- Bell, M, 2007. *Prehistoric coastal communities: the Mesolithic in western Britain*, York
- Berridge, P, and Roberts, A, 1986. The Mesolithic period in Cornwall, *Cornish Archaeol*, **25**, 7–34
- Berridge, P, and Roberts, A, 1994. The Mesolithic decorated and other pebble artefacts: synthesis, in H Quinnell, M Blockley and P Berridge, *Excavations at Rhuddlan, Clwyd 1969–73: Mesolithic to medieval*, York, 115–31
- Brown, F, Dickson, A, and Evans, H, 2019. Crossing the divide: raw material use in the north-west of the British Isles in the late Mesolithic and Neolithic, in A Teather, P Topping and J Baczkowski, eds, *Mining and quarrying in Neolithic Europe: a social perspective*, Oxford, 149–62
- Butler, C, 2005. *Prehistoric flintwork*, Stroud
- Cave, D, and Irwin, M, 1990. Another flint site on Trevoze Head, *Cornish Archaeol*, **29**, 43–8
- Chan, B, T-Y, 2011. Stonehenge, looking from the inside out: a comparative analysis of landscape surveys in southern Britain, in A Saville, ed, *Flint and stone in the Neolithic period*, Oxford, 116–38
- Christie, P, 1988. A barrow cemetery on Davidstow Moor, Cornwall: wartime excavations by C K Croft Andrew, *Cornish Archaeol*, **27**, 27–169
- Clark, J G D, 1954. *Excavations at Star Carr: an early Mesolithic site at Seamer near Scarborough, Yorkshire*. Cambridge
- Clarke, A, 2009. Craft specialisation in the Mesolithic of northern Britain: the evidence from the coarse stone tools, in N Finlay, S McCarten, N Milner and C R Wickham-Jones, eds, *From Bann flakes to Bushmills. Papers in honour of Professor Peter Woodman*, Oxford, 14–21
- Clarke, A, Vila, A, Estevez, J, and Hardy, K, 2012. The tie that binds? An incised Mesolithic bevelled pebble from Camas Daraich, Skye, *Mesolithic Miscellany*, **22.1**, 3–9
- Conneller, C J, Milner, N, Taylor, B, and Taylor, M, 2012. Substantial settlement in the European Early Mesolithic: new research at Star Carr, *Antiquity*, **86**, 1004–1020
- Conneller, C J, and Warren, G, eds, 2006. *Mesolithic Britain and Ireland; new approaches*, Stroud
- Cummings, V, 2010. A view from the outside: some thoughts on the research priorities for Mesolithic and Neolithic studies in Britain and Ireland, *Lithics*, **31**, 68–77
- David, A, 2007. *Palaeolithic and Mesolithic settlement in Wales*, Brit Arch Repts, Brit Ser, **448**, Oxford
- Driscoll, K, 2017. Approaching the Mesolithic through taskscapes: a case study from western Ireland, in U Rajala, and P Mills, eds, *Forms of dwelling: 20 years of taskscapes in archaeology*, 41–61
- Evens, E D, Grinsell L V, Piggott, S, and Wallis, F S, 1962. Fourth report of the subcommittee of the South-western Federation of Museums and Art Galleries (England) on the petrological identification of stone axes, *Proc Prehist Soc*, **28**, 209–66
- Fienup-Riordan, A, 2005. *Yup'ik elders at the Ethnologisches Museum Berlin: fieldwork turned on its head*, Seattle
- Fletcher, R J, 2005. The role and significance of bevelled pebbles in the British Mesolithic, unpublished BA thesis, University of Bristol
- Griffiths, B, 2018. *Deep time dreaming: uncovering ancient Australia*, Melbourne
- Hurcombe, L, 2014. *Perishable material culture in prehistory: investigating the missing majority*, London
- Jacobi, R M, 1979. Early Flandrian hunters in the south-west, *Proc Devon Archaeol Soc*, **37**, 48–94
- Johnson, N, and David, A, 1982. A Mesolithic site on Trevoze Head and contemporary geography, *Cornish Archaeol*, **21**, 67–103
- Jones, A M, 2015. An incised Mesolithic pebble from Trevoze Head, St Merryn, Cornwall, *Cornish Archaeol*, **54**, 219–24
- Jones, A M, 2016. A Mesolithic pit at Penans Farm, Grampound, Cornwall, *Cornish Archaeol*, **55**, 241–8
- Jones, A M, 2018a. To the North Cliffs!, in A M Jones and H Quinnell, eds, *An intellectual adventurer in archaeology: reflections on the work of Charles Thomas*, Oxford, 25–42
- Jones, A M, 2018b. The North Cliffs cataloguing project, *Cornwall Archaeological Society Newsletter*, **146**, 5–6
- Jones, A M, 2019. Trethevy Quoit excavations 2019: summary, *Cornwall Archaeological Society Newsletter*, **151**, 5–6
- Jones, A M, and Lawson-Jones, A, 2018. Pits and flints: archaeological recording along the A30 to Higher Carblake road scheme, Cornwall, *Cornish Archaeol*, **57**, 1–33
- Jones, A M, Lawson-Jones, A, Quinnell, H, and Tyacke, A, 2013. Landscapes of stone: contextualising greenstone working and lithics from Clodgy Moor, West Penwith, Cornwall, *Arch Jnl*, **170**, 2–29
- Jones, A M, Lawson-Jones, A, Quinnell, H, Tyacke, A, and Taylor, R T, 2018. The North Cliffs Project, *Mesolithic Miscellany*, **25.1**, 23–48
- Jones, A M, Quinnell, H, and Taylor, R T, 2017. Cornish axe groupings, not Cornish axe factories: new work on

- the sourcing of Neolithic stone axes in Cornwall, in R Shaffrey, ed, *Written in stone: papers on the function, form, and provenancing of prehistoric stone objects in memory of Fiona Roe*, Southampton, 35–53
- Jones, A M, Quinnell, H, and Taylor, R T, forthcoming. Recent work on the Group XIX artefacts from the North Cliffs: reconsidering the use of Cornish greywacke, *Lithics*
- Jones, R S, 2014. A 6000 year-old decoratively carved timber from Maerdy, Rhondda, Glamorgan, *Archaeology in Wales*, **53**, 79–82
- Lawton-Matthews, E, and Warren, G, 2015. Pits in the Irish Mesolithic, in N F Bicho, C Detry and T Price, eds, *Muge 150th: Volume 2: the 150th anniversary of the discovery of Mesolithic shell middens*, Cambridge, 140–52
- Lewis, J, 2011. On top of the world: Mesolithic and Neolithic use of the Mendip Hills, in J Lewis, ed, *The archaeology of Mendip: 500,000 years of continuity and change*, Oxford, 93–117
- Lillie, M, 2015. *Hunters, fishers and foragers in Wales*, Oxford
- Mercer, R J, 1981. Excavations at Carn Brea, Illogan, Cornwall 1970–73. *Cornish Archaeol*, **20**, 1–204
- Milner, N, Coneller, C and Taylor, B, eds, 2018a. *Star Carr Volume 1: A persistent place in a changing world*, York
- Milner, N, Coneller, C, and Taylor, B, eds, 2018b. *Star Carr Volume 2: Studies in technology, subsistence and environment*, York
- Norman, C, 1977. A flint assemblage from Constantine Island, north Cornwall, *Cornish Archaeol*, **16**, 3–9
- O’Hanlon, M, 2014. *The Pitt Rivers Museum: a world within*, London
- Naylor, D, and Shannon, P M, 1982. *The geology of offshore Ireland and west Britain*, London
- Pascoe, B, 2014. *Dark emu black seeds: agriculture or accident?*, Broome (Western Australia)
- Roberts, A, 1987. The later Mesolithic occupation of the Cornish coast at Gwithian: preliminary results, in P Rowley-Conwy, M Zvelebil and H P Blankholm, eds, *Mesolithic north-west Europe: Recent trends*, Sheffield, 131–37
- Rogers, S, 2016. Documenting the art of seal skin preparation for future generations, [online] Available at: https://nunatsiaq.com/stories/article/65674womens_collective_documents_seal_skin_preparation_for_future_generatio/ [accessed 25 Apr 2020]
- Smith, G, 1984a. Excavation at Windmill Farm, Predannack Moor, *Cornish Archaeol*, **23**, 179
- Smith, G, 1984b. Excavations at Goonhilly Down, The Lizard, 1981, *Cornish Archaeol*, **23**, 3–48
- Smith, G, 1987. The Lizard project: landscape survey 1978–1983, *Cornish Archaeol*, **26**, 13–68
- Smith, G, 1988. Excavation of the Iron Age cliff promontory fort and of Mesolithic and Neolithic flintworking areas at Penhale Point, Holywell Bay, near Newquay, 1983, *Cornish Archaeol*, **27**, 177–99
- Smith, G, and Harris, D, 1982. The excavation of Mesolithic, Neolithic and Bronze Age settlements at Poldowrian, St Keverne, 1980, *Cornish Archaeol*, **21**, 23–66
- Stewart, R J, 2012. The role of chert in later prehistoric lithic industries with specific reference to south-west England, *Geoscience in South-West England*, **13**, 123–30
- Straker, V, and Walker, T, 2018. Gwithian’s environmental history: landscape change and farming, in A M Jones and H Quinnell, eds, *An intellectual adventurer in archaeology: reflections on the work of Charles Thomas*, Oxford, 55–69
- Thomas, A C, 2005. *The Neolithic in the Gwithian area*, Lambessow (Privately published)
- Waddington, C, 2007. *Mesolithic settlement in the North Sea Basin: a case study from Howick, North-East England*, Oxford
- Walker, E A, 2016. The Palaeolithic and Mesolithic hunter-gatherers of Pembrokeshire, in T Darvill, H James, K Murphy, G Wainwright and E A Walker, *Pembrokeshire County History, Volume I, Prehistoric, Roman and early medieval Pembrokeshire*, Haverfordwest, 1–54
- Walker, T M, 2018. *The Gwithian landscape: molluscs and archaeology on Cornish sand dunes*, Oxford
- Wings, O, 2007. A review of gastrolith function with implications for fossil vertebrates and a revised classification, *Acta Palaeontologica Polonica*, **52**, 1–16
- Woodman, P C, Anderson, E, and Finlay, N, 1999. *Excavations at Ferriter’s Cove 1983–95*, Dublin
- Wymer, J J, 1977. *Gazetteer of Mesolithic sites in England and Wales*, Norwich

Excavations at Carn Galva and Bosporthennis Quoit, West Penwith, in 2009

ANDY M JONES

with contributions from DANA CHALLINOR and ANNA LAWSON-JONES

Investigations at Carn Galva and Bosporthennis Quoit, Zennor, were undertaken by Cornwall Archaeological Society over a two-week period in 2009. Field survey after a fire in the 1980s had revealed walling around the southern tor on Carn Galva and it was believed that the site would prove to be an Early Neolithic tor enclosure. The small megalithic monument at Bosporthennis was first recorded in the nineteenth century; however, its date and form were uncertain.

Two trenches were opened within the enclosure at Carn Galva and two adjacent to Bosporthennis Quoit. The trenching at Carn Galva confirmed the presence of a substantial enclosure wall. Although the enclosure could not be dated, it seems probable that it is of prehistoric origin and comparison with excavated tor enclosures suggests a Neolithic date. The excavations at Bosporthennis Quoit confirmed that it is likely to have been oval in plan and revealed a possible entrance into the chamber on its northern side. Radiocarbon dating suggests that the opening was blocked in the early medieval period. It is possible that the monument was a large cist or a small entrance grave, comparable with those at Bosiliack and Brane.

Following a series of visits to Penwith by the excavation committee of Cornwall Archaeological Society in the summer of 2008, the area around Carn Galva was chosen as the focus for a research project and training excavation. The two sites selected for investigation were on land owned by the National Trust and the project was developed in consultation with Shirley Blaylock (Regional Archaeologist) and National Trust staff in Penwith, including Jon Brooks and Paul Bonnington. After agreeing the scope of the project with the National Trust, archaeological excavations at Carn Galva and Bosporthennis were undertaken by Cornwall Archaeological Society over a two-week period in September 2009.

The objectives of the excavations at Carn Galva (SW42753605) were to confirm the presence of an enclosure on the hilltop and to recover environmental and artefactual evidence which would help characterise and date activity. The excavations at Carn Galva were important because the site is one of only 11 potential tor enclosures which have been identified in Cornwall, none of which have been investigated since Roger Mercer's excavations at Carn Brea and Helman Tor in the 1970s and 1980s confirmed that these enclosures dated to the fourth millennium cal BC (Mercer 1981; 1997).

At Bosporthennis Quoit (SW43563654) the main aim of the excavation was to gain information

which would help to establish what type of chambered tomb the monument represents, as well as to obtain suitable environmental material and artefacts to date it. There was also a desire to try and clarify its landscape context and ascertain whether there was any association with the enclosure on Carn Galva to the west.

Location and background

Both Carn Galva and Bosporthennis are situated close to the north Cornish coast in the parish of Zennor (Fig 1). The area is exposed and open to the sea, with little woodland to provide shelter from Atlantic weather fronts. The underlying geology is granite.

The two sites are on the National Trust properties of Bosigran and Bosporthennis, both of which

were surveyed in detail by the National Trust and the Cornwall Committee for Rescue Archaeology (CCRA; subsequently Cornwall Archaeological Unit) in the 1980s as part of the West Penwith Survey (Herring 1987; Nowakowski 1987; Herring *et al* 2016). The landscape history of Bosigran and Bosporthennis is summarised by Herring (2016b).

Carn Galva is a long, exposed, visually dominant north west – south east aligned ‘keel’-shaped hill with distinctive sheer-sided rocky outcrops which erupt out of either end. The hill, which rises to a height of 249m OD, stands proud of the coastal plain which lies to the north, and it can only be easily approached from the west, where a footpath enters the saddle between the outcrops. There is little soil coverage on the hilltop, although the flanks of the hill are in part covered by a peaty soil which provides sufficient nutrients for dense bracken coverage, which now shrouds much of

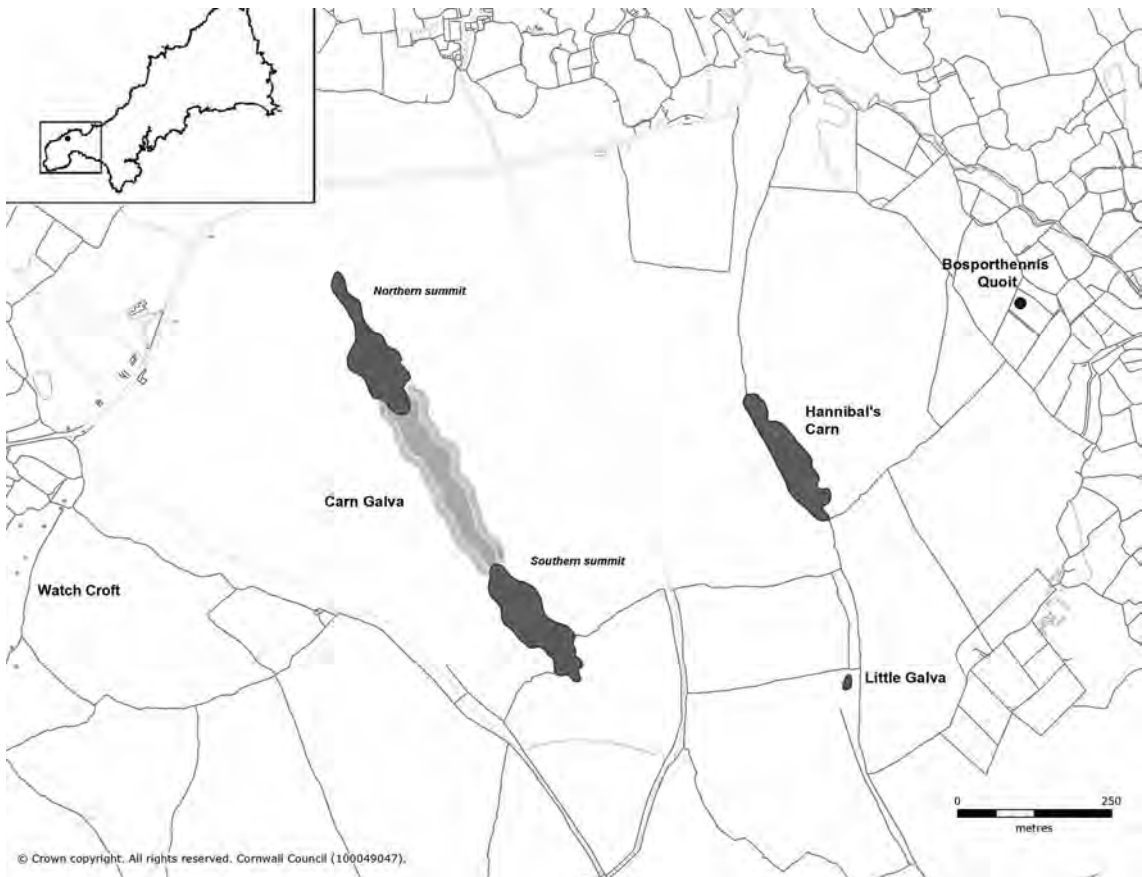


Fig 1 Carn Galva and Bosporthennis Quoit: location.

the hill. In common with Carn Kenidjack (St Just) and Trencrom (Lelant), other West Penwith hills distinctive for their rocky outcrops, Carn Galva has been the subject of folk traditions (Hunt 1865, I, 26–7; Bottrell 1870, 44–5).

Despite its prominence, no archaeological investigation is known to have taken place on the hill prior to the surveys of the 1980s when, following a fire, Peter Herring (1987) identified traces of walling enclosing areas of terracing around the summit of the southern outcrop (Fig 5). The overall size of the enclosure is approximately 0.8 ha. Much of the enclosure is defined by natural outcrops linked by short lengths of stony banks or walls, as well as large blocks of rock which have been levered and placed on end. The space inside was found to include level areas which appeared to have been cleared of stone, potentially platforms for simple structures (Herring 2016b, fig 4.4; Jones 2016, fig 5.7).

A trench 7m by 1m excavated by Herring on the western side of the southern end of the hill seemed to confirm the presence of a rampart; however, it was only excavated to the top of the walling (Herring 1987, 53; fig 3). Nonetheless, the form of the walling and terraces appeared to be similar to the excavated tor enclosure sites at Carn Brea (Illogan) and Helman Tor (Lanlivery) (Mercer 1981; 1997) and Carn Galva was included in English Heritage's list of Neolithic tor enclosures (Oswald *et al* 2001, 158). Although the northern

end of the hill has never been surveyed, it is possible that, as at Carn Brea, both summits were enclosed. This is perhaps suggested by a flattened area at the north end of the hill which has the potential to be a terrace. However, it is possible that any activity in this area may be of a much later date.

By contrast with the nearby hills of Watch Croft and Zennor Hill, Carn Galva itself is largely devoid of archaeological features such as cairns, standing stones or quoits. However, three 'propped' stones have been recorded on the hill (Blackman 2011), with a particularly fine example being found in the saddle of the hill (Fig 2). Propped stones comprise a large stone 'chocked up' by one or more smaller stones (Blackman 2011; Jones *et al* 2012; Shepherd 2017). These sites are difficult to date; nonetheless, it is probable that they are prehistoric and may belong to either the Neolithic or Bronze Age periods.

Although it seems that ceremonial monuments were not constructed on the hilltop itself, it does appear to have been the focus for a large number of Neolithic and Early Bronze Age ceremonial sites in the surrounding landscape. Zennor, Mulfra and Chun Neolithic chambered tombs appear to have been carefully sited so that the summit tors of the hill come into view as the monuments are approached from lower ground (Kirkham 2011a, 103; 2011b, 29). The southern end of Carn Galva



Fig 2 The large propped stone in the centre of Carn Galva. (Photograph: Andy M Jones.)



Fig 3 The southern summit of Carn Galva from the Nine Maidens stone circle. (Photograph: Andy M Jones.)

has a distinctive dome-shaped appearance from the south and it is unlikely to have been coincidence that the largest stones in the Nine Maidens stone circle appear to frame views to the outcrop at the southern end of the hill (Fig 3); a number of Bronze Age cairns also reflect this alignment (Barnatt 1982, 70–1; Herring 2016b, 83–5; Jones 2016, 118–20). Further Bronze Age cairns are also found in the vicinity, such as those on Watch Croft 800m to the south west. Approximately 2.5 km to the north east of Carn Galva, on the coast, is Gurnard's Head, a cliff castle of Iron Age date (Gordon 1941) with a recently recognised earlier Bronze Age Trevisker pottery-associated occupation (Henrietta Quinnell, pers comm). It also contains a greenstone outcrop, a possible source of Neolithic Group I axes (Markham 2000). Group I axes are widely distributed across Cornwall and beyond (Clough and Cummins 1988; Jones *et al* 2017), and many Group I axe heads were recovered during the excavation of the Neolithic tor enclosure at Carn Brea (Mercer 1981).

Approximately 800m to the east of Carn Galva, in a valley, is Bosporthennis Quoit. The land is more sheltered and has mostly been enclosed since at least the medieval period. The quoit is comprised of a large capstone and a central cist or chamber which is set within a small, near circular mound (Figs 4 and 11). The monument was first recorded

by Richard Edmonds (1848) and illustrated by J T Blight (1862), who reported that the capstone had been trimmed for use as a millstone. The site was surveyed at 1:50 in 1983 by the National Trust and the CCRA (Fig 9).

The mound measures approximately 6.4m by 5.8m and up to 1m high, within which there is a large cist or chamber, two sides of which survive as substantial upright slabs around 1.2m high: a southern slab 1.8m long, and a western upright 1.1m long. The east side may be marked by three further surviving uprights, one of which is a substantial block, but these stones are much lower than the principal uprights and so they may instead be displaced stones, or perhaps represent a more complex setting related to the cist or chamber. Internally, the cist may have measured between 1.5m and 1.9m long and approximately 1.2m wide. It may have been covered by a single capstone, the millstone rough-out, although alternatively this may be a displaced upright. The site is certainly disturbed and many of the stones may well have been displaced by antiquarian investigation and agricultural activity.

The original form of Bosporthennis Quoit is unclear and its classification has been uncertain. One possibility is that it was a small version of a simple boxed chambered tomb or portal dolmen, in which case an Early Neolithic date might be expected (for



Fig 4 Bosporthennis Quoit in 2007, looking south east. (Photograph: Andy M Jones.)

example, Nowakowski 1987, 30–1; Kytmanow 2008, 80). Alternatively it may have been an unusually large cist, potentially of later Neolithic or Early Bronze Age date (for example, Daniel 1950, 241; Barnatt 1982, 245–6; Nowakowski 1987, 30–1; Herring 2016b, 83), a transitional monument between the two types (Nowakowski 1987, 30–1), or perhaps a ruined entrance grave. The central cist or chamber was partially excavated in the 1860s by W C Borlase and the Reverend W S Symonds, who reported discovering sherds from a globular urn, a fractured flint, two ‘jasper’ stones and burnt bones on the floor of the chamber (Borlase 1872, 69). Unfortunately, the description of the finds does not help to date the site beyond indicating that they were probably Neolithic, Bronze Age or later. The dating of burnt bone from Penwith chambered tombs has also revealed that cremation was practised in both the Neolithic and the Bronze Age (Kytmanow

2008, 105–6; Jones and Thomas 2010). Borlase’s excavation techniques were also poor even by the standards of the time and he is unlikely to have noted any structural detail. The entrance grave at Tregiffian (St Buryan) for example was recorded by him as a cisted barrow (Borlase 1872, 107–8).

The context of Bosporthennis Quoit is complicated by the fact that it sits within farmland which was enclosed from rough ground as crofts in the post-medieval period and subsequently improved, and this is likely to have led to the clearance of smaller-scale prehistoric cairns and monuments. Construction of the substantial stone field banks and walls (Fig 4) would have involved the robbing of stone from earlier structures, potentially including Bosporthennis Quoit. The large capstone of a megalithic structure of probable Early Neolithic date known as Bosporthennis Great Quoit was noted by the folklorist Robert

Hunt in his *Popular romances of the west of England* as having been broken up 'some years since' and taken to Penzance for use as oven bases (Hunt 1865, I, 196n). The location of this latter site is not known but a query about it in the local press (*Cornish Telegraph*, 27 September 1871, p3) gained a response from 'WB', almost certainly William Bottrell, commenting that 'It was not near the cromlech with a circular capstone which remains' (*Cornish Telegraph*, 4 October 1871, p2). It is possible that Bosporthenis Quoit was, however, part of a larger group of cairns: Borlase, for example, says 'Many smaller mounds occur in the same enclosure' (Borlase 1872, 67), though none of these can be seen today. There are also cairns and a cist, of presumably Bronze Age date, 300m to the south (Herring 2016b, fig 4.7). To the east and south east there are fields and settlements of later prehistoric and medieval date, characteristic of the long-lived field-systems of West Penwith, and there was a possible roundhouse just a few metres to the east of Bosporthenis Quoit (Cornwall and Isles of Scilly Historic Environment Record MCO 2196) which could indicate that prehistoric settlement existed nearby.

The archaeological investigations

The fieldwork at Carn Galva and Bosporthenis involved two elements, geophysical survey and excavation.

Geophysical survey

Magnetometer surveys were undertaken at both Carn Galva and Bosporthenis in advance of the excavations.

Geophysical survey at Carn Galva was carried out at the northern summit on a small, sheltered terrace on the eastern side of the northern outcrop. The survey did not reveal any features except for a single 'spike' in the centre of the terraced area, which may have been of natural origin.

At Bosporthenis geophysical survey covered the field in which the monument is located. The survey did not identify many features; however, it did reveal that there was an anomaly on the southern side of the site, which suggested a spread of ploughed-down mound material. The shape of the anomaly indicated that Bosporthenis Quoit may have originally been oval in plan. The

discovery influenced the siting of Trench 2 which was positioned to investigate this anomaly.

Excavations

During the course of the excavations, four hand-dug trenches were opened up, two on Carn Galva and two at Bosporthenis. The sites were located and planned using a total station. However, although the trench locations were georeferenced accurately there were problems with the downloaded data. Consequently, digitized survey drawings from the 1980s surveys have been used as base plans.

Carn Galva

The trench locations on Carn Galva were guided by the results from the 1980s survey (Herring 1987). Trench 1 was excavated across the line of the rampart and a terraced area on the western side of the southern summit and Trench 2 was located on the summit itself, in a flat area to the north of the southern outcrop.

TRENCH 1

Trench 1 (Figs 5 and 6) was located on the western side of the enclosure on the southern summit and was positioned to identify occupation-related activity associated with one of the terraced areas and investigate the character of the rampart. The northern end of the trench was level and located within the terraced area, whereas the southern extended beyond the edge of the terrace and was steeply sloping. It was aligned roughly north – south and measured 11m by 2m. The upper layers (1) / (2) which extended across the trench were 0.2–0.5m deep. Layer (1) was a mid-brown fibrous organic topsoil and layer (2) a dark brown peaty soil, which contained frequent tumbled stones from walls 5 and 7 (below). Both layers were devoid of artefacts and were heavily disturbed by roots and bracken rhizomes.

Only two features, wall 5 and wall 7, were uncovered. Both were sealed beneath layer (2). Wall 5 was located in the central part of the trench. It ran along the top edge of the break of the slope, was oriented north west – south east, and corresponded with the position of the enclosure wall which had been identified by Peter Herring (1987). Granite blocks up to 0.8m long formed a bank 1.1m wide and two to three stones high which survived to a height of 0.7m (Figs 6 and 7). A good deal of tumble

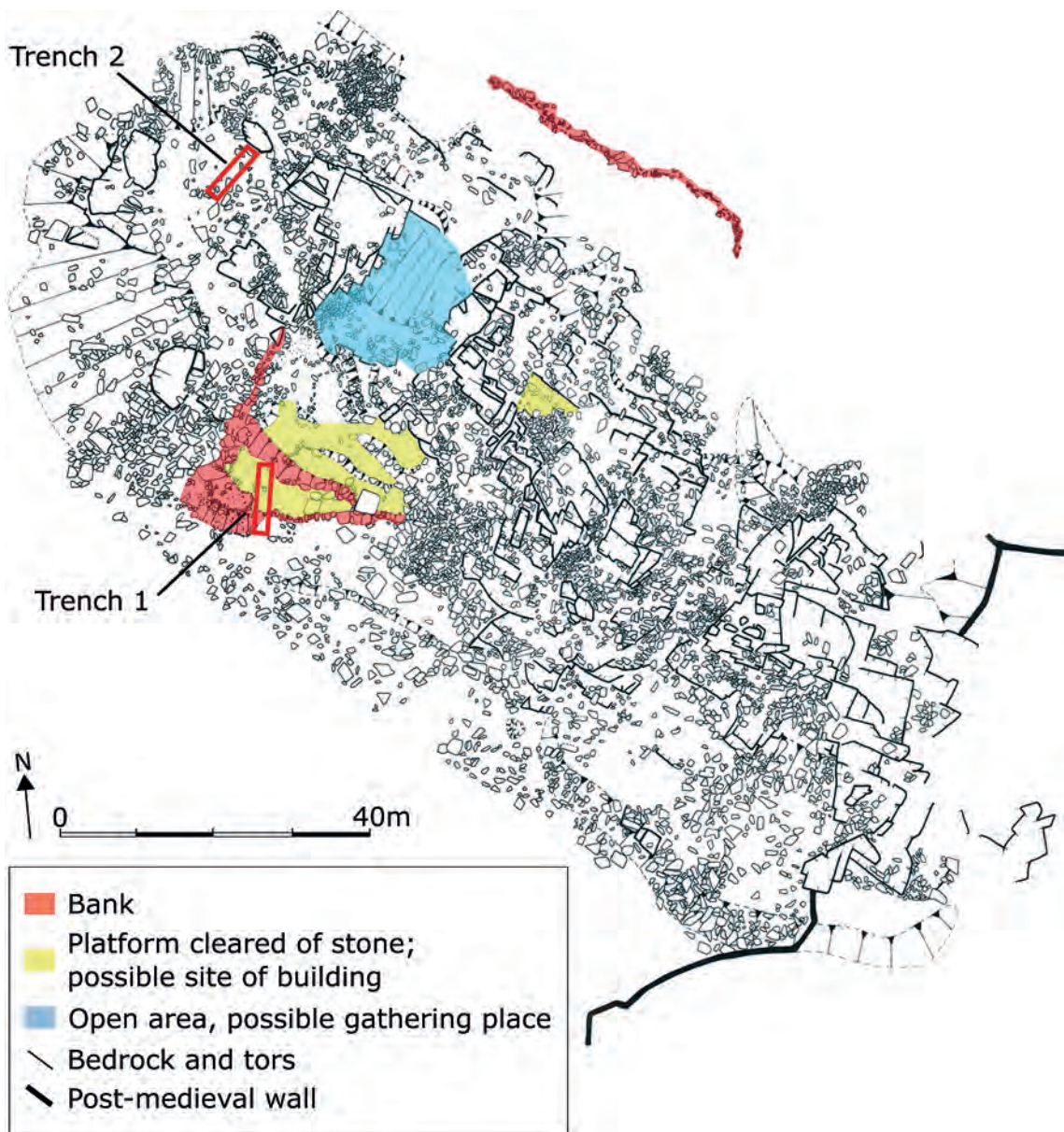


Fig 5 Plan showing the position of the trenches on the southern summit of Carn Galva. In order to show the context of artificial banks and cleared areas on the rocky summit, the National Trust's survey of 1984 recorded natural boulders and outcrops in detail. (After Herring 2016b, fig 4.4.)

was uncovered below the edge of the terrace, to the south west of the *in situ* walling. It is likely that much of this material had fallen from the western side of wall 5. The original enclosure wall would have originally been much more substantial.

Wall 7 ran down the length of the trench and filled the entirety of it until reaching wall 5. This wall measured 5m long by 1.5m wide and up to 0.3m high. It was made up of granite boulders which ranged from 0.5m to 0.8m. Wall 7 was

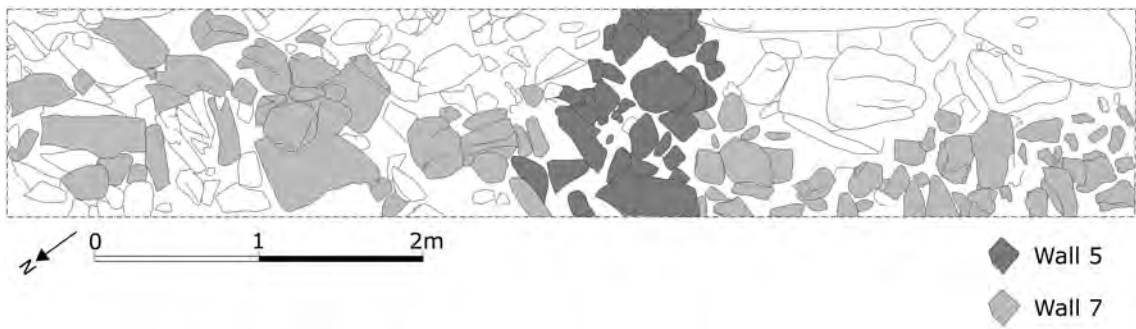


Fig 6 Plan showing walls 5 and 7 in Trench 1, Carn Galva.



Fig 7 Carn Galva Trench 1 looking south east, showing wall 5. (Photograph: Andy M Jones.)

not associated with any artefacts but it appeared to partly overlie the northern side of wall 5, suggesting that it was later in date (Figs 6 and 8).

Both walls were left *in situ* and were not sectioned. In the spaces between the walls, a greyish-brown, gritty soil, layer (8) was uncovered. This appears to have formed between the natural boulders, which were also found at the bottom of the trench. As with the overlying layer (2), there were signs of root and bracken rhizome disturbance to this layer.

The amount of stone meant that excavation of Trench 1 revealed no evidence for occupation-related activity on the terrace, and the great extent of rhizome penetration meant that it was not

possible to sample material for dating. However, wall 5 is likely to be of prehistoric date and is therefore significant.

TRENCH 2

This trench was oriented north east – south west and measured 10m by 2m (Fig 6). It was positioned on the summit of the southern hill, to the north of the southern outcrop, to identify evidence for activity on the hilltop. The upper layers (3) / (4) were 0.2m–0.3m deep. Both were very rooty, dark brown soils, although the lower, layer (4) had a higher peat content.

No archaeological features were uncovered in Trench 2. Layer (4) was found to seal the natural



Fig 8 Carn Galva Trench 1, photograph from the southern end of the trench showing wall 7 running down the length of the trench and overlying wall 5 (in foreground). (Photograph: Andy M Jones.)

orange rab, except at the western end of the trench, where it covered layer (6), a thin granitic soil which instead overlay the natural.

No artefacts were recovered from Trench 2, although four flints were found on the footpath to the south of it.

The absence of artefactual or dateable features from Trench 2 means that the date and character of occupation within the main enclosure remains uncertain.

Bosporthennis

The trench locations at Bosporthennis were guided by an inspection of the site prior to the excavation and the results from the geophysical survey (Fig 9). Trench 1 was excavated on the northern side of the quoit and Trench 2 was located across the

area where the geophysical survey suggested that there was a potential ploughed down mound. Both trenches measured 5.5m long by 2m wide.

TRENCH 1

Trench 1 was opened on the northern side of the site in order to determine whether there was any indication of an entrance and uncover any evidence for activity outside the monument.

Layer (100) was a dark brown gritty soil which was up to 0.10m thick and covered infill deposit (106), the kerb (108), and layer (104) (Fig 10). Layer (104) was similar to (100) but was lighter in colour. It was also quite thin and up to 0.10m deep. It presumably represented an earlier ploughsoil and was found to seal all the archaeological deposits. A localised layer (107) of dark, firm clay loam was found at the eastern end of the trench where

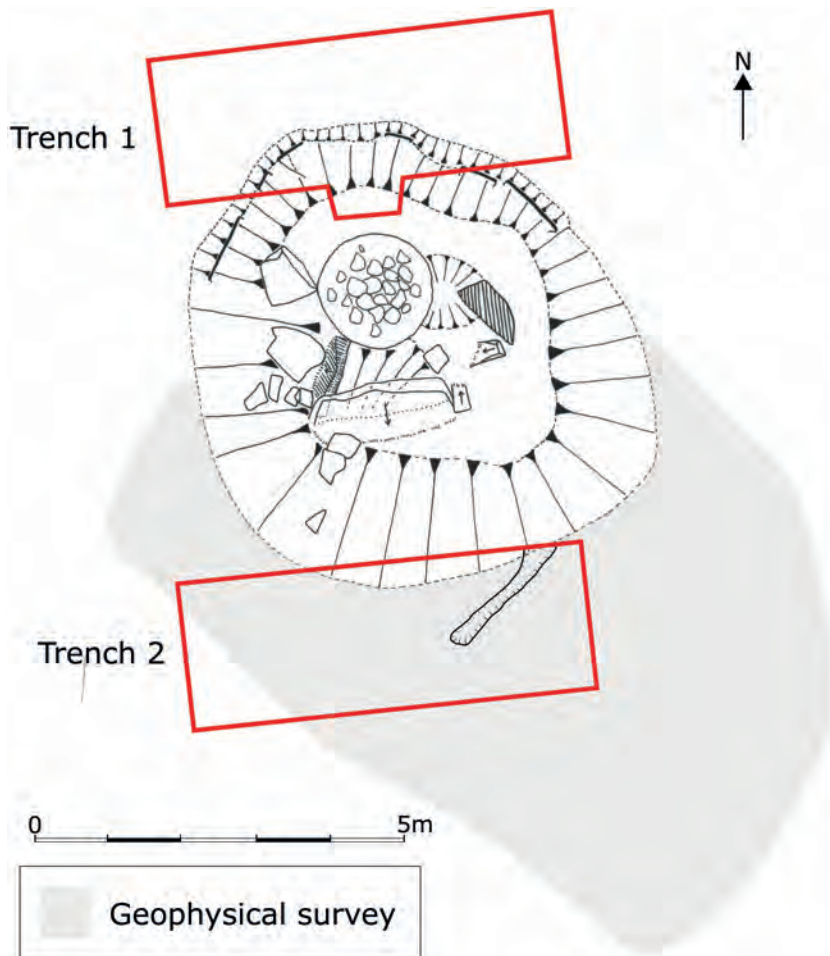


Fig 9 Bosporthennis Quoit plan, with the trenches shown in relation to the 1983 survey drawing in Nowakowski (1987). Subsequent to the 1983 survey the trimmed capstone, shown on the plan supporting a heap of clearance stones, was taken off-site for a while before being recovered and replaced in the same position (Herring 2016a, 17, fig 1.11, caption). The position of excavated gully [110] is shown in trench 2. Shading shows an anomaly indicated by the geophysical survey, possibly relating to spread mound material.

it abutted the edge of the monument. It measured approximately 0.5m by 0.8m and was up to 0.02m deep. A similar deposit, (120), was identified at the western end of the trench, where it was found to partially overlie the kerbstones (108). Both layers overlay the natural (123) and they may represent an older ploughsoil which had developed after the mound had been constructed.

Few archaeological features were recorded within Trench 1, most layers being recorded in the standing section. Two amorphous depressions and an area of scorched clay were recorded in the trench. Deposit (122) was a shallow layer located in the north-west corner of the trench. It reached a depth of 0.06m and was up to 1.4m long by 0.5m wide, and lay directly upon the natural (123). There was no defined cut edge and given its silty nature, it is probably material which had filled a natural depression in the underlying rab. Layer (121) was located along the eastern side of the trench and was similar to (122). It extended for 0.5m from the section and reached a depth of 0.14m. Again, it seems that the layer filled a natural depression in the underlying rab. The third and final feature was deposit (109), a patch of scorched natural measuring 0.85m long by 0.5m wide and 0.05m deep in the centre of the trench. This feature was not associated with any artefacts or charcoal, so it cannot be dated.

The remaining archaeological contexts were recorded in the north-facing section which was cut up against the side of the monument.

Cutting back of the section immediately revealed that there was a substantial stone kerb (108). This stood up to 0.55m high and had up to three courses of stones. Some of the constituent stones were very large, measuring up to 0.5m long by 0.15 thick. There were a large number of voids between the stones which had become infilled with dark soil and rooty material which was similar to

the overlying (104). The kerb sat directly upon the natural rab (123), which was found to rise towards the centre of the section. This meant that the site had been constructed upon what must have been a slight knoll in the valley side.

When the section was cleaned it became apparent that there was a gap in the kerb which measured approximately 0.6m wide (Fig 11). This may represent a later robber trench which was dug into the mount or, if the central feature is a chamber, an entrance. This gap was filled by two layers. The upper layer (106) was up to 0.3m deep and was a compact stony clay loam which contained large stones. Beneath it was (125), a 0.13m thick deposit of compact pale grey clay. This layer seemed to be comprised of redeposited natural. Layers (106) and (125) were interpreted as being infill deposits within a possible entrance into the site, although layer (125) could have been a lining for the chamber floor. A radiocarbon determination on a twig from layer (106) fell in the period 1245 $\pm$ 35 BP, cal AD 678–878 (SUERC-30808).

Eight flints were recovered from Trench 1; however, all were from post-prehistoric contexts and were therefore residual (Lawson-Jones, below). Likewise, quartz pebbles were noted, but none could be assigned a prehistoric date. However, the results from the trench were significant as they have provided information about the form of the monument.

TRENCH 2

Trench 2 was opened on the southern side of the monument in the area where the geophysical survey had indicated that there may have been spread material from a mound (Fig 9).

Layer (101) was a dark brown gritty soil which was equivalent to (100) in Trench 1. However, in Trench 2 this layer merged very quickly with the

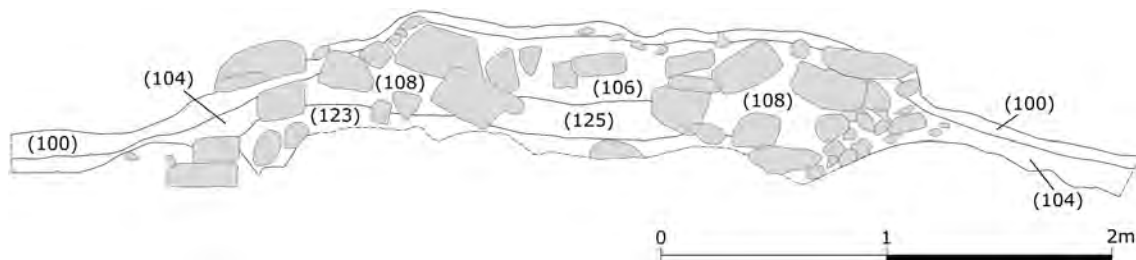


Fig 10 Bosporthennis, Trench 1: north-facing section, showing entrance area.



Fig 11 Trench 1: kerb and blocked entrance. (Photograph: Andy M Jones.)

underlying subsoil. Layer (102) on the eastern side of the trench was similar to (100) but was greyer in colour and up to 0.10m thick. At the western edge of the trench there was a corresponding layer (105), which was up to 0.2m thick. These layers presumably represented an earlier ploughsoil and sealed all the archaeological deposits and features.

The mound was comprised of layer (103), a deposit of dark grey clay loam. This deposit survived to a height of 0.25m in the section and was up to 2.5m wide. It extended up to 1.2m into the trench and was located above the natural (123) and layer (124). The extension of the layer into the trench suggests that the original mound was more oval with a substantial earthen component, and that it had been reduced by ploughing. This interpretation is reinforced by the fact that the kerbstones (108) on the southern side of the site were displaced or completely missing.

Layer (124) was partially below subsoil layers (102) / (105) and mound material (103) (Fig 12). It was a dark clay loam, which survived to a depth of up to 0.10m and ran across the western half of the trench. The layer may have been an old land surface, as flints were recovered from it (Lawson-Jones, below), or plough-spread mound material, as indicated by the geophysical survey.

A number of archaeological features were identified in the eastern half of the trench beneath layer (102). These included a gully and four

postholes (Figs 12 and 13). Gully [110] was located at the eastern end of the trench and was aligned roughly north east–south-west. It measured 2m long, up to 0.25m wide and 0.10m deep and was filled by (111), a greyish-brown silty clay deposit. The four postholes were located approximately 0.5m to the south of gully [110] and ran roughly parallel with it. Posthole [114] was located at the northern end of the alignment. It was oval, measuring up to 0.2m across, and 0.05m deep. It was filled by (115), a deposit of mid-greyish-brown silty clay loam. Posthole [112] was 0.13m in diameter and 0.05m deep. It was filled by (113), a deposit of mid-greyish-brown silty clay loam. Posthole [116] was the most substantial, measuring 0.35m in diameter and 0.2m deep. It was filled by (117), a deposit of mid-greyish-brown silty clay loam. Posthole [118] at the southern end of the alignment measured 0.10m in diameter and was just 0.04m deep. It was filled by (119), a deposit of dark greyish-brown silty clay loam. No artefacts were recovered from the gully or the postholes, and despite sampling, no suitable material could be found for radiocarbon dating (Challinor, below). It is possible that the postholes and gully were part of a pre-mound structure.

The natural rab (123) was again found to rise towards the centre of the section, reinforcing the impression given in Trench 1 that Bosporthenis Quoit had been sited upon what must have been

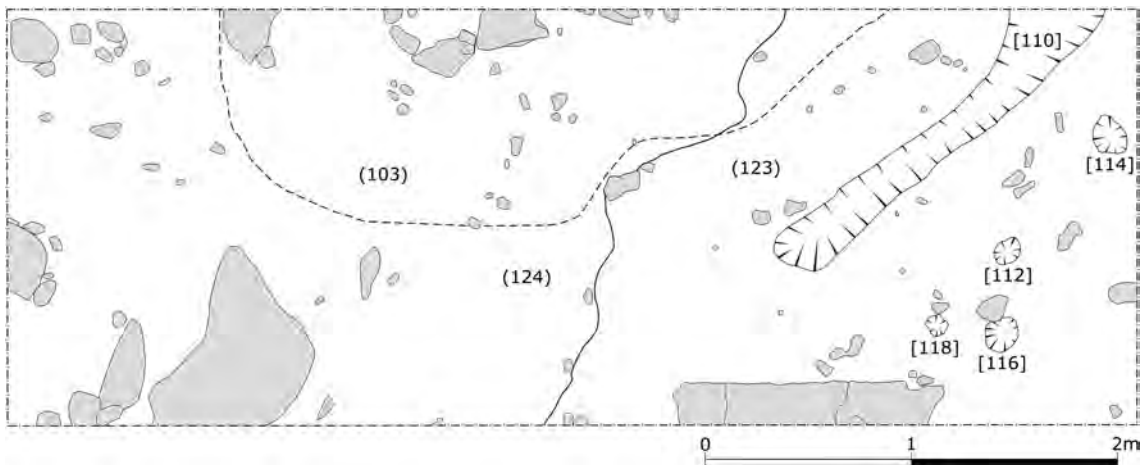


Fig 12 Bosporthennis Quoit, Trench 2: plan of features, and spread mound material / old land surface (124).



Fig 13 Trench 2, gully [110] and postholes.
(Photograph: Andy M Jones.)

a slight knoll, although it is also possible that ploughing around the mound, as at Brane (Barnatt 1982, 145) might have caused this.

Twenty-nine flints were recovered from Trench 2; most were from post-prehistoric contexts and are therefore residual (Lawson-Jones, below). However, they mostly appear to be of Late Neolithic to Early Bronze Age date, and two were recovered from layer (124), which may represent mound material or an old land surface. As in Trench 1, quartz pebbles were recorded; however,

these could have been introduced into the site at any period.

The results from Trench 2 confirmed the findings from the geophysical survey and imply the mound was originally oval in shape. There is evidence that the site has been ploughed into its current more circular shape. Flints were also recovered from the trench and traces of a possible structure were revealed. The implications of this will be discussed below.

Flint

Anna Lawson-Jones

Carn Galva

The excavations at Carn Galva produced four pieces of unstratified worked flint. All are small, tertiary and likely to be of local beach pebble origin (Rogers 1923). None are from the excavated trenches. The ‘summit area footpath’ produced small find <1>, a small exhausted, unclassified flake- and bladelet-core, and a small waste flake. The summit area near to Trench 2 produced two flints. Small find <3> was a small piece of burnt waste (probable debitage produced during tool working), and small find <6> was a pale mid-blade section piece showing light, bilateral use wear. This last piece may be Mesolithic in date and potentially markedly earlier than the other essentially undiagnostic pieces. These four pieces of worked flint are not all contemporary.

Bosporthennis

Excavations at Bosporthennis produced a total of 37 pieces of worked flint and chert, eight from Trench 1 and 29 from Trench 2. Many of the pieces are small unmodified flakes, the majority of which have not retained any cortex. Of those that have retained any original cortex, one clearly has a thin, brownish granular cortex, very similar to material from Beer Head (Tingle 1998) or other smaller Devon sources (Newberry 2002). A further three

are considered likely to have had a nodular source (see below). In Cornwall, the presence of nodular flint (from Beer Head or elsewhere) is often seen as indicative of a Neolithic presence (Healy 1985). All the remaining pieces appear to have come from local, abraded beach pebble flint (Rogers 1923).

The finds have been individually described by trench, in order of context and then in order of small find number. The terms primary, secondary and tertiary refer to the dorsal (non-knapped) percentage of original cortex surviving on each piece, and can be a useful indicator for on-site knapping, core reduction techniques and raw material sourcing. Primary refers to 50–100 per cent dorsal cortex; secondary refers to 2–49 per cent dorsal cortex; and tertiary refers to 1 per cent or less.

TRENCH 1

Three contexts produced flint. Layer (101) produced a single piece; (104) five; and (106) two flints (Table 1).

TRENCH 2

Five contexts produced flint. Layer (101) produced two flints; (102) nine pieces; (103) a single piece; (105) fourteen pieces; (124) produced two worked flints plus a single ‘special’ pebble. A further unstratified worked flint was also collected. Trench 2 produced significantly more worked flint than Trench 1 (Table 2).

Table 1 Flints from Trench 1, Bosporthennis

<i>Context</i>	<i>Description</i>
(101) topsoil	One broken primary flake.
(104) deposit	One broken flake (proximal end missing) with a narrow distal tip defined by two opposing notches suggestive of hafting, but perhaps more likely to be as a result of use as a light-weight point, given the thinness of the flake.
	<17> a small secondary flakelet.
	<29> a larger thin, broken, markedly dark, good-quality (probably nodular), fresh, tertiary flake showing broad blade-like dorsal scarring.
	<56> the burnt, broken, proximal end of a probable former large flake tool.
(106) deposit	<74> an apparently deliberately broken mid-section of a larger, slightly cherty flake piece or possible former tool, created with a burin-like removal. Although this piece does not show any obvious evidence for secondary reuse, either end could have functioned well as a piercer or as an engraver.
	<64> a small tertiary thinning flake.
	<68> a hard-hammered, fresh nodular lump of angular secondary waste.

Overview of the Bosporthennis flint assemblage

Almost no evidence at all was seen for the production of blades or bladelets on site. One Mesolithic blade fragment was identified from Bosporthennis: <7>. This represent the earliest evidence for human activity on either site and appears to be residual.

Of the various flakes recorded within the assemblage, very few were modified or retouched, and almost none showed clear macroscopic evidence for use. The majority appeared fairly small, with few larger or well-formed blank-like flakes or tools. Few of the pieces show any evidence for burning. Some appear very sharp and fresh; particularly the probable Late Neolithic to Early Bronze Age thinning flakes. A few show

Table 2 Flints from Trench 2, Bosporthennis

<i>Context</i>	<i>Description</i>
(101) topsoil	One burnt secondary flake which had possibly come from a larger tool. A small, fresh, tertiary piece, which had possibly been used as an unmodified point or piercer.
(102) deposit	A small, broken, possibly utilised tertiary flake. <6> a large secondary flake with fine nibbled, steep end-scraper retouch along the dorsal proximal edge which extended slightly along one side, and had adhering flakelets on its ventral surface – possibly the result of heat. <7> a heavily patinated, tertiary, mid-blade section with lateral use wear. <8>, <30>, <35> and <38> four small, fresh, tertiary probable thinning flakes. <31> an unused, poor quality, broken primary flake. <37> a small, burnt, broken tertiary flake.
(103) deposit	<72> a small, tertiary waste / debitage chip from a former repatinated / reused tool.
(105) deposit	<2> a small, thick probable leaf shaped arrowhead with distal and bilateral, bifacial fine retouch of Neolithic date. <4>, <5>, <62> and <69>; four small, thin broken tertiary thinning flakes. <57> a thin, broken, unused secondary waste flake. <59> an unclassified, small, hard hammer reduced, pebble flakelet core <60> a dark-coloured piece from a former heavily used flint hammerstone (possibly nodular), which has had all its original cortex removed through hammer wear. <67> a burnt, exhausted, possible chert unclassified / probable multiplatform flake-producing core. <71> a primary, white (repatinated) flake, which has seen post-depositional battering. <73> and <75>; two fresh, sharp, chert-like, thin, tertiary probable thinning flakes. <76> a small, chert-like, exhausted, unclassifiable / ?multiplatform core. <78> a primary waste flake.
(124) deposit	<87> a hard hammered, fresh and sharp, unused secondary waste 'lump' or possible core. <89> a thin, small, soft-hammer removed thinning flake. <86>; this may well be a specifically collected or deposited pebble. It is a near perfectly circular, flattish, disk-like beach pebble with a uniformly smooth surface, which shows no apparent use-wear or polish. It is the only pebble artefact that appears in any way 'special' or markedly different from the otherwise mixed range of usually very small and miscellaneous shaped quartz, chert, flint, killas / slate and other pebbles within the assemblage as a whole.
Unstratified	<36> a small, dark (possibly nodular) unclassified flakelet core – possibly with slight post-abandonment reuse.

signs of post-depositional damage, including the diagnostically later Neolithic tools – notably the flake scraper <6> and a diagnostic leaf-shaped arrowhead <2> which could be of earlier Neolithic date. One piece <72> shows clear evidence for the reuse and reworking of a formerly worked piece, clearly illustrating the mixed date of this assemblage.

The Bosporthennis Quoit assemblage is composed of a small, primarily pebble-based range of material, the vast majority of which has seen no modification or use. As a result, numerically many of the pieces have been classified as waste, the majority of it debitage associated with the production of tools. This debitage is in part composed of small, thin, often quite fresh-looking, tertiary thinning flakes, which were produced during the manufacture and thinning of larger tools. The appearance of a range of larger flaked tools and the use of thinning to create these forms is often seen as a Late Neolithic to Early Bronze Age trait. Just under half of the ten thinning flakes identified (one from Trench 1 and nine from Trench 2) have an opaque pale-brownish, uniform colouration – suggestive of a single tool being finished on site. A similar pattern may be seen with the two or three cherty thinning flakes. Interestingly, the larger secondary and tertiary flakes removed in the initial production of this tool are not present, meaning that the tool was only finished on the site, rather than being created from scratch. Perhaps it was specifically introduced to the site as a blank for further working. Intriguingly, neither this particular tool, nor the other larger tools that were finished on site, are present within the assemblage. This implies that the site, at this point, was a specific finishing site. It was not where the resultant tools were used and discarded or deposited.

On the basis of freshness and an apparent complete lack of post-depositional damage – including the thinning flakes discussed above, some of the fresh larger pieces (for example the relatively large, potentially nodular flake <29>), and the small number of fresh worked out or exhausted cores (possibly <36>, and <68> and <87>) – it is probable that there was a Late Neolithic to Early Bronze Age period of on-site flint working, associated with larger tools and small core reduction. The cores primarily produced small, often quite squat, hard hammer removed flakes, none of which would be out of place within a Bronze Age context.

Complicating this picture are the larger tools, including: <2>, a small, thick, complete leaf-shaped arrowhead; <6>, a finely retouched scraper on a flake; <56>, a heat-damaged probable former tool; <60>, a broken hammerstone; and <74>, which appears to have been deliberately broken twice to form a thin mid-section piece. In addition, a single broken former tool came from context (101). The majority of these pieces are Middle to Late Neolithic in form. The bulk are abraded or worn through past disturbance and / or surface exposure. They pre-date the fresher material discussed above, and represent an earlier, pre-Bronze Age focus of activity at the site.

Charcoal

Dana Challinor

Seven samples from Bosporthennis Quoit were submitted for charcoal analysis, including one from deposit (106). The aim of the analysis was to characterise the assemblages and select a piece of roundwood or short-lived species from each sample for radiocarbon dating. The flots were scanned at X10 to X45 magnification and the presence of any charred material noted. In practice, the samples were extremely poor and dominated by roots and modern material (Table 3).

The flots were mostly composed of roots, bark fragments and modern seeds. Context (106) also included some daub-type material. There was virtually no charcoal or charred material in the samples. A few unidentifiable charcoal flecks were noted in four contexts, (111), (119), (116), (114), and only one, context (106), produced a few charred items, including some amorphous material, probably parenchyma, and a couple of fragments of *Quercus* sp. (oak). A single unidentifiable charred twig was selected for dating, but it was very small and not possible to identify.

Radiocarbon dating

Despite undertaking a sampling programme, little charcoal was recovered from Bosporthennis Quoit. Because of the lack of suitable charcoal, only one sample was submitted for accelerator mass spectrometry dating (AMS), at the Scottish Universities Environmental Research Centre

Table 3 Results of the charcoal analysis

Sample	Context	Feature	Notes	C14
4000	(111)	[110]	Very rooty, lots root bark fragments, pupa cases and modern <i>chenopodium</i> seeds.	
4001	(119)	[118]	Very small. Roots, charcoal flecks.	
4002	(117)	[116]	Very small, roots, stones, sediment. Charcoal flecks.	
4003	(109)		Sediment, roots.	
4004	(106)		Roots, daub-type material. Bark fragments. <i>Quercus</i> charcoal, charred parenchyma type, indeterminate twig.	Indeterminate twig x 1
4005	(113)	[112]	Roots, modern seeds.	
4006	(115)	[114]	Roots, sediment, modern seeds. Charcoal flecks.	

Table 4 Results from radiocarbon dating

Feature	Lab. no	Age BP	Material	Calendrical years 95%
Deposit [106]	SUERC-30808	1245 ±35	Unidentified twig	AD 678–878

(SUERC). The unidentified twig from deposit (106) was selected for dating (Table 4).

The probability distributions have been calculated using OxCal (v4.3) and all radiocarbon determinations are quoted at 95.4 per cent probability throughout this paper unless otherwise stated.

Discussion

The archaeological investigations at Carn Galva and Bosporthennis Quoit produced valuable if not entirely anticipated results. The interpretation for each of the sites is given below.

Carn Galva

The results from Carn Galva were rather mixed. Because of the amount of walling within Trench 1, evidence for occupation activity in the terrace area was not found. However, the excavations did confirm the presence of the substantial stone wall 5. It was unfortunate that the later wall 7 filled up so much of the area targeted by the trench, and that there were no layers which had not been thoroughly disturbed by roots and rhizomes. Although the enclosure cannot be dated, the discovery of a wall which survived to more than 1m wide by 0.7m high has obvious parallels with tor enclosure walls dated to the Early Neolithic, in the centuries after c 3800

cal BC (Whittle *et al* 2011, 476–509). In common with tor enclosures at Carn Brea and Helman Tor, Carn Galva wall 5 appeared to enclose the edge of a flattened terrace or platform, and in common with other tor enclosures there was no trace of an external ditch. In other words, the stone for the walling is likely to have been at least partly cleared from the platform area behind it or from the surrounding slopes. This type of construction is more indicative of the Neolithic period, rather than the Iron Age, when hillforts were constructed with more coherent circuits than seen here, comprised of substantial ramparts constructed using material which had been excavated out of deep ditches. Nonetheless, it is only possible to suggest a broadly prehistoric date for the enclosure of the hill. Wall 7 remains undated but it post-dates wall 5 and as such it could be a boundary of later prehistoric or medieval origin.

The four flints recovered from close to Trench 2 demonstrated that the area of the summit had at least been periodically visited during prehistory but there was little evidence for the widespread occupation during the Early Neolithic period which was identified during excavations at Carn Brea and Helman Tor by Roger Mercer (1981; 1997). However, the lack of finds may in part be because of the thinness of the soil coverage in the area of the trench. It is also a possibility that the focal point for activity within the enclosure could have been closer to the outcrop which lay further to the south.

The lack of artefactual evidence from the excavations at Carn Galva is, despite the reason for caution given above, interesting and contrasts with the results from other Cornish tor enclosures. Quite small-scale excavations at Carn Brea and Helman Tor (Mercer 1981; 1997) led to the recovery of substantial quantities of Neolithic pottery, flint and greenstone axes, and even at Trencrom (Lelant), Penwith's other potential tor enclosure, greenstone axe-heads and flints have been recorded within the enclosure without there being any formal excavation (Herring 1999, 18; Jones 2016). These discoveries have resulted in the suggestion that tor enclosures were centres for the exchanges of axes and other items, as well for the ritualised deposition of artefacts. However, despite greenstone axes being found in the wider vicinity (for example, Thomas 1955), Carn Galva is without any comparable axe finds, either from the excavated trenches or as unstratified chance finds comparable with those which have been found at Trencrom.

Carn Galva is also interesting in that, given that the hill is so visually distinctive, it did not become a place for monument construction in the way that many of the surrounding hills did, such as Watch Croft and Zennor Hill, which were associated with cairns, standing stones and quoits (Thomas and Wailes 1967; Barnatt 1982, 98; Weatherhill 1981, 29). Instead, the only archaeological features which are found on the top of Carn Galva are propped stones (Fig 2). The construction of these features involved the more subtle manipulation of rocks which are already found upon the hill, rather than the building of substantial monuments. This pattern is repeated at other tor enclosure sites such as Carn Brea, Helman Tor and, on Bodmin Moor, Stowes Hill (Linkinhorne) and Tregarrick Tor (St Cleer) (Bradley 1998; Jones 2005, 45; Blackman 2011), where obviously constructed monuments are absent, but instead there are propped stones or natural stones which have the appearance of being 'ancient sites'. Yet Carn Galva did become the focus for monuments which were set some distance away from the hill. As noted above, these sites include a large number of cairns and the Nine Maidens stone circle (Preston-Jones 2004–5). Comparable referencing of hills with enclosures is also found elsewhere in Cornwall, notably at Rough Tor, St Breward (Herring 2008; Jones 2004–5), which is the focal point for a large number of ceremonial monuments including cairns and barrows, and at

Stowes Hill, where a pair of standing stones known as the Pipers frame the hill in a manner similar to the Nine Maidens. Further away a comparable pattern has been detected in the Preseli hills in south-west Wales, where paired stones are located on the junction between the lower-lying ground and the uplands (Figgis 2001, 98–9; Darvill and Wainwright 2016).

Simon Davies (2010, 41) has argued that there was a recurring relationship between Cornish tor enclosures and chambered tombs which is unlikely to be coincidental. However, no chambered tombs are found on Carn Galva or in the immediate vicinity. The nearest Early Neolithic chambered tombs are found in the wider area, at Sperris and Zennor (Thomas and Wailes 1967). Both of these sites are associated with cremated remains that have been radiocarbon dated to the earlier Neolithic (Kytmanov 2008, 105–6) and are likely to have been part of the same cultural landscape as the enclosure on Carn Galva. It has been convincingly argued that tors and prominent rocky outcrops were important to landscape cosmologies (Tilley 1995; Tilley and Bennett 2001; Cole and Jones 2002–3) and we might therefore expect enclosures incorporating rocky outcrops to have symbolic roles, as well as being places for exchange, and perhaps for ritualised episodes of violence and sacrifice (Jones 2010). At the same time large flint scatters are found on the lower-lying ground (for example, Lawson-Jones 2011), which are likely to have been associated with settlement-related activity over long periods of time. It is probable therefore that people would have moved around the landscape with their animals and would have made journeys to gather resources such as stone for axes (Davies 2010, 180). Hills such as Carn Galva may have been focal places where people gathered.

Therefore, the contrast between the low-lying coastal plateau with its evidence for settlement-related flint scatters, Zennor Hill to the east with its quoits, and Watch Croft to the west which became crowned with cairns and a standing stone, may have resulted from a meaningful development of a particular landscape biography, which saw some places being used for settlement, others for ceremonial monuments and mortuary ritual and others still with the enclosure of significant landscape features.

Bosporthennis Quoit

Excavations at Bosporthennis produced a more cohesive set of results and it is now possible to provide a firmer interpretation for the site.

The flints suggest activity on the site from the Middle Neolithic to the Early Bronze Age, and may well give an indication of the potential date of the monument, although as the flints are almost all residual finds their association with the monument remains uncertain. Interestingly, the flints suggest two main phases of activity, with most being relatively fresh-looking and belonging to the Late Neolithic or Early Bronze Age, whilst a smaller number of more abraded and worn flints are thought to be Middle to Late Neolithic. It is possible that a small and very low natural rise or knoll, beneath the monument, may have been an initial focus for the earliest activity.

Earlier activity is possibly indicated by the traces of a potential structure, which was found beneath the plough soil in Trench 2. The arrangement of the posts and the gully in Trench 2 might suggest that they were contemporary with one another and that they formed part of some kind of structure. Simple, sub-rectangular and sub-oval structures of later Neolithic and Bronze Age date have been found across southern and western Britain (Darvill 1996; Jones *et al* 2012; Gibson 2019) and several, such as at Trelystan in Wales (Britnell 1982), have been found beneath later round barrows. It is tempting to link this possible structure at Bosporthennis with the flint assemblage and to suggest that it represents occupation activity which pre-dated the monument. However, no secure dating was obtained from either the postholes or the gully and no diagnostic artefacts were recovered, which means that this suggestion is unproven. It is also the case that, as both the gully and the postholes seem to reflect or possibly respect the line of the mound, the features could have been associated with the quoit. Only further excavation of the *in situ* mound and / or of the wider area would fully resolve the shape of any structure and its relationship to the quoit.

Turning to the form and classification of the monument, the lithic assemblage, apart from the leaf-shaped arrowhead, does not suggest that activity around Bosporthennis Quoit took place during the Early Neolithic, which might be expected if the site had been a portal dolmen or a simple chambered tomb (Sheridan and Schulting 2008; Kytmanow 2008; Kirkham 2011a).

Furthermore, although the site bears a superficial resemblance to such sites, it is distinct from them, firstly in its relatively small scale and smaller stones (compared for example to dimensions for quoits given by Herring 2016c, 125, table 1), and secondly in its setting, a relatively inconspicuous valley-side location. We therefore have to look for a later third or second millennium cal BC date for the site.

One possibility is that the mound contained a cist, and indeed the monument is described as such by Borlase (1872, 67). Cists are found in the Neolithic period in Britain and beyond (Cooney and Grogan 1999; Benson and Whittle 2007, 81; Gibson 2007). There are numerous examples of cists in both Devon and Cornwall, many of which have substantial capstones (Baring-Gould 1898; Johnson and Rose 1994), as for example can be seen covering the cist at Merrivale on Dartmoor (Pettit 1995, 111). However, the ‘megalithic’ scale of stones forming the monument at Bosporthennis is more difficult to parallel locally. Elsewhere along the Atlantic façade large cists are found; for example, the poorly dated prehistoric cist at Ville-ès-Nouaux on Jersey, is set within a circular kerb-defined mound (Patton 1987, 69). In Ireland, the Middle Neolithic Linkardstown-type tombs feature large megalithic central cists comprised of substantial stones which are set in mounds or cairns (for example, Cooney 2000, 97–9), but there are no similar Middle Neolithic monuments of the type in the south west, and one would be exceptional in Penwith.

The evidence from across Britain and Ireland places the majority of cists in the Beaker-using and Early Bronze Age periods (for example, Savory 1972; Carlin and Brück 2012; Jones 2016). In Penwith the earliest cists also appear to be associated with Beakers and they continue to be constructed throughout the Early Bronze Age (Jones and Quinnell 2006; Jones 2016). The interpretation of Bosporthennis Quoit as a large cist is certainly a plausible explanation; however, the potential entrance identified on the northern side of the monument in Trench 1 allows another possibility.

The second millennium cal BC offers another form of monument which has similarities with the results from the excavations. In Penwith there is a small group of chambered tombs known as entrance graves, which are related to a larger group of small, later megalithic sites that are found

around the western fringes of the Atlantic façade (Jones and Thomas 2010). Most entrance graves are found in Scilly (Thomas 1985; Sawyer 2015) but around a dozen examples are known in Penwith (Jones 2016).

These sites consist of an oval or circular, usually kerbed, mound or cairn. There is a considerable variety in size, ranging from Tolcreeg (Gulval), which measured up to 16m in diameter (Pool 1964), down to Bosiliack (Madron) which has a diameter of only 5m. The mound at Bosporthennis therefore slots comfortably within the size range of other Penwith entrance graves and is not dissimilar in size to Bosiliack, Brane (Sancreed) or Treen (Zennor) (Jones and Thomas 2010). Unlike Neolithic passage tombs, there is no attempt to demarcate the passage from the chamber. The passage opens directly from the kerb and the chamber is undifferentiated and covered by flat laid granite slabs.

The potential northern entrance at Bosporthennis is not as well defined as the definite examples; however, the 0.6m width, though unusually narrow, is comparable with Bosiliack. The infilling deposits here indicate that there may have been a chamber, and the radiocarbon determination 1245 ± 35 BP, cal AD 678–878 (SUERC-30808) suggests that it became blocked during the earlier medieval period, presumably through agricultural activity, such as ploughing close to the monument. In this interpretation, the large southern slab would mark the southern end of the chamber and the eastern uprights would be stones displaced from the chamber. There has been considerable disturbance to the site, which may have resulted in both the loss of larger kerb stones from around the mound and the potential entrance, as well as the trimming of one stone for use as a millstone and, potentially, the removal of other capstones. The exact form of the chamber is therefore difficult to ascertain, and only excavation of the stone sockets would reveal a precise plan.

Where diagnostic artefacts have been recorded from entrance graves, these have consistently been found to be of Bronze Age date, with Trevisker pottery being the most commonly found ceramic (Jones and Thomas 2010). The artefacts from Bosporthennis were not adequately described (Borlase 1872, 69) to allow any judgement as to their date; although it is possible that the globular ceramic vessel could be of Bronze Age date, it could also be much later. However, the record of

a cremation burial being found within the chamber at Bosporthennis is consistent with entrance graves (Jones and Thomas 2010), as many sites, such as Tregaseal (St Just) and Tregiffian (St Buryan) (Borlase 1885; ApSimon 1973), have been found to contain cremated human remains. Radiocarbon dating on cremated bone from Bosiliack and from the charcoal associated with a Collared Urn from Tregiffian places entrance grave use in the first half of the second millennium cal BC (Jones and Thomas 2010).

The setting of the site may also be of significance to its interpretation. It is evident that unlike other Neolithic chambered tombs and many Early Bronze Age barrows in Penwith, Bosporthennis Quoit was not built upon a hilltop, on an elevated ridge, within a monument complex (Barnatt 1988; Jones 2011), or within the upland rough ground to the south (Dudley 2011, 65). Instead, the monument was constructed towards the upper end of a north–south valley floor, at a point where the enclosure on Carn Galva to the west, and the sea to the north became visible. This situation could have been intentional as it meant that the site occupied a space which was nested within a landscape which possessed ancestral and cosmological associations but which also overlooked a part of the landscape that was occupied and used for pasture by local communities.

Indeed, it was a niche in the landscape which is common to many of the Penwith entrance graves, including those at Mayon Cliff (Sennen), Bosiliack (Madron), Pennance (Zennor) and Brane (Sancreed) (Jones 2016), which are in lower-lying locales such as valleys or the coastal plateau beyond the granite uplands (Fig 14). These areas are likely to have been occupied and possibly enclosed during the second millennium cal BC (Herring 2008). It has been argued elsewhere that entrance graves in Penwith may have been associated with changing rights to tenure (Jones and Thomas 2010) and with the desire to establish small shrines associated with ritual activity and the burial of members of the community near to occupation areas.

Whichever form of monument, megalithic cist or entrance grave, is preferred, such sites may have helped to link local communities with the land that they inhabited and farmed at a time when rights of access to tracts of land may have been becoming less open and more contested. If this interpretation is correct, it might suggest that Bosporthennis Quoit served a small community which was located in the near vicinity. It is also possible

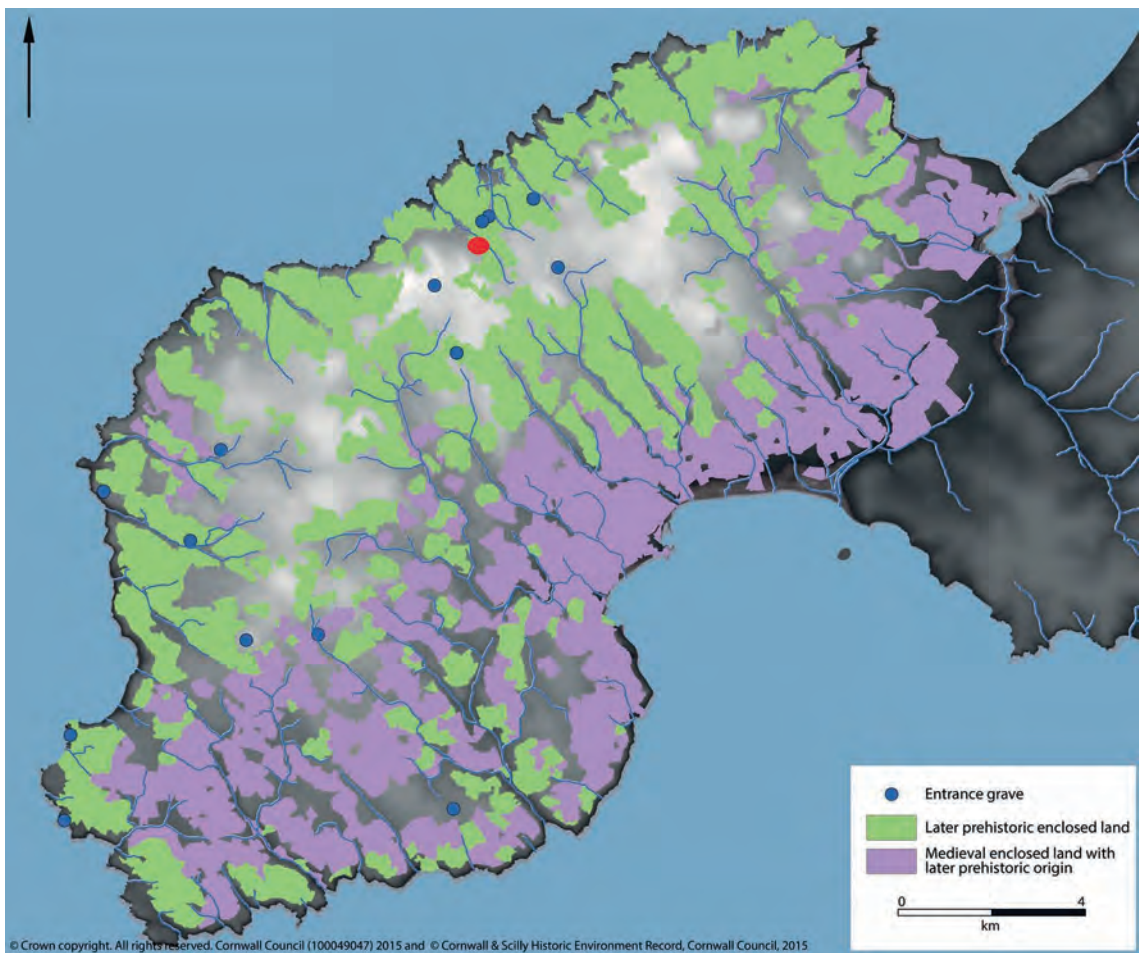


Fig 14 The locations of entrance graves in West Penwith (after Jones 2016, fig 5.25), with Bosporthennis Quoit shown in red.

that the megalithic size of the quoit may have led to it becoming the focus for other monuments, notably Bronze Age cairns. Several are found in the higher rough ground to the south, beyond the post-medieval fields, and others may have been removed from within these.

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References

- ApSimon, A, 1973. Tregiffian, *Arch Jnl*, **130**, 241–3
- Baring-Gould, S, 1898. Seventeenth report of the barrow committee. *Trans Devonshire Assoc*, **30**, 77–9
- Barnatt, J, 1982. *Prehistoric Cornwall: the ceremonial monuments*, Wellingborough
- Barnatt, J, 1998. Monuments in the landscape: thoughts from the Peak, in A Gibson and D Simpson, eds, *Prehistoric religion and ritual*, Stroud, 92–105
- Benson, D, and Whittle, A, 2007. *Building memories: the Neolithic Cotswold long barrow at Ascott-under-Wychwood, Oxfordshire*, Oxford
- Blackman, T, 2011. From pseudo-quoit to propped stones, in S, Pearce, ed, *The archaeology of South Western Britain: recent research; papers in honour of Henrietta Quinnell*, Brit Arch Repts, Brit Ser, **548**, Oxford, 41–8
- Blight, J T, 1862. *List of antiquities in the hundreds of Kirrier and Penwith, west Cornwall*, Truro
- Borlase, W C, 1872. *Naenia Cornubiae, a descriptive essay illustrative of the sepulchres and funereal customs of the early inhabitants of the county of Cornwall*, London
- Borlase, W C, 1885. Typical specimens of Cornish barrows, *Archaeologia*, **49**, 185–98
- Bottrell, W, 1870. *Traditions and hearthside stories of west Cornwall*, 1st ser, Penzance
- Bradley, R, 1998. Ruined buildings, ruined stones: enclosures, tombs and natural places in the Neolithic of south-west England, *World Archaeol*, **30**, 13–22
- Britnell, W, 1982. The excavation of two round barrows at Trelystan, Powys, *Proc Prehist Soc*, **48**, 133–202
- Carlin, N, and Brück, J, 2012. Searching for the Chalcolithic: continuity and change in the Irish Final Neolithic / Early Bronze Age, in M J Allen, J Gardiner and A Sheridan, eds, *Is there a British Chalcolithic? People, place and polity in the late 3rd millennium*, Oxford, 281–97
- Clough, T H McK, and Cummins, W A, 1988. *Stone axe studies, volume 2*, London
- Cole, R, and Jones, A M, 2002–3. Journeys to the Rock; archaeological investigations at Tregarrick Farm, Roche, Cornwall, *Cornish Archaeol*, **41–42**, 107–43
- Cooney, G, 2000. *Landscapes of Neolithic Ireland*, London
- Cooney, G, and Grogan, E, 1999. *Irish prehistory: a social perspective*, Dublin
- Daniel, G, 1950. *The prehistoric chamber tombs of England and Wales*, Cambridge
- Darvill, T, 1996. Neolithic houses in England, Wales and the Isle of Man, in T Darvill and J Thomas, eds, *Neolithic houses in northwest Europe and beyond*, Oxford, 77–112
- Darvill, T, and Wainwright, G, 2016. Neolithic and Bronze Age Pembrokeshire, in *Pembrokeshire County History, Volume 1: Prehistoric, Roman and early medieval Pembrokeshire*, Havorfordwest, 55–222
- Davies, S R, 2010. The Early Neolithic tor enclosures of southwest Britain, unpublished PhD thesis, University of Birmingham
- Dudley, P, 2011. *Goon, hal, cliff and croft: the archaeology and landscape history of Cornwall's rough ground*, Truro (Cornwall Council)
- Edmonds, R, 1848. On the cromlechs near Penzance, *Trans Penzance Nat Hist and Ant Soc*, **1**, 195–202
- Figgis, N P, 2001. *Prehistoric Preseli, a field guide*, Machynlieth
- Fowler, C, 2004. *The archaeology of personhood: an anthropological approach*, London
- Gibson, A, 2007. A Beaker veneer, in M Larsson and M Parker Pearson, eds, *From Stonehenge to the Baltic: living with cultural diversity in the third millennium BC*, Brit Arch Repts, Int Ser, **1692**, Oxford, 47–64
- Gibson, A, 2019. *The Bell Beaker settlement of Europe: the Bell Beaker phenomenon from a domestic perspective*, Oxford
- Gordon, A S R, 1941. The excavation of Gurnard's Head, an Iron Age cliff castle in western Cornwall, *Arch Jnl*, **97**, 96–111
- Healy, F, 1985. And to Cornwall, *Lithics*, **5**, 18–20
- Herring, P, 1987. *Bosigran, Zennor 2, West Penwith, Cornwall*, Truro (Cornwall Archaeological Unit)
- Herring, P, 1999. *Trencrom, Lelant, historical and archaeological assessment*, Truro (Cornwall Archaeological Unit)
- Herring, P, 2008. Commons, communities and fields in prehistoric Cornwall, in A Chadwick, ed, *Recent approaches to the archaeology of land allotment*, Brit Arch Repts, Int Ser, **1875**, Oxford, 70–95
- Herring 2016a. Introduction to West Penwith's historic landscape, in Herring *et al* 2016, 10–24
- Herring, P, 2016b. Bosigran and Bosporthenis – a case study, in Herring *et al* 2016, 78–111
- Herring, P, 2016c. A tomb for the living: Grumbra cromlech, the Giant's Chair, Sancreed, *Cornish Archaeol*, **55**, 119–33
- Herring, P, Johnson, N, Jones, A M, Nowakowski, J, Sharpe, A, and Young, A, 2016. *Archaeology and landscape at the Land's End, Cornwall: the West Penwith Surveys 1980–2010*, Truro (Cornwall Council)
- Hunt, R, 1865. *Popular romances of the west of England*, London (2 vols)

- Johnson, N and Rose, P, 1994. *Bodmin Moor: an archaeological survey. Volume 1: the human landscape to c 1800*, London (English Heritage)
- Jones A, 2010. Burning matters: memory violence and monumentality in the British Neolithic, in K T Lillios and V Tsamis, eds, *Material mnemonics, everyday memory in prehistoric Europe*, Oxford, 85–102
- Jones, A M, 2004–5. Settlement and ceremony; archaeological investigations at Stannon Down, St Breward, Cornwall, *Cornish Archaeol*, **43–4**, 1–141
- Jones, A M, 2005. *Cornish Bronze Age ceremonial landscapes, c 2500–1500 BC*, Brit Arch Repts, Brit Ser, **394**, Oxford
- Jones, A M, 2009–10. Excavation of a barrow on Constantine Island, St Merryn, Cornwall, *Cornish Archaeol*, **48–9**, 67–98
- Jones, A M, 2011. The Botrea barrow group: regional identity in Early Bronze Age Cornwall, in A M Jones and G Kirkham, eds, *Beyond the core: reflections on regionality in prehistory*, Oxford, 75–86
- Jones, A M, 2016. Early landscape and ceremony, in Herring *et al* 2016, 112–37
- Jones, A M, and Quinnell, H, 2006. Cornish Beakers: new discoveries and perspectives. *Cornish Archaeol*, **45**, 31–70
- Jones, A M, Quinnell, H, and Taylor, R T, 2017. Cornish axe groupings, not Cornish axe factories: new work on the sourcing of Neolithic stone axes in Cornwall, in R Shaffrey, ed, *Written in stone: papers on the function, form, and provenancing of prehistoric stone objects in memory of Fiona Roe*, Southampton, 35–53
- Jones, A M, Taylor, S R, and Sturgess, J, 2012. A Beaker associated structure and other discoveries along the Sennen to Porthcurno SWW pipeline, *Cornish Archaeol*, **51**, 1–67
- Jones, A M, and Thomas, A C, 2010. Bosiliack and a reconsideration of entrance graves, *Proc Prehist Soc*, **76**, 271–96
- Kirkham, G, 2011a. Something different at the Land's End, in A M Jones and G Kirkham, eds, *Beyond the core: reflections on regionality in prehistory*, Oxford, 101–12
- Kirkham, G, 2011b. *Managing the historic environment on west Cornwall's rough ground*, Truro (English Heritage and Cornwall Council)
- Kytmanow, T, 2008. Portal tombs in the landscape, the chronology, morphology and landscape setting of the portal tombs of Ireland, Wales and Cornwall, Brit Arch Repts, Brit Ser, **455**, Oxford
- Lawson-Jones, A, 2011. Discoveries along the North Land's End pipeline, *Cornish Archaeol*, **52**, 197–222
- Markham, M, 2000. Provenance studies of British prehistoric greenstone implements using non-destructive analytical methods, unpublished PhD Thesis, Open University
- Mercer, R, 1981. Excavations at Carn Brea, Illogan Cornwall: a Neolithic fortified complex of the third millennium bc, *Cornish Archaeol*, **20**, 1–204
- Mercer, R, 1997. The excavation of a Neolithic enclosure complex at Helman Tor, Lostwithiel, Cornwall, *Cornish Archaeol*, **36**, 5–63
- Miles, H, 1975. Barrows on the St Austell Granite, *Cornish Archaeol*, **14**, 5–81
- Newberry, J, 2002. Inland flint in prehistoric Devon: sources, tool-making quality and use, *Proc Devon Archaeol Soc*, **60**, 1–36
- Nowakowski, J, 1987. *Bosporthennis, West Penwith, Cornwall*, Truro (Cornwall Archaeological Unit)
- Oswald, A, Dyer, C, and Barber, M, 2001. *The creation of monuments, Neolithic enclosures in the British Isles*, Swindon
- Patton, M, 1987. *Jersey in prehistory*, La Haule
- Pettit, P, 1995. *Prehistoric Dartmoor*, Exeter
- Pool, P A S, 1964. Tolcreeg barrow, Gulval, *Cornish Archaeol*, **3**, 105–7
- Preston-Jones, A, 2004–5. Nine Maidens stone circle, *Archaeology Alive*, **13**, 32
- Rogers, W, 1923. The shingles and sands of Cornwall. *Royal Cornwall Polytechnic Society*, **5**, 45–50
- Savory, H N 1972. Copper Age cists and cist-cairns in Wales: with special reference to Newton, Swansea, and other 'multiple-cist cairns', in F Lynch and C Burgess, eds, *Prehistoric man in Wales and the west: essays in honour of Lily F Chitty*, Bath, 117–40
- Sawyer, K, 2015. *Isles of the Dead? The setting and function of the Bronze Age chambered cairns and cists of the Isles of Scilly*, Oxford
- Shepherd, C, 2017. A note on the Leskernick propped stone, *Cornish Archaeol*, **56**, 199–202
- Sheridan, A, and Schulting, R, 2008. Re-visiting a small passage tomb at Broadlands, Devon, *Proc Devon Archaeol Soc*, **66**, 1–26
- Thomas, A C, 1955. Wayside Museum, Zennor, register of stone implements, unpublished catalogue
- Thomas, A C, 1985. *Exploration of a drowned landscape*, London
- Thomas, A C, and Wailes, B, 1967. Sperris Quoit; the excavation of a new Penwith chamber tomb, *Cornish Archaeol*, **6**, 9–23
- Tilley, C, 1995. Rocks as resources: landscapes and power, *Cornish Archaeol*, **34**, 5–57
- Tilley, C, and Bennett, W, 2001. An archaeology of supernatural places: the case of west Penwith, *Journal Royal Anthropological Institute*, **7**, 335–62
- Tingle, M, 1998. *The prehistory of Beer Head: field survey and excavations at an isolated flint source on the South Devon coast*, Brit Arch Repts, Brit Ser, **270**, Oxford
- Weatherhill, C, 1981. *Belerion: ancient sites of Lands End*, Truro
- Whittle, A, Bayliss, A, Healy, F, Mercer, R, Jones, A M, and Todd, M, 2011. The south-west peninsula, in A Whittle, F Healy and A Bayliss, eds, *Gathering time, dating the Early Neolithic enclosures of southern Britain and Ireland*, Oxford, 476–509

A prehistoric pit at Helston, Cornwall

BOB CLARKE

with contributions by PHIL HARDING, INÉS LÓPEZ-DÓRIGA and GRACE JONES

A geophysical survey in advance of development at Helston Business Park, Helston, identified a number of possible features and further investigations were undertaken (a strip, map and record and watching brief). An area of approximately 0.3 hectares was investigated; a single archaeological feature, a pit, was revealed. The pit contained two fills; two undiagnostic sherds of gabbroic pottery came from the upper layer, while a flint core of Neolithic date was recovered from the lower fill. Environmental material was recovered from both fills on which radiocarbon dates were obtained. The flint core is of such superior quality that it may have been intentionally deposited in the pit.

In 2016 Wessex Archaeology carried out geophysical survey, strip, map and record and a watching brief on land at Helston Business Park, Helston, centred on NGR SW 67029 27352, in advance of building construction. The site comprises a sub-rectangular piece of land located on the eastern edge of the town of Helston, adjacent to the A394.

The site is located on an eastward-facing slope within a small valley formed on a tributary of the Helford River. The area under investigation falls from 63m OD in the west to 57m OD in the south east. The underlying geology is Devonian slate and siltstone of the Mylor Slate Formation (British Geological Survey online viewer).

Archaeological background

Work in 2009, in advance of the construction of the hotel currently located on the site, discovered pits dating to the Early and Middle Neolithic, a posthole and a series of field boundaries ascribed to the medieval and post-medieval periods (Foundations Archaeology 2009). The pits were dispersed. One contained 11 sherds of pottery, probably from two bowls. The posthole contained

15 sherds of Fengate Ware pottery, possibly from three vessels, together with 11 worked flints and a possible whetstone (*ibid*). In January 2016 a detailed gradiometer survey was carried out by Wessex Archaeology (2016). This was confined to a small arable field (0.32 ha), immediately to the north east of the hotel and car park. A number of anomalies of archaeological potential were noted.

Archaeological interpretation

In light of the geophysical results, a strip, map and sample exercise was undertaken within the north-eastern part of the site. Within this area only one archaeological feature was uncovered, pit [102] (Fig 1). Pit [102] was 100 per cent investigated. It was sub-oval in plan, measuring 1.36m long by 0.90m wide by 0.94m deep, with a longitudinal axis aligned north west to south east. The sides were straight and steep with a relatively flat base. The feature contained two deposits, both of which produced artefacts. The upper deposit (103) comprised a mid-reddish-brown silty clay with abundant, angular nodules of quartz (<0.3m), well sorted, interspersed with small fragments of slate. Two sherds of pottery were recovered from this

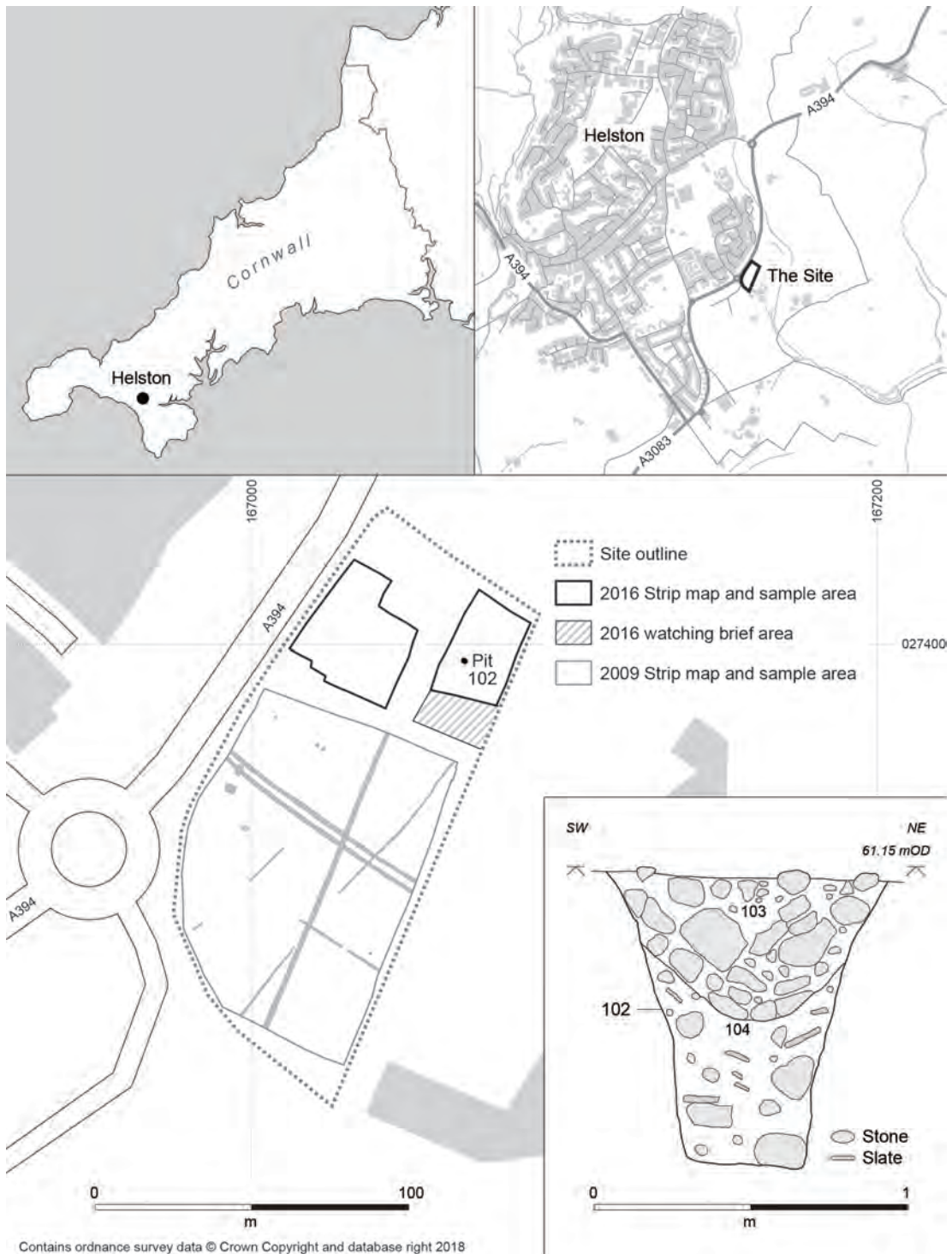


Fig 1 Site location. (Drawing: Rob Goller.)

matrix. The lower deposit (104) comprised a mid-to dark reddish-brown silty clay with common large (<0.3m) poorly sorted angular to sub-angular quartz pieces, and small and medium slabs of angular slate. The poorly sorted nature of this deposit suggests a single event, probably deliberate backfilling. A flint blade core was recovered from this context (Fig 2).

Finds

Flint

Phil Harding

A single-platform core weighing 180g that had been prepared to produce both flake and blade blanks was recovered from the lower fill (104) of the pit. All aspects of core preparation are represented, with minor faceting to modify the flaking angle and platform abrasion to prepare the flaking face (Fig 2). The nodule comprised good quality black flint grading to grey and was almost certainly from Beer Head, near Seaton, Devon. This is the most westerly source of good quality raw material in Britain.

The technology and core control, combined with the proximity of this feature to other similar features from the immediate vicinity (Foundations Archaeology 2009), suggests that the core is probably of Neolithic date. The previous excavations produced worked flints from a Middle Neolithic feature [1024] although an Early Neolithic pit [1-12] was also recorded. The small collection from the Middle Neolithic posthole or pit contained broad flakes that were made from beach flint described as ‘poor quality’ (Lamdin-Whymark 2009). Platform abrasion was absent. These contrasting features make the core from the present site of particular interest. It is surprising that such a potentially valued source of raw material was rejected, which raises the possibility that it was buried intentionally.

Pottery

Grace Jones

Two abraded sherds of pottery, weighing 9g, were recovered from the upper fill of pit [102]. Both are body sherds in a gabbroic fabric, made from the clays that are produced through the breakdown

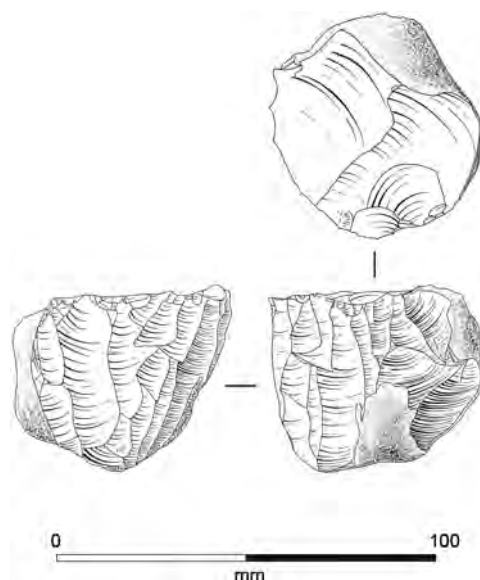


Fig 2 The single-platform core from lower fill (104). (Drawing: Rob Goller.)

of gabbroic rocks, the outcrops of which are geographically distinct, occurring predominantly on the Lizard Peninsula of Cornwall (Harrad 2004a–b). This clay source was exploited for pottery production from the Early Neolithic through to the medieval period (Peacock 1988, 302). The sherds are 8 mm thick and have no diagnostic features; they cannot be closely dated. Gabbroic pottery has also been identified from the nearby site of Tresprison, including material of Early Neolithic, Iron Age – Roman and medieval date (Quinnell 2009, appendix 2).

Archaeobotanical evidence

Inés López-Dóriga

Two bulk sediment samples of 13 and 4.5 litres, taken from the two deposits of the pit, were processed for the recovery and assessment of environmental evidence by standard flotation methods, with the flot retained on a 0.5mm mesh and residues on a 1mm mesh. The coarse fractions of the residues (>5.6mm) were sorted with the naked eye, the flots and the finer fractions of the residues were scanned under a x10 – x40 stereobinocular microscope. A small assemblage of poorly preserved charred plant remains was

recovered. Low numbers of roots and modern seeds, indicative of stratigraphic movement, were noted in both samples. The plant remains included a cereal grain, possibly wheat (Triticeae, *cf Triticum* sp.), three small (<4 mm²) and worn fragments of hazelnut (*Corylus avellana*) shell, a seed from a wild grass (Poaceae), a few indeterminate underground organs or seed fragments and a small amount of mature and branch wood charcoal.

Radiocarbon dating of some of these short-lived plant remains (hazelnut shell fragments and cereal grain) was undertaken to verify the chronology of the deposit and the potential for evidence of early farming. The samples were submitted to the ¹⁴CHRONO Centre, Queen's University, Belfast, and SUERC at the University of Glasgow. The dates (Table 1) were calculated using the IntCal13 calibration curve (Reimer *et al.* 2013) and the computer program OxCal (v4.2.3) (Bronk Ramsey and Lee 2013) and are cited at 95.4 per cent confidence.

The results indicate the existence of prehistoric plant processing activity in the area, although this is dated to the Middle Bronze Age (UBA-36414, 1430–1280 cal BC), and the intrusion of late medieval or post-medieval cereal grains (UBA-36413, cal AD 1490–1644). However, it is likely that all the charred plant material was intrusive, since the hazelnut fragments were very small and poorly preserved and might have been displaced by worms (Canti 2003). A second attempt to obtain a radiocarbon date on the nutshell fragments failed due to insufficient carbon. Hazelnut shell fragments are possibly the most ubiquitous piece of archaeobotanical evidence of plant exploitation activities in prehistoric periods (for example, Jones 2000) and other almost-pure hazelnut shell assemblages have previously been discovered in Helston (Smith 2009).

Obtaining direct radiocarbon dates on an assemblage of charred plant remains of presumed

Neolithic chronology is highly relevant. Very little archaeobotanical evidence, specifically of cultivated cereal and especially securely dated by radiocarbon dating (*cf* Waterbolk 1971), is known from Neolithic contexts in Cornwall (Jones and Quinnell 2011, 199). Due to their morphology and small size, cereal remains are particularly prone to post-depositional displacement, demonstrated to be intrusive in otherwise apparently undisturbed deposits only through direct radiocarbon dating (Pelling *et al.* 2015). Examples of instances where direct radiocarbon dating of unsuspectedly intrusive grains has invalidated initial assumptions about Neolithic agriculture are plentiful from around Europe (for example, Motuzaite Matuzeviciute *et al.* 2013; Tereso *et al.* 2013; Rojo-Guerra *et al.* 2018) and also exist in this particular region (for example, Helbaek 1952; Smith 1971). Early prehistoric deposits with cereal assemblages are known in the region but their authenticity (that is, non-intrusive character) often remains unverified through direct single grain radiocarbon dating (for example, undated cereals at an Early Bronze Age pit at Trenoweth (Carruthers 2006); a mixture of cereals and other remains were dated at an Early Neolithic pit in Portscatho (Jones 2006). As a consequence, only one cereal date – obtained on four grains (an emmer grain (*Triticum cf dicoccum*) and three indeterminate wheat grains (*Triticum* sp.) – from a pit at Penhale round (Jones 2006, 14) was securely dated to the Early Neolithic in the latest general review of the evidence for causewayed enclosures (Whittle *et al.* 2011, I, 516, table 10.5), constituting the earliest published date for cereal remains in Cornwall. The sparsity of cereal grains in sites from early farming societies has led to hypotheses about the failure of early agriculture (for example, Stevens and Fuller 2012).

Table 1 Radiocarbon dating results

Lab ref	Sample reference	Material	Date BP	Calibration (2 sig. 95.4%)
UBA-36413	112121 [102] (103) <1>	Charred plant material: <i>cf Triticum</i> sp. grain	319 ±25	cal AD 1490–1644
UBA-36414	112121 [102] (104) <2>	Charred plant material <i>Corylus avellana</i> shell fragment	3092 ±28	1430–1280 cal BC
GU46872	112121 [102] (104) <2> II	Charred plant material: <i>Corylus avellana</i> shell fragment (9mm ²)	Failed	

Discussion

Considering the current discovery in context with results from the work in 2009 (Foundations Archaeology 2009), it is clear that the area was the focus of activity in the mid- to Late Neolithic and Middle Bronze Age. The depositional profile of pit [102], investigated in 2016, suggests that the upper fill formed through a gradual accumulation of material over a period of time. This would account for the abraded nature of one of the sherds from this context and the anomalous late medieval or post-medieval radiocarbon date. The lower context appears to have been formed by one event, probably backfilling. Attempts to securely date both contexts were frustrated as the cereal grain returned a date of cal AD 1490–1644 (UBA-36413), but the hazelnut shell was dated to 1430–1280 cal BC (UBA-36414), while a second attempt with hazelnut shell failed.

The flint core recovered from the lower fill is in extremely good condition; its struck edges are very sharp, suggesting intended deposition rather than inclusion by accident, although the latter cannot be totally discounted. Moreover, the poorly sorted nature of the matrix it was discovered in adds weight to the theory that the flint may have been intentionally placed in the feature.

Acknowledgements

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It is hoped that the archive will eventually be deposited with the Royal Cornwall Museum, but the museum is not currently accepting archives. The archive is currently stored at Wessex Archaeology under project number 112121: Premier Inn, Helston, Cornwall.

References

- British Geological Survey online viewer [online] Available at <http://mapapps.bgs.ac.uk/geology/obtain/home.html> [accessed 24/04/2018]
- Bronk Ramsey, C, and Lee, S, 2013. Recent and planned developments of the Program OxCal, *Radiocarbon*, **55**(2–3), 720–30
- Canti, M G, 2003. Earthworm activity and archaeological stratigraphy: a review of products and processes, *J Archaeol Sci*, **30**, 135–48
- Carruthers, W, 2006. Charred plant remains, 87–90, in A Reynolds, An Early Bronze Age pit at Trenoweth, Portreath, and other results from the Reskadinnick to Portreath transfer pipeline, *Cornish Archaeol*, **45**, 71–95
- Foundations Archaeology 2009. Land adjacent to Tresprison, Helston, Cornwall, archaeological strip, map and sample post-excavation assessment, unpublished client report, Foundations Archaeology report no 628
- Harrad, L, 2004a. The production and trade of prehistoric ceramics in Cornwall, unpublished D Phil thesis, University of Oxford
- Harrad, L, 2004b. Gabbroic clay sources in Cornwall: a petrographic study of prehistoric pottery and clay samples, *Oxford J Archaeol*, **23**(3), 271–86
- Helbaek, H, 1952. Early crops in southern England, *Proc Prehist Soc*, **18**(2), 194–233
- Jones, A M, and Quinnell, H, 2011. The Neolithic and Bronze Age in Cornwall, c 4000 cal BC to c 1000 cal BC: an overview of recent developments, *Cornish Archaeol*, **50**, 197–229
- Jones, G, 2000. Evaluating the importance of cultivation and collecting in Neolithic Britain, in A Fairbairn, ed, *Plants in Neolithic Britain and beyond*, Oxford, 79–84
- Jones, J, 2006. Charred plant remains, 14–15, in A M Jones and S J Reed, By land, sea and air, an Early Neolithic pit group at Portscatho, Cornwall, and consideration of coastal activity during the Neolithic, *Cornish Archaeol*, **45**, 1–30
- Lamdin-Whymark, H, 2009. Appendix 3: The struck lithics, raw material and condition, in Foundations Archaeology 2009
- Motuzaitė Matuzevičiūtė, G, Staff, R A., Hunt, H V, Liu, X, and Jones, M K, 2013. The early chronology of broomcorn millet (*Panicum miliaceum*) in Europe, *Antiquity* **87**(338), 1073–85

- Peacock, D P S, 1988. The gabbroic pottery of Cornwall, *Antiquity*, **62**, 302–4
- Pelling, R, Campbell, G, Carruthers, W, Hunter, K, and Marshall, P, 2015. Exploring contamination (intrusion and residuality) in the archaeobotanical record: case studies from central and southern England, *Vegetation history and archaeobotany*, **24**, 85–99
- Quinnell, H 2009. The pottery, in Foundations Archaeology 2009
- Reimer, P J, Bard, E, Bayliss, A, Beck, J W, Blackwell, P G, Bronk Ramsey, C, Buck, C E, Cheng, H, Edwards, R L, Friedrich, M, Grootes, P M, Guilderson, T P; Haflidason, H, Hajdas, I, Hatté, Heaton, T J, Hoffmann, D L, Hogg, A G, Hughen, K A, Kaiser, K F, Kromer, B, Manning, S W, Nui, M, Reimer, R W, Richards, D A, Scott, E M, Southon, J R, Staff, R A, Turney, C S M, and van der Plicht, J, 2013. IntCal13 and Marine 13 Calibration Curves, 0–50,000 Years cal BP, *Radiocarbon*, **55** (4), 1869–87
- Royo-Guerra, M A, García-Martínez de Lagrán, I, Rojo-Guillén, J I, 2018. The beginning of the Neolithic in the mid-Ebro valley and in Iberia's inland (northern and southern submeseta), Spain, *Quaternary International*, **470**, B, 398–438
- Smith, I F, 1971. Causewayed enclosures, in D D A Simpson, ed, *Economy and settlement in Neolithic and Early Bronze Age Britain and Europe*, Leicester, 89–112
- Smith, W, 2009. Appendix 5 – The charred plant macrofossils, in Foundations Archaeology 2009.
- Stevens, C J, and Fuller, D Q, 2012. Did Neolithic farming fail? The case for a Bronze Age agricultural revolution in the British Isles, *Antiquity*, **86**, 707–22
- Tereso, J P, Ramil-Rego, P, and da-Silva, R A, 2013. Roman agriculture in the *conventus Bracaraugustanus* (NW Iberia), *J Archaeol Sci*, **40**(6), 2848–58
- Waterbolk, H T 1971. Working with radiocarbon dates, *Proc Prehist Soc*, **37**, 15–33
- Wessex Archaeology 2016. Premier Inn, Helston Business Park, Helston, Cornwall: detailed gradiometer survey report (unpublished client report, ref 112120.04)
- Whittle, A, Bayliss, A, Healy, F, Mercer, R, Jones, A M, and Todd, M, 2011. The south-west peninsula, in A Whittle, F Healy, A Bayliss, eds, *Gathering time: dating the Early Neolithic enclosures of southern Britain and Ireland*, Oxford, 476–520 (2 vols)

Castle-an-Dinas, St Columb, Cornwall: investigating the 1962–1964 excavation archive

ANDY M JONES

with contributions from DANA CHALLINOR, ANNA LAWSON-JONES and HENRIETTA QUINNELL

Castle-an-Dinas is one of the largest and most impressive hillforts in Cornwall, situated on a visually distinctive hill with extensive views over the surrounding countryside. Excavations were undertaken over three seasons by Bernard Wailes in the 1960s but the results were never fully published. Since the 1990s the hillfort has been managed by the Cornwall Heritage Trust and following the return of the excavation archives to Cornwall the Trust commissioned work on the archive and preparation of a publication.

As part of the project a selection of the archive drawings have been redrawn for publication and the surviving finds and samples analysed. Six radiocarbon determinations were obtained, of which two are medieval or later. Three fall in the Middle Iron Age, one of which could extend back into the Early Iron Age, and a fourth indicates the Late Iron Age. These dates are significant because they provide the first scientific dating from the hillfort and, aside from Killibury, are the only secure radiocarbon dates associated with a Cornish hillfort.

This paper does not constitute an excavation report, rather an appraisal of the surviving project archive.

Castle-an-Dinas (St Columb Major) is a roughly circular multivallate Iron Age hillfort in mid-Cornwall (centred on NGR SW 9455 6237) (Fig 21). It has four concentric circuits of ramparts enclosing an area of approximately 5.5 ha, with an original entrance to the south west (Fig 1). Despite not being situated in a particularly elevated position (210–215m OD), the hill that it is set upon is isolated and of a distinctive low domed shape, which is visually dominant from lower-lying land to the west and north, and especially from Goss Moor to the south. It also has good views in all directions (Fox 1958), which gives it the impression of being more elevated than it really is.

The underlying bedrock is mostly composed of the grey slates of the Lower Devonian Meadfoot Beds with an outcrop of granite on the north-west side of the hill (Brooks 2001, 97).

As Hencken noted (1932, 128), Castle-an-Dinas is not far from the rich tin deposits of the Luxulyan and Roche area to the south and it lies between them and Harlyn Bay to the north, which is likely to have been a significant landing place in the Bronze and Iron Age (Jones and Quinnell 2014, 125). The hill was clearly significant in the Early Bronze Age as one or probably two round barrows, now Scheduled with the hillfort (National Heritage List for England 1006713; formerly CO93), were constructed upon its summit long before the upstanding earthworks were constructed

in the Iron Age. One of the barrows was excavated in 1870 by W C Borlase, who only found two pits beneath it (Bishop 2011), and excavation in the area in the 1960s led Professor Bernard Wailes to conclude that it was soil from later industrial-related activity on the hill (Wailes 1963). However, given Borlase's propensity to create spoil heaps of his own and not reinstate his trenches, it is equally likely that the spoil was in fact from his excavation. Pits below barrows with 'little in them' are known in the area (for example, Johns and Herring 1994). The hill has continued to be a significant landscape feature and a focus for folklore, having long been associated with King Arthur and 'spectral' warriors (Jenner 1921; Young 2017).

All four upstanding ramparts are simple dumps of stone and earth derived from the ditches without any trace of revetment; Wailes (1963) numbered them from one to four from the inner to the outer and this numbering has been maintained. The inner rampart (rampart 1) is the most substantial and encloses an area 150m by 140m; rampart 2 had only a slight ditch and may be a counterscarp bank to rampart 1. Rampart 3 was of a slighter character than the others, and there is a little evidence to suggest that it was the earliest to be constructed and possibly pre-dated the Iron Age. Rampart 4 is the outermost enclosure and after rampart 1 the most substantial. The hillfort also contains several later features, including a post-medieval quarry and a pond. Later disturbance to the site was caused by wolfram mining which continued into the middle of the twentieth century (Brooks 2001). Several bags of post-medieval finds, including sherds of glass and ceramics, are part of the archive, although there is no information about where they were found on the hill. Interestingly, no finds relate to the English Civil War period, when the site was occupied for two days by the Royalist army (Venning 2015, 217).

Professor Wailes surveyed the site and excavated a series of trenches between 1962 and 1964 for the University of Pennsylvania. The main excavations were carried out in June and July 1962: the long cuttings through the ramparts (Area I), most of the larger trenches within the interior (Areas II and III) and the southern section of rampart 3 (Area IV) (Wailes 1963). They were followed by much shorter seasons of two and four weeks in 1963 and 1964 respectively, largely targeted upon clarifying the results of magnetometer and phosphate analysis and excavating the rampart 3 ditch (Wailes 1964;

1965); many trenches for this are not included on the surviving plans.

Despite the relatively small scale of the excavations, Castle-an-Dinas remains the most extensively excavated hillfort in Cornwall, and only the hillforts at Killibury (Egloshayle) and Gear (St Martin-in-Meneage) have been investigated in the decades since (Miles *et al* 1977; Edwards and Kirkham 2008). It was also the site of one of the first attempts at geophysical survey, in the form of a proton magnetometer survey carried out in 1963; this technique was used to good effect in 1966 at Cadbury Castle, Somerset (Alcock 1972, 70–2). Unfortunately, the results from these investigations have never been published beyond three short interim notes in *Cornish Archaeology* which were produced by Wailes at the end of each season of excavation (Wailes 1963; 1964; 1965).

In 2004 much of the interior of the hillfort was covered by a magnetometer survey (Cripps 2004) and another was carried out in 2020 (Lewis *et al*, in preparation). Interestingly, although a few possible posthole-type anomalies were located, these surveys (as was the case with the previous survey) did not lead to the identification of any definite structures. The paucity of internal features was also reflected in the excavation trenches and contrasts with, for example, Killibury and Gear, where there is abundant evidence for internal activity (Miles *et al* 1977; Edwards and Kirkham 2008).

An MA thesis which made use of the excavation archive was completed in 2009 (Blick 2009) and in 2011 a detailed topographical survey of the hillfort was undertaken by Historic England (Bishop 2011; Soutar 2013). The later mining-related features outside the hillfort were described in 2012 (Buck and Thomas 2012). These projects have greatly helped with the development of a better understanding of the archive and with the characterisation of the earthworks and their complex histories.

The archive

The remaining portion of the Castle-an-Dinas archive returned to Cornwall in 2012 after being in the possession of Professor Bernard Wailes, the site director, since the mid-1960s. In the interim, Professor Wailes had worked for most of his life at the University of Pennsylvania, where it was

CASTLE-AN-DINAS, ST COLUMB, CORNWALL

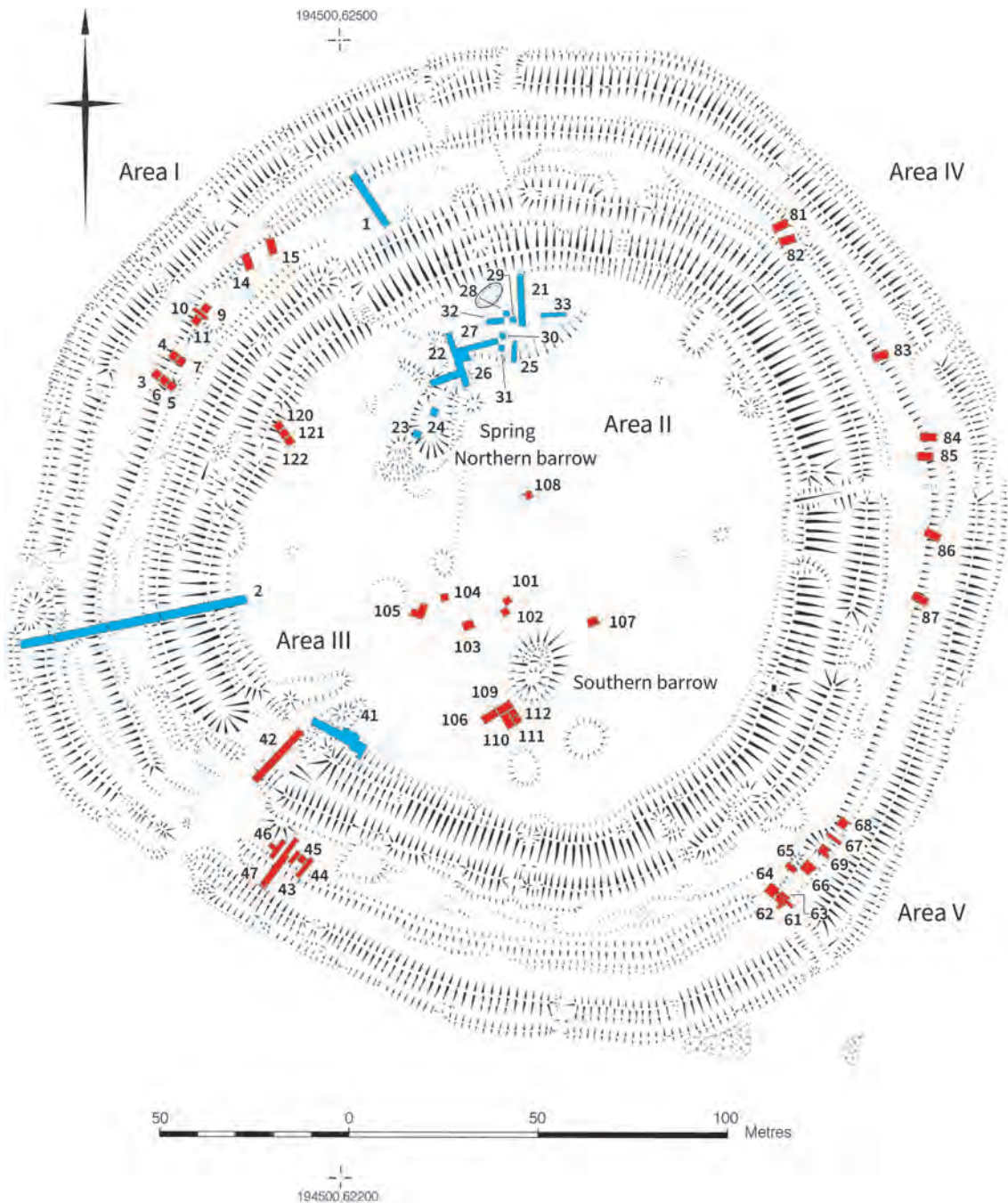


Fig 1 Plan of Castle-an-Dinas showing the location of the excavation trenches. (Blue: previously published by Wailes 1963; red indicated by the archive and Blick 2009). (Survey drawing reproduced by permission © Historic England Archive.)

assumed the archive would be located. The author became aware that Professor Wailes had retired to the United Kingdom through Nathan Blick, who completed his MA on Castle-an-Dinas in 2009. Blick had corresponded with Bernard Wailes and had obtained access to the documentary archive (Field Notebooks and Finds Register). Around this time Tony Blackman, then Chair of Cornwall Heritage Trust, which has managed Castle-an-Dinas since the 1990s, began a dialogue with Bernard Wailes about the return to Cornwall and long-term preservation of the excavation archive. Very sadly, both correspondents became ill and died in 2012, shortly before the archive was returned to Cornwall and into the care of Cornwall Heritage Trust. After initial assessment in 2012, funded by Cornwall Archaeological Society, the Trust took the view that the excavation archive was significant and part of the site.

From the outset it should be clearly stated that the site was recorded according to the practice of the early 1960s and should be judged by those standards rather than those of today (*cf* Nowakowski *et al* 2007; Nowakowski and Quinnell 2011; Evans *et al* 2016). The surviving project archive is, moreover, incomplete and the original material limited to the following: artefacts and charcoal samples from the 1964 season; some colour slide film, much of which has become discoloured; many but by no means all of the site drawings and some notes on them; details of the 1963 proton magnetometer survey and the phosphate analysis; and the 1963 Field Notebook. The two additional Field Notebooks from 1962 and 1964 were missing, but fortunately had been scanned by Nathan Blick as part of his MA thesis (2009) and copies of them were made available to Cornwall Archaeological Unit. A copy of the Finds Register was also scanned by Blick prior to its disappearance from the site archive. This scanned copy now provides the only record of the finds from 1962 and 1963, the years recorded as having produced most of the ceramics from the site. Further information about the 1960s excavations was provided by Professor Joan Taylor, who also made available scanned copies of her black and white photos for the project archive.

The drawn record, together with the interim reports (Wailes 1963; 1964; 1965), provides the most useful of the contemporary information about the excavations (Table 1). However, it is important to note that even the surviving portions of the

archive are limited and by today's standards there is very little contextual information. Site notes are brief and there are no context records in the modern sense. Much of what is known about contexts is gleaned from the site drawings, especially the section drawings; for example, 'yellow silt' marked on the rampart 1 ditch section. However, the level of detail is patchy and varies between drawings, with some having little or no contextual information at all, or terminology used which appears antiquated – 'grey muck silt', for instance – or appears unlikely given its stratigraphical position: 'dark brown humus with stones' in the middle of rampart 1, for example. Where possible, terminology has been modernised or simplified ('humus' has, for example, been relabelled as soil); however, where there is uncertainty about dubious labelling (for example, the 'old turf' on the rampart 2 section), the term is placed in inverted commas (Figs 9, 10 and 11).

There are also notable gaps in the documentation and many plans and sections are missing (Fig 1 and Table 1). Again, the level of information recorded differs significantly between the drawings, presumably reflecting the individual archaeologists who drew them. Although a few drawings have been inked over, the majority seem to have been left as they were when made in the field (Figs 2, 3 and 4).

Furthermore, only one of Wailes' interim reports (Wailes 1963) shows the locations of his cuttings and only the cuttings made in the first season, in 1962, were located on the published plan. The subsequent interims were only short notes and there are no accompanying trench location plans. Further cuttings were located by Nathan Blick (2009) and these are reproduced in his MA thesis. Additional cutting locations have been identified as part of this project; however, the exact siting and interpretation of some features within them remains uncertain, and the positioning of the newly identified cuttings (in Blick 2009 and on Fig 1) should be regarded as approximate rather than precise. It should be noted that the dates of work recorded in the Finds Register and the Field Notebooks do not always coincide. It is likely that there was rushed and less consistent recording at the end of each season.

Because of these limitations, this paper is not a conventional excavation report and does not masquerade as one. Instead, it is essentially an archaeological investigation of, and a statement upon, the surviving archive, with some comment

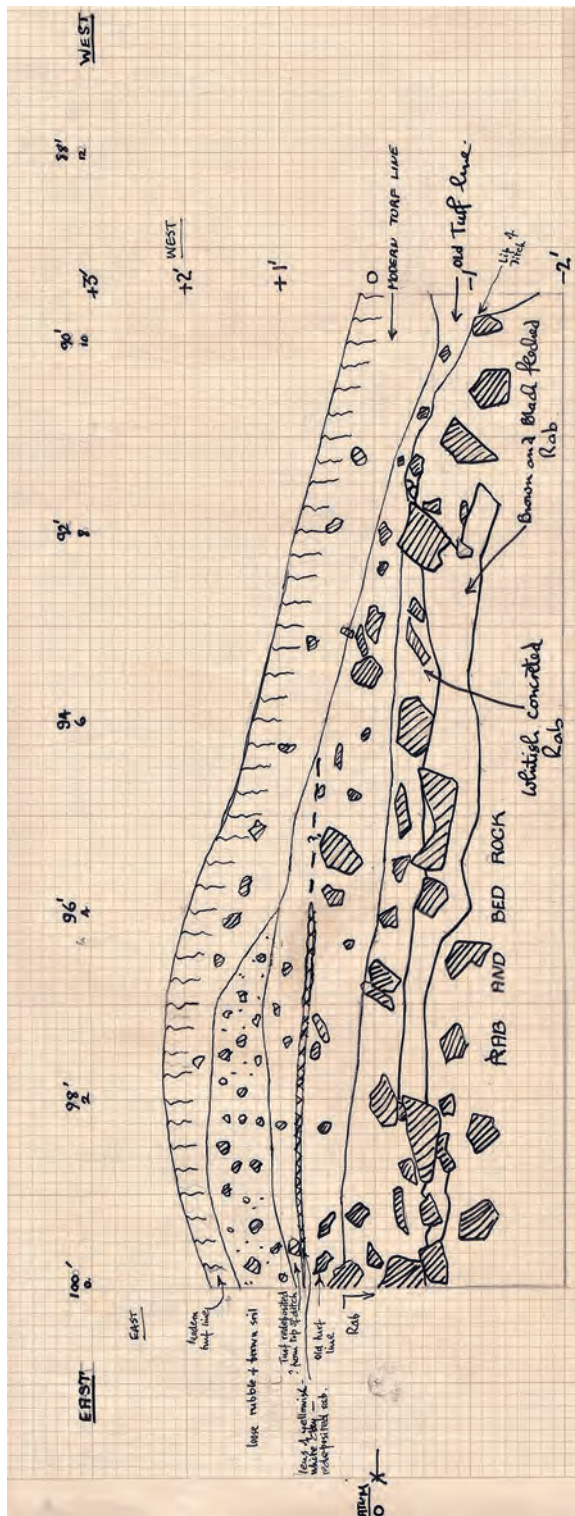


Fig 2 Archive drawing (CAD-34) showing north-facing section through rampart 2 in cutting 2 (excluding the eastern end). The drawing was annotated 'CASTLE-AN-DINAS, 1962. AREA I, Cutting 2. SECTION: - THROUGH RAMPART 2, South Face. Scale: 1" = 1', length of section drawn 10' 6". J SPECHT et G THORNE mens. et delt. 12-7-62.' The south-facing section is shown in Figure 10. (Cornwall Heritage Trust archive.)

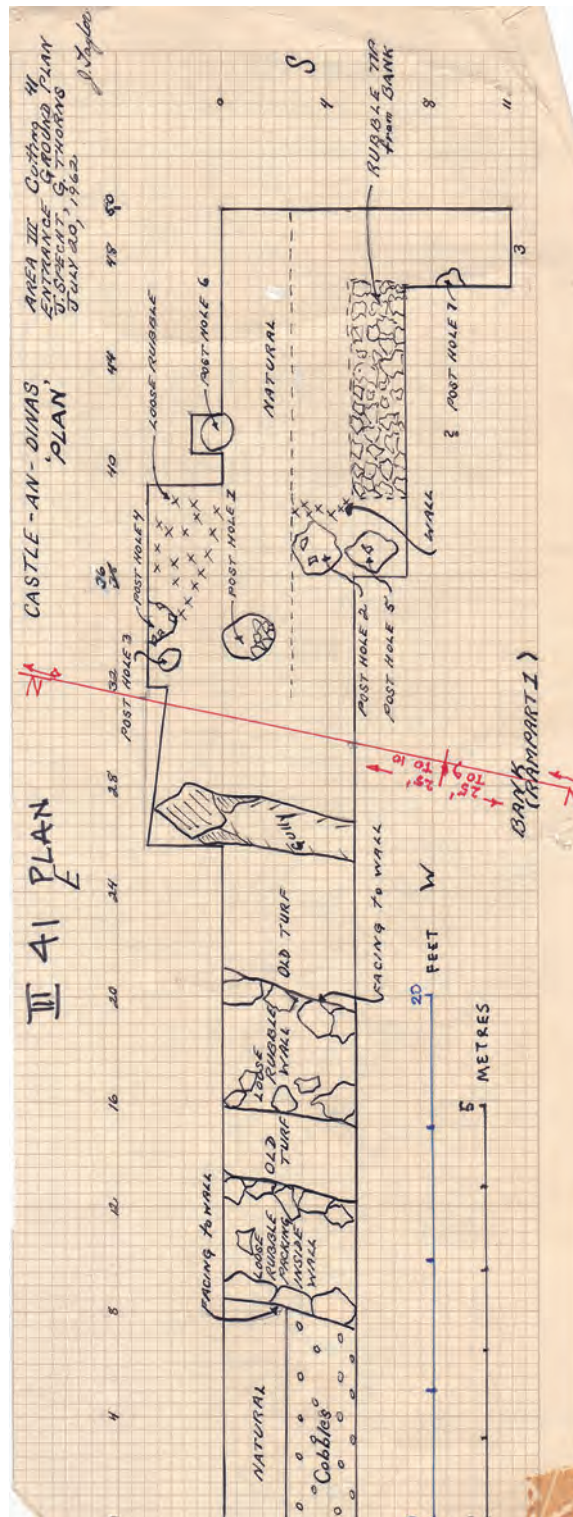


Fig 3 Archive drawing (CAD-II) showing cutting 41 in plan. This drawing has been inked over and tidied up. It shows the concentration of features adjacent to the south-west entrance into the hillfort; from left to right, cobbles in the entrance, walling defining the in-turned entrance bank and postholes of a possible structure. (Cornwall Heritage Trust archive.)

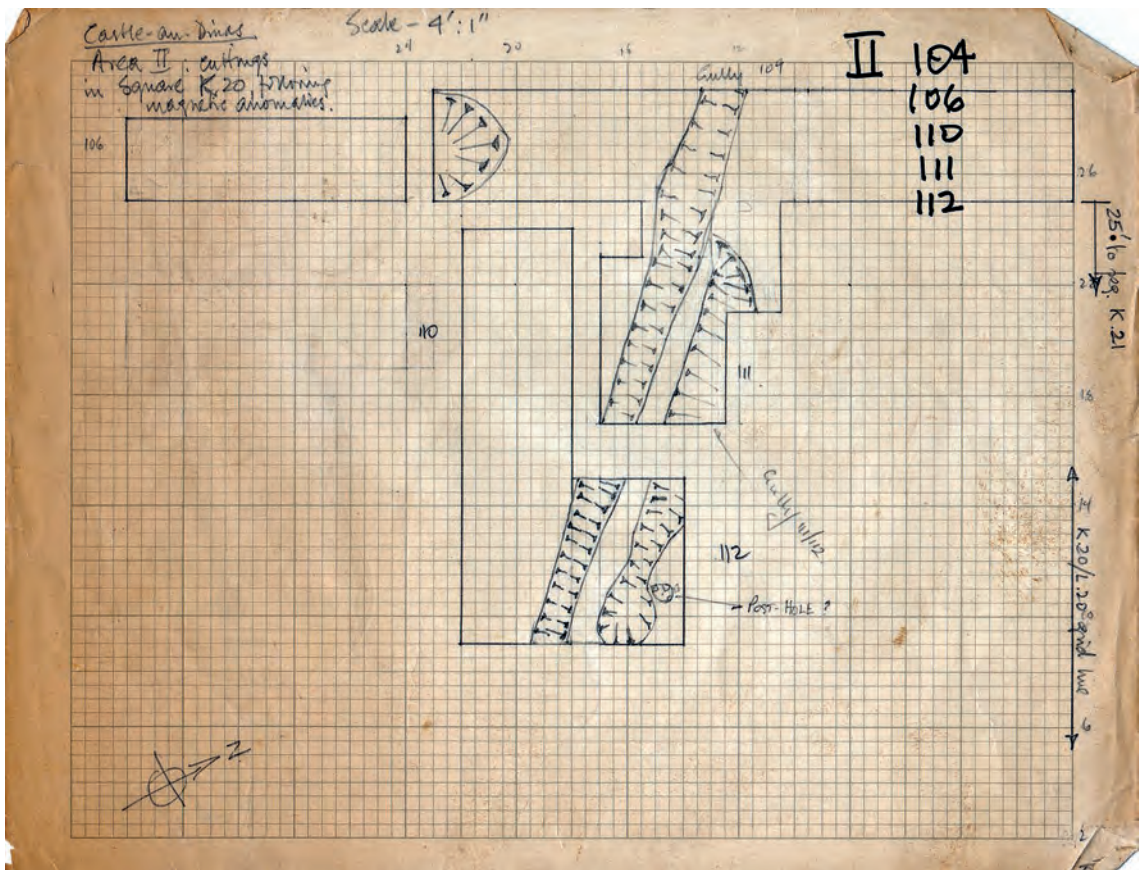


Fig 4 Archive drawing (CAD-02) showing cuttings 106, 109, 110, 111 and 112 in plan. This field drawing shows the gullies south of the southern barrow. (Cornwall Heritage Trust archive.)

made possible by the radiocarbon dating and studies of the surviving artefacts. There are lots of outstanding questions, particularly to do with phasing, the character of activity within the site and the location of the remaining excavation trenches. These could only be answered by the discovery of the lost portions of the site archive, a new geophysical survey and targeted excavation of key contexts with the aim of recovering key samples for further analysis and dating.

The excavations

The hillfort was loosely subdivided into five areas: Area I covered the ramparts on the western side of the site, Area II much of the interior of the site, Area III the south-west entrance area, Area IV

the south-eastern rampart 3 area, and Area V the north-east sector of the rampart circuit outside rampart 1. No surviving plan shows exactly where the boundaries of these areas were and their limits are defined by the cuttings which are attributed to these areas (Table 1 and Fig 22). The excavations mostly comprised small hand-dug trenches (Fig 1) which were given cutting numbers (1–122), and it is important to note that there were no extensive open-area excavations. Recording was undertaken using imperial measurement and original drawings were made in feet and inches (for example, Fig 2); scale bars shown on the photographs are also in feet.

Rampart 3 was a particular target for the campaign, with a large number of cuttings over its slight bank and ditch in the north-west, north-east, south-west and south-east parts of its circuit (Figs

Table 1 List of cuttings excavated between 1962 and 1964 with notes from the archive. (Drawing numbers CAD-1 to CAD-45 are those given to the scanned archive files.)

<i>Cutting no.</i>	<i>Area</i>	<i>Description/notes</i>	<i>Reference</i>
1	I	Long north west – south east cutting through rampart 3 area. Shown as a scaled sketch on plan drawing CAD-08, in plan on CAD-27 and in section on CAD-26.	Wailes 1963
2	I	Long east–west composite cutting through all four ramparts with approximately 0.5m intervals between excavated trenches. Spacing between excavated sections shown on plan drawing CAD-012. Rampart sections shown on drawings CAD-13, CAD-15, CAD-28, CAD-29, CAD-34, CAD-35, CAD-37.	Wailes 1963, fig 18
3	I	Small cutting over area of rampart 3. Shown in outline only on plan CAD-05 and on the composite plan CAD-19, which depicts a ditch terminal at the north-east end of the cutting. An opposing ditch terminal is located in cutting 4, 6m to the north-east. Cuttings 3, 4, 5, 6 and 7 are shown on plan CAD-33. Also shown in section on composite drawing CAD-39 (with cuttings 5 and 6). Here the rampart 3 ditch is more steeply sided and approximately 1.5m deep.	Unpublished
4	I	Small cutting over area of rampart 3. Shown in outline only on plan CAD-05 and on composite plan CAD-19, which reveals a ditch terminal at the south-west end of the cutting (opposing that in cutting 3). Cuttings 3, 4, 5, 6 and 7 are shown on plan CAD-33. Also shown in profile on drawing CAD-39. Here the rampart 3 ditch is approximately 1.3m deep.	Unpublished
5	I	Small cutting over area of rampart 3. Shown in outline only on plan CAD-05 and on composite plan CAD-19, which reveals part of the bank end at the north east end of the cutting (corresponds with bank in cutting 6). Cuttings 3, 4, 5, 6 and 7 are shown on plan CAD-33. Also shown in section on composite drawing CAD-39 (with cuttings 3 and 6). Here the rampart bank is very low.	Unpublished
6	I	Small cutting over area of rampart 3. Shown in outline only on plan CAD-05 and on composite plan CAD-19, which reveals part of the ditch (in cutting 3) and a bank end at the north east end of the cutting. Cuttings 3, 4, 5, 6 and 7 are shown on plan CAD-33. Also shown in section on composite drawing CAD-39 (with cuttings 3 and 5). Here the rampart 3 bank is low and said to be of redeposited natural, which had been dumped onto the underlying turf.	Unpublished
7	I	Small cutting over area of rampart 3. Shown in outline only on plan CAD-05 and on composite plan CAD-19, which reveals part of the ditch and a bank end at the north-east end of the cutting (opposes bank in cuttings 5 and 6). Cuttings 3, 4, 5, 6 and 7 are also shown on plan CAD-33.	Unpublished
8	I	No archive survives for this cutting.	Unpublished
9	I	Cutting over area of rampart 3. Shown on plan CAD-33. Nothing was found, indicating that the ditch was not present in this area and that there was a gap between the ditch segments. The terminal of a new ditch segment was, however, picked up in the eastern end of the cutting 9 extension (9a)	Unpublished
10	I	Cutting over area of rampart 3. Shown in outline only on plan CAD-07 and on CAD-33. Nothing was found, indicating that the ditch was not present in this area and that there was a gap between the ditch segments.	Unpublished
11	I	Cutting over area of rampart 3. Shown on plan CAD-33. A ditch terminal was found at the western end of the cutting. It appears to form a ditch segment with cutting 4 at the western end. The terminal of the next ditch segment lies in the extension of cutting 9 approximately 8m north west.	Unpublished
12		No archive survives for this cutting.	Unpublished
13		No archive survives for this cutting.	Unpublished
14	I	Small cutting over area of rampart 3. Shown on composite plan CAD-33, which reveals that a segment of the rampart 3 ditch was revealed in this cutting. Part of the same segment as in cuttings 9a and 15.	Unpublished

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<i>Cutting no.</i>	<i>Area</i>	<i>Description/notes</i>	<i>Reference</i>
15	I	Small cutting over area of rampart 3. Shown on composite plan drawing CAD-33, which shows that a segment of the rampart 3 ditch was revealed in this cutting. Part of the same segment as in cuttings 9a and 14.	Unpublished
16–20		No archive survives for these cuttings.	Unpublished
21	II	North–south cutting in interior near spring (below). Layer of cobbles shown on section drawing CAD-14 and the inner end of rampart 1 on drawing CAD-038.	Wales 1963, fig 18
22	II	North–south cutting in interior near the ‘spring’ (below). A section through a probable post-medieval pit is shown on section drawing CAD-17 and a contour plan of it on CAD-20.	Wales 1963, fig 18
23	II	Cutting located within the ‘spring’ which proved to be shallow and no features or finds recovered.	Wales 1963, fig 18
24	II	Cutting located within the ‘spring’ which proved to be shallow and no features or finds recovered.	Wales 1963, fig 18
25	II	Cutting located in the area of the ‘spring’. No record survives other than its location.	Wales 1963, fig 18
26	II	Cutting in interior near the ‘spring’. The pit recorded in cutting 22 extended into it; however, no other details survive other than its location.	Wales 1963, fig 18
27		No archive survives for this cutting.	Unpublished
28	II	Cutting located in the area of the ‘spring’. No record other than its location survives.	Wales 1963, fig 18
29	II	Cutting located in the area of the ‘spring’. No record other than its location survives.	Wales 1963, fig 18
30	II	Cutting located in the area of the ‘spring’. No record other than its location survives.	Wales 1963, fig 18
31	II	Cutting located in the area of the ‘spring’. No record other its location survives.	Wales 1963, fig 18
32	II	Cutting located in the area of the ‘spring’. No record other than its location survives.	Wales 1963, fig 18
33	II	Cutting located in the area of the ‘spring’. No record other than its location survives.	Wales 1963, fig 18
34–40		No archive survives for these cuttings.	Unpublished
41	III	Area of excavation inside the western entrance (below). Inked version of excavation plan CAD-11 and earlier stages of excavation are on plans CAD-43 and CAD-44 (the latter has some labelling on the wrong side of the paper). West-facing section survives as drawing CAD-41 and the south-facing as CAD-42.	Wales 1963; 1964
42	III	Cutting made through the western entrance. No features, such as metallurgy or postholes, were recorded. However, none of the archive for this trench survives.	Unpublished
43	III	One of a group of five cuttings (see cuttings 44, 45, 46 and 47) over rampart 3 ditch. Shown on composite drawing CAD-16.	Unpublished
44	III	One of a group of five cuttings (see cuttings 43, 45, 46 and 47) over rampart 3 ditch. Shown on composite drawing CAD-16.	Unpublished
45	III	One of a group of five cuttings (see cuttings 43, 44, 46 and 47) over rampart 3 ditch. Shown on composite drawing CAD-16.	
46	III	Cutting through rampart 3 ditch, one of a group of five (43, 44, 45 and 47). Shown as a ditch approximately 0.5m deep on section drawing CAD-10 and included as part of composite drawing CAD-16. The latter shows a ditch terminal at the north-western end of the cutting.	Unpublished

<i>Cutting no.</i>	<i>Area</i>	<i>Description/notes</i>	<i>Reference</i>
47	III	One of a group of five cuttings (see cuttings 43, 44, 45 and 46) over rampart 3 ditch. Shown on composite drawing CAD-16 and on section drawing CAD-40. On the latter the inner edge of rampart 4 is shown with spillage extending over the rampart 3 ditch. In this section the ditch is broad, over 2m wide, but only around 0.7m deep.	Unpublished
48-60		No archive survives for these cuttings.	Unpublished
61	IV	Cutting through rampart 3 ditch area. Two postholes were identified in the cutting, which are shown on composite plan CAD-45. The cutting was subsequently largely subsumed within cuttings 63 and 64.	Wailles 1963
62	IV	Cutting through rampart 3 ditch. Terminal of ditch 3 was uncovered and shown on composite drawing CAD-45. The cutting was subsequently largely subsumed within cutting 63.	Wailles 1963
63		Cutting through rampart 3 ditch. The eastern terminal of the ditch segment was found in the cutting and it is shown on composite drawing CAD-45. The opposing ditch terminal was located in cutting 66, 12m to the east.	Unpublished
64	IV	Cutting through rampart 3 bank. Shown as a low stony bank (0.15m high) on section drawing CAD-09. The eastern end of the bank was found in the cutting and it is shown on composite drawing CAD-45.	Unpublished
65	IV	Cutting through area of rampart 3 bank. Only a residual trace of the bank was uncovered and labelled on composite drawing CAD-45. It is possible that there was an entrance in the rampart here (see cuttings 63 and 66).	Unpublished
66	IV	Cutting through rampart 3 ditch. Shown as a ditch less than 1m deep on section drawing CAD-09. The western terminal of a ditch segment, the eastern end of which was found in cutting 69, was found in the cutting and it is shown on composite drawing CAD-45. The opposing ditch terminal was located in cutting 63, 12m to the west.	Unpublished
67	IV	Cutting through area of rampart 3 ditch. Nothing was found and is labelled 'no trace of ditch' on composite drawing CAD-45. It is likely that there was a gap between the ditch sections in this area (see cuttings 68 and 69).	Unpublished
68	IV	Cutting through area of rampart 3 ditch. The western end of a ditch segment was found but not excavated. Shown on composite drawing CAD-45, it is located approximately 7m to the east of the ditch terminal exposed in cutting 69.	Unpublished
69	IV	Cutting through area of rampart 3 ditch. The eastern end of a 7m- long ditch segment was found but not excavated. Shown on composite drawing CAD-45, it is located approximately 7m to the east of the ditch terminal exposed in cutting 68.	Unpublished
70-80		No archive survives for these cuttings.	Unpublished
81	V	Cutting through rampart 3 ditch. Shown in plan on CAD-21, where a terminal is evident at the southern end of the cutting. Opposes ditch terminal in cutting 82, with a gap of 2.5m between terminals.	Unpublished
82	V	Cutting through rampart 3 ditch. Section drawing CAD-01 survives in archive and shows a ditch less than 1m deep. Shown in plan on CAD-21, where a terminal is evident at the northern end of the cutting.	Unpublished
83	V	Cutting through rampart 3 ditch. Outline of cutting and extent of rampart 3 ditch shown on CAD-21 and CAD-22. Appears to be excavated to top of ditch fill.	Unpublished
84	V	Cutting through rampart 3 ditch, which was identified in this trench. Ditch 3 shown on plan CAD-22. Appears to be excavated to top of ditch fill.	Unpublished
85	V	Cutting through rampart 3 ditch. Outline of cutting and extent of rampart 3 ditch shown on drawing CAD-22. Appears to be excavated to top of ditch fill.	Unpublished
86	V	Cutting through rampart 3 ditch. Outline of cutting and extent of rampart 3 ditch shown on drawing CAD-23. Appears to be excavated to top of ditch fill.	Unpublished

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<i>Cutting no.</i>	<i>Area</i>	<i>Description/notes</i>	<i>Reference</i>
87	V	Cutting through rampart 3 ditch. Outline of cutting and extent of rampart 3 ditch shown on drawing CAD-23. Appears to be excavated to top of ditch fill.	Unpublished
88-100		No archive survives for these cuttings.	Unpublished
101	II	Small square cutting revealed no evidence of occupation. Shown in plan on drawing CAD-04.	Unpublished
102	II	Small square cutting revealed no evidence of occupation. Shown in plan on drawing CAD-04.	Unpublished
103	II	Cutting made within the interior. No features or artefacts were recorded. However, none of the archive for this trench survives.	Unpublished
104	II	Cutting made within the interior. No features or artefacts were recorded. However, none of the archive for this trench survives.	Unpublished
105	II	Cutting made within the interior. No features or artefacts were recorded. However, none of the archive for this trench survives.	Unpublished
106	II	Cutting within a group of five located to the south of the large barrow (cuttings 109, 110, 111, and 112). Shallow north east – south west gully revealed in cutting with pits at either end. Area of cutting (without features) shown on drawing CAD-02 and in plan on drawing CAD-03 with features.	Unpublished
107	II	Cutting made within the interior. No features or artefacts were recorded. However, none of the archive for this trench survives.	Unpublished
108	II	Cutting made within the interior. No features or artefacts were recorded. However, none of the archive for this trench survives.	Unpublished
109	II	Cutting within a group of five located to the south of the large barrow (see cuttings 106, 110, 111 and 112). A north west – south east gully ran across the middle of the trench and a pit in the southern part. Flints, charcoal and pottery were recovered from soil in the cuttings. Area of cutting shown on drawing CAD-02.	Unpublished
110	II	Cutting within a group of five located to the south of the large barrow (see cuttings 106, 109, 111 and 112). The southern gully found in cutting 109 was revealed at the eastern end of the cutting. Area of cutting shown on drawing CAD-02.	Unpublished
111		Cutting within a group of five located to the south of the large barrow (see cuttings 106, 109, 110 and 112). Two parallel north west – south east gullies were revealed in the cutting. One ran through from cutting 109, one to its north started in the cutting. Area of cutting shown on drawing CAD-02.	Unpublished
112	II	Cutting within a group of five located to the south of the large barrow (see cuttings 106, 109, 110 and 111). The two parallel gullies continued across the cutting. The northern one appeared to terminate at the eastern end of the cutting. A possible posthole was also found on the northern side of the gullies. Area of cutting shown on drawing CAD-02.	Unpublished
113–119		No archive survives for these cuttings.	Unpublished
120	II	Cutting excavated on the inside face of rampart 1, on the western part of the rampart circuit. It was one of a line of three cuttings each 6 ft square (121 and 122). Shown in section on drawing CAD-18 with cutting 121.	Unpublished
121	II	Cutting excavated on the inside face of rampart 1, on the western part of the rampart circuit. It was in the centre of the line of three cuttings (120 and 122). Shown in section on drawing CAD-18 with cutting 120.	Unpublished
122	II	Cutting excavated on the inside face of rampart 1, on the western part of the rampart circuit. It was at the west end of the line of three cuttings (120 and 121).	Unpublished



Fig 5 Rampart 3 with 'entrance 3' defined by cuttings 3 and 4 in the foreground. (Cornwall Heritage Trust archive.)

1 and 5). A few longer cuttings were made, most notably cutting 2, which ran from the interior of rampart 1 to the crest of the rampart 4 bank (Fig 6). A bulldozer seems to have been used to excavate the section through the largest bank, rampart 1 (Fig 7) (Joan Taylor, pers comm). Within the interior, most of the excavated trenches were clustered in four areas: around the 'spring' in the northern part of the enclosure, around the southern round barrow, behind rampart 1 next to the south-west entrance (cutting 41) and close to the inner western edge of rampart 1 (cuttings 120–122).

The ramparts

The four ramparts are described from the inner rampart 1 outwards to the outer rampart 4. The descriptions are based on the information shown on the redrawn sections and plans now published (for Areas I and IV), the published interims, and information provided by the recent Historic England survey (Wailes 1963; 1964; 1965; Bishop 2011; Soutar 2013). Few finds were specifically attributed to the ramparts or their associated ditches, although 'waterworn pebbles (? sling stones)' were recorded (Wailes 1963) and some of these survive in the archive (Lawson-Jones, below).

Rampart 1

The innermost rampart comprises a bank and outer ditch. The bank stands to a height of 0.5m above the interior of the hillfort in the north-west and up to 1.5m in the south-east. The top of the bank is 1m wide and the base between 9m and 12m wide (Bishop 2011, 18). The rampart was investigated in one principal cutting, cutting 2 on the south west (Fig 7), with a more limited investigations in cutting 21 to the north (Fig 8) and, adjoining the rampart, in cuttings 120–122 in the north west. In addition, features associated with the rampart 1 entrance were also investigated in cuttings 41 and 42 (discussed below under 'Interior'). There was no evidence on the drawn section for internal quarrying and most, if not all the bank material must be derived from the associated external ditch, which measures up to 8m wide and 2m deep in the recorded section. The rampart has no discernible structure and there is no trace of any revetment. The underlying turf does not appear to have been removed and material was heaped up (Figs 7, 8 and 9).

Wailes (1963) suggested that the rampart was of two phases, with an initial outer berm covered by subsequent dumping of material over it. This sequence is also supported by the drawn section



Fig 6 The long cutting 2 made through all four ramparts. Photograph from rampart 1, looking west. (Cornwall Heritage Trust archive.)

(Fig 9), which shows a series of deposits in what was possibly a space between the original rampart face and the ditch. Given the lack of finds or material for radiocarbon dating, the length of time between these suggested phases is uncertain. The radiocarbon dating from the occupation or midden material abutting the inner side of rampart 1 in cutting 120/121 (below) confirms that it was in place by the Middle Iron Age and suggests that it continued into the Late Iron Age: 2177 $\pm$ 24 BP, 358–171 cal BC (SUERC-82206), and 1999 $\pm$ 34 BP, 91 cal BC – AD 76 (SUERC-82207).

The external ditch was cut into the bedrock and had stepped sides and a flat bottom. It is uncertain

whether the ditch was recut. The primary infilling appears to have commenced with silting followed by more substantial deposits with higher contents of stone. These deposits are likely have been derived from the rampart. It could, however, be argued that the last two stony deposits which fill the upper, broader part of the ditch cut might have been derived from a later recut to provide material for the second phase of the rampart. It should, however, also be borne in mind that if they were associated with a recut they could, like the upper part of the rampart 3 ditch section (below), be associated with a very much later phase of ditch cutting.



Fig 7 Rampart 1 in cutting 2, looking east. (Cornwall Heritage Trust archive.)

Rampart 2

Rampart 2 comprises a bank with a concentric flanking outer ditch. The Historic England survey noted that it was probably the most altered of the ramparts and that the rampart was smaller than that of rampart 1, rising between 1.7m and 2.6m above the inner rampart 1 ditch and between 0.9m and 2.2m above the outer ground surface. It has been argued rampart 2 is a later (and unfinished) enlargement of the earlier counterscarp of rampart 1 (Fox 1958; Soutar 2013). The main illustrated section in cutting 2 does not fully show the eastern (inner) side of the rampart as the section was not

recorded in the cutting (Fig 10), and neither does the opposing section, which also survives in the archive (Fig 2). Together, the drawings show a low bank of 'rubble and brown soil'. However, there are differences between the two sections. In the main section the bank is over what is labelled as 'laid turf' (Fig 10). This in turn appears to seal a possible earlier feature filled by layers of rubble and 'old turf'. It is uncertain whether there was a natural depression in the natural or if it was a cut feature. The description of the basal layer as 'old turf' is also open to question. In either case, however, it is clear that the feature was not large enough to appear in the opposing section. By



Fig 8 Rampart 1 in cutting 21, taken from the south. The 'dumped' build of the rampart can clearly be seen. (Cornwall Heritage Trust archive.)

contrast, in the opposing section (Fig 2) the bank overlies the original turf and within the make-up of the bank was a band of 'turf redeposited ? from top of ditch'. The accompanying ditch measures approximately 2.5m wide and 0.7m deep in the recorded section (Fig 10) and appears broader and less steeply cut than the rampart 1 or 3 ditches. It appears to have been largely infilled with stones and 'brown tip', derived from the bank. A layer at the bottom of the section described as 'old turf' may imply that a soil had formed prior to bank material eroding into it. There is no indication of a later recut.

Rampart 3

Rampart 3 is the slightest of the enclosing ramparts and comprises a bank and outer ditch. The Historic England survey (Bishop 2011) records that the bank has a maximum height of 0.6m. The section drawing (Fig 11) is one of the least informative as there is little original annotation. The rampart appears to comprise just one deposit and had

been built on the original turf line. There are no cut features that are directly associated with the low bank, although approximately 1m to the east of it, an undated shallow depression labelled 'charcoal pit' is shown on the section drawing. The accompanying external ditch, approximately 2.5m wide by over 1m deep (Figs 11 and 12), was rock cut and in the illustrated section had steep sloping sides and a narrow base. Again, it is likely to have provided all the material for the bank. There are no primary silts indicated in the description of the fill and the ditch seems to have been filled by redeposited bank material. It is likely that the three yellow / granular layers shown in Figure 11 are derived from the yellow clay bank capping. In the illustrated section, the upper portion of the ditch profile steps out towards the bank, which might be indicative of a later recut into the top of the ditch; although this is not evident in any of the other drawn sections. A number of the ditch fills on the annotated section drawing are described as being 'yellow' in colour, and the underlying natural subsoil in some parts of the site appears to

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- | | | | |
|----|------------------------------------|----|---|
| 5 | Yellowy brown soil with stones | 11 | Fine yellow clay |
| 6 | Black soil with largish rocks | 12 | Brown soil with stones yellowish in patches |
| 7 | Dark brown soil with stones | 13 | Dark khaki soil with small stones |
| 8 | Yellowish soil with small stones | 14 | Loose rubble with dark soil |
| 9 | Small stones with yellowish soil | 15 | Brown soil with small stones |
| 10 | Light khaki soil with small stones | 16 | Black soil |
| | | 17 | Natural subsoil/bedrock |



Key to ditch section

- | | |
|------------------------|-------------------------|
| Turf | Loose rubble and soil |
| Brown silt | Yellow silt |
| Brown silt with stones | Small loose rubble |
| Dirty yellow silt | Grey silt |
| | Natural subsoil/bedrock |



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have been yellow (Fig 12). The use of this material may have meant that the bank had a yellow clay capping or facing, and this could have been a deliberate means of making the site stand out in the landscape.

However, it is important to note that the photographic evidence and other section drawings in the archive (Table 1) indicate that the depth and profile of the ditch varied considerably between the cuttings (Figs 11, 12, 13 and 14). Wailes (1965) suggested that there were six entrances through the rampart 3 ditch and the surviving plans of the excavated cuttings through the ditch (in Areas I, IV and V; Table 1, above) show that in these areas at least it was segmented, with relatively narrow causeways between ditch terminals ranging from approximately 5m to 12m apart (Figs 15, 16 and 17). However, the 2011 topographical survey did not detect any breaks in the circuit of the rampart (Soutar 2013) and only confirmed the south-west entrance, which is also respected by the other later ramparts. The survey report suggested that the segmentation may represent construction episodes, rather than breaks in the circuit (*ibid*, 226). Nonetheless, the interrupted character of the rampart 3 ditch, comprised of segments with variable depth and length, is quite unlike the other rampart circuits.

This rampart is thought to be the earliest and the evidence from cutting 47 revealed that eroded material from the inner face of rampart 4 overlay the secondary silt of the rampart 3 ditch (Wailes 1965). However, the length of time represented by this stratigraphic relationship is uncertain. Unfortunately, the only sample available for radiocarbon dating was from an unspecified depth in the upper fill of the ditch in cutting 7. This gave a medieval radiocarbon determination on *Cytisus* / *Ulex* charcoal of 865 ±24 BP, cal AD 1050–1244 (SUERC-82202), which must relate to later disturbance. The only prehistoric artefact from rampart 3 was a tiny perforated ‘mud-coloured thing’, possibly a bead, recovered from the secondary ditch silt. This is unfortunately now lost and its date is uncertain (Quinnell, below).

Rampart 4

The outermost rampart comprises a bank with an outer ditch with a counterscarp bank. The Historic England survey recorded that it was between 0.9m and 1.6m high (Bishop 2011). Unfortunately, the

section drawing of rampart 4 only records the eastern half, as cutting 2 ended on the crest of the rampart. The section drawing (Fig 11) shows that the structure of the rampart comprised many layers, including several dumps of yellow clay. The ditch, which was not sectioned in cutting 2, was recorded by the Historic England survey (Bishop 2011) as being between 0.3m and 0.7m deep and its bottom between 1.2m and 2.3m wide.

The interior

Most of the cuttings within the hillfort interior were clustered in four areas (Fig 1). Two are shown on the published plan (Wailes 1963): around the ‘spring’ in the northern part of the enclosure (Area II, cuttings 21–33) and next to the inner south-west entrance (part of Area III, cutting 41). Subsequently, trenching occurred in two further areas: close to the inner western edge of rampart 1 (cuttings 120–122) and around and especially to the south of the southern barrow (cuttings 101–112); these were not given their own distinct ‘Area’ subdivisions and are all Area II. Most of the surviving archive relates to the latter areas. Most of the small quantity of Iron Age ceramics discussed by Wailes (1963) came from cutting 41, from behind rampart 1 (Quinnell, below), as did a small quantity of burnt animal bone. Flints and pebble ‘sling-stones’ seem to have been spread more widely (Lawson-Jones, below), although larger quantities of flint survived in the area to the south of the barrow and other flints were noted by Wailes (1963) in the vicinity of rampart 3 (Area IV).

The ‘spring’ (Area II)

William of Worcester noted in 1478 that ‘Castle-an-Dinas . . . lies on a high hill and a spring rises in the midst of the castle’ (Hull 1970). Several cuttings were located in the northern part of the site in a boggy area originally identified as a ‘spring’, presumed to have provided water for the hillfort’s occupants, which it was hoped might have the potential to contain organic remains (Wailes 1963). Very few of the drawings from this area survive in the project archive but it is apparent that comparatively little was found and that much of the boggy ground appeared to have been churned over by animals. No definite prehistoric artefacts were recovered (Wailes 1963).

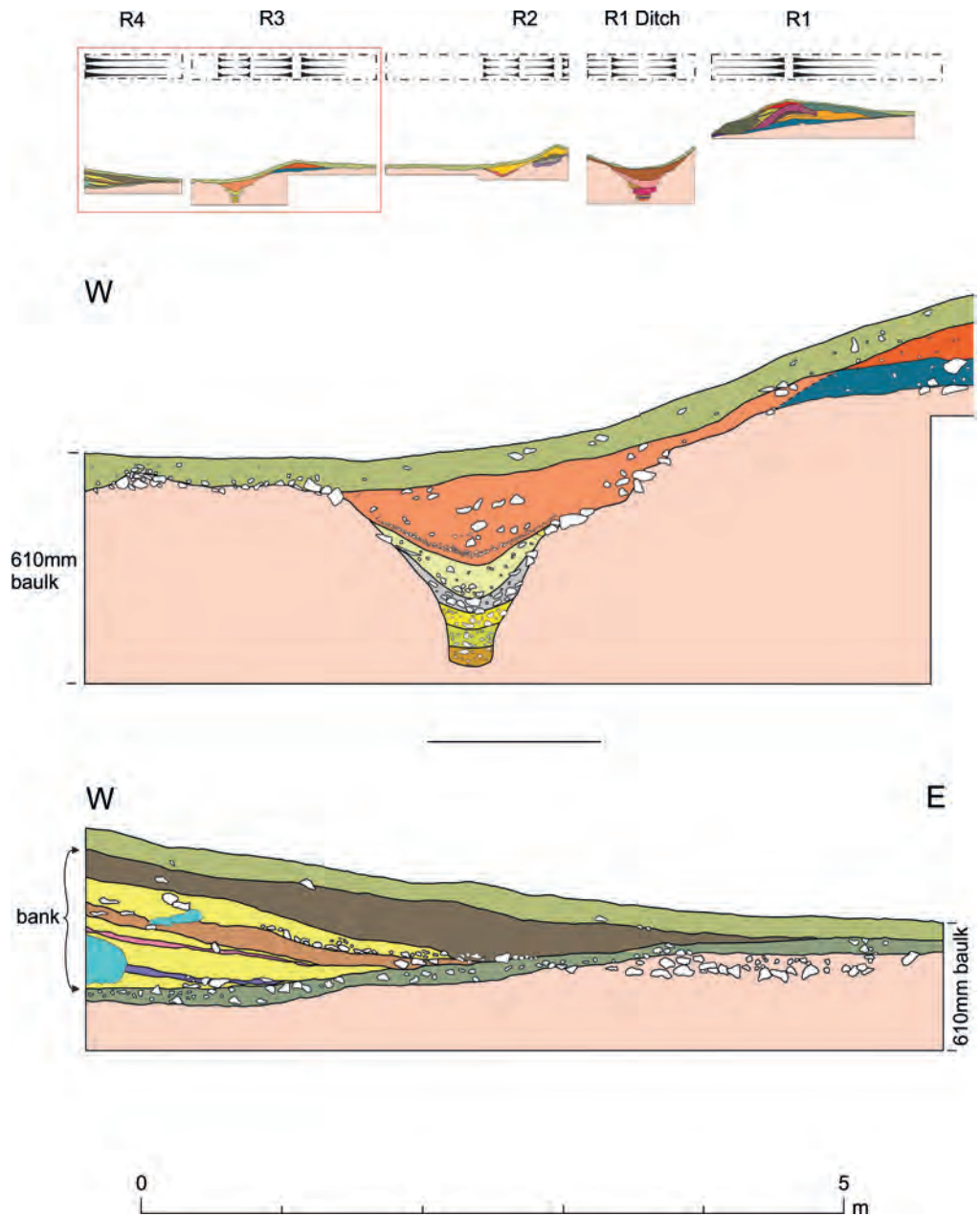
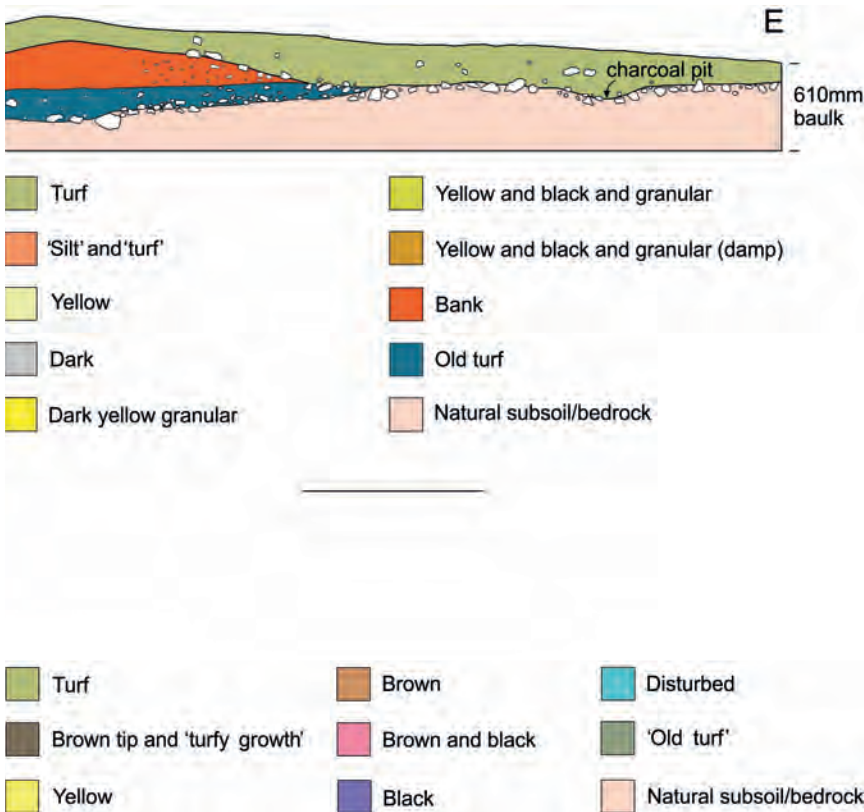


Fig 11 Section showing rampart 3 bank and ditch and the eastern part of rampart 4. Note that as far as possible the key is arranged in stratigraphical order from top of the section to the bottom.
(Drawing: Gary Young.)



Two features were commented upon. A spread of cobbling was uncovered in several of the cuttings and in cutting 21 was found to extend under the 'spill' from the back of rampart 1, which led Wailes to suggest the two features were near contemporary. The only finds from the cobbled layer were a perforated slate and a 'gritstone'. The second feature, in cutting 22, was a large pit, approximately 1.4m by 1.2m and 1.4m deep, located to receive the flow from the

spring. The section drawing of this feature and a contour plan survive in the archive and show a near straight-sided pit with a flat bottom. Wailes (1963) thought that the pit had infilled naturally, although the surviving section drawing shows it to be filled with yellow-brown and black bands, and it is possible that it was backfilled soon after excavation. Material described as 'black matter' was found at the bottom of the pit but is not shown on the section. The size and character of the cut is

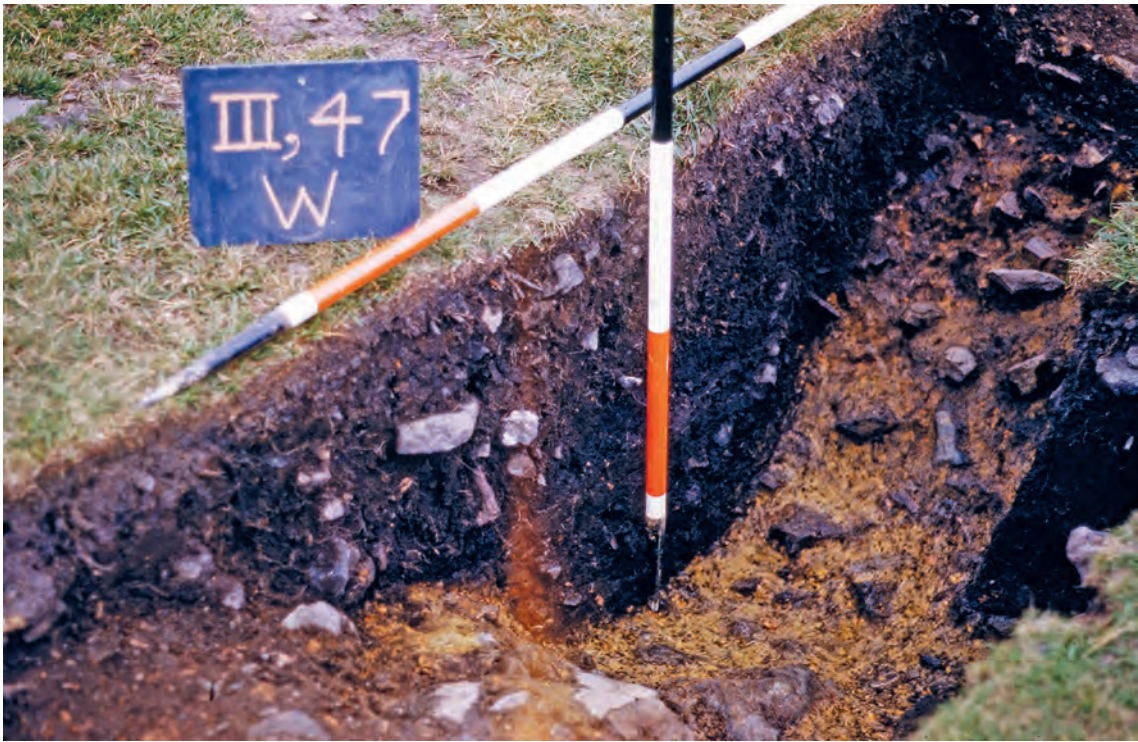


Fig 12 The rampart 3 ditch in cutting 47, taken from the east. Note that the ditch is approximately 0.75m deep in this section.



Fig 13 The rampart 3 ditch cutting in Area IV. The ditch is approximately 0.75m deep in this section but has steep sloping sides and a narrow base, unlike that seen in Figure 12.

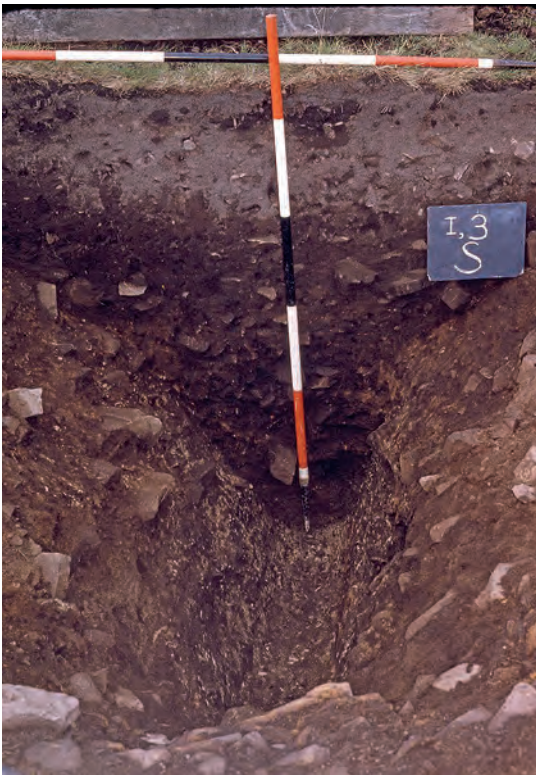


Fig 14 The rampart 3 ditch in cutting 1. The ditch is approximately 1.6m deep in this section. (Cornwall Heritage Trust archive.)

consistent with it being a prospecting pit of post-medieval date, perhaps associated with later mining (Brooks 2001). However, William Hals, writing c 1700, noted a 'flat vallum, pit or tank, wherein rain or cloud-water . . . abides more or less in quantity as it falls one half of the year; which I suppose, heretofore supplied the soldiers' occasions as no fountain, spring, or river water is within a thousand paces thereof' (Polsue 1867, I, 227). An artificial spring-fed pool, perhaps intended for watering animals grazing on the surrounding rough ground, is therefore also a possibility.

The south-west entrance area (Area III)

Cutting 41 was opened behind rampart 1, close to where there was a small 'inturn' on the southern side of the entrance. This area had the potential to be associated with evidence for built structures, such as pits or postholes, and 'surface irregularities' had

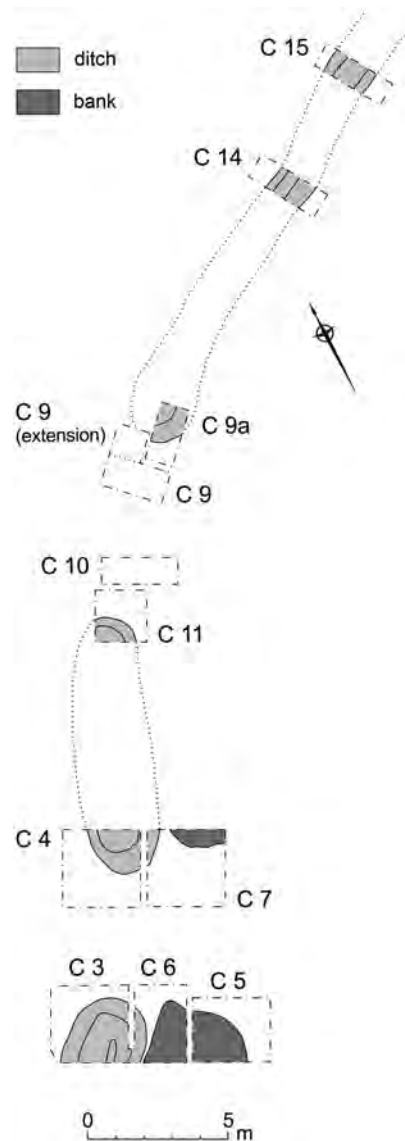


Fig 15 Plan showing rampart 3 ditch segments in cuttings 3 to 15 on the western part of the ditch circuit. (Drawing: Gary Young.)

suggested potential for a stone-built roundhouse to survive (Wailes 1963). A second trench, cutting 42, was excavated through the entrance, where it is likely that metallised surfaces were anticipated. No plans or specific information survive regarding this cutting. It is therefore unlikely that it contained any features and no finds are mentioned in either

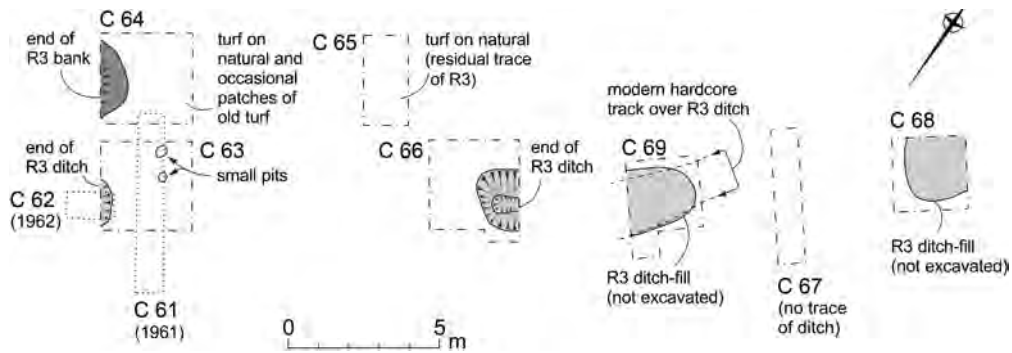


Fig 16 Plan showing rampart 3 ditch segments in cuttings 61 to 69 on the southern part of the ditch circuit. (Drawing: Gary Young.)



Fig 17 The gap between excavated rampart 3 ditch segments on the northern side of the hillfort, taken from the west. It is not clear from the archive which cuttings are shown. (Cornwall Heritage Trust archive.)

the published accounts (Wailes 1963; 1964; 1965) or in the Field Notebooks.

The section and most of the final plan for cutting 41 (Fig 3) survive. (Note that the following description follows the compass points shown on the archive drawing, although the cutting was in fact closer to west–east than to north–south). The plan shows a far greater number of internal features than any of the other excavated cuttings. At the north end, fragmentary cobbling was found along the western side of the trench and a two-course

stone revetment was shown to back the ‘inturned’ bank (Wailes 1963, 54), the rubble collapse from which covered a cobbled surface. To the south of this was a shallow gully, which ran behind the ‘inturned’ bank. Seven postholes were found in the middle and southern end of the cutting, which may have been associated with a structure, although the trench was too small to establish an overall plan. Although none survive in the archive, the area was also important because it produced the largest quantity of Iron Age ceramics (Wailes 1963, 55).

All appear to have been South Western Decorated ware, dating to the Middle Iron Age. The Finds Notebook indicates that a perforated slate disc was also discovered in the rubble overlying the gully in cutting 41. Although lost this is likely to belong to the Middle to later Iron Age, if not later. Several of the postholes were found to contain artefacts. Posthole 1 contained pottery and flint and postholes 2 and 6 also produced sherds of pottery. Given their location behind the entrance it is possible that some of these artefacts may have been 'special deposits' and this will be touched upon below.

Western interior of rampart 1 (Area II)

Three cuttings (120, 121 and 122), previously unpublished, were opened on the inside edge of rampart 1 over an anomaly detected by the magnetometer survey. The cuttings revealed a stony layer overlying a stony, grey yellowish-brown deposit described as a layer of 'occupation material' (Field Notebook 1964, 40, 44; Finds Register 1964, 6). This 'occupation' material included burnt bone, charcoal, pottery, and sling stones (Wailes Finds Register 1964, 6; Lawson-Jones and Quinnell, below). Blick (2009, 52) suggested the possibility that rampart 1 was remodelled at some stage and that midden material was used to modify the rampart, which could have meant that the midden was associated with occupation of the site prior to the construction or modification of rampart 1 and was subsequently utilised in the earthworks. Two newly-obtained radiocarbon determinations from the occupation layer, one obtained on burnt animal bone, 865 $\pm$ 24 BP, 91 cal BC – cal AD 76 (SUERC-82207), the other on *Prunus* charcoal, 2177 $\pm$ 24 BP, 358–171 cal BC (SUERC-82206), however, cast doubt on this interpretation. The earlier, on charcoal, starts in the Middle Iron Age but does not suggest an earlier date than the other material from the gully in cutting 112 or the South Western Decorated pottery recorded elsewhere on the site. The date on the burnt bone falls very late in the Iron Age and is interesting as it suggests activity continuing after the broadly Middle Iron Age horizon (see discussion below). In light of this it seems likely that rampart 1 was constructed first and that midden-derived material was piled against the inside edge. This may have been done to heighten rampart 1 or may have been related to the disposal against the rampart of residues from cooking or feasting. The subsequent stone layer

covering the deposit may have been related to slippage from the rampart after it and the midden were no longer in use.

Area of southern barrow (Area II)

Five previously unpublished cuttings (106, 109, 110, 111 and 112) were opened up in the area to the south of the large southern barrow. Six small cuttings (101, 102, 103, 104, 105 and 107) were also excavated on the northern side of the barrow but no information other than their location survives about these, which presumably indicates that little was found in them; cutting 104 did, however, produce a blue glass bead (now lost) and a piece of iron (Quinnell, below). The former would be appropriate for the Middle Iron Age, although a date for the latter is open to question.

The cuttings to the south, by contrast, produced both artefacts and features. Cuttings 109 to 112 all produced 'sling stones' and flints were also found in 109, 110 and 111 (Lawson-Jones, below). In addition, pottery is recorded from cuttings 106 and 109 (Finds Register 1964, 5; Quinnell, below).

Two significant cut features, previously unpublished, were also uncovered in these cuttings (109, 110, 111 and 112). Two parallel shallow gullies oriented roughly north west to south east ran through them (Figs 4 and 18). The south-west gully (Wailes' 'gully 109' on Figure 4) was narrow and parallel-sided. A post-medieval radiocarbon determination, 865 $\pm$ 24 BP, cal AD 1647–1935 (SUERC-82205), was obtained on *Cytisus* / *Ulex* charcoal found with flint and sling stones in the upper part of the cutting. The function of these features is uncertain and the date may well be associated with mining activity. The second gully (labelled 'gully 111/112' on Figure 4) was less straight sided in plan and had a possible pit located at its southern end. A possible posthole was located on the eastern side of this gully in cutting 112, close to the possible terminal pit. The western side of the gully may have been removed by 'gully 109' and an earlier date is also supported by the radiocarbon determination, 2134 $\pm$ 24 BP, 349–58 cal BC (SUERC-82204), obtained on *Corylus* charcoal. A second radiocarbon determination on *Corylus* charcoal, 2293 $\pm$ 24 BP, 405–236 cal BC (SUERC-82203) fell in broadly the same period but is attributed to three cuttings (109, 111 and 112), so can only be used to demonstrate Middle Iron Age activity in this area.



Fig 18 The gullies in cuttings 109–111, taken from the south east. (Cornwall Heritage Trust archive.)

A sketch of a gully with pits at either end in cutting 106 was made in the 1963 Field Notebook (Quinnell, below). The plan showing cutting 106, however, is devoid of features (Fig 4, top left) and was not amended to show them.

Prehistoric pottery

Henrietta Quinnell

A very small ceramic assemblage survived from the 1960s excavations. The material is commented on below under the year in which it was found and recorded. **NB.** In the following tables, unless a single pot sherd is specified, each bag is presumed to represent two or more sherds.

Comment on 1962

Cutting 41 has 13+ sherds from six locations, associated with a possible building in the cutting or in the rubble over it (Table 2). This cutting is located inside the south-east side of the south-west entrance. Wailes (1963, 55) records this pottery as 'provisionally . . . late South-Western B Iron Age types'. He makes no reference to the sherd from cutting 22 which may well have been post-prehistoric.

Comment on 1963

Cutting 106 has a total of 4+ sherds (Table 3). A sketch in the 1963 Field Notebook (page 10) clearly shows the positions of the two pot groups, one in a gully or perhaps a slot, the other in one of the two pits which the gully links: the Notebook plan gives no indication of the contemporaneity of the features. Cutting 106 lay a little south west of the surviving barrow and some 30m east of cutting 41.

Comment on 1964

Four surviving sherds with a total weight of 8g (Table 4). The cutting 109 sherds may come from a gully or from soil over this and may be associated with a radiocarbon determination of 2134 ± 24 BP, 209–89 cal BC (SUERC-82204) (83.1 per cent). Cutting 120 was the outer of three 6 ft square cuttings in line, 120–122, running down from the top (?) on the inner side of rampart 1. The Field Notebook (page 44) describes the compact layer as 'looking like redeposited occupation material'; this lay under rubble from which the rim without a bag number presumably came. The pottery is associated with radiocarbon dates SUERC-82206 and SUERC-82207, Middle to Late Iron Age (below).

Comment on the pottery

The assemblage totalled at least 21 sherds, probably quite a few more, from nine recorded contexts. There is no reason to supposed that the number of contexts with pottery was larger, especially as Wailes (1963, 55; 1964, 85; 1965, 65) repeatedly comments on 'slight occupation' of the hillfort.

Table 2: Extracts from the Finds Register for pottery in 1962.

<i>Area and Cutting</i>	<i>Bag no</i>	<i>Date</i>	<i>Level</i>	<i>Object</i>	<i>Comment</i>
II, 22	5	19-7-62	Just below turf.	Pottery	lost
III, 41 centre	7	19-7-62	Rubble above ancient turf.	Pottery (including rim)	lost
III, 41	9	19-7-62	Rubble over Old Ground Surface (10" below surface).	Pottery	lost
III, 41 (centre)	13	19-7-62	(rubble overlying) Old Ground Surface.	'fine potsherd'	lost
III, 41	20	20-7-62	Filling of posthole 1.	Pottery	lost
III, 41c North corner	21	20-7-62	Rubble immediately over Old Ground Surface.	Pottery	lost
III, 41	22	20-7-62	Filling of posthole 2.	Pottery	lost
III, 41b West end	23	20-7-62	Old Ground Surface (or filling of posthole...)	Potsherds	lost
III, 41	24	2-07-62	Filling of posthole 6.	Pottery	lost

Table 3: Extracts from the Finds Register for pottery in 1963.

<i>Cutting</i>	<i>Bag no</i>	<i>Date</i>	<i>Level</i>	<i>Object</i>	<i>Comment</i>
106	32	17-8-63	Fill of 'gully'.	Pottery	lost
106	33	17-8-63	Fill of pit <1>.	Pottery	lost

Table 4 Extracts from the Finds Register for pottery in 1964.

<i>Area and Cutting</i>	<i>Bag no</i>	<i>Date</i>	<i>Level</i>	<i>Object</i>	<i>Comment</i>
II, 109	51	15-7-64	Black soil below turf ('middle' on bag).	Pottery	2 sherds 1g, gabbroic of Later Iron Age type.
II, 120	64	17-7-64	Compact 'occupation level'.	Pottery	1 sherd 1g, gabbroic as 51.
II, 120	none	July 64	In loose rubble with brown soil approximately '1 ft deep' (on bag, not in register).		1 rim sherd 6g, gabbroic well-made.

The surviving sherds are all gabbroic. The largest, the rim sherd from cutting 120, is a good example of well-made gabbroic fabric. The rim is of exceptionally good quality and is the form most commonly used found with Middle Iron Age South Western Decorated ware (SWD), which Bernard Wailes and others in the 1960s would have described as 'South-Western B Iron Age'. It has a groove running around the interior of the rim top, a feature which can occur throughout the currency of SWD, but which is not found on similar rims from Cordoned Ware of the Late Iron Age. The high quality of the fabric is of the kind which has led to suggestions of use of a potter's wheel (for example, Threipland 1956, 54, with reference to Carloggas (St Mawgan-in-Pydar), a matter which is subsequently unresolved for the Cornish Iron Age. The use of gabbroic pottery became almost universal during the Middle Iron Age and effectively universal for Late Iron Age and Roman-period ceramics made in Cornwall (Quinnell 2011a, 7.9.6: 2011b).

The date for the currency of SWD ceramics is late fourth century BC until a long period of overlap with Cordoned Ware from the late second century BC to a date in the first century BC. Before this, at the end of the Early Iron Age, the ceramics in use in Cornwall are now described as the 'Plain Jar Group', ceramics which could have been in use at the beginning of the chronology suggested for Castle-an-Dinas by the earliest radiocarbon determination published here. At the other end of the dating chronology, Late Iron Age Cordoned Ware was certainly in use with SWD and tends to be found on settlement sites with the same or greater quantity as SWD. Overall, the sparsity of pottery recovered from the Castle-an-Dinas excavations supports Wailes' assessment of 'slight occupation activity' in so far as activities involving the deposition of pot sherds are concerned.

Small finds

Henrietta Quinnell

There are five potential small finds listed in the Finds Register: two beads, two perforated slate discs and a piece of iron (Table 5). All the finds are appropriate for the Middle Iron Age but, with the possible exception of the blue glass bead, could have a very long time range through the first millennia BC and AD (see also the small stone and pebble assemblage, below). Given the later post-medieval disturbance to the site, however, it is also possible that the iron is of a very much later date.

Beads

Bag no 29 blue glass bead, described in 1963 Field Notebook (page 11) as 'small', found with iron (bag no 28). Cutting 104 was 2 ft square; the finds appear to come from an 'anomaly' 'well below modern turf, resting on stones, in turn resting on natural – depth c 7": natural at 9". There seems no reason why nos 29 and 28 should not be of hillfort date. Three of the five glass beads found at Castle Dore (Radford 1951, 69–70) could be described as small and blue: Guido (1958) lists several varieties of small blue beads which are relatively uncommon in the Iron Age. Activity at Castle Dore appears to have been confined to the Middle Iron Age (Quinnell and Harris 1985).

Bag no 37 '? bead'. Tiny 'mud-coloured thing with perforation' may well be a ceramic bead. Study of the Field Notebook indicates that this came from high up in the rampart 3 ditch. A few ceramic beads of possible Iron Age date are now known from Cornwall; the finds are most recently summarised in the report on a site at Mullion (Quinnell 2017).

Table 5 Extracts from the Finds Register of possible small finds.

<i>Area and Cutting</i>	<i>Bag no</i>	<i>Date</i>	<i>Level</i>	<i>Object</i>	<i>Comment</i>
II, 41	12	19-7-62	Rubble overlying gully (centre of trench).	Slate disc, perforated	lost
II, 21	19	20-7-62	Cobbles and stone rubble.	Perforated slate	lost
II, 104	29	14-8-63	Stony level below turf, resting on natural.	Blue glass bead, associated with (28)	lost
I, 3	37	29-6-64	Rampart 3 ditch: secondary silt.	? bead. Tiny mud-coloured thing with perforation	lost
II, 104	28	14-8-64	Stony level below turf, resting on natural.	Iron + ? slag	lost

Perforated slate discs

The slate disc in bag no 12 came from rubble in cutting 41, which overlay a possible structure with Iron Age pottery.

Another perforated slate (bag no 19) was from cutting 21 on the inside of rampart 1 on the north: the description, following details in the 1962 Field Notebook, suggests that it was in or buried by the tail of the rampart.

It seems likely that if either of these objects had been spindle whorls, their regularity would have led to a definite identification. It seems more probable that these perforated pieces, one a ‘disc’, the other of unknown shape, belong in the ‘pot lid’ category, which can be perforated (Nowakowski and Quinnell 2011, 268–9).

Iron

Bag no 28 Iron + ? slag, from the same ‘anomaly’ as the bag no 29 glass bead. It seems likely that this represents a corroded iron artefact of unknown type and date.

The flint

Anna Lawson-Jones

The assemblage consists of 12 pieces and is small, blade-based and predominantly Late Mesolithic in character (for example, Berridge and Roberts 1986; Butler 2005). Pieces include two microliths made on small well-formed bladelets: **L1**, obliquely retouched with steep, tiny lateral retouch; and atypical **L2**, with limited distal and proximal retouch (Table 6). Associated material includes two

deliberately snapped, mid-blade-section pieces: one, **L3**, with small opposing notches reflecting fine hafting and with a shallow well-defined retouched notch on its proximal break; and one heat-blistered piece, **L4** (Fig 19). Other blade and blade scarred pieces include backed knife **L5**. Many of the pieces show use-wear, some with retouch. The retouch is minimal, tiny, steep and focused, typical of Mesolithic flintwork (for example, Walker 2016; Johnson and David 1982; Jones *et al* 2019). A potential exception is the backed knife, which could possibly be later in date. Two pieces retain a limited amount of surviving beach pebble cortex but none of the other pieces retain any original cortex. The recorded flint colours could reflect a preference for very pale flint.

Seven of the 12 flints are well-formed blades from managed blade-producing cores of the Late Mesolithic. The remaining five would not be out of place within the later Mesolithic (with the possible exception of the backed knife) and as such it is suggested that the entire assemblage is from a single phase of Late Mesolithic activity. Unfortunately, the context descriptions for each piece show that all were residual when excavated. Occasional pieces show evidence for heating in the form of either minor crazing or blistering (Lee 2001), suggesting the original presence of at least one Late Mesolithic hearth. The heat-blistered blade found in Area I, cutting 109/111 ‘charcoal from gully’, could have been heated in the Mesolithic period or at a later point (given that this context also produced an unburnt piece of flint).

There are no cores or heavily corticated pieces, and very little if any unused material or flint waste, implying that most contemporary

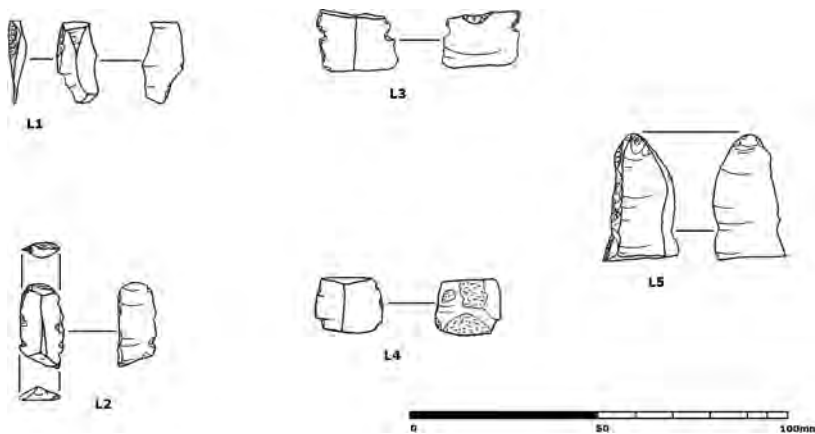


Fig 19 Selected worked flint from the 1964 excavation assemblage showing microliths **L1** and **L2**, notched mid-blade section **L3**, burnt mid-blade section **L4** and backed knife **L5**. (Drawings: Anna Lawson-Jones.)

knapping was carried out elsewhere, probably somewhere in the vicinity. It is likely that these 12 pieces represent just a small proportion of a larger contemporary spread of material across the hill, which may well include a proportion of the pebble stone assemblage (below). Without access to this and a better understanding of its spread, it is not possible to know what character this Late Mesolithic presence might have taken. The small size of the assemblage implies a short-term visit, although the hill's prominent position within the wider landscape and its location overlooking Goss Moor, with its varied resources, would suggest that repeated, perhaps seasonal, visits are likely to have been made. Work in the surrounding area has frequently produced evidence for at least fleeting Mesolithic activity (for example, Lawson-Jones 2001; Nowakowski and Johns 2015).

The small stone and pebble assemblage

Anna Lawson-Jones, with Henrietta Quinnell

This assemblage of 32 pebbles consists of 31 complete water-rounded pebbles and one broken cortical flake from a larger pebble (Table 7). The cortical flake shows no evidence for previous use, as a hammerstone, for example. Seventeen of the pebbles were white vein quartz. The remaining 15 are dark grey and more granular (with one mustard brown, speckled, exception). The vast majority have a 30–50mm size range and a 30–50g weight range and are near spherical to ovoid in shape. Only four pebbles show some macroscopic evidence for use.

The pieces were identified during the excavation as 'sling stones' and Wailes (1963; 1965) refers to these as frequent finds. Some may date to the Mesolithic period, perhaps collected from the beach at the same time as the flint. If so then they may reflect Late Mesolithic hunting on and around Goss Moor. However, the majority of the pebbles are considered to be of Iron Age introduction and potentially reflect inter-tribal conflict or skirmishes.

Previous excavations on Cornish hillforts have recovered numerous possible sling stones. Large numbers were found at Castle Dore (St Sampson), including some 'small hoards' (Radford 1951, 72). Killibury (Egloshayle) produced 165 'without any significant concentration' (Miles *et al* 1977, 109). Coastal promontory forts also have them: Trevelgue Head (Newquay) produced over 5000 (Nowakowski and Quinnell 2011, table 11.1, 261), Penhale Point (Perranzabuloe) a scatter (Smith 1988, 184–5) and the Rumps (St Minver) some 'potential' sling stones (Brooks 1974, 46). Trethurgy round (St Austell), an enclosed farming settlement, produced 764 pebbles, many of which were of white vein quartz. The majority had a 30–50mm size range, the same as that recorded for Castle-an-Dinas, and were described as 'suitable for use as sling pellets' (Quinnell 2004, table 6.2, 152). This site, occupied from the second to the sixth centuries AD, suggests some use of the sling after the Iron Age.

Many hillforts elsewhere in Britain have produced sling stones, including for example, Bredon Hill, Crickley Hill, Danebury, Eggardon, Hambledon Hill, Hod Hill, Maiden Castle and Uffington Castle (Finney 2006, appendix 1.1). Maiden Castle produced 22,000 sling stones

CASTLE-AN-DINAS, ST COLUMB, CORNWALL

Table 6 The flint from Castle-an-Dinas.

NB. Areas and cuttings are arranged numerically, as are original bag numbers where possible. All measurements are from proximal to distal end, all widths and thicknesses are at the widest or thickest point.

<i>Area and Cutting</i>	<i>Context description and date excavated</i>	<i>Material and original bag no</i>	<i>Description</i>
Area I Cutting 109/111	Charcoal from gully	Flint – ?	Dark grey, slightly heated proximal end of a used blade. Diagonally broken. 13mm x 14mm x 2mm.
Area I Cutting 109/111	Charcoal from gully	Flint – ?	L5 – Pale milky grey proximal half of a retouch-backed used blade. Simple knife. 30mm x 18mm x 4mm.
Area I Cutting 9	Topsoil, above natural. 7/7/64	Flint – 42	Dark grey, slightly heated, small snapped piece. 16mm x 10mm x 4mm.
Area I Cutting 9	Topsoil, above natural. 7/7/64	Flint – 42	L4. Pale grey, heat-blistered mid-section of well-formed blade. 13mm x 15mm x 3mm.
Area II Cutting 109, NE end	Recent turf-line sealed under sand lens (edge of 'barrow spoil').	Flint – 49	L3. Off-white mid-section of well-formed blade with two small opposing notches on edges. 12mm x 19mm x 3mm.
Area II Cutting 109, middle	Black soil below turf. 15/7/64	Flint – 57	Dark grey-brown fine quality flint with short miscellaneous retouched edge extending from remnant pebble cortex. 25mm x 18mm x 5mm.
Area II Cutting 109, N end	Lower topsoil. 19/7/64	Flint – 67	L2. Pale grey proximal half of a narrow well-formed blade. Diagonally snapped and used / retouched end. Microlith. 21mm x 9mm x 2mm.
Area II Cutting 109/111, baulk	Gully fill / baulk. 19/7/64	Flint – ?	Pale grey, semi-translucent mid-section blade-like piece with pebble cortex along one dorsal edge. Used. 19mm x 12mm x 5mm.
Area II Cutting 109/111, baulk	Gully fill of gully 111/112. 19/7/64	Flint – ?	Pale grey, proximal half of snapped blade. Some possible dorsal surface gloss? Some cutting/edge wear. 30mm x 19mm x 4mm.
Area II Cutting 110	Low in topsoil. 16/7/64	Flint – 56	L1. Pale grey bladelet-like piece. Short, straight edge with tiny end retouch. Microlith. 20mm x 9mm x 3mm.
Area II Cutting 110	Low in topsoil. 16/7/64	Flint – 56	Mid / pale grey, small, thick, blade-scarred flake with miscellaneous retouch / wear at distal end. 22mm x 17mm x 5mm.
Area II Cutting 111	Lower topsoil. 17/7/64	Flint – 60	Pale, mottled, semi-translucent distal half of a long plunging flake with flared, slightly retouched / used distal spurred end. Miscellaneous tool. 34mm x 19mm x 6mm.

(Cunliffe 2005, 136), with individual weights recorded between 14.17g and 56.69g, while the many thousands of sling stones from Danebury varied between 29.5g and 109.5g (Stanford 1980, chapter 6; Brown 1984, 425). Finney's work (2006) shows new interest in experimental work on the use of slings, based on material from Cunliffe's 'hillfort dominated zone' (2005, fig 15.39), and has been followed by Robertson's more recent experiments (2016).

Three small, possibly smoothed pebbles may have had a different use, perhaps for the working

of leather or other soft material which has left only the most ephemeral traces of wear. One of these had very slight evidence for two parallel striations, but these were very faint. The largest smoothed pebble (84 x 66 x 16mm) had two very smooth flat faces. It was found in cutting 81, across rampart 3 on the north east, in the 'Upper fill of R3 ditch'. It is the only piece from the assemblage to show clear wear. It was used as a lapstone for the working (smoothing, beating and softening) of leather, suggestive of at least some domestic activity on the site.

Table 7 The small stone from Castle-an-Dinas.

NB. All areas and cuttings are arranged numerically, as are original bag numbers where possible. All measurements recorded are maximum length only (with the exception of the lap-stone). Weights are in grammes.

<i>Area and Cutting</i>	<i>Context description and date excavated</i>	<i>Material and original bag no</i>	<i>Description (and no of pieces, length and weight)</i>
Area I Cutting 3	Primary silt of R3 ditch. 29/6/64	Pebble – 36	2 complete semi-discoidal pebbles. One 37mm long/48.4g. One pale 34mm long/33.7g.
Area I Cutting 6	Topsoil, near edge of R3 bank. 1/7/64	Pebble – 38	2 complete pebbles. One oval, 38mm long/ 26.7g. One near round, quartz, 33mm long/32.4g. 1 broken pebble flake, no other evidence for use, 38mm long/17.1g.
Area I Cutting 7	Edge of R3 bank. 7/7/64	Pebble – 40	2 complete pebbles. One near circular, quartz? 33mm/52.6g. One slightly tapered 40mm/50.5g.
Area I Cutting 9a	Burnt granite? – Upper fill of R3 ditch. 08/07/1964	Flat piece of stone – 43	Flat lump of iron-rich natural stone.
Area I Cutting 15	Top of R3 ditch silt. 3/7/64	Pebble – 39	3 complete pebbles. One quartz amorphous with flat base, 39mm/49.8g. One flattish and roughly triangular, 47mm/45.3g. One quartz with flattish side, 52mm/67.0g.
Area V Cutting 84	Upper R3 ditch silt. 15/7/64	Pebble – 52	1 complete pebble. Pale, quartz, flattish with a possible smoothed surface, 40mm long/37.2g.
Area II Cutting 109 – NE end	Recent turf line sealed under edge of barrow spoil.	Pebble – 49	1 x near circular pebble with distinctive coarse, slightly swirly exterior, 30mm/29.2g.
Area II Cutting 109 – middle	Black soil below turf. 15/7/64	Pebble – 50	2 complete pebbles. Larger darker one has possible smoothing on flattest side with 2 or 3 possible faint lines, 47mm/74.9g. One small, pale, quartz oval pebble, 37mm/27.9g.
Area II Cutting 109/111 – baulk	Gully fill. 19/7/64	Pebble – ?	2 complete pebbles. One oval, flattish pebble with smooth (but possibly not smoothed) faces, 53mm/46.6g. One heavy, rounded square shaped quartz pale pebble, 42mm/91.5g.
Area II Cutting 110	Black soil below turf. 15/7/64	Pebble – 54	6 complete quartz pebbles. All broadly ovoid: 32mm/24.9g; 39mm/40.3g; 35mm/31.7; 37mm/43.5g; 42mm/40.9g; 45mm/55.6g.
Area II Cutting 111	Gully silt. 17/7/64	Pebble – 61	1 complete pebble. Near round, 42mm/78.1g.
Area II Cutting 112	Silt of gully. 17/7/64	Pebble – 59	1 complete pebble. Near circular, quartz, 34mm /34.2g.
Area II Cutting 120	Topsoil below turf. 16/7/64	Pebble – 55	1 complete pebble. Oval, Q? 36mm/34.7g.
Area II Cutting 121	Topsoil below turf. 15/7/64	Pebble – 53	1 complete pebble. Near circular, 35mm/45.5g.
Area II Cutting 122	On top of compact 'occupation' level. 17/7/64	Pebble – 66	3 complete quartz pebbles. One near circular, 37mm/45.1g. One uneven oval, 45mm/45.7g. One flattish oval, 55mm/98.7g.
Area II Cutting 67	Topsoil, below turf. 9/7/64	Pebble – 46	1 flat, slightly tear-shaped pebble, 45mm/25.0g.
Area II Cutting 81	Upper fill of R3 ditch. 8/7/64	Pebble – 45	2 pebbles. One flat rounded rectangular pebble, 39mm long/15.8g. One large, uniformly flat, slightly egg-shaped pebble with two smoothed faces. 84 x 66 x 16mm/186.1g.

Pebbles are a common find on Cornish prehistoric sites of all dates. They were used for a multitude of purposes and are often associated, as here, with flint assemblages, Bronze Age barrows and Iron Age sites. They could have been used as sling shot, game pieces, smoothers / polishers and no doubt for a range of other less easily identifiable purposes. For example, a number of Bronze Age barrows have been found to have associated white quartz pebbles and / or other distinctive stones (Miles 1975, 72).

A naturally near-circular, distinctively swirly-surfaced metamorphic pebble, grouped above with sling stones, was found in cutting 109 in 'Recent turf line sealed under edge of barrow spoil'. Although from a disturbed context, this piece is different from the other surviving pebbles (although not particularly attractive or striking) and could originally have been brought to the site because of its distinctive rock. In addition, there is a single flat piece of sandy-grained / iron-rich stone.

Charcoal

Dana Challinor

Nine samples of charcoal, which had been hand-collected during the 1960s excavations, were submitted for examination. The aim of the analysis was to provide identifications and to select suitable material for radiocarbon dating. The results are presented in Table 8. Not all of the charcoal was identified. For the more abundant samples, an estimate of the total is provided, with the actual number of identified fragments noted in brackets next to the taxon. Where roundwood is indicated, this denotes moderate to strong ring curvature. There were no complete stems, but the (near) presence of pith or bark is noted. A single fragment of a suitable species / maturity was selected for dating. The charcoal was mounted in a sand bath for identification.

Table 8 Results of the charcoal analysis, with samples for radiocarbon dating. Sample information as given in the project archive.

Area	Context details	Quantity charcoal	Identifications	Notes	C14 sample
I	Cutting 7 R3 ditch	+	<i>cf Cytisus / Ulex</i> (1 r-w)	Highly vitrified with many radial cracks, so could not confirm identification.	<i>cf Cytisus / Ulex</i> r-w
I	Cutting 7	-	Indeterminate roots, ?tuber	Probably suitable for dating, ?plant specialist to examine.	None selected
II	Cutting 111	+++	<i>Alnus glutinosa</i> (11, r-w) <i>Quercus</i> sp. (4, r-w)		<i>Alnus glutinosa</i> r-w
II	Gully fill 109/111/112	+++	<i>Quercus</i> sp. (10, r-w) <i>Corylus avellana</i> (5, r-w)	C14 fragment has bark but no pith, though close; approximately 10 yrs.	<i>Corylus avellana</i> r-w
II	Gully 112	++	<i>Corylus avellana</i> (5, r-w)	C14 sample incomplete roundwood; 8+ yrs.	<i>Corylus avellana</i> r-w
II	Cutting 112	+	<i>Alnus / Corylus</i> (2)	Identification not confirmed as charcoal; knotty. No C14 selected as better material from other sample from 112, but would be suitable.	None selected
II	Cutting 109	+	<i>Cytisus / Ulex</i> (2 r-w)	Vitrified, with radial cracks.	<i>Cytisus / Ulex</i> r-w
II	Cutting 121/122	+++	<i>Quercus</i> sp. (7, r-w) <i>Prunus</i> sp. (1, r-w) <i>Fraxinus excelsior</i> (2)	Could not confirm <i>Prunus</i> species.	<i>Prunus</i> sp. r-w
II	Cutting 120/121	-		No identifiable charcoal; sediment lumps only.	No potential

+ = up to 5 frags; ++ = 5-25; +++ = 25-100; r-w = Roundwood.

Notes on taxa

Alnus glutinosa (alder): relatively short-lived tree, prefers damp ground.

Corylus avellana (hazel): common in oak woodlands in Cornwall in early prehistory.

Cytisus / *Ulex* (broom / gorse): heathland shrubs, gorse makes good fuel.

Fraxinus excelsior (ash): colonising tree which likes open conditions.

Prunus sp. (cherry, blackthorn type): could not confirm which species present, but blackthorn likes open conditions.

Quercus sp. (oak): no mature wood was recorded; ubiquitous in woodland in the south west.

Radiocarbon dating

Given the near absence of surviving diagnostic artefacts from the 1960s excavations, a key aim of the project was to obtain secure dating evidence from the hillfort. Because wet sieving was not carried out in the 1960s, sampling was restricted to pieces of burnt bone or charcoal which had been large enough to be recognised by eye and robust enough to be lifted from their context without disintegrating. Radiometric dating, which was the only technique for obtaining radiocarbon determinations in the 1960s, also required much larger samples (for example, 15g of charcoal or 300g of bone) than the very small amounts of material which can be submitted for AMS dating today (Bayliss *et al* 2012), and this too is likely to have influenced what was collected for further analysis.

The selection was further limited by the fact that none of the charcoal samples survived from before the 1964 season and the material available was not necessarily from the contexts which might now have been preferred for radiocarbon dating. Another difficulty was caused by the fact that contextual information was rather more limited than would be expected today; for example, one sample was labelled 'R3 ditch'. This limitation meant that it was not possible to ascertain whether the charcoal came from either the top or the bottom of the ditch cut. Nonetheless, six samples were selected for radiocarbon dating which it was hoped would shed some light on the hillfort's chronology.

The six samples were submitted for accelerator mass spectrometry dating (AMS) at the Scottish Universities Environmental Research Centre (SUERC). The first was from the rampart 3 ditch, which was believed to be the earliest in the sequence. The second and third were taken from gully 112 and the fourth from cutting 109, which were internal features located to the south of the southern round barrow. The fifth and sixth were from cuttings 121/122, where an occupation horizon had been identified behind the inner rampart 1 (Table 9). Five of the resulting determinations were obtained from short-lived charcoal and the sixth was on burnt animal bone.

The probability distributions have been calculated using OxCal (v4.3) and all radiocarbon determinations are quoted at 95.4 per cent probability throughout this paper unless otherwise stated.

Results

The radiocarbon determinations (Fig 20) covered a broad stretch of time. The latest two were post-Iron Age in date. The medieval determination from rampart 3 ditch (SUERC-82202) was a little disappointing as this appears to be the earliest of the ditch circuits. However, the location of the sample is described in the Finds Register as from 'Upper fill of R3 ditch in cutting 7' (Wailes 1964, Finds Register, 5), for which the section drawing does not survive, and it is likely that the date is related to later disturbance. The date from the internal cutting 109 (SUERC-82205) is post-medieval to modern. Sample (49) is recorded in the Finds Register as 'Recent turf sealed under sand lens' for which (48) is recorded as having nineteenth-century pottery and glass. This may relate to the mining activity on the site (Soutar 2013; Buck and Thomas 2012). This raises the possibility that other cut features may also belong to later periods of use. It may be of significance that both the later dates were obtained on *Cytisus* / *Ulex* (gorse / broom) charcoal, which contrasts with the prehistoric determinations which were obtained on *Corylus* (hazel) or *Prunus* (cherry/blackthorn). This could be taken to suggest that by the medieval period the locally available wood fuels were similar to those found today.

The four remaining dates all fall in the Iron Age. SUERC-82203 and SUERC-82204 both come from the group of cuttings 109/111/112. The earlier date, SUERC-82203, 405–357 cal BC (84.3

Table 9 Radiocarbon dating from Castle-an-Dinas.

<i>Feature (Bag number in brackets)</i>	<i>Lab no</i>	<i>Age BP</i>	<i>Material</i>	<i>Calendrical years 95.4%</i>
Cutting 7 R3 ditch (44)	SUERC-82202	865 ±24	Charcoal: <i>Cytisus/Ulex</i>	AD 1050–1084 (8.6%) AD 1125–1136 (1.3%) AD 1151–1225 (84.2%) AD 1233–1244 (1.3%)
Gully 109/111/112	SUERC-82203	2293 ±24	Charcoal: <i>Corylus</i>	405–357 BC (84.3%) 284–254 BC (9.5%) 254–236 BC (1.6%)
Gully 112	SUERC-82204	2134 ±24	Charcoal: <i>Corylus</i>	349–315 BC (9.7%) 209–89 BC (83.1%) 75–58 BC (2.5%)
Cutting 109 (49)	SUERC-82205	208 ±24	Charcoal: <i>Cytisus/Ulex</i>	AD 1647–1684 (29.1%) AD 1736–1805 (48.9%) AD 1935– (17.4%)
Cutting 121/122 (65). 'Compact occupation layer'	SUERC-82206	2177 ±24	Charcoal: <i>Prunus</i>	358–278 BC (55.7%) 259–171 BC (39.5%)
Cutting 121/122 (65). 'Compact occupation layer'	SUERC-82207	1999 ±34	Burnt bone	91–71 BC (2.8%) 60 BC–AD 76 (92.6%)

per cent), is from a sample identified as from those three cuttings and probably came from the gully which runs through all three (Figs 4 and 18). The later date, SUERC-82204, 209–89 cal BC (83.1 per cent), from gully 112, may come from cutting 111 or 112: the Finds Register records charcoal from cutting 111 but the sample bag records gully 112. Given the uncertainty surrounding actual contexts, they are best read as recording activity from the fourth to the second centuries BC.

Two dates were obtained from cuttings 120/121. SUERC-82206, 358–278 cal BC (55.7 per cent) and 259–171 cal BC (39.5 per cent), comes from the 'compact occupation layer' across both cuttings. SUERC-82207 is from cutting 120 alone, the date of 60 cal BC – cal AD 76 (92.6 per cent) suggesting activity in the Late Iron Age. The site notebook records the 'compact layer' from which both of these dates came as lying under rubble and suggests that the layer might have been 'redeposited occupation material'. This would suggest that the rather different dates come from redeposited material, in which case the later determination is the significant one.

In summary, the radiocarbon dates suggest prehistoric activity starting at the end of the Early Iron Age and confirm that this continued through the Middle Iron Age until the Late Iron Age.

Unfortunately, the earliest phases of activity remain unknown, as does the overall sequence of the ramparts. Given that there are still comparatively few radiocarbon determinations from Cornish hillforts, the significance of the dates is discussed below.

Discussion

Inevitably, given the gaps in the archive and the recording methods of the period in which Castle-an-Dinas was excavated, much remains uncertain and the site chronology is still open to question. Nonetheless, from the work that has been done it is possible to put forward an outline framework which is very much open to refinement by future recording on the site.

Before the hillfort: flints and barrows

It has been suggested that there may have been an extensive Neolithic presence on Castle-an-Dinas hill. This was based on two factors: the segmented ditches associated with rampart 3, which have been suggested as possibly representing a Neolithic causewayed enclosure (HER MCO 45; Blick 2009; Weatherhill 2009, 85), and a flint assemblage.

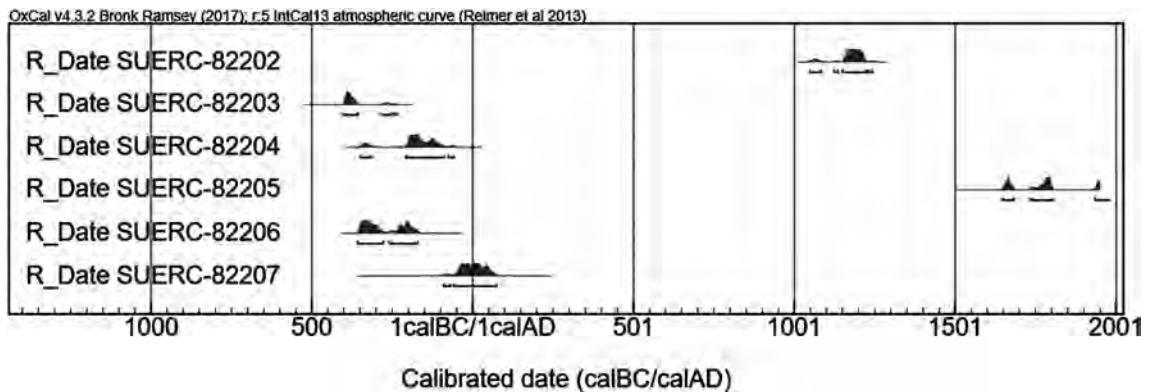


Fig 20 Results from the radiocarbon dating.

The argument for a causewayed enclosure with respect to the earliest enclosure of the hill is discussed below, but first the flint assemblage will be considered. Blick (2009, 50) suggested that the flint may reflect Neolithic activity associated with rampart 3. The study undertaken of the assemblage for this project (Lawson-Jones, above), however, reveals that the diagnostic pieces are much earlier and are in fact of Late Mesolithic date. The hill overlooks Goss Moor to the south, which would undoubtedly have provided a rich source of food in the form of wetland birds and animals and as a wetland would also have yielded important organic resources such as reeds and other plant materials for making items such as basketry, cordage and clothing which have not survived in the archaeological record (for example, Jacobi 1979; Bell 2007, 235–9; Milner *et al* 2018, ch 10; Hurcombe 2014, 29–34). However, the hill is also a very distinctive feature in the landscape and as such is likely to have drawn people to it. Even today it is associated with stories and legends (Jenner 1921; Young 2017) and, as has been argued with regard to other landscape features, it is hardly likely to have acquired fewer stories and mythological associations in the distant past (for example, Tilley 2010, 360–3; Leary 2015, ch 6). Although the lithic assemblage is limited to just a few flints, elsewhere in Cornwall and the south-west region, and beyond, we are finding that certain places in the landscape were associated with special offerings and the same may have been true at Castle-an-Dinas (Jones *et al* 2015; Chatterton 2006; Lewis 2011).

Although the character of the Mesolithic and any Neolithic occupation remains uncertain, the significance of the hill to later communities is

evident from the construction of two or probably three Early Bronze Age barrows on its summit (Bishop 2011, 9). Two of these are enclosed by the ramparts and lie within the interior of the site. The northernmost of these features was excavated by W C Borlase in the nineteenth century and had been reduced to such an extent that Wailes (1963, 54) thought it nothing more than spoil from the adjacent ‘spring’ hollow. Borlase apparently found two pits, but nothing more is recorded (Bishop 2011, 24). The larger southern barrow has also been disturbed but there is no record of any antiquarian excavation.

The apparent lack of a burial in the excavated barrow is not unsurprising in a Cornish context, given that many barrows in the region do not appear to have covered human remains (for example, Jones 2005, 138–40). Instead, many barrows seem to have been places of ceremony which could cover features not related to burials. This can be seen, for example, at the excavated barrows at Caerloggas (St Austell), approximately 9 km to the south west of Castle-an-Dinas, that were found to cover pits and deposits of artefacts and other features, which may have been made over an extended period of time, but no burials (Miles 1975). Several barrows in the region also appear to have been remodelled over time, including the Watch Hill barrow (St Stephen-in-Brannel) (Jones and Quinnell 2006), which was significantly altered and finally became mounded over a period of several centuries. Seen in this light, the barrows on the summit of Castle-an-Dinas may have accrued significance over time and could have retained importance or developed mythological associations in later periods, and this is considered below.

An enclosure before the hillfort?

The stratigraphical phasing of rampart 3 would suggest that it was the earliest in the sequence. The radiocarbon determination from the upper fill of the rampart 3 ditch however, 865 $\pm$ 24 BP, cal AD 1050–1244 (SUERC-82202), is medieval and the actual date for the construction of the rampart remains unknown.

As noted above, the character of rampart 3 has led to speculation concerning the presence of an Early Neolithic enclosure which pre-dated the hillfort (Blick 2009, 60; Clark and Foreman 2009). This would not be unprecedented, as there are several examples of hillforts which overlies Early Neolithic causewayed enclosures, including Maiden Castle and the Trundle on the southern English chalk (Oswald *et al* 2001, 28–30; Sharples 2010, 24–7) and Hembury and Raddon in Devon (Liddell 1932; 1935; Gent and Quinnell 1999). There are, however, three problems with this hypothesis. The first is that ditched causewayed enclosures are unknown in Cornwall. Bury Down (Lanreath) has been suggested as a possible example, but geophysical survey has shown that it is unlikely to be a causewayed enclosure (Lewis and Frieman 2016). Instead, there are Early Neolithic tor enclosures, defined by stony banks (for example, Mercer 1981; 1997; Oswald *et al* 2001, 150). A circular ditched monument of Early Neolithic date would therefore be unusual.

Secondly, ramparts 1, 2 and 4 are fairly closely concentric to rampart 3, although that is rather more sharply angled than the others, and the position of their south-western entrances align with it. This degree of similarity in plan is atypical of any of the sites which have both Neolithic and Iron Age earthworks. The Neolithic enclosures at Raddon and Hembury in Devon, Maiden Castle and Hambledon Hill in Dorset, for example, all have very different plans from those of the succeeding Iron Age hillfort ramparts (Mercer and Healy 2008, 5; Sharples 1991, 44; Gent and Quinnell 1999), and no attempt was made at any of these sites to reuse earlier entrances. Returning to Cornwall, even at Carn Brea, which does have a later Iron Age roundhouse occupation within it (Mercer 1981), there was little to suggest Iron Age activity in the vicinity of the ramparts.

Furthermore, as noted above, the suggested ‘Neolithic’ flints found at Castle-an-Dinas are now known to be of a much earlier Mesolithic date and cannot be used as evidence for occupation

within a Neolithic enclosure. It is also notable that none of Wailes’s cuttings produced any of the diagnostic finds (for example, stone axe heads or Hembury-type pottery) found at Early Neolithic tor enclosures and other sites across the county (for example, Mercer 1986; Jones and Quinnell 2011; Jones 2016).

Instead, the variably sized ditch segments and contrasting profiles comprising the circuit of rampart 3 (compare ditch sections in Figs 12, 13 and 14) might be better thought of as quarries for a low continuous bank with a diameter of approximately 220m. This would fit with the topographical survey, which found that aside from the south-western entrance there were no breaks in the rampart 3 bank (Soutar 2013). A low continuous bank would be unusual in the Early Neolithic; however, parallels for other types of enclosure are known in other parts of Britain, including Cornwall, in the later Bronze Age and Iron Age.

If rampart 3 is accepted as pre-dating the hillfort by a significant period, although not as early as the Neolithic, there is the possibility that it may fall into a category of circular earthworks that is being found in western Britain and Ireland and which excavation has revealed to be of post-Neolithic date. For example, in west Wales the excavation of two enclosures of supposed Late Neolithic date at Babil Farm and Castell Mawr in Pembrokeshire (Parker Pearson *et al* 2016; 2017) revealed that they were instead of Late Bronze Age and Early Iron Age date respectively. A similar picture has been found in Ireland, where a range of enclosures dating from the Late Bronze Age and Iron Age have been uncovered. These include ring-barrows, which can be less than 10m in diameter, through to very large embanked enclosures and hillforts (Waddell 1998, ch 9; O’Brien 2004; 2016; 2017), many of which are much larger than Castle-an-Dinas. This evidence suggests that from the later Bronze Age circular enclosures were being constructed along the Atlantic façade for a range of purposes, including as places of ceremonial gathering, burial and high-status occupation.

At Warbstow Bury (Warbstow) hillfort, recent topographical survey identified three prehistoric phases of activity (Arkley 2017). The earliest rampart lies between the inner and outer circuits and is partly overlain by the much more substantial inner rampart; it is, like Castle-an-Dinas rampart 3, the slightest. Warbstow Bury has not been

excavated and the date of the middle rampart is uncertain but was interpreted as likely to be of Late Bronze Age – Early Iron Age date (*ibid*, 246). At Killibury (Eglosayle) a Middle to Late Bronze Age radiocarbon determination was obtained from a pit beneath the inner rampart (Miles *et al* 1977). However, its association with the hillfort earthworks was uncertain.

In Cornwall the evidence for Late Bronze Age to Early Iron Age enclosures was fairly sparse until excavations at Hay Close (St Newlyn East) and Tremough (Penryn) in the mid-2000s revealed evidence for enclosures dating to the late second – early first millennium cal BC (Jones 2010; Jones *et al* 2015). At Hay Close (Jones 2014) a cropmark enclosure with a diameter of 60m was found to be enclosed by a substantial ditch with traces of an external bank. The few internal features identified included a possible cairn on the northern side of the enclosure. The ceramic assemblage from the enclosure ditch revealed that the earliest pottery dated from the first millennium cal BC and a radiocarbon determination from the base of the ditch placed activity in the Early Iron Age. At Tremough, enclosure 1 comprised a deeply cut ditch defining an enclosure with a diameter of approximately 60m (Jones *et al* 2015, 38–48). Unlike Hay Close, the interior was found to contain a large number of features, including rectilinear structures, large cooking pits and a general scatter of pits and postholes. Radiocarbon determinations placed activity within the period 1000–850 cal BC (*ibid*, 158). To the east, in Devon, a Late Bronze Age ringwork containing a roundhouse has recently been excavated at Hill Barton, Exeter (Mudd *et al* 2019). These excavated examples reveal that during the Late Bronze Age to Early Iron Age circular enclosures were being constructed and used for differing purposes.

In addition to these excavated examples, there are other enclosures which are morphologically similar to Castle-an-Dinas, although smaller in diameter (Jones 2010). Like Castle-an-Dinas, but unlike Hay Close and Tremough, they are hilltop sites. Unfortunately, they have not been investigated. Three examples are in west Cornwall. Bartinney (St Just-in-Penwith) is a circular enclosure around 75m in diameter (Herring 1995, 53). A very low bank surrounds three large central ring-cairns that form the focal point of the enclosure; a number of possible cairns are sited around the perimeter. Caer

Bran (Sancreed) is a circular multivallate site comprising an inner bank, a ditch and an outer bank (Lawson-Jones and Herring 1997, 55–6). Within the enclosure are three ring-cairns. The circular multivallate enclosure Castle-an-Dinas (Ludgvan) similarly encloses a number of circular features which are likely to be cairns. At all three sites it is possible that the cairns represent the earliest elements, constructed during the Early Bronze Age, followed by their encirclement by banks and, in the case of Caer Bran and Castle-an-Dinas (Ludgvan), multiple banks and ditches towards the end of the second or during the first millennium cal BC (Jones 2010; 2016). In this way the embellishment of the sites with additional banks and ditches would have been an ‘ongoing project’ (Barrett 1994, 14). At Caer Bran and Castle-an-Dinas (Ludgvan) the periodic remodelling may have been as important a focus for the surrounding communities as the final use of the completed monument.

Thus, several Cornish enclosures which have morphological similarities to Castle-an-Dinas contain ceremonial monuments within them. Bartinney and Caer Bran, Castle-an-Dinas (Ludgvan) and possibly Hay Close, enclose what are likely to be Early Bronze Age cairns, which are also a feature of Castle-an-Dinas. Rampart 3 may therefore have been intended to enclose and redefine a sacred space and, as noted above, the possible use of yellow clay capping recorded in some of the rampart 3 sections may have been to make the enclosure visually distinctive in the landscape. Given the widespread use of yellow clays as a capping for barrows in the local area during the Early Bronze Age (Miles 1975; Jones 2005) there may also have been a deliberate attempt to visually reference an ‘ancestral past’. However, only targeted radiocarbon dating could clarify the true age of rampart 3.

The Iron Age hillfort

Traditionally hillforts were interpreted as defended settlements occupied by elites (for example, Cunliffe 1971; 1983, 168–9). However, this position has been critiqued on a number of fronts. It has been noted that hillfort ramparts were frequently so complex and extensive that they would not have been readily defensible (for example, Bowden and McOmish 1987) and there is little evidence for the occupants of hillforts having

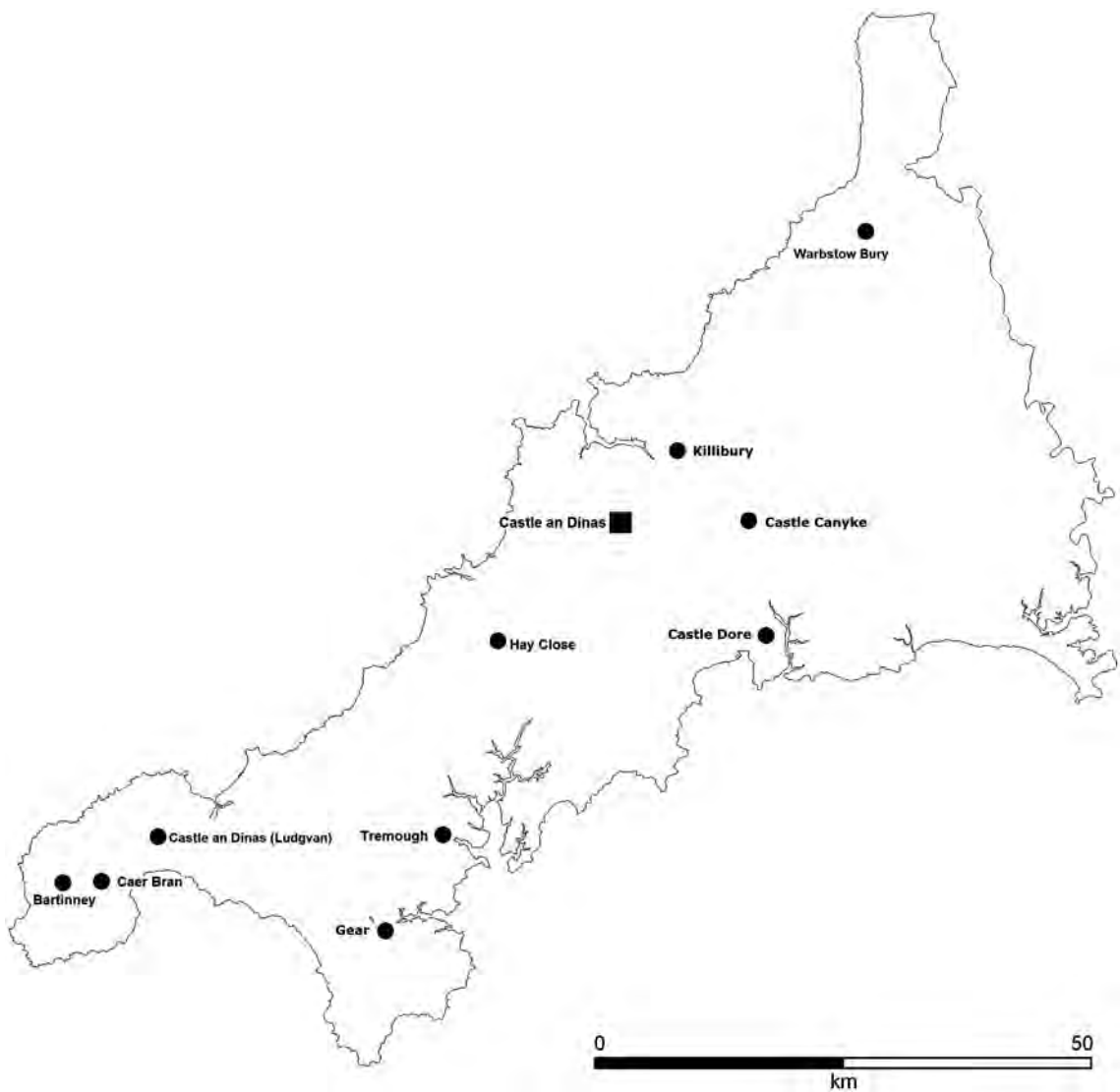


Fig 21 The location of Castle-an-Dinas and some of the later prehistoric enclosures referred to in the text.

had more in the way of ‘high status’ artefacts than groups who lived in other types of settlement (for example, Hill 1996; Sharples 2010).

The findings from the Castle-an-Dinas archive, although limited by its level of preservation, suggest a long and complex history of use. Despite the number of cuttings, the dating evidence for the hillfort at Castle-an-Dinas is limited. The surviving artefacts indicate that the major phase of activity was associated with South Western Decorated ware

dating to the Middle Iron Age. This is supported by three radiocarbon dates (SUERC-82203; SUERC-82204; SUERC-82206) which span the mid fourth to first centuries cal BC. None of the finds or radiocarbon determinations, however, can be used to date the construction of the hillfort.

The construction of hillforts in some parts of Britain, in the Welsh Marches, for example, is now thought to have commenced in the later Bronze Age (for example, Brown 2009). Elsewhere in

southern England the majority appear to have been constructed during the earlier Iron Age (Sharples 2010, 55–7); early sites, such as Balkerne (Hampshire), tend to have little inside them (Payne *et al* 2006). Although it is possible that ramparts 1, 2 and 4 may date to the later Bronze Age or the Early Iron Age, at Castle-an-Dinas there is no available evidence for the dating of the ramparts and the first identifiable phase of activity from both the ceramics and radiocarbon dating lies in the fourth or third centuries cal BC or the Middle Iron Age, when developed hillforts were being occupied in southern England (for example, Payne *et al* 2006, 157–9; Sharples 2010, 70–5).

Despite being devoid of artefacts, the evidence from the ramparts 1 and 2 does suggest some phasing. The largest inner rampart was of simple dump construction but does seem to have had two phases, as does its associated ditch, which had stepped sides where it had been cut into the bedrock, presumably to provide stone for rampart 1. Rampart 2 may be a separate rampart although Soutar (2013, 227) suggests that it is a later and unfinished enlargement of the earlier counterscarp of rampart 1. There is also a hint of ongoing modifications in the narrowing of the entrance to rampart 1 (Graeme Kirkham, pers comm). As suggested above, it is likely that enclosures were ‘ongoing projects’ with new ramparts being added as others decayed.

The character of Iron Age activity inside Castle-an-Dinas is still poorly understood: the areas excavated within the ramparts were small and few cut features were uncovered. Artefacts were also scarce, and although many have been lost and the primary archive for many of the cuttings is missing, the Finds Register reveals that few objects were found over the course of the three years of excavation. This is despite the fact that many of the internal cuttings were located over geophysical anomalies and that areas which often do produce finds, such as ditch terminals, were excavated (for example, Hill 1995).

Internal features were limited in number, and several are ambiguous or of uncertain date. A spread of cobbles was found in the area to the north of the spring, and two gullies were located to the south of the barrow; one of these produced a post-medieval date (SUERC-82205), the other a Middle Iron Age determination (SUERC-82204). Neither of these features, however, need be of prehistoric date, and their interpretation remains uncertain.

Two areas did produce significant Iron Age features. A midden deposit indicative of feasting and dating to the Middle Iron Age (SUERC-82206) was uncovered behind the rampart in cuttings 120, 121 and 122 (below) and in the south west entrance area there were a number of postholes or pits, although it is not certain whether these were structural. The same area also produced some indication of cobbling and a low stone revetment was identified behind the ‘inturned’ bank. However, cutting 42 which was excavated through the entrance does not appear to have uncovered a metallised surface.

In addition to the excavated evidence, geophysical survey within the interior of Castle-an-Dinas has revealed very few features. This is true of the more recent surveys which covered much of the central part of the interior (Cripps 2004; Lewis *et al*, in preparation) and the original proton magnetometer survey. The latter contrasts with the broadly contemporary survey at Cadbury Castle (Alcock 1972), which revealed roundhouses and other structures. The paucity of occupation evidence is emphasised by the fact that the radiocarbon dating suggests at least two phases of occupation within the hillfort. In other words, not only are there few features but those that have been identified were potentially created over an extended period of time.

Castle-an-Dinas does not, therefore, on current evidence, show much of the complexity of the developed hillforts of Wessex (Sharples 1991, 262) or indeed many of the hillforts of varying size and form found in other parts of Britain (for example, Harding 1974, ch 4; Stanford 1981; Dixon 1994; Barrett *et al* 2000; Thomas 2005), either in terms of rampart construction, entrance works, or metallised surfaces, and, as noted above, occupation within the hillfort does not seem to have been intensive.

Elsewhere in southern Britain, geophysical survey undertaken as part of the Wessex Hillforts Project (which covered sites in Wiltshire, Hampshire and Berkshire) revealed that hillfort interiors could have very different levels of occupation (Payne *et al* 2006, 147). The hillforts are likely to have been constructed for a number of purposes and their functions may have changed over time. Some hillforts, as with that at Barbury (Wiltshire), were found to contain large numbers of pits; others such as Beacon Hill contained houses; by contrast, some sites produced very little evidence for cut features (*ibid*).

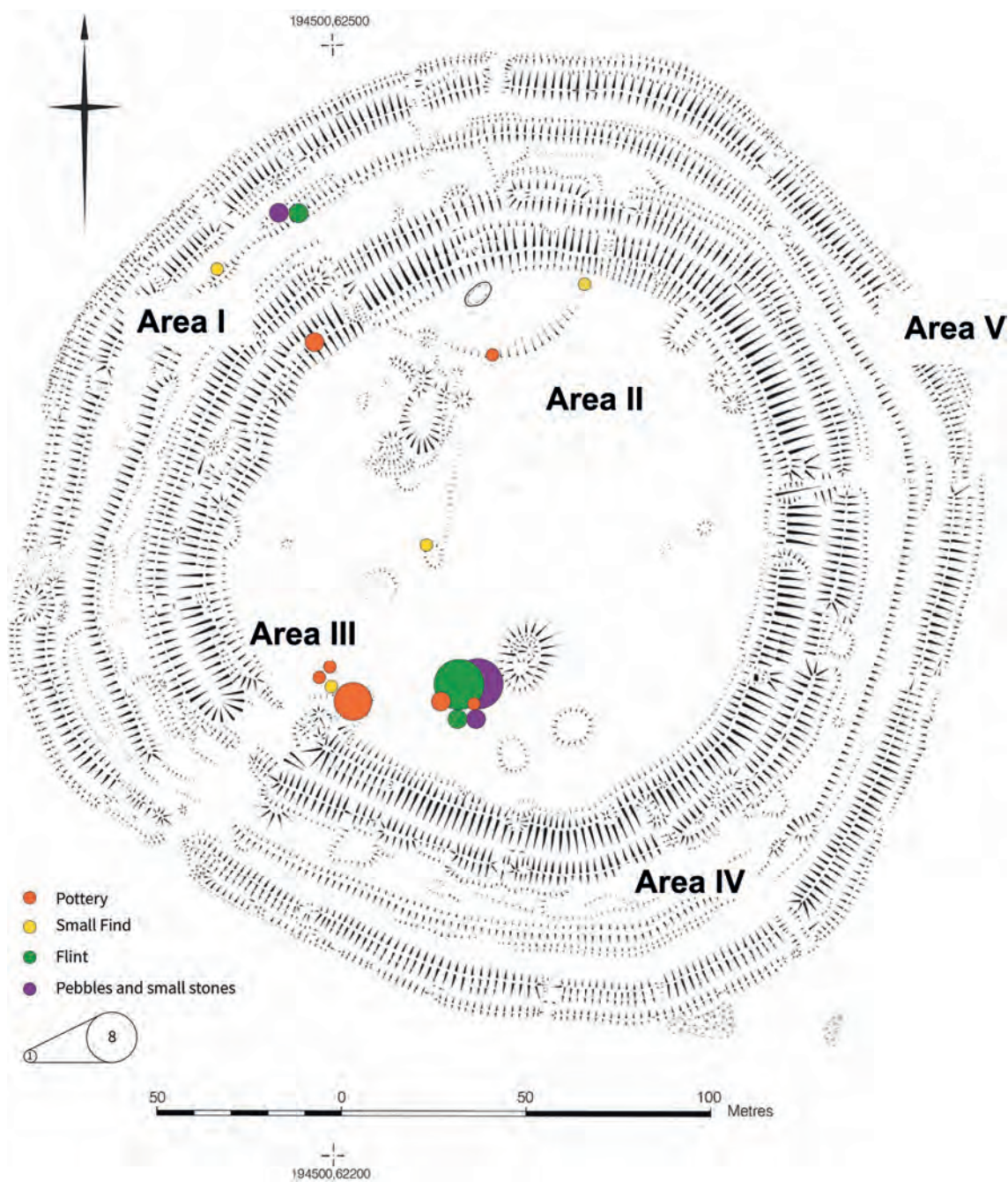


Fig 22 Plan showing the location of the recorded small finds and locations of excavation Areas I–V. (Survey drawing reproduced by permission © Historic England Archive.)

The dataset for Cornwall is very much smaller than Wessex, as only a tiny number of Cornish hillforts have had a geophysical survey and even fewer have been excavated. As in Wessex, however, the investigated sites have produced very different or at least contrasting kinds of evidence for occupation inside them. Excavation at Killibury hillfort (Miles *et al* 1975), 13 km north east of Castle-an-Dinas, found large numbers of postholes which are likely to have been associated with multi-phased timber structures, as well as a substantial ceramic / artefactual assemblage. Dating of this site suggested a Middle Iron Age occupation horizon broadly contemporary with the datable activity at Castle-an-Dinas. Post-ring roundhouses belonging to several phases were also identified by Radford (1951) during excavations in the 1930s inside Castle Dore. The ceramics were dated to the Middle Iron Age and re-analysis of the beads revealed that they were all of Iron Age date (Quinnell and Harris 1985). Excavation was mostly focused in the southern part of the site but interestingly the first phase roundhouses were arranged along the inner edge of the rampart.

Likewise, dense occupation was also found within the hillfort at Gear on the Lizard, where geophysical survey followed by limited trenching revealed that the interior of the enclosure contained small enclosures and ring-gullies associated with Iron Age roundhouses (Edwards and Kirkham 2008). Radiocarbon dating and ceramics from the site reveal that occupation within the hillfort spanned both the Middle and Late Iron Age periods. Although intense, the organisation of features and the internal subdivision of space appear to be rather different from both Killibury and Castle Dore.

By contrast, the geophysical survey at Castle Canyke (Bodmin), the largest hillfort in Cornwall, detected few archaeological anomalies inside the enclosure, although some of those identified may have been pits (Bartlett 1985). However, the size of the surveyed area was small in relation to the overall area of the site and a complete survey with modern equipment might produce different results.

Geophysical survey has also been undertaken recently at four hillforts in south-east Cornwall: Padderbury Top (St Germans), Hall Rings (Pelynt), Bury Down (Lanreath) and Bake Rings (Pelynt) (Lewis and Frieman 2013; 2014; 2015; 2016; 2018). None of the interiors of these sites have been excavated and there are distinct differences in the form and size of the surveyed enclosures;

however, the variation in anomalies within the enclosures is of interest. Padderbury Top, Hall Rings and Bake Rings produced anomalies inside which can be interpreted as relating to roundhouses and settlement activity, whereas Bury Down produced no significant indications of occupation-related features.

As we have seen, there is a good deal of variation in the apparent intensity of occupation inside hillforts. However, much more extensive evidence for Iron Age activity has been uncovered in non-hillfort contexts across Cornwall, particularly in unenclosed and smaller enclosed settlements. Among the open settlements currently known are examples at Penmayne (St Minver), along the Newquay Strategic Road Corridor and near Belowda (Roche) (Gossip *et al* 2012; Jones 2019; Clark and Foreman 2009). Smaller enclosures of Iron Age date include Carloggas (St Mawgan-in-Pydar) and sites at Threemilestone (Kenwyn) and Boden (St Anthony in Meneage) (Threipland 1956; Gossip 2013; forthcoming).

Nearly all of the Iron Age settlements that have been investigated have produced rather more in the way of artefacts than were found within Castle-an-Dinas. One plausible explanation for this is that the latter site was not permanently occupied. Long ago, Lady Aileen Fox (1952; 1958) suggested that some hillslope forts or multiple enclosure hillforts in the south west and Wales, with wide spaces between their ramparts, were associated with protected grazing for cattle. Sites in this class include Clovelly Dykes in Devon and Warbstow Bury; the form of the latter has been compared with Castle-an-Dinas (Forde-Johnson 1976, 160; Arkley 2017). Seasonal occupation of some hillfort sites has certainly been suggested in Wessex (for example, Hill 1996). Furthermore, in Cornwall and more widely across the south west there is evidence for the reuse of some upland Middle Bronze Age roundhouses and enclosures in the Iron Age, which is likely to have related to seasonal patterns of grazing associated with transhumance (for example, Jones 2013; 2017). Although Castle-an-Dinas does not comprise just the two widely spaced ramparts envisioned by Fox (1958, 49), it is feasible that in the Middle Iron Age, it was associated with a seasonal grazing regime, which might account for the lack of internal features.

Another plausible interpretation would be that the hilltop was used for gatherings of surrounding communities, and several commentators have

suggested that such assemblies might have included communal or ceremonial functions (for example, Hill 1996; Driver 2016, ch 5). This need not be separate from the interpretation offered above, as any seasonal rounding up of cattle may have been accompanied by celebrations and ritualised acts.

The evidence from Castle-an-Dinas is unfortunately too limited to make any extended comment on what activities took place inside it. However, it is worth noting that the ramparts enclosed one or two round barrows, the southernmost of which was large and is clearly visible from the south-west entrance. Prior to disturbance the northern barrow is also likely to have been visible from the entrance. As several commentators have argued, there is a growing body of evidence that monuments continued to be important and were potentially manipulated long after their architects had died and their original purposes had been forgotten or mythologised (for example, Barrett 1999; Bradley 2002). Indeed, many Iron Age hillforts across the British Isles enclose Early Bronze Age round barrows and cairns (Hingley 1999; Sharples 2010, 31–4). Although it is likely that attitudes to earlier barrows may have differed between communities, it is also probable that, just as modern identities are shaped by mythologised versions of the past (Appiah 2018, chapter 4), an ‘ancestral past’ continued to exert an influence on the users of the hillfort and that this extended beyond the fact that they were utilising the same hilltop. As John Barrett (1999) has argued, the Bronze Age shaped the Iron Age by creating conditions (monuments and places) which could be recognised and read as mythological histories. In the context of Castle-an-Dinas, the enclosed barrows may have been considered to be the burial mounds of significant ancestors, founding community members or heroes from the distant past, and as such may have played an active part in the mythology of the community who used the hillfort.

At Castle-an-Dinas it is apparent from the Finds Register that artefacts were concentrated in the area of the southern barrow and behind the entrance, where the greatest concentration of pottery was recorded within what are described as postholes (especially in cutting 41) and also of quartz pebbles or sling stones (cuttings 109, 110, 111 and 112). Aside from this the only other notable area to produce artefacts was in the later Iron Age occupation or midden deposit in cuttings

120/121/122. This was found to contain charcoal, some pottery and, significantly, burnt animal bone. Animal bone rarely survives in Cornwall’s acidic soils, unless very charred, so what survives of the bone assemblage at Castle-an-Dinas is likely to be a tiny proportion of what was deposited in the Iron Age. One possible interpretation is that the material was, given the lack of evidence for settlement activity either from the excavations or geophysical survey, associated with feasting inside the enclosure. The reasons behind such events are open to question; however, evidence from anthropology makes it apparent that the ritualised consumption of food often takes place at key times of the year or as a way of marking social transitions in the lives of people (Clarke 2001; Jones 2007, 158). Food production, processing and its public consumption are frequently associated with social strategies involving feasting, which can provide opportunities whereby individuals can obtain or maintain status through the provision of food at events and the memories these generate (Wiessner 1996; Dietler 1996; Sutton 2001). Evidence for feasting in later prehistoric Europe is well documented (for example, Dietler 1996), and in Britain there is evidence for such activity in the form of middens, cooking sites, deposits of animal bones and large vessels used for cooking quantities of food (for example, Madgwick and Mulville 2015; Baldwin and Joy 2017; Waddington *et al* 2019).

Similar material, deposited in far smaller quantities than has been found elsewhere in Britain, has also been identified at several Iron Age sites in Cornwall, such as the Middle and Late Iron Age cliff castles at the Rumps and Trevelgue (Brooks 1964; 1974; Nowakowski and Quinnell 2011, 389–90). At Camelford, material associated with feasting activity and the consumption of animals was deposited into the terminal of a ditch associated with a ceremonial monument, enclosure 1 (Jones and Taylor 2015). Radiocarbon dating from the terminal pit places the deposit very close to the end of the Iron Age and broadly contemporary with the determination from Castle-an-Dinas.

By contrast, no artefacts were recovered from the more extensively excavated Area II ‘spring area’ at Castle-an-Dinas, or in any of the excavated ditch slots. The pottery from cutting 41 is lost, which means that little can be said about it (Quinnell, above). It is, however, worth noting that the deliberate placing of artefacts

within pits as ‘special’ deposits in the Iron Age has been increasingly recognised across Britain and Cornwall, as has the frequent burial of ‘special’ deposits close to ‘liminal’ or potentially ‘supernaturally ambiguous’ places, such as entrances, boundaries and ancient monuments (for example, Hingley 1990; Hill 1995; Chadwick 2015; Jones 2019). Likewise, the association of quartz pebbles and pieces with ritualised contexts is also a frequent occurrence in prehistoric and Roman-period sites across Cornwall (Miles 1975; Jones and Taylor 2015; Jones 2019). Although not securely dated to the Iron Age, the number of such items found around the southern barrow may be significant as on other sites, such as Killibury, pebbles or sling shots frequently do not appear to have had a particular concentration (Miles 1977, 89).

The distribution of the pottery and quartz pebbles at Castle-an-Dinas (Fig 22) hints at some deliberate patterning in the distribution of artefacts, although further investigation of the interior would be required to establish whether this is significant. Nonetheless, the apparent concentration of artefacts in the south-west part of the site (southern barrow and entrance) is noteworthy.

Later Iron Age continuity?

Evidence for Late Iron Age activity at Castle-an-Dinas is based on the radiocarbon determination obtained on burnt animal bone, 1999 $\pm$ 34 BP, 91 cal BC – cal AD 76 (SUERC-82207) from the midden deposit (above). Elsewhere in Britain the later Iron Age sees a decline in the occupation of hillforts and, in southern Britain, a greater diversity in habitation sites which included open settlement, a range of enclosures and oppida (Collis 1984a, 181–2; 1984b, 167–73; Sharples 2010, 159–68). In Cornwall there is no current evidence for the development of large oppidum-type sites and the limited evidence from hillforts, as at Gear and Killibury, suggests continuing occupation (Edwards and Kirkham 2008; Miles *et al* 1977). At the same time, there is evidence for roundhouses associated with open settlement, as at Camelford and Higher Besore (Jones and Taylor 2015; Gossip, forthcoming), and for small enclosures including ‘rounds’ (Quinnell 2004, 214; Frieman *et al*, in preparation). Excavated small enclosures include Trevisker (St Eval), Castle Gotha (St Austell) and Threemilestone (Kenwyn) (ApSimon

and Greenfield 1972; Saunders and Harris 1982; Schwieso 1976). As was the case in the Middle Iron Age, it seems that there was diversity in settlements, mostly small-scale, with perhaps enclosed settlements becoming more common.

Again, the character of occupation within Castle-an-Dinas is unknown and evidence is limited to the occupation or possibly midden material identified in cuttings 120, 121 and 122. At Camelford the Late Iron Age midden seemed to be associated with the abandonment of the enclosure (*ibid*). However, the character of the end of the occupation within Castle-an-Dinas is unknown; although we can say that no Roman-period finds were recovered from the site. This could be argued to suggest that by this time, active use of the enclosure had ceased and activities within faded into memory. Given its prominent setting in the landscape and the lower lying Roman-period settlement activity in the near vicinity (for example, Lawson-Jones and Kirkham 2009–10; Clark and Foreman 2009), Castle-an-Dinas is, however, unlikely to have been forgotten and the hillfort may have slowly changed from being a place of ‘ancestral memories’ to one of supernatural stories which have survived into the historic period (Jenner 1921; Young 2017).

Summary

The investigation of the Castle-an-Dinas archive was in some way comparable to the process of actual excavation. Tantalising fragments of what had been found on site in the 1960s were recovered and, together with the radiocarbon dating, these have taken our understanding a little further. It is now possible to say that the earliest identifiable activity belongs in the Late Mesolithic and that there is currently no evidence to support a Neolithic enclosure. The next identifiable phase relates to the Early Bronze Age barrows on the summit of the hill, two of which were encircled by a large enclosure, with a shallow segmented ditch and a low bank, perhaps capped with yellow clay. This bank may have been contemporaneous with the barrows or, more probably, was constructed towards the end of the Bronze Age c 1000 cal BC or early in the Iron Age, when similar enclosures were being built elsewhere along the Atlantic façade. In the Middle Iron Age this bank was itself encircled by substantial earthworks and ditches, an ‘ongoing project’ which formed the hillfort. While the hillfort dominated the surrounding landscape

it does not appear to have been permanently occupied and may instead have been a focal point in the landscape for one or more communities. Rarely preserved evidence in the form of a small surviving quantity of animal bone from the Late Iron Age suggests the possibility that midden material associated with feasting was heaped up against the inner rampart. This is the last evidence that we currently have for occupation inside the enclosure, prior to the post-medieval ceramics dating to more than a millennium later.

Of course, much remains to be established and many questions can only be answered by targeted excavation of key features to obtain environmental and dating material. In particular, there is a need to tie down the chronology for the ramparts, especially rampart 3, which is likely to represent a pre-hillfort enclosure. It would also be desirable to sample the potential midden deposit for further environmental material and to confirm the apparent lack of evidence for roundhouses and other structures within the hillfort interior.

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References

- Alcock, L., 1972. 'By South Cadbury is that Camelot': excavations at Cadbury Castle 1966–70, London
- Appiah, K A., 2018. *The lies that bind: rethinking identity, creed, country, class, culture*, London
- ApSimon, A., and Greenfield, E., 1972. The excavation of the Bronze Age and Iron Age settlement at Trevisker round, St Eval, Cornwall, *Proc Prehist Soc*, **38**, 302–81
- Arkley, Z., 2017. Warbstow Bury hillfort, Warbstow, Cornwall, *Cornish Archaeol*, **56**, 237–50
- Baldwin, A., and Joy, J., eds, 2017. *A Celtic feast: the Iron Age cauldrons from Chiseldon, Wiltshire*, London
- Barrett, J., 1994. *Fragments from antiquity: an archaeology of social life in Britain, 2900–1200 BC*, Oxford
- Barrett, J C., 1999. The mythical landscapes of the British Iron Age, in W Ashmore and A B Knapp, eds, *Archaeologies of landscape: contemporary perspectives*, Oxford, 253–65
- Barrett, J, Freeman, P, and Woodward, A., 2000. *Cadbury Castle, Somerset: the later prehistoric and early historic archaeology*, English Heritage Archaeological Rept, **20**, London
- Bartlett, A., 1985. Magnetometer survey at Castle Canyke, Bodmin, 1985, Ancient Monuments Laboratory Survey no. G26/85
- Bayliss, A, Hedges, R, Otlet, R, Switsur, R, and Walker, J., 2012. *Radiocarbon dates from samples funded by English Heritage between 1981 and 1988*, Swindon
- Bell, M., 2007. *Prehistoric coastal communities: the Mesolithic in western Britain*, York
- Berridge, P, and Roberts, A., 1986. The Mesolithic period in Cornwall, *Cornish Archaeol*, **25**, 7–35
- Bishop, S., 2011. *Castle-an-Dinas, St Columb Major, Cornwall: archaeological survey report*, Historic England research report series, no **110-2011**, Swindon
- Blick, N., 2009. Ancestral associations or pragmatic motivations? An interpretation of Castle-an-Dinas hillfort and the utilisation of past monuments in the British Iron Age, unpublished MA dissertation, University of Exeter
- Bowden, M C B, and McOmish, D., 1987. The required barrier, *Scottish Archaeological Review*, **4**, 76–84
- Bradley, R., 2002. *The past in prehistoric societies*, London
- Brooks, R T., 1964. The Rumps, St Minver: interim report on the 1963 excavations, *Cornish Archaeol*, **3**, 26–34
- Brooks, R T., 1974. The excavation of The Rumps cliff castle, St Minver, Cornwall *Cornish Archaeol*, **13**, 5–50
- Brooks, T., 2001. *Castle-an-Dinas (1916–1957): Cornwall's premier wolfram mine, with brief histories of other tungsten ore mines in Cornwall and west Devon*, St Austell
- Brown, I., 2009. *Beacons in the landscape. The hillforts of England and Wales*, Oxford

- Brown, L, 1984. Objects of stone, in B Cunliffe, *Danebury: an Iron Age hillfort in Hampshire. Volume 2. The excavations, 1969–1978: the finds*, CBA Res Rept, 52, London, 407–26
- Buck, C, and Thomas, N, 2012. *Castle-an-Dinas Mine, St Columb Major: archaeological assessment*, Truro (Cornwall Archaeological Unit)
- Butler, C, 2005. *Prehistoric flintwork*, Stroud
- Chadwick, A M, 2015. Doorways, ditches and dead dogs – material manifestations of practical magic in Iron Age and Roman Britain, in C Houlbrook and N Armitage, eds, *The materiality of magic: an artifactual investigation into ritual practices and popular beliefs*, Oxford, 37–64
- Chatterton, T, 2006. Ritual, in C Conneller and G Warren, eds, *Mesolithic Britain and Ireland: new approaches*, Stroud, 101–20
- Clark, P, and Foreman, S, 2009. The archaeology of the A30 Bodmin to Indian Queens road scheme [online] Available at <https://library.thehumanjourney.net/438/> [accessed 17 June 2020]
- Clarke, M J, 2001. Akha feasting: and ethnoarchaeological perspective, in M Dietler and B Hayden, eds, *Feasts: archaeological and ethnographic perspectives on food, politics, and power*, Tuscaloosa, 144–67
- Collis, J, 1984a. *Oppida: earliest towns north of the Alps*, Sheffield
- Collis, J, 1984b. *The European Iron Age*, London
- Cripps, L J, 2004. *Castle-an-Dinas, St Columb Major, Cornwall: magnetometry survey*, Durham: University of Durham
- Cunliffe, B, 1971. Some aspects of hill-forts and their cultural environments, in M Jesson and D Hill, eds, *The Iron Age and its hill-forts: papers presented to Sir Mortimer Wheeler*, Southampton, 53–69
- Cunliffe, B, 1983. *Danebury: anatomy of an Iron Age hillfort*, London
- Cunliffe, B, 2005. *Iron Age communities in Britain: an account of England, Scotland and Wales from the seventh century BC until the Roman Conquest*, London (4th edn)
- Dietler, M, 1996. Feasts and commensal politics in the political economy: food, power, and status in prehistoric Europe, in P Wiessner and W Schiefenhovel, eds, *Food and the status quest: an interdisciplinary perspective*, Oxford, 87–126
- Dixon, P, 1994. *Crickley Hill, volume 1: the hillfort defences*, Nottingham (Crickley Hill Trust and University of Nottingham)
- Driver, T, 2016. *Hillforts of Cardigan Bay*, Woonton (Logaston Press)
- Edwards, K, and Kirkham, G, 2008. Gear and Caervallack, St Martin-in-Meneage: excavations by Time Team, 2001, *Cornish Archaeol*, **47**, 49–100
- Evans, C, Appleby, G, and Lucy, S, 2016. *Lives in land – Mucking excavations: volume 1. Prehistory, context and summary*, Oxford
- Finney, J B, 2006. *Middle Iron Age warfare of the hillfort dominated zone c. 400 BC to c. 150 BC*, Brit Arch Repts, Brit Ser, **423**, Oxford
- Forde-Johnston, J, 1976. *Hillforts of the Iron Age in England and Wales: a survey of the surface evidence*, Liverpool
- Fox, A, 1952. Hillslope forts and related earthworks in south-west England and south Wales, *Arch Jnl*, **30**, 1–22
- Fox, A F, 1958. South-western hill-forts, in S S Frere, ed, *Problems of the Iron Age in southern Britain*, London, 35–60
- Frieman, C J, Jones A M, and Lewis J, in preparation. Worlds within worlds. Embanked enclosures and transforming identities during the Romano-British period in Cornwall.
- Gent, T H, and Quinnell, H, 1999. Excavations of a causewayed enclosure and hillfort on Raddon Hill, Stockleigh Pomeroy, *Proc Devon Archaeol Soc*, **57**, 1–76
- Gossip, J, 2013. The evaluation of a multi-period prehistoric site and fogou at Boden Vean, St Antony-in-Meneage, Cornwall, 2003, *Cornish Archaeol*, **52**, 1–98
- Gossip, J, forthcoming. Life outside the round: Bronze Age and Iron Age settlement at Higher Besore and Truro College, Threemilestone, Truro, in A M Jones, ed, *Later prehistoric settlement in Cornwall and the Isles of Scilly: evidence from five excavations*
- Gossip, J, Jones A M, and Quinnell, H, 2012. Early Neolithic activity and an Iron Age settlement at Penmayne, Rock, St Minver. *Cornish Archaeol*, **51**, 165–89
- Guido, M, 1958. *The glass beads of the prehistoric and Roman periods in Britain and Ireland*, London
- Harding, D W, 1974. *The Iron Age in lowland Britain*, London
- Hencken, H O’N, 1932. *The archaeology of Cornwall and Scilly*, London
- Herring, P, 1995. *Bartinney Hill, Tredinney Common and Carn Grean: an archaeological assessment*, Truro (Cornwall Archaeological Unit)
- Hill, J D, 1995. *Ritual and rubbish in the Iron Age of Wessex*, Brit Arch Repts, Brit Ser, **242**, Oxford
- Hill, J D, 1996. Hillforts and the Iron Age of Wessex, in T Champion and J Collis, eds, *The Iron Age in Britain and Ireland: recent trends*, Sheffield, 95–116
- Hingley, R, 1990. Iron Age ‘currency bars’: the archaeological and social context, *Arch Jnl*, **147**, 91–117
- Hingley, R, 1999. The creation of later prehistoric landscapes and the context of the reuse of Neolithic and early Bronze Age monuments in Britain and Ireland, in B Bevan, ed, *Northern Exposure: interpretative devolution and the British Iron Age*, Leicester, 233–51

- Hull, P L, 1970. William Worcester in Cornwall, *Cornish Archaeol*, **9**, 115–20
- Hurcombe, L, 2014. *Perishable material culture in prehistory: investigating the missing majority*, London
- Jacobi, R M, 1979. Early Flandrian hunters in the south-west, *Proc Devon Archaeol Soc*, **37**, 48–94
- Jenner, H, 1921. Castle-an-Dinas and King Arthur, *Annual report Roy Cornwall Polytechnic Socy*, **4**, 83–101
- Johns, C, and Herring, P, 1994. Littlejohns Barrow: the damage and reprofiling of the round barrow west of Hensbarrow, Roche, *Cornish Archaeol*, **33**, 22–35
- Johnson, N, and David, A, 1982. A Mesolithic site on Treose Head and contemporary geography, *Cornish Archaeol*, **21**, 67–103
- Jones, A M, 2005. *Cornish Bronze Age ceremonial landscapes c.2500-1500 BC*, Brit Arch Repts, Brit Ser, **394**, Oxford
- Jones, A M, 2010. Misplaced monuments?: a review of ceremony and monumentality in first millennium cal BC Cornwall, *Oxford J Archaeol*, **29**, 203–28
- Jones, A M, 2013. Archaeological excavations at Bosiliack, Madron, Cornwall, 2011, *Cornish Archaeol*, **53**, 135–69
- Jones, A M, 2014. Hay Close, St Newlyn East: excavations by the Cornwall Archaeological Society, 2007, Cornwall, *Cornish Archaeol*, **53**, 115–55
- Jones, A M, 2016. Early landscape and ceremony, in P Herring, N Johnson, A M Jones, J A Nowakowski and A Young, *Archaeology and landscape at the Land's End, Cornwall: the West Penwith surveys 1980–2010*, Truro (Cornwall Council), 112–37
- Jones, A M, 2017. Excavation of a multi-phased roundhouse at West Northwood Farm, Bodmin Moor 2017, *Cornish Archaeol*, **56**, 45–84
- Jones, A M, 2019. *Excavation of later prehistoric and Roman sites along the route of the Newquay Strategic Road Corridor*, Cornwall, Oxford
- Jones, A M, Gossip, J, and Quinnell, H, 2015. *Settlement and metalworking in the Middle Bronze Age and beyond: new evidence from Tremough, Cornwall*, Leiden
- Jones, A M, Lawson-Jones, A, and Quinnell, H, 2019. Excavations at the North Cliffs 2016: investigating Mesolithic flint scatters in Hudder Field, *Cornish Archaeol*, **58**, 1–26 [this volume]
- Jones, A M, and Quinnell, H, 2006. Redating the Watch Hill barrow, *Arch Jnl*, **163**, 42–66
- Jones, A M, and Quinnell, H, 2011. The Neolithic and Bronze Age periods in Cornwall, c 4000 cal BC to c 1000 cal BC: an overview of recent developments, *Cornish Archaeol*, **50**, 197–230
- Jones, A M, and Quinnell, H, 2014. *Lines of archaeological investigation along the north Cornish coast*, Brit Arch Repts, Brit Ser, **594**, Oxford
- Jones, A M, and Taylor, S R, 2015. Archaeological investigations of Late Iron Age settlement at Sir James Smith's Community School, Camelford, Cornwall, 2008–9, *Cornish Archaeol*, **54**, 1–87
- Jones, M, 2007. *Feast: why humans share food*, Oxford
- Lawson-Jones, A, 2001. *Bear's Down to Ruthvoes, Cornwall: archaeological watching brief*, Truro (Cornwall Archaeological Unit)
- Lawson-Jones, A, and Herring, P, 1997. *Caer Bran: an archaeological assessment*, Truro (Cornwall Archaeological Unit)
- Lawson-Jones, A, and Kirkham, G, 2009–10. Smithing in the round: excavations at Little Quoit Farm, St Columb Major, Cornwall *Cornish Archaeol*, **48–9**, 173–226
- Leary, J, 2015. *The remembered land: surviving sea-level rise after the last ice age*, London
- Lee, K, 2001. Experimental heat-treatment of flint, *Lithics*, **22**, 39–44
- Lewis, J, 2011. On top of the world: Mesolithic and Neolithic use of the Mendip Hills, in J Lewis, ed, *The archaeology of Mendip: 500,000 years of continuity and change*, Oxford, 93–117
- Lewis, J, and Frieman, C, 2013. *A geophysical survey of Padderbury Top hillfort enclosure, St Germans, Cornwall*, Southeast Kernow Archaeological Survey, **4**
- Lewis, J, and Frieman, C, 2014. *A geophysical survey of Bake Rings enclosure, Pelynt, Cornwall*, Southeast Kernow Archaeological Survey, **2**
- Lewis, J, and Frieman, C, 2015. *A geophysical survey of Hall Rings enclosure, Pelynt, Cornwall*, Southeast Kernow Archaeological Survey, **5**
- Lewis, J, and Frieman, C, 2016. *A geophysical Survey of Bury Down hillfort enclosure, Lanreath, Cornwall*, Southeast Kernow Archaeological Survey, **6**
- Lewis, J, and Frieman, C, 2018. Geophysical survey of four Cornish hillforts – later prehistoric settlements and gathering places in south-east Cornwall, *Cornish Archaeol*, **57**, 143–168.
- Lewis, J, Frieman, C J, and Beaverstock, K, in preparation. *A geophysical survey of Castle-an-Dinas hillfort*, Southeast Kernow Archaeological Survey
- Liddell, D, 1932. Report of the excavations at Hembury fort, Devon, third season, *Proc Devon Arch Expl Soc*, **1**, 162–90
- Liddell, D, 1935. Report of the excavations at Hembury fort, Devon (1934 and 1935), *Proc Devon Arch Expl Soc*, **2**, 135–75
- Madgwick, R, and Mulville, J, 2015. Feasting on forelimbs: conspicuous consumption and identity in later prehistoric Britain, *Antiquity*, **89 (345)**, 629–44
- Mercer, R, 1981. Excavations at Carn Brea, Illogan Cornwall: a Neolithic fortified complex of the third millennium bc, *Cornish Archaeol*, **20**, 1–204
- Mercer, R, 1986. The Neolithic in Cornwall, *Cornish Archaeol*, **25**, 35–80

- Mercer, R, 1997. The excavation of a Neolithic enclosure complex at Helman Tor, Lostwithiel, Cornwall, *Cornish Archaeol*, **36**, 5–63
- Mercer, R, and Healy, F, 2008. *Hambledon Hill, Dorset, England. Excavation and survey of a Neolithic monument complex and its surrounding landscape*, London
- Miles, H, 1975. Barrows on the St Austell granite, *Cornish Archaeol*, **14**, 5–81
- Miles, H, Davey, U, Harris, D, Hooper, S, Moreton, P, Padel, O, and Staines, S, 1977. Excavations at Killibury hillfort, Egloshayle 1975–6, *Cornish Archaeol*, **16**, 89–121
- Milner, N, Conneller, C, and Taylor, B, 2018. *Star Carr. Volume 1: a persistent place in a changing world*, York
- Mudd, A, Garland, N, and Brindle, T, 2019. A Late Bronze Age ringwork and other prehistoric, Roman and later occupation at Hill Barton, Exeter, 2012–15 *Proc Devon Arch Soc*, **77**, 147–221
- Nowakowski, J A, and Johns, C, 2015. *Bypassing Indian Queens. Archaeological excavations 1992–1994. Investigating prehistoric and Romano-British settlement and landscapes in Cornwall*, Truro (Cornwall Council)
- Nowakowski, J A, and Quinnell, H, 2011. *Trevelgue Head, Cornwall: the importance of C K C Andrew's 1939 excavations for prehistoric and Roman Cornwall*. Truro (Cornwall Archaeological Unit)
- Nowakowski, J A, Quinnell, H, Sturgess, J, Thomas, A C, and Thorpe, C, 2007. Return to Gwithian: shifting the sands of time, *Cornish Archaeol*, **46**, 13–76
- Oswald, A, Dyer, C, and Barber, M, 2001. *The creation of monuments: Neolithic causewayed enclosures in the British Isles*, Swindon
- O'Brien, W, 2004. (Con)fusion of tradition, in A Gibson and A Sheridan, eds, *From sickles to circles: Britain and Ireland at the time of Stonehenge*, Stroud, 323–39
- O'Brien, W, 2016. Language shift and political context in Bronze Age Ireland: some implications of hillfort chronology, in J Koch and B Cunliffe, eds, *Celtic from the West 3: Atlantic Europe in the metal ages*, Oxford, 219–46
- O'Brien, W, 2017. The development of the hillfort in prehistoric Ireland, *Proc Royal Irish Academy*, **117C**, 1–59
- Parker Pearson, M, Casswell, C, and Welham, K, 2016. Excavations at the Castell Mawr Iron Age hillfort, Pembrokeshire, *Archaeologia Cambrensis*, **166**, 141–73
- Parker Pearson, M, Casswell, C, and Welham, K, 2017. A Late Bronze Age ring-fort at Bayvil Farm, Pembrokeshire, *Archaeologia Cambrensis*, **167**, 113–41
- Payne, A, Corney M, and Cunliffe, B, 2006. *The Wessex Hillforts Project: extensive survey of hillfort interiors in central southern England*, London
- Polsue, J, 1867. *A complete parochial history of the county of Cornwall*, vol I, W Lake, ed, Truro and London
- Quinnell, H, 2004. *Trethurgy. Excavations at Trethurgy round, St Austell: community and status in Roman and post-Roman Cornwall*, Truro (Cornwall County Council)
- Quinnell, H, 2011a. The pottery, in J A Nowakowski and H Quinnell, *Trevelgue Head, Cornwall: the importance of C K C Andrew's 1939 excavations for prehistoric and Roman Cornwall*, Truro, 144–203
- Quinnell, H, 2011b. A summary of Cornish ceramics in the first millennium BC, *Cornish Archaeol*, **50**, 213–40
- Quinnell, H, 2017. The finds, 197–202, in A Brown, H Quinnell and P Rainbird, The excavation of an early medieval site at Parc-an-Venton, Mullion, *Cornish Archaeol*, **57**, 189–206
- Quinnell, H, and Harris, D, 1985. Castle Dore: the chronology reconsidered, *Cornish Archaeol*, **24**, 123–32
- Radford, C A R, 1951. Report on excavations at Castle Dore, *Jnl Roy Inst Cornwall*, 1–119
- Robertson, P, 2016. *Iron Age hillfort defences and the tactics of sling warfare*, Oxford
- Saunders, A, and Harris, D, 1982. Excavation at Castle Gotha, St Austell, *Cornish Archaeol*, **21**, 109–53
- Sharples, N, 1991. *Maiden Castle: excavations and field survey*, 1985–6, English Heritage Arch Rept, **19**, London
- Sharples, N, 2010. *Social relations in later prehistory: Wessex in the first millennium BC*, Oxford
- Soutar, S, 2013. Castle-an-Dinas, St Columb Major: a new survey, *Cornish Archaeol*, **52**, 223–32
- Schwieso, J, 1976. Excavations at Threemilestone round, Kenwyn, Truro, *Cornish Archaeol*, **15**, 51–67
- Smith, G, 1988. Excavation of the Iron Age cliff promontory fort and of Mesolithic and Neolithic flint working areas at Penhale Point, Holywell Bay, near Newquay, 1983, *Cornish Archaeol*, **27**, 171–99
- Stanford, S C, 1980. *The archaeology of the Welsh Marches*, London
- Stanford, S C, 1981. *Midsummer Hill: an Iron Age hillfort on the Malverns*, Hereford
- Sutton, D, 2001. *Remembrance of repasts: an anthropology of food and memory*, Oxford
- Thomas, N, 2005. *Conderton Camp, Worcestershire; a small Middle Iron Age hillfort on Bredon Hill*, York
- Threipland, L M, 1956. An excavation at St Mawgan-in-Pyder, north Cornwall, *Arch Jnl*, **113**, 33–81
- Tilley, C, 2010. *Interpreting landscapes: geologies, topographies and identities*. Explorations in landscape phenomenology, **3**, Walnut Creek, Ca (Left Coast Press)
- Venning, T, 2015. *An alternative history of Britain: the English Civil War*, Barnsley

- Waddell, J, 1998. *The prehistoric archaeology of Ireland*, Galway
- Waddington, K, Bayliss, A, Higham, T, Madgwick, R, and Sharples, N, 2019. Histories of deposition: creating chronologies for the Late Bronze Age–Early Iron Age transition in southern Britain, *Arch Jnl*, **176**, 84–133
- Wailles, B, 1963. Excavations at Castle-an-Dinas, St Columb Major: interim report, *Cornish Archaeol*, **2**, 51–5
- Wailles, B, 1964. Castle-an-Dinas, St. Columb Major, *Cornish Archaeol*, **3**, 85
- Wailles, B, 1965. Castle-an-Dinas, St. Columb Major, *Cornish Archaeol*, **4**, 65
- Walker, E A, 2016. The Palaeolithic and Mesolithic hunter-gatherers of Pembrokeshire, in T Darvill, H James, K Murphy, G Wainwright and E Walker, *Pembrokeshire County History, volume I: prehistoric, Roman and early medieval Pembrokeshire*, Haverfordwest, 1–54
- Weatherhill, C, 2009. *Cornovia: ancient sites of Cornwall and Scilly 4000 BC – 1000 AD*, Wellington (Halsgrove) [rev edn]
- Wiessner, P, 1996. Introduction: food, status, culture and nature, in P Wiessner and W Schiefenhovel, eds, *Food and the status quest: an interdisciplinary perspective*, Oxford, 1–18
- Young, S, 2017. The supernatural warriors of Castle-an-Dinas, Cornwall, *Jnl Roy Inst Cornwall*, 95–104

Twenty years after Trethurgy: revisiting Roman-period settlement in Cornwall

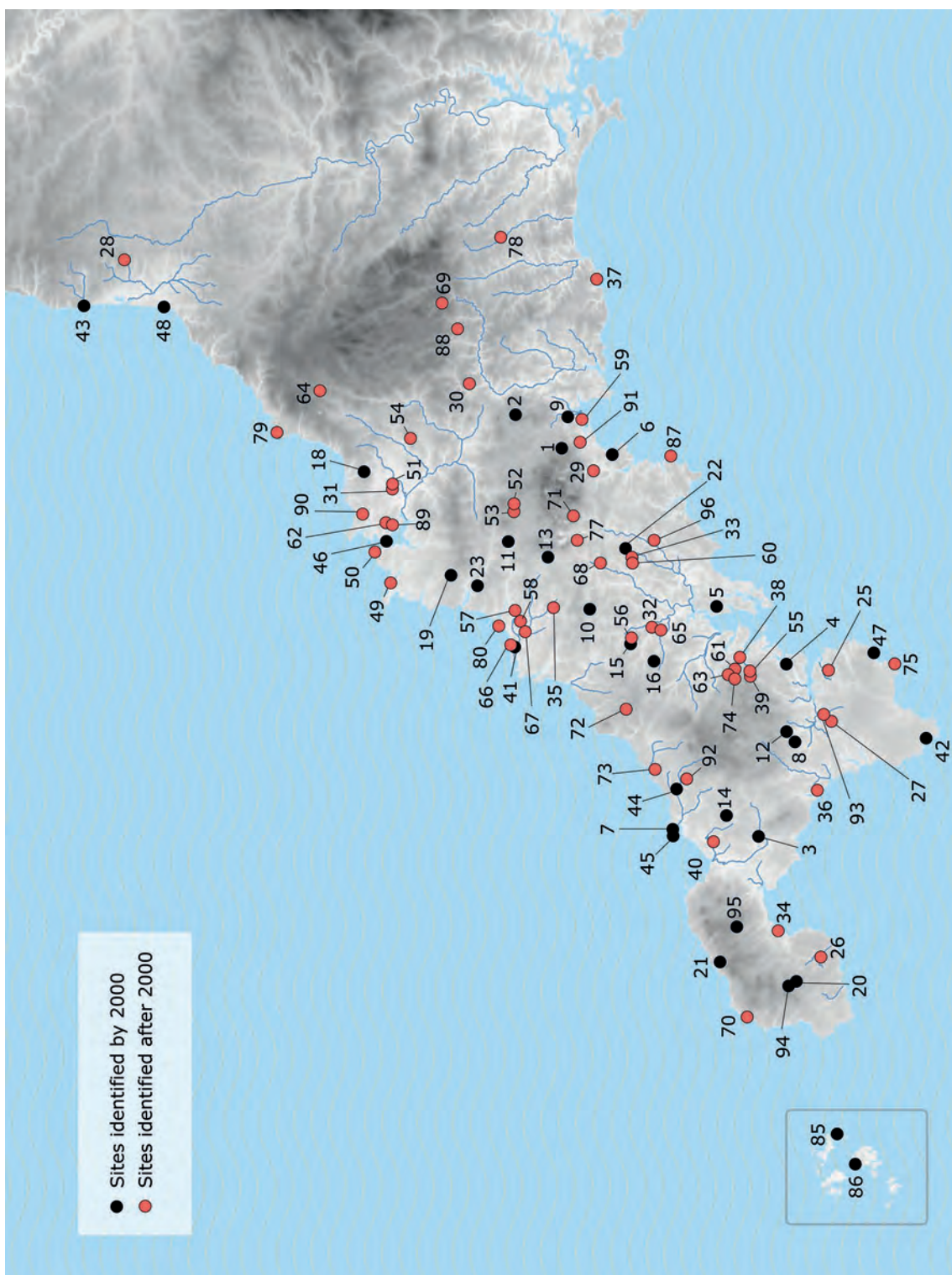
HENRIETTA QUINNELL

A review of data from interventions since c 2000 on rounds and other non-hillfort sites in the later Iron Age and the Roman period. This emphasises the importance of non-enclosed sites in the Cornish landscape, virtually unknown two decades back, and demonstrates some changes in site chronology.

It is now some 20 years since the main work was undertaken on preparing the excavation report on Trethurgy Round, near St Austell, which included a consideration of Cornwall in the Roman period and in the preceding later Iron Age (Quinnell 2004). Through these years, data held on enclosures in the Cornwall and Scilly Historic Environment Record have become ever more extensive, building on the discoveries made by the National Mapping Programme (NMP) during the period 1994–2006 (Young 2012). In addition, the development of historic landscape characterisation, with its potential for the prediction of likely archaeology, has been key to the archaeological response to development (Herring 1998); the latter has been greatly aided by the extensive use of geophysical detection (Fig 5). These factors have led, in a period of extensive developments, to a substantial increase in the number of excavated sites, largely through developer-funded work and sometimes known only through grey literature. This paper attempts to summarise some of the resultant changes in knowledge of the later Iron Age and Roman periods, some of which was presented by Nowakowski (2011). It presents two maps. The first (Fig 1) highlights the overall increase in the number of sites providing data from excavations. The second map (Fig 2, p114) divides sites into rounds / enclosures and unenclosed sites,

highlighting those at which occupation has been demonstrated to start in the Roman period. Both maps are intended to be indicative rather than completely comprehensive. Details of excavated rounds and of all other sites referred to are given in the Appendix. The sites discussed have been given reference numbers, used throughout the paper, on the maps and in the Appendix. The maps, in a slightly different format, were first presented to the joint symposium of the Cornwall and Devon Archaeological Societies, ‘The South West Landscape from the Late Iron Age until the 5th Century AD’, which was held at Liskeard on 16 November 2019.

Chronology for this period is now based on a considerable series of radiocarbon determinations, but ceramics in many cases provide finer tuning. Details of the ceramic sequence have become much better understood in the last two decades and the author has examined nearly all relevant assemblages from sites excavated before c 2010. The dating indicated in Figure 3 and in the Appendix reflects modern understanding of ceramics and differs in some cases from that presented previously (Quinnell 2004, table 12.1). Most dating is based on evidence from only limited excavation, however, and different parts of a site can produce varying dates, best evidenced at Penhale (site 13, below), with the consequence that small-scale interventions may not reflect the



overall range of a site. The chronology of sites presented here differs a little from that used in some recent surveys (for example, Brindle *et al* 2016), differences arising from detailed knowledge of the data and of ceramics.

In this account, ‘later Iron Age’ (LaIA) is used for the Middle and Late Iron Ages together, usually where ceramics do not allow for more specific allocation. Middle Iron Age (MIA) indicates the presence of South Western Decorated (SWD) ceramics, broadly dating to 300–100 BC. The Late Iron Age (LIA) is characterised by the use of Cordoned Ware, with the concomitant gradual disappearance of SWD ceramics. The date of this transition starts in the second century BC but different Cordoned Ware forms arrived at subsequent times, allowing some detail in chronology (Quinnell 2011). A start date for the Late Iron Age of around 100 BC currently seems acceptable. The abbreviation RB is used in the Appendix to refer to the broad Romano-British period.

No Roman military activity has yet been detected in Cornwall before the foundation of forts at Calstock (82) (Smart 2014), Nanstallon (83) (Fox and Ravenhill 1972) and Restormel (81) (Nicholas and Hartgroves 2018), probably in the early 60s AD (Bidwell, forthcoming). The change from Late Iron Age to ‘Roman’ chronologically occurred at that time but cannot currently be linked closely to any changes in local material culture. Cordoned Ware vessels continued to be made and used, with some additional styles presumably introduced by the Roman army, well into the second century AD, but do not provide precise dating. The three fort sites were occupied for perhaps 20 years, although research is continuing both on these and other potential military establishments (Borlase 2020).

Elsewhere, no building in Roman style has definitely been located to join the ‘villa’ at Magor (44), known since the 1930s, although finds from Lower Rosewarne (92) may indicate a second higher-status site. It may be noted that small quantities of Roman tile have been found at four other sites: Little Quoit Farm, St Columb Maor (11), Gwel-an-Mor, Portreath (73), Mountside Road, Par Lane, Par (59) and Penlee House, Tregony (96), but none in quantities that suggest an *in situ* building.

Fig 1 (opposite) The increase in the number of known later Iron Age and Roman sites in Cornwall during the period 2000–2020.

An end date for ‘Roman’ Cornwall is difficult to determine as enclosures, buildings and pottery continue with little detectable change until at least the sixth century AD (Quinnell 2004, 240).

West Penwith now has a volume devoted to the development of the local landscape, demonstrating very extensive field systems, settlements and enclosure sites for the Iron Age and Roman periods (Herring *et al* 2016). The area is cross-hatched on Figure 2; its sites do not form part of the main discussion in this paper.

Rounds and small enclosures

Small enclosures, of varying shapes but assumed to have been used for domestic settlement, have traditionally been called rounds in Cornwall, and at least 3300 potential sites are now known. Young (2012) summarises the work of the NMP in Cornwall with illustrations which demonstrate that the previous designation of these sites as either oval / circular or rectilinear is far too simplistic (Young 2012, figs 4, 7, 9 and 12). Young’s paper is based on the area around the Camel estuary, an area which, together with the Helford estuary, the Roseland peninsula, the Truro to Newquay area and the Hayle and Camborne area, has a high concentration of small enclosures. Across Cornwall as a whole, the distribution of known rounds is higher in the western four hundreds, west of the Camel and Fowey valleys, than in the eastern hundreds.

The term ‘round’ has been used for Cornish sites both as a field monument descriptor and as an interpretation of settlement. The definition of the first is of a site generally under 1 ha, with ditches of 2m or rather less in depth, generally oval or round but sometimes rectilinear, and on hillslopes with the entrance generally on the downhill side and without a distinct inturn. This use of the term ‘round’ is now embedded in the literature, beyond likelihood of significant change. The second definition for some rounds, suggested in the report on Trethurgy Round, was ‘a permanent settlement with substantially built houses whose inhabitants merited the distinction of a formal bound or enclosure, which may have held significance for their status beyond its provision of protection or defence’ (Quinnell 2004, 213). It was argued that the status implied by enclosure might reflect significant roles in the management of

communities which may have extended, for some periods at least of Roman control, to collection of taxes and licensed extraction of minerals such as tin. The reconstruction of Trethurgy Round (Fig 4) demonstrates the visual impact of a site in active use. Application of the second definition obviously needs some care when considering the data from excavations.

The end date for hillforts in Cornwall

The case for Cornish hillforts largely pre-dating the Late Iron Age has not been sufficiently strongly presented. The data for this was assembled by the author at the joint Cornwall and Devon Archaeological Societies symposium held in autumn 2015 but has not been published. Data on Cornish hillforts are generally small scale and from excavations at different dates over the last century. The only two hillforts currently with Middle Iron Age SWD but not Cordoned Ware are the cliff castles at Penhale Point (Smith 1988) and Gurnard's Head (Gordon 1940). Sites with both types of ceramics are Chun Castle (Leeds 1926), Carn Brea (Mercer 1981), Gear and Caervallack (93) (Edwards and Kirkham 2008), Castle Dore (Radford 1951), Killibury (Miles 1977) and The Rumps (Brooks 1974). However, these sites only have Cordoned Ware drinking cup and storage vessels, which come in at the beginning of the Cordoned Ware sequence, but not cooking pots and other types which come in as SWD disappears at some time in the first century BC. None of these sites, in so far as the excavated data go, were used in the last century before the arrival of the Roman army. Two exceptions are Carloggas, St Mawgan-in-Pydar (23) (Threipland 1956), and Castle-an-Dinas, St Columb Major (Jones 2019b). Carloggas, a small univallate site with an inturned entrance, has a sequence from SWD through the Late Iron Age to around AD 150. Its establishment, probably in the first century BC, may be related to the apparent Late Iron Age disuse of Trevelgue Head, near Newquay; this site has only a small amount of Cordoned Ware and none need be of pre-Roman date (Nowakowski and Quinnell 2011). Most of the assemblage from Castle-an-Dinas is not available and the pottery in the surviving archive is all SWD. However, a radiocarbon date indicates a heightening of the principal rampart during the Late Iron Age (Jones 2019b). Overall, the

data suggest that use of hillforts as residences for parts of the community gradually ceased during the Late Iron Age, as it does across much of southern Britain. This indicates some significant change in community relations at this time which may have been related to an increase in the numbers of rounds.

The Cornish landscape beyond hillforts and rounds / enclosures

In 2000 there had been little investigation of the Iron Age and Roman landscape, and fields away from the moors had hardly been recognised, a situation which has been substantially altered by the changes in methodology referred to above. Extensive tracts of lowland fields are now known, often intermixed with a variety of enclosure sites. Good examples are Tremough, Penryn (74) (Gossip and Jones 2007), Scarcewater, St Stephen (77) (Jones and Taylor 2010), and Trenowah, St Austell (91), with activity from the Early Iron Age through to the Roman period (Johns 2008). Field systems at these sites and others away from moorland are evidenced largely by field ditches which are detectable by geophysics, air photography and other remote prospection, and by excavation: banks without ditches and fences leave little trace. No attempt has been made here to compile a comprehensive index of non-moorland field systems, only to draw attention to their likely frequent presence across the landscape, especially in areas where other forms of activity are evidenced. The study of West Penwith shows very extensive rectangular field systems, often closely connected to courtyard houses of Roman date. These are still visible because of the stone incorporated in their construction, effectively providing us with a fairly complete landscape for that area and period (Nowakowski 2016). There is no reason why many other areas of Cornwall should not have been as densely used; other than where ditches survive, the insubstantial construction materials of which boundaries are likely to have been constructed make them difficult or impossible to detect.

The detection of structures

The oval house is now accepted as the main domestic structure in Roman Cornwall. The most fully studied examples, at Trethurgy, had stone-

revetted walls and few or no ground set timbers (Quinnell 2004, ch 10). Sites where usable stone was limited to slate may have had walls largely of sods, although these have not yet been definitely identified. Houses which did not involve disturbance of the subsoil may be impossible to detect, given the almost universal incorporation of their sites into arable land. Gullies, where present, have been used as indicators for the position and shape of houses, as, for example, with the suggested later Iron Age oval structures at Threemilestone Round (Schwieso 1976), but there is no agreement about gully function: gullies may have held structural elements, acted as soakaway drains or delimited the area of a building, interpretations recently explored by Jones (2019a).

A significant advance in the understanding of site survival was provided by Kirkham's (2012) paper which highlighted post-medieval destruction of earthworks through deliberate removal of deposits for use in manuring. This demonstrates that the broad term 'plough damage' may cover much more substantial removal of site material than has previously been supposed and is particularly relevant where turf structures may have been originally present.

Sites other than rounds

These sites have been previously treated as 'unenclosed settlements' but it is apparent that the functions of some sites may have been primarily industrial rather than domestic. It is also apparent that some such as Tremough (74) were smaller and had less substantial enclosing works than is usual with rounds. Other 'sites' consist of groups of finds which indicate activity in their vicinity. The data are extremely varied and on many sites poorly understood. Use of the landscape in the Late Iron Age and the Roman period cannot now be neatly divided into 'enclosed' and 'unenclosed' sites.

Only eight 'unenclosed' sites were known at the time of the Trethurgy report, all coastal except the Magor villa (44), and all dating to the Roman period except Atlantic Road, Newquay (41), which also had some Iron Age features. Their siting suggested activities on the periphery of mainstream settlement, with site identification largely due to erosion by footpaths or cliff falls in coastal rough ground. The situation has now substantially changed, largely due to increasing

use of geophysics on potential sites on Anciently Enclosed Land.

Extensive clusters of close-spaced and overlapping ring gullies have recently been identified at sites on either side of the Camel estuary. Harlyn Bay (49), St Merryn, resulted from pipeline work and presented a sequence of ring gullies from about the fifth century BC to the third century AD: these were only partially investigated as part of the site lay under sand (Jones and Quinnell 2014, pt 2). Lellizzick (50), St Merryn, had at least 70 ring gullies in a 300m stretch on the north side of the Camel estuary (Wessex Archaeology 2008). Finds from field walking and a *Time Team* excavation indicated a chronology extending from the second to at least the fifth century AD; the partially excavated ring gully appears appropriate for an oval structure (*ibid*). At Middle Amble (51), St Kew, a round (31) with minimal excavation revealing LIA activity is embedded in a ring ditch grouping (Borlase and Wright 2014a). Continued research in the area to the east of the Camel estuary has revealed further groupings at Porthilly (89) and Carruan (90), both St Minver, and also inland from Rock and Daymer Bay (46) (Borlase 2020). The size of the settlements represented is currently unclear, as there may be considerable overlap of building plans over long periods of use. Away from the Camel estuary only one settlement, made up of apparently contemporary later Iron Age structures, begins to come close in size, that at Higher Besore (56), Kenwyn, with Threemilestone round (16) set into it (Gossip, forthcoming a).

Some 12 sites have produced one or more houses of later Iron Age date, some clearly round, as at Belowda (52), some oval, as at Nansledan (57). Three sites appear to run from the later Iron Age to early Roman periods, notably the Newquay Strategic Road Corridor (58). Here a sequence of oval ring gully structures and working hollows dating from the third century BC until the second century AD was positioned over several hundred yards and revealed in the road corridor (Jones 2019a). Some six sites have oval houses of the Roman period, notably Mountside Road, Par Lane (59). It is stressed that these are sites which have been revealed through appropriate investigation in advance of developments, just a reminder of all the sites undetected in the landscape. West Northwood (69), St Neot, on the edge of Bodmin Moor, demonstrates for the first time a Roman-period midden on a site with earlier hut circles.

Tremough (74) has a single oval house 338 set in a small enclosure 306 among fields, which was occupied c AD 170–300 and produced a moderate assemblage of Roman-period domestic artefacts (Gossip and Jones 2007). It is the only Roman-period oval house for which the plan can be deduced from postholes. Its good survival is linked to the preservative effects of a slightly lowered floor. Published discussion covers the site and its landscape through the Iron Age and Roman periods and underlines the complexities in interpreting the growing range of Cornish sites. Mountside Road, Par Lane, Par (59), has one clearly defined oval house with a hollowed floor, and two others with fewer features, with a partial enclosing ditch. Its dating appears to be much as at Tremough. There is a cremation burial in a pit beyond the enclosing ditch (Rainbird, in preparation). Another site with a cremation burial is Penlee House, Tregony (96), and small quantities of human cremated bone have been identified at Duckpool (43) and Tintagel (79). Scarcewater (77) had at least two inhumation burials.

Some sites were industrial. Metal working, pewter and lead, was suggested as a long-term activity at Duckpool, Morwenstow (43) although recent work suggests other industrial activity (Taylor and Johns 2017). In West Penwith, Botallack Head (70) had a small oval structure and a ditch with tin smelting slag dated to cal AD 210 – 420 and is included as evidence of Roman-period tin working (Lawson-Jones 2013). Trebarveth (47) and Ebber Rocks (75), both St Keverne, had saltings, as did Caragoon Bank (42), Landewednack, and possibly Porth Godrevy (45), Gwithian.

Updating rounds and small enclosures

Rounds and their interpretation

Some 38 rounds with various degrees of archaeological intervention are included in Figure 3, nearly double the number listed in 2004 (Quinnell 2004, table 12.1). Penhale (13), Killigrew (10) and Little Quoit Farm (11) had been excavated before 2004 but analysis took place subsequently. More recently, the complete interior of an enclosure at The Shrubberies, Porthleven (36), was stripped, but demonstrated usage was limited to a small range of

features relating to industrial activity. Otherwise, Boden Vean (25) and Nancemere (32) have had the most substantial interior areas excavated in recent times. In general, awareness of the complex and expensive task of excavating a round has led to a preference for preservation at early stages of the planning process, as at Parkengear (33) and Higher Trewhiddle Farm (29). The only complete interior plan remains that of Trethurgy (1). The database for interpretation remains minimal, with so few sites presenting large areas of well-preserved stratigraphy.

Attention is drawn to three problems with the data. Firstly, structures are generally difficult to interpret. Oval houses, as most fully studied at Trethurgy, needed few or no ground-set timbers and could, on sites where little or no internal stratigraphy survives, be impossible to detect. Trethurgy also contained a range of other structures, including a probable rectangular building (X1) and several with dump walls; the functions of these varied structures is uncertain (Quinnell 2004, ch 11.1). Secondly, domestic buildings within rounds appear generally to have been laid out in a ring inside the rampart, with the interior of the enclosure often left open. Therefore, sites such as Little Quoit Farm (11), where data come almost entirely from a strip excavated across the centre, are unlikely to provide a full picture of site function. Thirdly, site chronology, while increasingly making use of radiometric methods, is still highly reliant on the survival of dateable artefacts, usually pottery. This is well illustrated at Penhale. Work across the entrance and south side in the 1990s provided a sequence from the fourth century BC until the fourth century AD, possibly a little later (Nowakowski and Johns 2015). A second excavation across the north side suggested a shorter duration and detected less complexity in the enclosing works (Johnston *et al* 1998–99). A third excavation located a hitherto unsuspected fogou for which no construction date could be determined (Hood 2007).

An additional problem with artefact-based chronologies is the potential distortion caused by curation. Curation was probably the cause for the presence of samian together with post-Roman import sherds in Structure G at Trethurgy (Quinnell 2004, 237); it may also account for the small amount of SWD at Castle Gotha (6) (Saunders and Harris 1982), all decorated shoulder sherds of hand-held size.

Chronology

(Figures 2, 3)

The date range of round-type enclosures has recently been extended back to the Early Iron Age at Boden Vean (25) (Gossip 2013), Boleigh (26) (Young 2000–1) and Halligye (27) (Startin 2009–10; Quinnell and Elsdon 2009–10). All three sites have pottery from the Plain Jar Group, broadly sixth to fourth centuries BC, and all three have associations with fogous. Boden Vean, rectilinear in plan, was subsequently not used until the post-Roman period, although there was considerable and probably continuous activity in areas immediately around the site (J Gossip, pers comm). Boleigh probably and Halligye almost certainly were occupied into and through the Roman period, with Halligye continuing into the post-Roman centuries. Little is known of the interiors of these early but long-lived sites. It should not be assumed that rounds had the same functions throughout the millennium in which they now can be shown to have been occupied.

Some eight sites may have started in the Middle Iron Age and have varying lengths of detected activity; only Threemilestone (16) was definitely out of use before the Roman period. Currently some seven sites appear to start in the Late Iron Age – that is, the earliest surviving pottery is Cordoned Ware – and again continue until various dates in the Roman period. It should be remembered that the extensive excavation of Trethurgy revealed a probable LIA enclosure pre-dating the main round (Quinnell 2004, fig 4). The data indicate that about half the small enclosures excavated were in use in the Late Iron Age. Figure 3 suggests that the period spanning the first century BC to the second century AD was the broad period in which rounds were most in use. Only one, The Shrubberies, Porthleven (36), is currently known to have been built in the third century AD. It is perhaps surprising that rounds do not feature more in the fourth century AD.

The evidence for activity after c AD 400 remains uncertain, except for Trethurgy (1), Grambla (8), Goldherring (20), Boden Vean (25) and probably Penhale (13) and Halligye (27). However, Reawla (14) (Appleton-Fox 1992) has five radiocarbon dates, of which three fall in the fifth to sixth centuries AD and it may be that the site extends later than the early fourth century suggested in the excavation report.

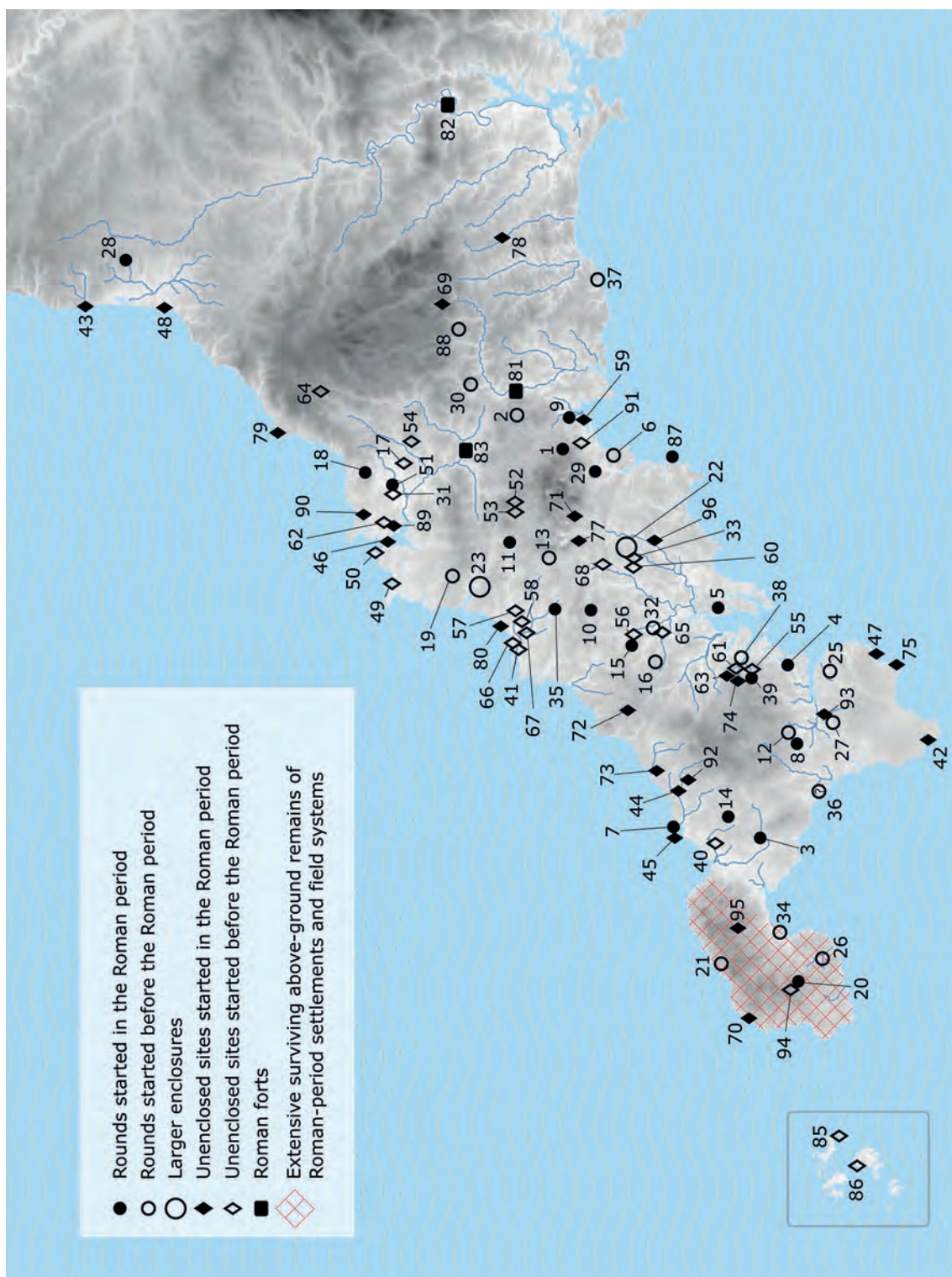
Rounds and community status

The criteria upon which a round might be demonstrated to have housed an agricultural community with some status in the Roman period are listed at the beginning of this paper. The list of such rounds given in 2004 was Trethurgy, Trevisker, Reawla, Penhale, Grambla and Castle Gotha, with, in addition, Goldherring and Porthmeor, which continued through the Roman period with courtyard house settlements filling their interiors. The only likely addition to this list currently is Nancemere (32) (Gossip, forthcoming b). This sparsity is due to the limited data from most sites.

If the broad overall chronology presented in Figure 3 is in any way accurate, the increase in round construction may well have been linked to the changes in Late Iron Age society which saw the move away from hillforts suggested earlier. These data certainly lessen the impression provided by the smaller, earlier data set (Quinnell 2004, table 12.1) of some major settlement shift towards rounds in the second century AD. However, it is probably still true to say that more rounds were in use in this century than at any other time. It is still difficult to see in the data any link to the presence of the Roman army in the 60s and 70s AD or of events connected with trade, tin and taxes under the subsequent civilian administration, whatever form(s) this may have taken. If as suggested in the discussion of Trethurgy Round, it and other rounds had a formal role in local administration, this may have varied through time. Certainly, other forms of contemporary settlement are much more varied than was suspected 20 years ago, with the large groups of potential houses on unenclosed sites identified around the Camel estuary being the most remarkable of these.

Large enclosures

Two excavated enclosures are distinguished as ‘Large’ on Figure 2 and in the Appendix. Carloggas (23) is best described as a small hillfort, given its situation and more especially its turned entrance (Threipland 1956). It had a number of apparent residential structures internally and a large continuous pottery series from a date in the Middle Iron Age until the later second century AD. Carvossa (22) is rectilinear with substantial earthworks enclosing some 2 ha on flattish ground. It was poorly excavated and understood: its large



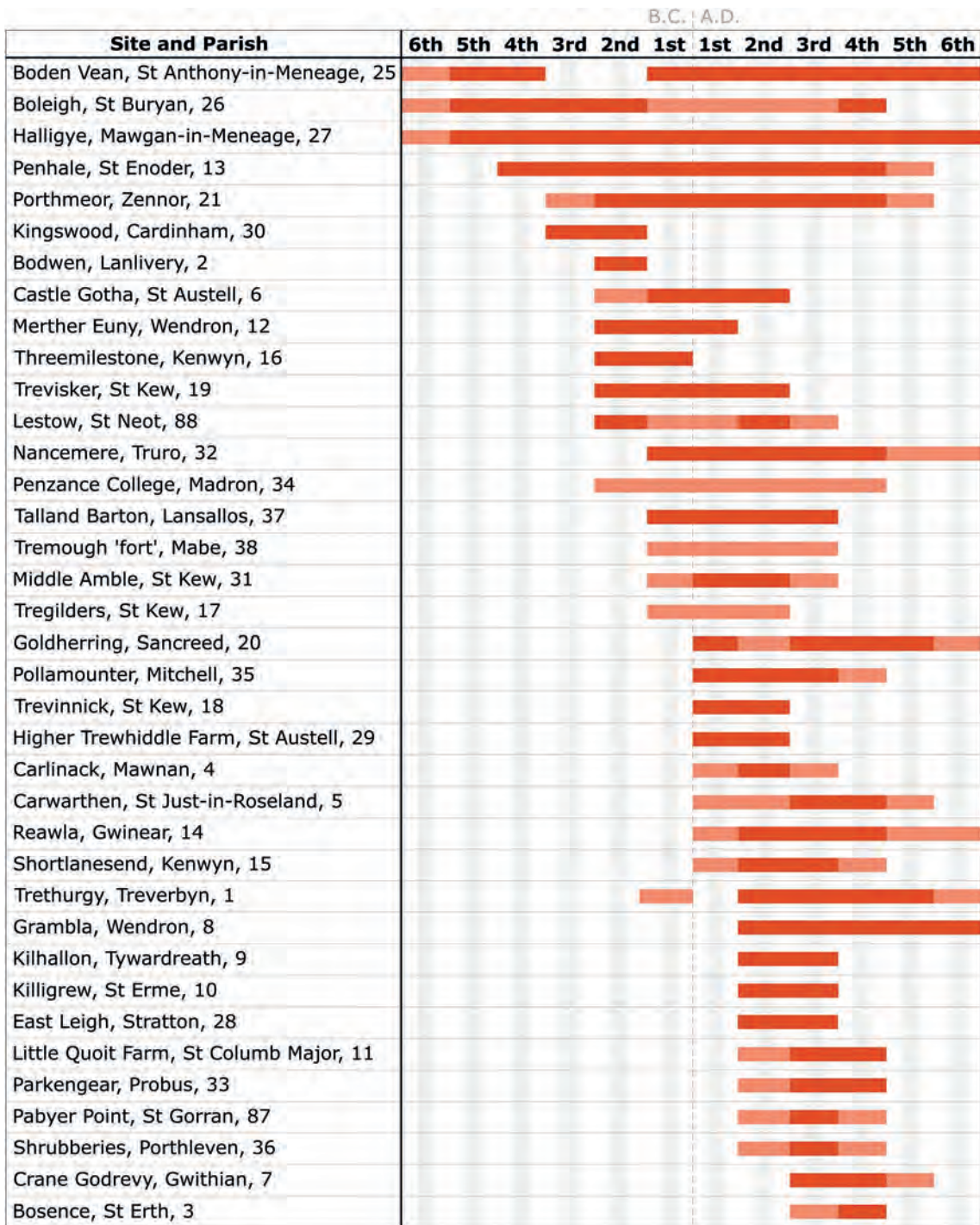


Fig 2 (Opposite) Roman-period sites distinguished from those which originated in the Later Iron Age.

Fig 3 Current chronology of excavated rounds, with sites presented in broad order of activity. Red indicates likely activity, pale red possible activity.



Fig 4 Reconstruction of Trethurgy Round in the fourth century AD, showing the importance of enclosure. (Illustration: © Rosemary Robertson.)

ceramic assemblage (Carlyon 1987) runs from the Middle Iron Age until at least the later third century AD. Currently, geophysical survey is planned by Cornwall Archaeological Society's Roman Research Committee as a first stage in better understanding the site. These two large sites, in use in the first two centuries AD, are a reminder of the potential complexity of the enclosure data.

Round construction in active landscapes

In 2000 there was no information on the archaeology of any area around a round: investigation was restricted to interiors and their enclosing works. Today the situation is very different, and a few exemplars are selected here. Threemilestone (16) had over half of the interior excavated, showing a dense infill of ring and oval ditches presumed to define house sites (Schwieso

1976). Subsequent work on its surroundings shows the round as a probable addition to an extensive landscape of round or oval houses and fields. A second enclosure remains unexcavated on the south-west side of the site. A reconsideration of the original finds report by the present author is included in Gossip (forthcoming a). The Middle Amble bivallate round (31) set within a village grouping of ring gully structures (51) appears to represent a similar sequence (Borlase and Wright 2014 a). The round, on very limited intervention, post-dated at least one of the ring gullies. Limited ceramics and a single radiocarbon date indicated activity in the first and second centuries AD, but site use could have been longer.

The largely unexcavated Parkengear round (33) has a small unexcavated circular enclosure adjacent and was constructed in a landscape which had contained a later Iron Age oval structure (60)

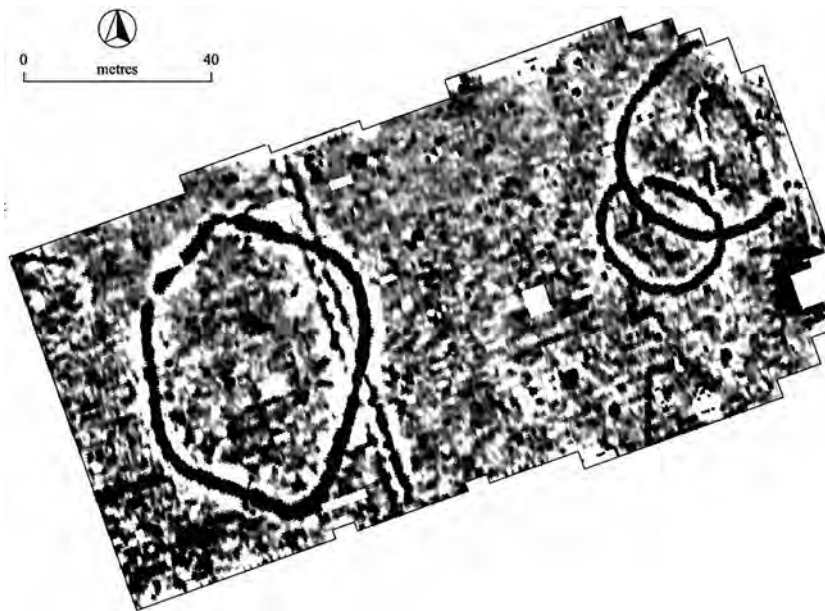


Fig 5 Greyscale plot of a 2008 geophysical survey of a site (84) at Jory's Meadow, St Tudy, by GSB Prospection (reproduced courtesy SUMO Services Ltd). The potential complexity of occupation sequences is evident. Evaluation trenching (Goacher and Smith 2014) revealed ditches up to 2m wide and 1.6m deep and recovered a small quantity of ceramics broadly identified as of later prehistoric – Romano-British – early medieval date.

(Rainbird *et al* 2017). Ongoing excavation adjacent to the Boden Vean rectilinear enclosure (25) and the nearby fogou is revealing a long sequence of activity which stretches back to the Middle Bronze Age (Gossip 2013). At Carloggas, St Stephen-in-Brannel (71), a round, left unexcavated, was located in a landscape which evaluation trenches found contained Roman activity, presumably domestic, and also a fogou, for which a construction date could not be obtained (Cotswold Archaeology 2015).

Some updates on individual rounds

Penhale round, Fraddon (13), has a partially complete plan, now based on three separate excavations (Nowakowski and Johns 2015, ch 7). The enclosure with a simple entrance may have been established in the fourth century BC, respecting a pre-existing linear land boundary. A range of radiocarbon dates and some ceramics show ongoing activity through to the early Roman period but no surviving structures were identified: a largely pastoral role for the resident community was suggested. An internal fogou could have been constructed at some point during this activity. Through the later Roman centuries the entrance and the enclosure were altered and elaborated and several oval structures of this period were identified in the interior, probably part of a ring of

structures around its circumference. Some limited post-Roman use is possible.

Trevsker (19) was presented as two successive enclosures (Quinnell 2004, table 12.1), following the excavation report (ApSimon and Greenfield 1972), but this interpretation merits revisiting. The 1955–6 partial excavation interpreted the site as an initial small round containing House 2 with associated MIA pottery and a radiocarbon date. This round was then enlarged by a wide-set concentric ditch focused on Houses 1 and 3, with activity continuing until the early Roman period. This outer ditch had an entrance facing in the opposite direction to that of the interior enclosure and produced no dateable finds. Examination of the pottery by the author shows the assemblages from Houses 1 and 2 both contain MIA and LIA material of similar date, with some early Roman-period sherds from House 3 and elsewhere taking activity up to the late second century AD. An alternative interpretation would see the two enclosures representing a small hillslope enclosure of Fox's (1960) widely-spaced rampart type, unusually with opposed entrances but with the usual concentration of residential activity in the inner enclosure.

The two rounds with MIA origins in West Penwith were occupied by courtyard houses in the later Roman centuries. That at Porthmeor (21) (Hirst 1937) has a reasonable ceramic sequence starting with MIA sherds and continuing probably

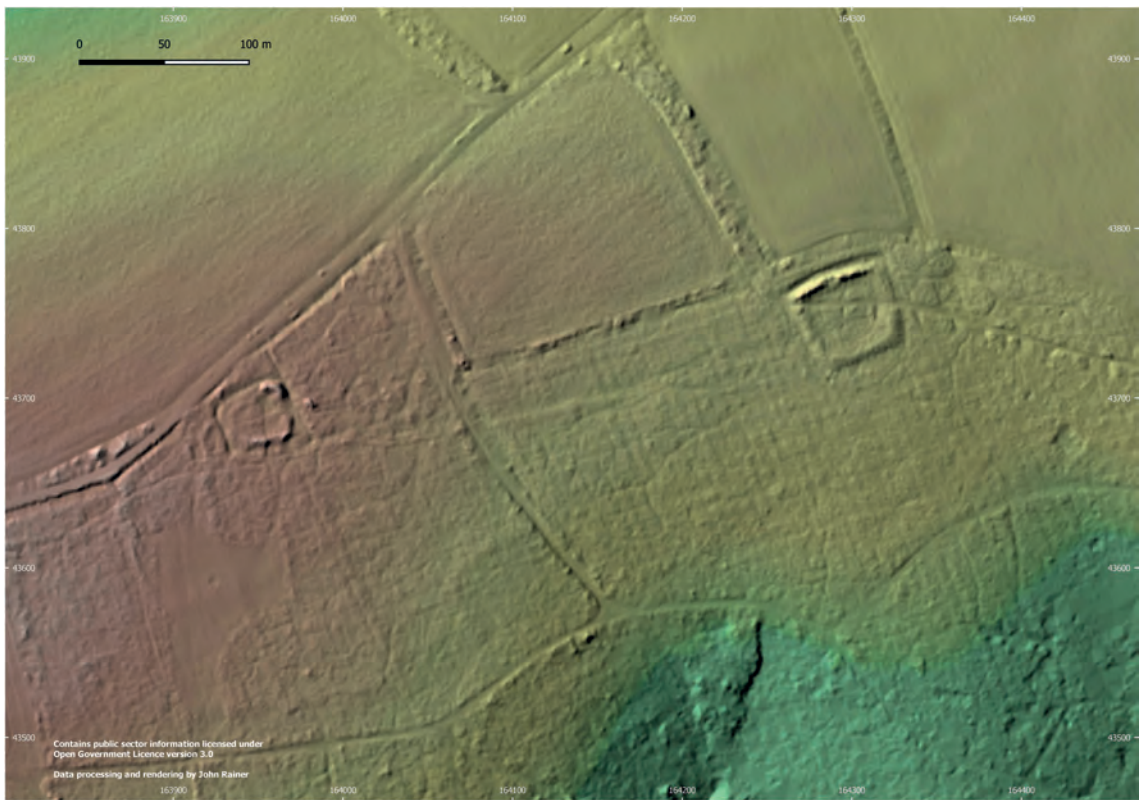


Fig 6 Lidar image of two rectilinear enclosures within nineteenth-century plantations in the designed landscape around the Bassett family mansion at Tehidy (Illogan). Fields adjacent to the eastern enclosure were recorded in 1737 as Little and Great Parkangear. Both features survive as earthworks within the present Tehidy Country Park (Parkes 2011). (Lidar processing and rendering: John Raines.)

well after the Roman period. That at Goldherring (20) had an early phase associated with Cordoned Ware and poorly preserved circular structures, the best being L (Guthrie 1969, fig 10). Soil levels suggested some abandonment before a courtyard house settlement was constructed in the second to third centuries AD, continuing until the currency of the post-Roman Gwithian style. The most recent excavation of a courtyard house, at Carn Euny (94) (Christie 1978), shows a courtyard house complex succeeding a settlement of round houses. Unfortunately, this work pre-dated the reworking of Cornish Roman pottery in the 1980s (Quinnell 1986), which showed pottery with cordons was being made into the late Roman period; consequently the published chronology cannot now be considered reliable.

A recent review for English Heritage of artefacts from the courtyard house village of Chysauster (95) (Hencken 1933) by the author indicated a start date, after a probable gap from later Iron Age activity, in the late first century AD. The contrary position by Cripps (2007), suggesting a later Iron Age start-date for courtyard houses, showed insufficient awareness of the 1980s redating of ceramics. Jon Henderson, in his review of the Atlantic Iron Age, supports the view expressed here, that courtyard houses belong to the Roman period but may succeed other forms of structure with earlier pottery (Henderson 2007, 237–8). Nowakowski's (2016, fig 7.26) up-to-date presentation of settlement data in west Cornwall shows a potential 45 locations with varying numbers of courtyard houses and identifies (with varying degrees of confidence)

about 100 rounds. A potential scenario in which rounds generally preceded courtyard houses would allow the enclosures to belong to the Late Iron Age and early Roman centuries, with a gradual move to courtyard houses by c AD 200 (author).

Nancemere, Truro (32), is one of the sites more extensively excavated in the period since 2000 but unfortunately its publication is currently incomplete. Cornwall Archaeological Unit excavations showed an entrance with signs of renewal and a stone-revetted bank. These excavations ran across the centre of the site and provided limited structural evidence (Gossip, forthcoming b). More extensive excavations published only as early archive-stage grey literature located a ring of structures around the interior but await fuller interpretation (Higgins 2009).

Two rounds have strong associations with iron smithing. Killigrew (10) (Cole and Nowakowski, forthcoming) contained a sequence of gullies and features connected with smithing; a tin plate was recovered but no data to indicate tin working. The ceramics were unusual in that cooking vessels were virtually absent and most vessels were eating dishes and storage jars. These elements suggest specialist activity, perhaps in addition to farming. At Little Quoit Farm (11) a field system of MIA to early Roman date underlay the round; the excavation only looked at a pipeline strip through its centre (Lawson-Jones and Kirkham 2009–10). In its first phase, dated to the second century AD, the round was probably a ditch and palisade enclosure, replaced in the third–fourth centuries by a ditch and bank. This phase produced 26 kg of smithing slag, mainly from four working hollows. Smithing was an important activity but evidence came from the centre of the site and nothing is known of the inner circumference of the enclosed area, where there may have been farmers' houses. (A radiocarbon date of 770–410 cal BC (AA-36505) from working hollow debris may hint at earlier iron working on the site.) The interior of the enclosure at The Shrubberies, Porthleven (36), was only used for some industrial related activity in the third century AD and the enclosure appears to have had its ditch deliberately infilled (Jones, forthcoming).

The data on two suggested rounds may now be considered potentially dubious. The later IA pottery from Tregilders (17) (Trudgian 1977) came from soil and gullies outside the rectilinear enclosure and there is no real dating for the enclosure itself.

Kilhaddon (9) was presented as an enclosure of sub-triangular shape but only a single stretch of ditch was identified (Carlyon 1982). This contained a midden with an unusually high proportion of non-local wares but limited excavation and early geophysics failed to establish that the ditch formed an enclosure.

Rounds in elevated topographical positions

Mark Borlase has drawn attention to a group of sites situated in elevated positions which provided long views along both the north and south coasts (2020; Borlase and Wright 2014b) and has suggested a function related to that of Roman signal fortlets. Three of these elevated rounds, Pabyer Point (87), Lestow (88) and East Leigh (28), have had some minimal excavation, each of which produced artefacts usual on Cornish sites of the Roman period. However, the extent of the interventions is not sufficient for the nature of the interior occupations to be established. The first two of these sites are rectilinear; East Leigh has concentric pentagonal enclosures. A rectilinear enclosure at High Cliff, St Gennys, was considered as one of this group but not excavated. The available data do not support a Roman military connection but it is entirely possible that these sites were selected for their suitability for maintenance of some form of medium-distance contact. It is likely that other sites in this group may lie unidentified among the approximately 3300 postulated rounds.

Some concluding comments

Work on rounds in the last 20 years has been limited, with the most important data coming from sites excavated before AD 2000 but subsequently worked up to publication. There have been no data to either confirm or contradict the main conclusions of the Trethurgy report. However, work outside rounds has transformed our understanding of the Late Iron Age and Roman-period landscapes within which they existed, in particular showing the extensive presence of fields together with a wide range of unenclosed structures and settlements which were unknown 20 years ago. This work changes the landscape from one of scattered enclosed settlements, with their arable activity presumed in undetected fields around them, to one of extensive farming landscapes in

which rounds form only one settlement type. Many forms of building leave few clear indications of their structure, those with stone walls without ground-set timbers, of turf or cob or founded on sill beams, and the dating of most sites lacks precision. The spread of dated sites shown in the maps emphasises the concentration of sites in the

four hundreds west of the Camel and Fowey rivers. The sites east of this show no material differences in their archaeology from those to the west. To a considerable extent this westward concentration reflects greater development-related work in these areas and cannot yet be interpreted in terms of differences in past communities.

Appendix

Rounds

All oval or circular unless stated. Nos (1) – (23) were presented in Quinnell (2004, table 12.1). All others have been investigated or reported on since c 2000.

1	Trethurgy , Treverbyn.	Only completely excavated site.	Quinnell 2004.
2	Bodwen , Lanlivery.	Minimal work.	Harris 1977.
3	Bosence , St Erth.	Rectilinear. Shaft with artefacts.	Borlase 1769, 316-20, pl 28.
4	Carlidnack , Mawnan.	Minimal intervention.	Harris and Johnson 1976.
5	Carwarthen , St Just-in-Roseland.	1930s work; unpublished.	Carlyon 1995.
6	Castle Gotha , St Austell.	Small-scale work; oval house.	Saunders and Harris 1992.
7	Crane Godrevy , Gwithian.	Shape uncertain; unpublished.	Quinnell 2007.
8	Grambla , Wendron.	Rectilinear; interim report only.	Saunders 1972.
9	Kilhallon , Tywardreath.	Midden in ditch (unproven enclosure).	Carlyon 1982.
10	Killigrew , St Erme.	Double ditches; iron working; ? non-domestic function.	Cole and Nowakowski, forthcoming.
11	Little Quoit Farm , St Columb Major.	Strip excavated across enclosure; smithing.	Lawson-Jones and Kirkham 2009–10.
12	Merther Euny , Wendron.	Small-scale work; not fully published.	Thomas 1968.
13	Penhale , St Enoder.	Extensive excavation; fogou within interior.	Nowakowski and Johns 2015; Johnston <i>et al</i> 1998-9; Hood 2007.
14	Reawla , Gwinear.	Double-ditched; small-scale excavations.	Appleton-Fox 1992.
15	Shortlanesend , Kenwyn.	Small-scale intervention.	Harris 1980.
16	Threemilestone , Kenwyn.	Most extensive later Iron Age plan.	Schwieso 1976.
17	Tregilders , St Kew.	Rectilinear; minimal intervention.	Trudgian 1977.
18	Trevinnick , St Kew.	Rectilinear; small-scale intervention; ring gullies.	Fox and Ravenhill 1969.
19	Trevisker , St Eval.	Partial excavation; outer enclosure.	ApSimon and Greenfield 1972.
20	Goldherring , Sancreed.	Courtyard houses within enclosure in later phase.	Guthrie 1969.
21	Porthmeor , Zennor.	Relationship to courtyard houses uncertain; fogou adjacent.	Hirst 1937.
22	Carvossa	see Large enclosures (22), below.	
23	Carloggas	see Large enclosures (23), below.	

24	Tremough , Mabe.	Late Bronze Age (not included in discussion or shown on maps).	Jones <i>et al</i> 2015.
25	Boden Vean , St Anthony-in-Meneage.	Rectilinear; fogou adjacent.	Gossip 2013.
26	Boleigh , St Buryan.	Small-scale work; associated fogou.	Young 2000–1.
27	Halligye , Mawgan-in-Meneage.	Small-scale work, associated fogou.	Startin 2009–10.
28	East Leigh , Stratton.	Pentangular; minimal excavation.	Borlase and Wright 2014b.
29	Higher Trewhiddle Farm , St Austell.	Evaluation.	South West Archaeology 2017c.
30	Kingswood , Cardinham.	Small-scale work; stratified structures.	Borlase 2013.
31	Middle Amble , St Kew.	Bivallate; small-scale work.	Borlase and Wright 2014a.
32	Nancemere , Truro.	Extensive excavations; partially unpublished.	Gossip, forthcoming b; Higgins 2009.
33	Parkengear , Probus.	Minimal excavation; extensive investigation of surrounding area.	Rainbird <i>et al</i> 2017.
34	Penwith College , Madron.	MIA – RB occupation with contemporary field system adjacent.	Gossip and Thorpe 2010; unpublished work on finds in excavation archive.
35	Pollamounter , Mitchell.	Rectilinear; two oval houses.	Jones and Taylor 2004.
36	The Shrubberies , Porthleven.	Rectilinear; complete strip; minimal industrial activities.	Jones, forthcoming.
37	Talland Barton , Lansallos.	Current work by C Frieman and J Lewis.	Lewis and Frieman 2017.
38	Tremough ‘fort’ , Mabe.	Rectilinear; minimal intervention.	Gossip and Jones 2007.
39	Tremough 2	Multiple ditches, minimal intervention.	Jones <i>et al</i> 2015.
84	Jory’s Meadow , St Tudy.	Three enclosures revealed by geophysics (Fig 5). Evaluation trenching recovered pottery characterised as IA – RB and possibly early medieval.	Goacher and Smith 2014.
87	Pabyer Point , Gorran.	Rectilinear, minimal excavation.	Borlase 2020, 44–8.
88	Lestow , St Neot.	Rectilinear, minimal excavation.	Borlase 2020, 51–5.

Large enclosures

22	Carvossa , Probus.	Large rectilinear enclosure with complex history; poor excavation; MIA – third century AD.	Carlyon 1987.
23	Carloggas , St Mawgan-in-Pydar.	Small hillfort-type earthwork with numerous internal structures and inturned entrance; second century BC – late second century AD.	Threipland 1956.

Sites other than rounds

The sites included here are:

- a) Houses, whether excavated or indicated by geophysics. These are presumed to be habitations and are beginning to be found in large numbers by geophysics, especially on either side of the Camel estuary.
- b) Sites where ditches or other features indicate nearby domestic or possibly industrial activity.
- c) Sites with demonstrable industrial activity.
- d) Sites where scatters of pottery indicate likely domestic activity. (Sites with coin hoards and objects such as stone mortars are not included.)

Sites studied for the Trethurgy report

17	Tregilders , St Kew.	Gullies adjacent to round; LIA.	Trudgian 1977.
41	Atlantic Road , Newquay.	Probably oval houses and middens; first – fourth centuries AD; also SWD pits.	Reynolds, in preparation.
42	Carnagoon Bank , Lizard.	Saltings and oval house; third – sixth centuries AD.	McAvoy <i>et al</i> 1980.
43	Duckpool , Morwenstow.	Pewter and lead working; other industrial activity; third – fourth centuries AD and later.	Ratcliffe 1995; Taylor and Johns 2017.
44	Magor , Illogan.	Villa; second to third or fourth centuries AD.	O’Neil 1933.
45	Porth Godrevy , Gwithian.	Small oval house; third – fourth centuries AD, possible saltings.	Fowler 1962.
46	Rock , St Minver.	Extensive sand dune finds.	Haverfield 1924, 6–8.
47	Trebarveth , St Keverne.	Saltings; third – fourth centuries AD and ? later.	Peacock 1969.
48	Widemouth Bay , Bude.	Pottery from coastal erosion, second century AD.	Carlyon 1981.

Sites reported on 2000–2020

40	Viaduct Hill , Hayle.	Complex ring ditches, MIA – fifth century AD.	J Gossip, pers comm.
49	Harlyn Bay , St Merryn.	Extensive ring gullies; EIA – third century AD.	Jones and Quinnell 2014.
50	Lellizzick , St Merryn.	Extensive ring gullies; limited excavation; RB.	Wessex Archaeology 2008.
51	Middle Amble , St Minver.	Extensive ring gullies; MIA – RB and ? later.	Borlase 2014a
52	Belowda , Roche.	Ring gully round house; no pottery; radiocarbon dated to 360–40 cal BC.	Clark and Foreman 2009.
53	Lower Trenoweth , Roche.	Ring gully round house; first century BC to first century AD.	Clark and Foreman 2009.
54	Chapel Field , St Mabyn.	Ring gully structure and enclosures; RB.	Cornwall Archaeological Unit 2016.
55	Kernick House , Penryn.	Ring gullies; third – first centuries BC.	AC archaeology 2013.
56	Higher Besore , Kenwyn.	Ring gully houses adjacent to enclosure (16); third – first centuries BC.	Gossip, forthcoming a.
57	Nansledan , Newquay.	Ring gullies, including oval, four-post structure; third – first centuries BC.	Rainbird and Pears 2017.
58	NSRC Newquay Strategic Road Corridor , Newquay.	Sequence of oval ring gully structures and working hollows; third century BC – second century AD.	Jones 2019a.
59	Mountside Road, Par Lane , Par.	Two+ oval ring gully structures within partial enclosure; second – early fourth centuries AD.	Sims and Valentin 2011; Rainbird <i>et al</i> , in preparation..

60	Parkengear , Probus.	Oval ring gully structure in landscape with enclosure (33); radiocarbon dated to 170 cal BC – cal AD 16.	Rainbird <i>et al</i> 2017.
61	Penryn College , Mabe.	Oval enclosures and structure; first century BC to second century AD.	Gossip and Jones 2017.
62	Penmayne , St Minver.	Ring gully structures; third – first centuries BC.	Gossip <i>et al</i> 2012.
63	Penvose Farm , St Gluvias.	Buildings evaluated; second – third centuries AD.	South West Archaeology 2017a.
64	Sir James Smith's School , Camelford.	Structures and ceremonial enclosures; LIA.	Jones and Taylor 2015.
65	Tolgarrick Farm , Truro.	Ring gully structure; LaIA.	Hughes and Farnell 2016.
66	Tregunnel , Newquay.	Pits and probable structures; MIA.	Brindle, in preparation.
67	Trevithick Manor , Newquay.	Ring gullies and enclosures; MIA – LIA.	Cotswold Archaeology 2018.
68	Trethurffe Manor , Ladock.	Two ring gully houses; radiocarbon dated to 166–1 cal BC and 96 cal BC – AD 27.	South West Archaeology 2017b.
69	West Northwood , St Neot.	Midden relates to possible hut circle re-use; RB.	Jones 2017.
70	Botallack Head , St Just.	Small oval structure and ditch with tin smelting slag; radiocarbon dated to AD 210–420.	Lawson-Jones 2013.
71	Carloggas Farm , St Stephen-in-Brannel.	Settlement including fogou; round 150m to north east; RB.	Cotswold Archaeology 2015.
72	Gover Farm , St Agnes.	Possible building evaluated among small contemporary fields; RB.	Good 2015.
73	Gwel-an-Mor , Portreath.	Walls of ? oval house; second – fourth centuries AD.	Jones and Hughes 2014.
74	Tremough , Mabe.	Partially enclosed single oval house 338/306 dating to late second – early fourth centuries AD within field system originating in LaIA.	Gossip and Jones 2007.
75	Ebber Rocks , St Keverne.	Saltings; RB.	Hunt 2016.
76	Wiggle , Rame.	Pottery and possible Roman-period building material. (Location not shown on maps.)	Anna Tyacke, pers comm.
77	Scarcewater , St Stephen.	Fields with probable settlement; RB.	Jones and Taylor 2010.
78	Tregrill Vean , Menheniot.	Pottery, first century AD.	J Gendall and C Thorpe, pers comm.
79	Tintagel Island , Tintagel.	Later Roman artefacts suggest activity.	Nowakowski <i>et al</i> , in preparation.
80	Trevelgue Head , Newquay.	Re-use of round house within cliff castle; second – fifth centuries AD.	Nowakowski and Quinnell 2011.
89	Porthilly , St Minver.	Extensive ring gullies; minimal excavation; RB.	Borlase 2020.
90	Carruan , St Minver.	Extensive ring gullies; minimal excavation; second – third centuries AD.	Borlase 2020.
91	Trenowah , St Austell.	Fields and activity; EIA – RB.	Johns 2008.
92	Lower Rosewarne , Camborne.	Finds of tesserae, coins and samian.	HER MCO 26661; C Thorpe, pers comm.
93	Gear , St Martin-in-Meneage.	Activity within hillfort after apparent gap; RB.	Edwards and Kirkham 2008.
94	Carn Euny , Sancreed.	Fogou and houses, replaced by courtyard houses circa second century AD.	Christie 1978.
95	Chysauster , Madron.	Courtyard houses; second – fourth centuries AD.	Hencken 1933; dating by author.

96	Penlee House , Tregony.	Cremation and possible related rectangular enclosure; RB.	Taylor 2012.
97	Boswyn , Camborne.	Two MIA houses with SWD; third – second centuries BC. (Not shown on maps.)	Thomas 1953–4.

Roman forts

81	Restormel , Lostwithiel.		Nicholas and Hartgroves 2018.
82	Calstock , Calstock.		Smart 2014.
83	Nanstallon , Lanivet.		Fox and Ravenhill 1972.

Isles of Scilly

85	Nornour , Isles of Scilly.	Probable shrine.	Butcher 2014.
86	Halangy , Isles of Scilly.	Courtyard house.	Ashbee 1996.

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References

- AC archaeology 2013. *Results of archaeological investigations at Kernick House, Penryn: interim statement*, Exeter (AC archaeology report ACD660)
- Appleton-Fox, N, 1992. Excavations at a Romano-British round: Reawla, Gwinear, Cornwall, *Cornish Archaeol*, **31**, 69–123
- ApSimon, A M, and Greenfield, E, 1972. The excavation of Bronze Age and Iron Age settlements at Trevisker, St Eval, Cornwall, *Proc Prehist Soc*, **38**, 302–81
- Ashbee, P, 1996. Halangy Down, St Mary's, Isles of Scilly, excavations 1964–1977, *Cornish Archaeol*, **35**, 5–201
- Bidwell, P, forthcoming. The legionary fortress and its landscape context, in S Rippon and N Holbrook, eds, *Exeter: a place in time I. Roman and medieval Exeter and their hinterlands: from Exeter to Esanceaster*, chapter 5, Oxford (Oxbow Books)
- Borlase, M, 2013. Kingswood round: an enclosure at Kingswood Farm, Cardinham, Cornwall, *Cornish Archaeol*, **52**, 171–96
- Borlase, M, 2020. *Cornwall's trans-peninsula route: socio-economic and cultural continuity across the Camel/Fowey corridor. 'The Way of Saints' from the Roman period to AD 700*, Brit Arch Repts, Brit Ser, **653**, Oxford (BAR Publishing)
- Borlase, M, and Wright, M, 2014a. A Late Iron Age and Romano-British settlement at Middle Amble Farm, St Kew, *Cornish Archaeol*, **53**, 183–208
- Borlase, M, and Wright, M, 2014b. A Romano-British enclosure at East Leigh, Stratton, *Cornish Archaeol*, **53**, 209–22
- Borlase, W, 1769. *Antiquities, historical and monumental, of the county of Cornwall*, Oxford (facsimile reprint, 1973; Wakefield)
- Brindle, T, 2016. The south west, in A Smith, M Allen, T Brindle and M Fulford, *New visions of the countryside of Roman Britain. Volume 1: The rural settlement of Roman Britain*, Britannia Monograph, **29**, London (Society for the Promotion of Roman Studies), 331–59
- Brindle, T, in preparation. *Excavations at Tregunnel, Newquay* (Cotswold Archaeology)
- Brooks, R T, 1974. The excavation of The Rumps cliff castle, St Minver, Cornwall, *Cornish Archaeol*, **13**, 5–50
- Butcher, S, 2014. The Roman brooches from Nornour, Isles of Scilly, *Cornish Archaeol*, **53**, 1–80
- Carlyon, P, 1981. Some second century AD finds from Widemouth Bay, *Cornish Archaeol*, **20**, 224–6
- Carlyon, P M, 1982. A Romano-British site at Kilhallon, Tywardreath: excavation in 1975, *Cornish Archaeol*, **21**, 155–70
- Carlyon, P M, 1987. Finds from the earthwork at Carvossa, *Cornish Archaeol*, **26**, 103–41
- Carlyon, P M, 1995. *Romano-British gabbroic pottery: a summary of the available evidence in 1985*, private desktop publication deposited at Cornwall

- archaeological Unit and the Royal Institution of Cornwall
- Christie, P M, 1978. The excavation of an Iron Age souterrain and settlement at Carn Euny, Sancreed, Cornwall, *Proc Prehist Soc*, **44**, 309–433
- Clark, P, and Foreman, S, 2009. *The archaeology of the A30 Bodmin to Indian Queens road scheme*, Oxford (Oxford Archaeology report 2715)
- Cole, D, and Nowakowski, J A, forthcoming. Excavations at Killigrew 1996: an Iron Age and Romano-British industrial site on the Trispen bypass, Cornwall, in Jones, ed, forthcoming, Section 3
- Cornwall Archaeological Unit 2016. Chapelfield, St Mabyn, *Cornish Archaeol*, **55**, 256–57
- Cotswold Archaeology 2015. *Carloggas Farm, St Stephen, St Austell, Cornwall. Archaeological excavation and watching brief*, Kemble (Cotswold Archaeology report 15093)
- Cotswold Archaeology 2018. *Land at Trevithick Manor Farm (Phase II), Newquay, Cornwall. Post-excavation assessment and updated project design*, Kemble (Cotswold Archaeology report 18079)
- Cripps, L J, 2007. Re-situating the Later Iron Age in Cornwall and Devon: new perspectives from the settlement record, in C Haselgrove and T Moore, eds, *The Later Iron Age in Britain and beyond*, Oxford (Oxbow Books), 140–155
- Edwards, K, and Kirkham, G, 2008. Gear and Caervallack, St Martin-in-Meneage: excavations by *Time Team* 2001, *Cornish Archaeol*, **47**, 49–100
- Fowler, P J, 1962. A native homestead of the Roman period at Porth Godrevy, Gwithian, *Cornish Archaeol*, **1**, 17–60
- Fox, A, 1960. South-western hillforts, in S S Frere, ed, *Problems of the Iron Age in southern Britain*, University of London Institute of Archaeology Occasional Paper, **11**, London, 35–60.
- Fox, A, and Ravenhill, W, 1969. Excavations of a rectilinear earthwork at Trevinnick, St Kew, 1968, *Cornish Archaeol*, **8**, 89–97
- Fox, A, and Ravenhill, W, 1972. The Roman fort at Nanstallon, Cornwall, *Britannia*, **3**, 56–111
- Goacher, H, and Smith, R P, 2014. *Jory's Meadow, St Tudy, Cornwall: archaeological evaluation*, Truro (Cornwall Archaeological Unit)
- Good, O, 2015. Romano-British settlement and enclosure at Gover Farm, St Agnes, Cornwall, *Cornish Archaeol*, **54**, 225–32
- Gordon, A S R, 1940. The excavation of Gurnard's Head, a cliff-castle in W Cornwall, *Arch Jnl*, **97**, 96–111
- Gossip, J, 2013. The evaluation of a multi-period site and fogou at Boden Vean, St Anthony-in-Meneage, Cornwall, 2003, *Cornish Archaeol*, **52**, 1–98
- Gossip, J, forthcoming a. Life outside the round – Bronze Age and Iron Age settlement at Higher Besore and Truro College, 2004–5, in Jones, ed, Section 5
- Gossip, J, forthcoming b. Archaeological investigations at Nancemere, Truro, Cornwall 2002: a prehistoric and Romano-British landscape, in Jones, ed, forthcoming, Section 4
- Gossip, J, and Jones, A M, 2007. *Archaeological investigations of a later prehistoric and a Romano-British landscape at Tremough, Penryn, Cornwall*, Brit Arch Repts, Brit Ser, **443**, Oxford
- Gossip, J, and Jones, A M, 2017. Late Neolithic pits and an Iron Age and Romano-British settlement at Penryn College, *Cornish Archaeol*, **56**, 1–44
- Gossip, J, Jones, A M, and Quinnell, H, 2012. Early Neolithic activity and an Iron Age settlement at Penmayne, Rock, St Minver, *Cornish Archaeol*, **51**, 165–90
- Gossip, J, and Thorpe, C, 2010. *Penwith College, Penzance, Cornwall. Archaeological recording in advance of redevelopment: archive report*, Truro (Cornwall Archaeological Unit)
- Guthrie, A, 1969. Excavation of a settlement at Goldherring, Sancreed, 1958–1961, *Cornish Archaeol*, **8**, 5–39
- Harris, D, 1977. Bodwen, Lanlivery: a multi-period occupation, *Cornish Archaeol*, **16**, 43–60
- Harris, D, 1980. Excavation of a Romano-British round at Shortlanesend, Kenwyn, Truro, *Cornish Archaeol*, **19**, 63–75
- Harris, D, and Johnson, N, 1976. Carlidnack round, Mawnan, *Cornish Archaeol*, **15**, 73–6
- Haverfield, F, 1924. *A history of the county of Cornwall, part 5: Romano-British remains*, London (Victoria History of the Counties of England)
- Hencken, H O'H, 1933. An excavation by H M Office of Works at Chysauster, Cornwall, 1931, *Archaeologia*, **82**, 237–84
- Henderson, J C, 2007. *The Atlantic Iron Age*. London (Routledge)
- Herring, P, 1998. *Cornwall's historic landscape. Presenting a method of historic landscape character assessment*, Truro (Cornwall Archaeological Unit)
- Herring, P, Johnson, N, Jones, A M, Nowakowski, J A, Sharpe, A, and Young, A, 2016. *Archaeology and landscape at the Land's End, Cornwall. The West Penwith surveys 1980–2010*, Truro (Cornwall Council and Historic England)
- Higgins, J, 2009. *Archaeological excavations at Nancemere Fields, Truro, Cornwall*. np (Darag)
- Hirst, F C, 1937. Excavations at Porthmeor, Cornwall, 1933, 1934 and 1935, *Jnl Royal Inst Cornwall*, **24**, Appendix II
- Hood, A, 2007. *Penhale round, Fraddon, Cornwall. Archaeological excavation; post excavation assessment*, Swindon (Foundations Archaeology report 541)
- Hughes, S, and Farnell, A, 2016. Excavations at Tolgarick Farm, Truro, Cornwall, *Cornish Archaeol*, **55**, 1–64

- Hunt, M, 2016. A second Romano-British salt production site near Coverack, Cornwall, *Cornish Archaeol*, **55**, 249–54
- Johns, C, 2008. The excavation of a multi-period archaeological landscape at Trenowah, St Austell, *Cornish Archaeol*, **47**, 1–48
- Johnston, D A, Moore, C, and Fasham, P, 1998–9. Excavations at Penhale round, Fraddon, Cornwall, 1995/6, *Cornish Archaeol*, **37–8**, 72–120
- Jones, A M, 2017. Excavation of a multi-phased roundhouse at West Northwood Farm, Bodmin Moor, 2017, *Cornish Archaeol*, **56**, 45–84
- Jones, A M, 2019a. *Excavation of later prehistoric and Roman sites along the route of the Newquay Strategic Road Corridor*, Cornwall, Oxford (Archaeopress)
- Jones, A M, 2019b. Castle-an-Dinas, St Columb, Cornwall: investigating the 1962–1964 excavation archive, *Cornish Archaeol*, **58**, 57–105 [this volume]
- Jones, A M, forthcoming. Excavation of a Middle Iron Age settlement and a Roman-period enclosure at Porthleven, 2014, in Jones, ed, Section 6
- Jones, A M, ed, forthcoming. *Later prehistoric settlement in Cornwall and the Isles of Scilly: evidence from five excavations*, Oxford
- Jones, A M, and Quinnell, H, 2014. *Lines of archaeological investigation along the north Cornish coast*, Brit Arch Repts, Brit Ser, **594**, Oxford (Archaeopress)
- Jones, A M, Gossip, J, and Quinnell, H, 2015 *Settlement and metalworking in the Middle Bronze Age and beyond*, Leiden (Sidestone Press)
- Jones, A M, and Taylor, S R, 2004. *What lies beneath... St Newlyn East and Mitchell*. Archaeological investigations summer 2001, Truro (Cornwall County Council)
- Jones, A M, and Taylor, S R, 2010. *Scarcewater, Pennance, Cornwall*. Archaeological excavation of a Bronze Age and Roman landscape, Brit Arch Repts, Brit Ser, **516**, Oxford (Archaeopress)
- Jones, A M, and Taylor, S R, 2015. Archaeological investigations of Late Iron Age settlement at Sir James Smith's Community School, Camelford, Cornwall, 2008–9, *Cornish Archaeol*, **54**, 1–88
- Jones, P, and Hughes, S, 2014. *Land forming phase 2, Gwel-an-Mor, Portreath, Cornwall*, Bradninch (AC archaeology report ACD1025/2/0)
- Kirkham, G, 2012. 'Rip it up, and spread it over the field': post-medieval agriculture and the destruction of monuments, a case study from Cornwall, *Landscapes*, **13**, 2, 1–20
- Lawson-Jones, A, 2013. Discoveries along the North Land's End pipeline, *Cornish Archaeol*, **52**, 197–222
- Lawson-Jones, A, and Kirkham, G, 2009–10. Smithing in the round: excavations at Little Quoit Farm, St Columb Major, Cornwall, *Cornish Archaeol*, **48–9**, 173–226
- Leeds, E T, 1926. Excavations at Chun Castle, in Penwith, Cornwall, *Archaeologia*, **76**, 205–40
- Lewis, J, and Frieman, C, 2017. A geophysical survey of Talland Barton enclosures, field system and Hendersick Barrow, Talland, Cornwall [online] Available at archanth.cass.anu.edu.au/sites/default/files/docs/2019/11/Geophysical_Report_Talland_Barton_Rpt_No_8 [accessed 28 September 2020]
- McAvoy, F, Morris, E L, and Smith, G H, 1980. Excavation of a multi-period site at Carngoon Bank, Lizard, *Cornish Archaeol*, **19**, 31–62
- Mercer, R, 1981. Excavations at Carn Brea, Illogan, Cornwall – a Neolithic fortified complex of the third millennium bc, *Cornish Archaeol*, **20**, 1–204
- Miles, H, 1977. Excavations at Killibury hillfort, Eglosayle, 1975–6, *Cornish Archaeol*, **16**, 89–121
- Nicholas, P, and Hartgroves, S, 2018. The Roman fort at Restormel: geophysical surveys, 2007–2009, *Cornish Archaeol*, **57**, 169–88
- Nowakowski, J A, 2011 Appraising the bigger picture – Cornish Iron Age and Romano-British lives and settlements 25 years on, *Cornish Archaeol*, **50**, 241–61
- Nowakowski, J A, 2016. Remarkable landscapes of ancient fields – the later prehistoric and Romano-British legacy, in Herring *et al* 2016, 160–91
- Nowakowski, J A, and Johns, C, 2015. *Bypassing Indian Queens*. Archaeological excavations 1992–1994, Truro (Cornwall Council) (digital publication)
- Nowakowski, J A, and Quinnell, H, 2011. *Trevelgue Head, Cornwall: the importance of C K C Andrew's 1939 excavations for prehistoric and Roman Cornwall*, Truro (Cornwall Archaeological Unit)
- Nowakowski, J A, Gossip, J, Holder, N, and Scutt, W, in preparation. *New excavations at Tintagel Castle, north Cornwall, TCARP 2016–2017*, Truro (English Heritage/Cornwall Archaeological Unit)
- O'Neil, B H St J, 1933. The Roman villa at Magor Farm, near Camborne, Cornwall, *J Brit Arch Assoc*, **39**, 117–75
- Parkes, C, 2011. *Tehidy Park, Illogan, Cornwall: archaeological assessment*, Truro (Historic Environment, Cornwall Council)
- Peacock, D P S, 1969. A Romano-British salt-working site at Trebarveth, St Keverne, *Cornish Archaeol*, **8**, 47–65
- Quinnell, H, 1986. Cornwall during the Iron Age and the Roman period, *Cornish Archaeol*, **25**, 111–35
- Quinnell, H, 2004. *Trethurgy. Excavations at Trethurgy Round, St Austell: community and status in Roman and post-Roman Cornwall*, Truro (Cornwall County Council and English Heritage)
- Quinnell, H, 2007. The Iron Age and Roman period, in J A Nowakowski, H Quinnell, J Sturgess, C Thomas, and C Thorpe, *Return to Gwithian: shifting the sands of time*, *Cornish Archaeol*, **46**, 37–8
- Quinnell, H, 2011. A summary of Cornish ceramics in the first millennium BC, *Cornish Archaeol*, **50**, 231–40

- Quinnell, H, and Elsdon, S, 2009–10. The finds from Halligye fogou, *Cornish Archaeol*, **48–9**, 145–72
- Radford, C A R, 1951. Report on the excavations at Castle Dore, *Jnl Royal Inst Cornwall*, ns **1**, Appendix
- Rainbird, P, and Pears, B, 2017. The excavation of an Iron Age site at Nansledan, Newquay, *Cornish Archaeol*, **56**, 85–114
- Rainbird, P, Pears, B, Pink, F, and Valentin, J, 2017. Archaeological investigations of a Romano-British settlement at Parkengear, Probus, Cornwall, *Cornish Archaeol*, **56**, 115–53
- Rainbird, P, Pears, B, Sims, R, and Valentin, J, in preparation. Archaeological investigations of Romano-British and medieval settlement at Mountside, Par Lane, Par, St Blaise
- Ratcliffe, J, 1995. Duckpool: a Romano-British metal-working site and early medieval industrial site and harbour, Morwenstow, *Cornish Archaeol*, **34**, 81–171
- Reynolds, A, in preparation. Atlantic Road, Newquay: excavations on a Late Iron Age and Romano-British coastal site
- Saunders, C, 1972. The excavations at Grambla, Wendron, 1972: interim report, *Cornish Archaeol*, **11**, 50–52
- Saunders, A, and Harris, D, 1982. Excavation at Castle Gotha, St Austell, *Cornish Archaeol*, **21**, 109–53
- Schwieso, J, 1976. Excavation at Threemilestone round, Kenwyn, Truro, *Cornish Archaeol*, **15**, 51–67
- Sims, R, and Valentin, J, 2011. *Archaeological investigations on land off Par Lane, Par, Cornwall: post-excavation report on the results, with proposals for further analysis, publication and deposition of archive*, Exeter (AC archaeology report ACD162/1/1)
- Smart, C, 2014. *A Roman military complex and medieval settlement on Church Hill, Calstock, Cornwall: survey and excavation 2007–2010*, Brit Arch Repts, Brit Ser, **603**, Oxford (Archaeopress)
- Smith, G, 1988. Excavation of an Iron Age cliff promontory fort and Mesolithic and Neolithic flint working areas at Penhale Point, Holywell Bay, near Newquay, *Cornish Archaeol*, **27**, 177–99
- South West Archaeology, 2017a. Penvose Farm, St Gluvias, *Cornish Archaeol*, **56**, 284–5
- South West Archaeology, 2017b. Trethurffe Manor, Ladock, *Cornish Archaeol*, **56**, 279
- South West Archaeology, 2017c. Higher Trehiddle Farm, *Cornish Archaeol*, **56**, 281–2
- Startin, W, 2009–2010. Halligye fogou: excavations 1980–82, *Cornish Archaeol*, **48–9**, 127–44
- Taylor, S, 2012. Excavations of a Roman and post-Roman site at Penlee House, Tregony: a cremation and other burning issues, *Cornish Archaeol*, **51**, 125–64
- Taylor, S R, and Johns, C, 2017. *Duckpool, Morwenstow, Cornwall: archaeological excavation 2017*, Truro (Cornwall Archaeological Unit)
- Thomas, C, 1953–4. An Early Iron Age site at Carwynnen, Camborne, *Proc W Cornwall Field Club*, ns, **1,2**, 48–52
- Thomas, C, 1968. Merther Euny, Wendron, *Cornish Archaeol*, **7**, 81–2
- Threipland, L, 1956. An excavation at St Mawgan-in-Pyder, north Cornwall, *Arch Jnl*, **113**, 33–81
- Trudgian, P, 1977. Excavation at Tregilders, St Kew, 1975–6, *Cornish Archaeol*, **16**, 122–28
- Wessex Archaeology, 2008. *Lellizzick, near Padstow, Cornwall. Archaeological evaluation and assessment of results*, Salisbury (Wessex Archaeology report 65312.01)
- Young, A, 2000–1. Time Team at Boleigh fogou, St Buryan, *Cornish Archaeol*, **39–40**, 129–48
- Young, A, 2012. Prehistoric and Romano-British enclosures around the Camel estuary, Cornwall, *Cornish Archaeol*, **51**, 69–124

Distinctive Cornish stone artefacts in the Roman and post-Roman periods: an update

HENRIETTA QUINNELL

Three recent finds of complete bowls / mortars are described, together with a fourth mortar with so far unique decoration. The catalogue of fragments found since 1993 is updated together with new finds of stone weights and moulds. The new finds occasion a brief update on the style and function of these objects in Cornwall.

Cornish stone mortaria were first published by Hirst (1936), but large examples with skeuomorphic handles only came to notice with the extensive excavations of Trethurgy round in 1973 (Quinnell 2004). After this excavation the author began to catalogue examples of both forms and also stone weights. It became apparent that these were all a feature of the material culture of Roman Cornwall and a paper was published with a distribution map (Quinnell 1993). Recent finds show greater stylistic variation than previously realized but do not substantially alter the pattern of distribution. The locations of most sites in Cornwall are given on an updated map of Roman-period sites in the county (Quinnell 2019, fig 2 [this volume]). They are referred to here by the numbers used on that map and in the associated gazetteer; for example, no 59.

Trethurgy bowls

These are a large mortar variant, generally between 400 and 550mm in diameter, with a pair of skeuomorphic handles. The examples previously considered had distinct angles between the wall and base, did not have spouts and appear to be a local development from Cornish mortars (Quinnell 1993). The contexts in which they were found, when secure, date from the late third to the

sixth centuries AD. There are no data on date of manufacture or duration of use.

Redruth bowl

Circumstances of the find

Jane Marley

The bowl (Figs 1, 2) and a lower rotary quern were found in 2004 by developers who were clearing the site in and around the Redruth Miners' and General Hospital, formerly Redruth's 'Women's Hospital' (SW 692 417). The developers placed the artefacts by their hut. Another contractor became interested, purchased them and had them identified by Cornwall County Council's Historic Environment Service. The Royal Cornwall Museum was informed about the finds.

When the new owner decided to auction the finds, the Royal Institution of Cornwall attempted to trace the provenance more accurately but with limited success. The RIC eventually decided to purchase them, due to their rarity and archaeological importance. The finds are now accessioned as TRURI : 2004.39.1–2. The lower quernstone was of elvan and had, unusually, a rectangular spindle hole (Martin and Sue Watts, pers comm).

In 1889 two large, roughly circular mortar stones, a wedge-shaped grinding stone and a muller were found, together with wood ash and red burnt earth and an 'ancient wall', when the foundations for the Women's Hospital were being dug (Michell 1948, 97; *Western Daily Mercury*, 19 February 1889, p5). The mortars were interpreted as having been used for grinding tin ore and the site as having been a blowing house, it being noted that the area had been known as 'Blowing-house' for a long period. The stone finds were removed to Trewirgie House in Redruth but their present whereabouts are unknown. There is no other record of archaeological material in the immediate area.

Description of the bowl

The bowl has an internal rim diameter of 360mm and a depth of 102mm. The exterior retains slight

traces of vertical working. The rim is simple, only very slightly chamfered and widens to a projection or spout, ornamented by slight grooves either side of a channel 5.5mm deep. Two small 'handles' are set opposite each other. The edges of the handles have been given definition by the use of a metal scribing tool. The interior has been worked smooth but the lower third has been roughened through use, presumably by pestle working. The base has become thin with long use and the hole now present is entirely consistent with pestle-pounding. The edge of the fracture splays outward, consistent with the pressure causing the fracture coming from the inside. The bowl was made of mica-rich greisen containing a little tourmaline and its mineralogy is entirely consistent with a source at Tregonning Hill, Godolphin (Roger Taylor, pers comm).

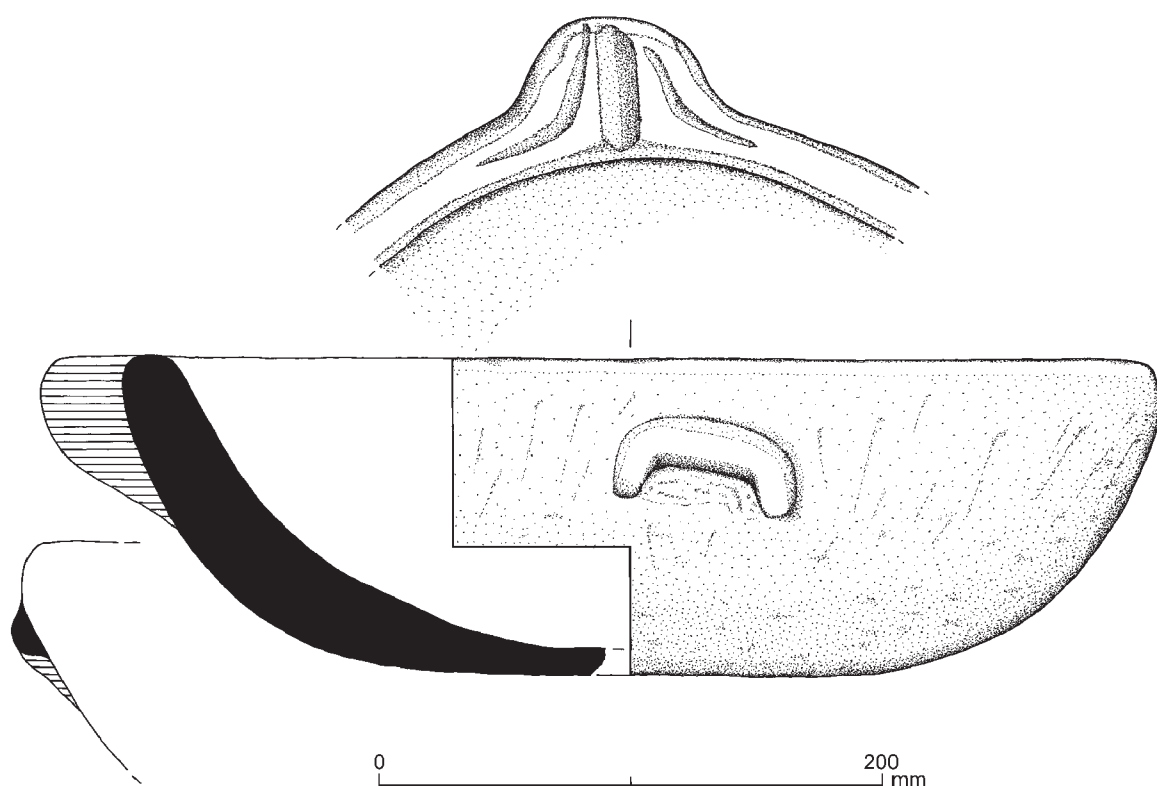


Fig 1 The Trethurgy bowl from Redruth. Scale 1:3. The additional section is through a handle; note that the spout, presented above the handle, is situated at approximate right angles to it. (Drawing: Carl Thorpe; digitized by Jane Read.)



Fig 2 The Redruth bowl. (Photograph: Carl Thorpe.)

Date and affinities

While the bowl is smaller than almost all previously studied examples, and a small spout is present, it is suggested that the handles indicate a Trethurgy-type bowl. Indeed, part of a small example, 240mm in diameter, from St Agnes, Isles of Scilly, with both a skeuomorph handle and a damaged spout, was included in the 1993 catalogue. It is likely that

the initial division between large Trethurgy bowls, with handles but without spouts, and small Cornish mortars, without handles but with spouts, was too simplistic and that bowls and mortars form part of a continuous range. The profile of the Redruth bowl also differs from most examples previously published in that it is shallower, a dish rather than a bowl, and that the wall curves gently into the base

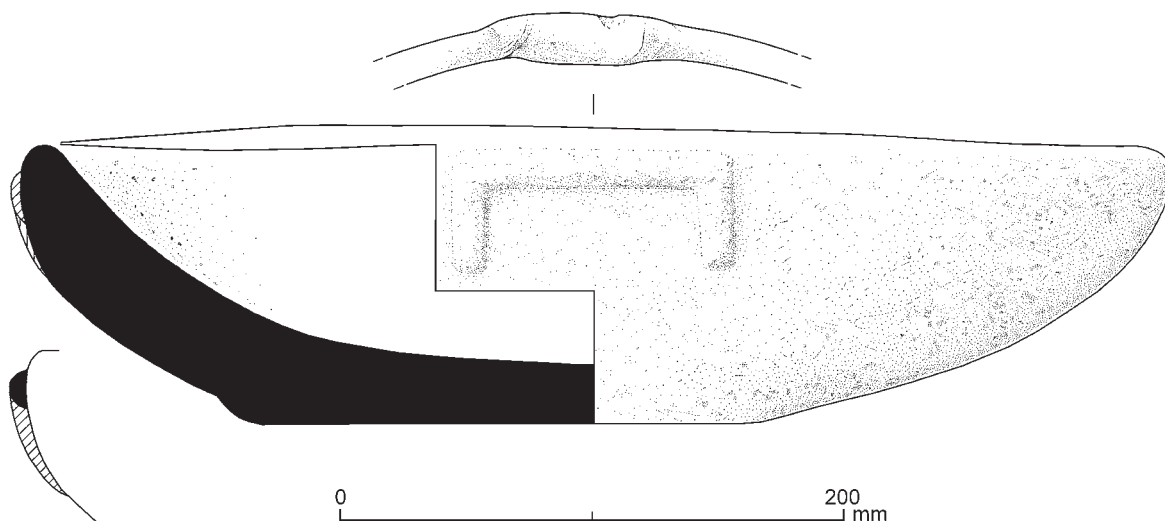


Fig 3 The Trethurgy bowl from Holy Street, Chagford, Devon, drawn from photographs. Scale 1:3. The additional section is through a handle: note that the spout, presented above the handle, is situated at approximate right angles to it. (Drawing: Jane Read.)

with no base angle. The Redruth bowl can only be dated to the third century AD or later, the general range of the series.

Holy Street bowl, Chagford, Devon

Circumstances of the find

The bowl (Fig 3) was found in 1987 in a winter drainage ditch running down the centre of a small combe in a field belonging to Holy Street House, a Grade II listed structure, about 160m south of the house itself (SX 6883 8763) (Devon and Dartmoor HER MDV 6205). It was found upside down by the then owner, Sally Meadows, when clearing the ditch. There is a spring on the north side of the combe and several possible building terraces within it. In 1996 Mrs Meadows showed it to Dr Tom Greeves, who visited the site of the find with her in 2002 and subsequently passed details to the author. John Allan was shown the bowl and provided a comment on its lithology. The bowl was taken by Mrs Meadows when she sold the property in the early 2000s and it remains in her possession at an address in Henley-on-Thames, Oxfordshire. She has generously provided a number of photographs on which the illustration is based.

Description, date and affinities

The bowl is approximately 457mm in diameter and 114mm deep. It has two opposed square handles and a slight spout centrally on one side. Its rim is rounded, with both interior and exterior being well finished, the latter very smooth and almost glossy. Photographs suggest that it had become worn through use. John Allan identified its material as quartz porphyry, a term used to describe elvan. Elvan does occur in occasional dykes around Dartmoor (Roger Taylor, pers comm) but given the scarcity of bowls and mortars of this material in Devon, the source of the Holy Street bowl is likely to be Cornish. Like the Redruth bowl, this is effectively a dish with only an intermittent basal angle and its date and affinities are similar.

Other Trethurgy bowls

Cornwall

Tremough, Mabe. Structure 338/306 Greisenised aplite. Rim of curved sided bowl, approximately

380mm diameter with slight beading. Spread (503), from which the rim came, is dated to the late second–third centuries AD. The size suggests a Trethurgy bowl. (Gossip and Jones 2007, fig 38, S13). No 74.

Newquay Strategic Road Corridor (NSRC), Newquay. Elvan S6, simple rim, approximately 360mm diameter. Structure 3 dated to later second to early fourth century AD (Jones 2019, 53, fig 4.1). No 58.

Harlyn Bay, St Merryn. Greisenised granite. Unstratified. Fragment diameter approximately 400mm with part of skeuomorphic handle. (Jones and Quinnell 2014, 11, S2). No 49.

Gloucestershire

Lydney Roman temple. Elvan, handled rim fragment, approximately 430mm diameter with probable dish shape; effectively unstratified (Casey and Hoffman 1999, fig 22, no 43).

Updating Trethurgy bowls

Both the Redruth and Holy Street bowls are effectively dishes, and without the defined basal angle which S1–S3 and S5 from Trethurgy have. S4 from Trethurgy lacks a base angle but is a definite bowl shape, as is probably incomplete S6 (Quinnell 2004, figs 61–2). While the overall numbers of bowls are too few to make subdivisions necessarily meaningful, data now suggest that these may fall into three types: bowl with defined base angle; bowl with simple curved profile; and dish. The nearly complete example from Richborough (*ibid*, fig 66) is a bowl with simple curved profile, as is the Lydney fragment (Casey and Hoffman 1999, fig 22, no 43). The only additional information on dating is provided by the possible examples, without surviving handles, from Tremough and the Newquay Strategic Road Corridor, which could indicate bowls were present from the second century AD.

Cornish mortars

These are generally between 200mm and 300mm in diameter with rim forms apparently copying pottery mortaria of the second and third centuries AD. Later forms, from the third–fourth centuries

and later, have simple rims. All reasonably complete examples have spouts.

Lane End Farm, Tresmeer

Circumstances of the find

The mortar (Figs 4, 5) has until recently been in the possession of Mr Michael Robin Mackelden. It was passed to him by his aunt, Mrs Ann Wickett (née Phillips) after her death in 1968. She had been

told by her husband, William Wickett (died 15 April 1954), that it had been ploughed up on Lane End Farm, the family holding, in Tresmeer parish in east Cornwall. The grid reference SX 224 884 was noted but this may refer to the farm, not the findspot. The mortar had until recently been used as a bird bath, and its surface shows extensive lichen growth. In 2009 Mr Mackelden's niece, Dr Alison Gascoigne, suggested to him that the object was of archaeological interest, and Anna Tyacke, the Finds Liaison Officer for the Portable Antiquities

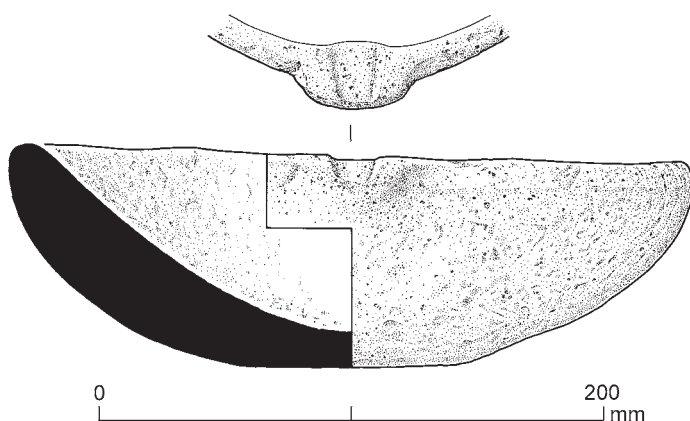


Fig 4 The Cornish mortar from Lane End Farm, Tresmeer. Scale 1:3. (Drawing: Jane Read.)



Fig 5 The Lane End Farm mortar. (Photograph: Henrietta Quinnell.)

Scheme for Cornwall, was contacted. Ms Tyacke contacted the author, to whom Mr Mackelden lent the mortar for study and illustration. The object was donated to the Royal Cornwall Museum by Mr Mackelden in 2010. (Accession number TRURI : 2010.26.)

Lane End farm was recorded on Thomas Martyn's 1748 map of Cornwall as West Tregear; the settlement approximately 350m to the east, now known as North Tregear, was shown as East Tregear. The *gear* element in the settlement names (from Cornish *ker*) suggests an enclosure (Padel 1985, 50–54) and the Tresmeer tithe survey (1839) recorded the field name 'Round Meadow' (TA 375) (centred on SX 2284 8850) just to the east of the present North Tregear settlement. The two fields immediately to the north of this were recorded as Higher Berry Park (TA 414) and Lower Berry Park (TA 515) (centred on SX 2272 8858), the 'round' and 'bury' elements in these field names again suggesting a 'round'-type enclosure. These fields do not appear to have been part of Lane End Farm, where the mortar is said to have been found, but the combination of historic farm and field names strongly hints at an enclosed settlement in the near vicinity, offering a possible context for the find (Graeme Kirkham, pers comm). Nothing indicating an enclosure has been recorded from air photographs and no other finds are known from the area.

Description

The mortar is a little lopsided with an internal diameter of 240mm. It has been worked from the parent elvan to give a flat-topped rim with a slight external bevel; this widens to provide a short spout, the inner edges of which have been emphasised by a grooved line on either side. Externally there is a flattened base, which provides the impression of a very slight foot ring. The exterior has been evenly dressed to give a generally smooth surface. Inside, this dressing has been removed by wear to a very smooth surface over its lower two thirds. The elvan has numerous cavities which would have facilitated the working of food. However, the porous nature of the rock has attracted staining over the interior and all but the base of the exterior, which remains the pale grey of the original elvan. Much of this staining is visibly due to lichen growth, due to its long presence in a rockery. There are some chips or damaged patches along the rim. Overall, the

centre part of the bowl has worn very thin and it is doubtful whether the mortar could have sustained much more use.

The mortar has been identified by Roger Taylor as of quartz porphyry elvan; abundant cavities caused by the rotting of feldspar would have provided a working surface that had a degree of 'bite'. Elvan dykes occur on the east side of Bodmin Moor some 10 km to the south of Tresmeer. However, it is quite possible that the mortar was imported from further west in Cornwall where similar artefacts are frequent finds on sites of the Roman period. Pieces of Roman-period elvan mortars have been found at Forrabury and at Widemouth Bay (Quinnell 1993, 41, fig 1). The generally simple style of the Lane End vessel suggests it belongs in the later part of the Cornish series, probably in the fourth or fifth centuries AD.

Nansledan phase 4, Newquay

Excavation by AC archaeology (Devon) in 2019 demonstrated Roman-period settlement centred on SW 839 613, near Newquay (no 57). AC Archaeology has permitted publication of an unusual Cornish mortar (Fig 6) in advance of the main excavation report (Rainbird 2020). The mortar, S1, comes from an irregular feature F1697 for which ceramics suggest a second century AD date. A substantial part of the mortar is represented by four conjoining rim fragments, including part of the spout. Externally, it is decorated uniquely by a series of vertical ribs. The rim has a simple bulbous shape; diameter approximately 300mm. Roger Taylor reports its material as altered elvan, completely greisenised by metasomatic *in situ* alteration, now consisting of aggregate quartz with small flakes of muscovite and sparse surviving quartz phenocrysts. The site also produced a body fragment (S2) which appears to have broken during working, suggesting on-site manufacture; this is of broadly similar date to S1. A third vessel S3 has a simple rim and was associated with a Type 22 bowl rim, suggesting a late third century AD or later date. These two vessels are of the same elvan as S1.

Overall, mortar S1 visually appears rather like a pillar-moulded glass bowl, current in Britain in the later first and second centuries AD although not yet recognized in Cornwall. Alternatively, a fluted bowl in either silver or pewter could have been the model (Eggers 1966, Abb. 50).

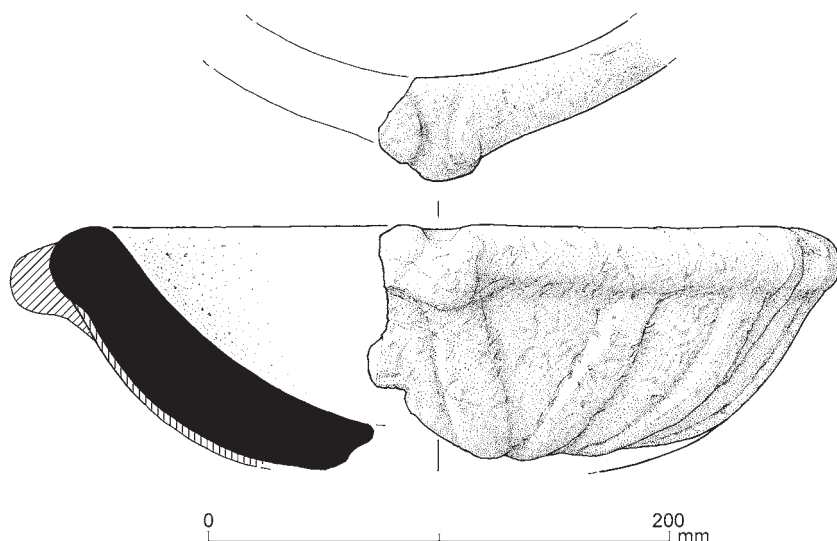


Fig 6 The Cornish mortar from Nansledan phase 4, Newquay; by permission of AC archaeology (Devon). Scale 1:3. (Drawing: Jane Read.)

If the Nansledan mortar is indeed modelled on a glass or metal original, its origin is comparable with the handles on Trethurgy bowls, which are presumed to have been copied from metal originals (Quinnell 1993, 34). In both cases the copying is of general style rather than replication and in both cases suggests a richer suite of artefacts in use in Roman Cornwall than survives today.

Cornish mortar fragments

At least another 11 mortars are represented from a further nine sites. Of these, the two from the Newquay Strategic Road Corridor are the most important as indicating that the stone vessels started in the later first century AD and were potentially present through the whole Roman period, as well as extending into the fifth to sixth centuries AD.

Cornwall

Reawla, Gwinear. Part elvan mortar with simple rim approximately 280mm in diameter. Midden, House B, dated to the later third century AD (Appleton-Fox 1992, fig 19, S1). No 14.

Penhale, Fraddon. Greisenised elvan. Two chamfered rims from fourth century AD midden (Nowakowski and Johns 2015, S12, S13). No 13.

Talland Barton, Lansallos. Mortar fragment (C Thorpe, pers comm: ongoing work by C Frieman and J Lewis). No 37.

Newquay Strategic Road Corridor (NSRC), Newquay. Elvan S5, simple rim approximately 220mm in internal diameter. Hollow 1, from which it came, is dated to the later first century AD. The exterior shows pecking which suggests that the mortar was unfinished and probably made on site. It is currently the earliest example known (Jones 2019, 52–4, fig 4.1). Elvan rim S7 with expanded grooved top, diameter approximately 290mm: Structure A6 is dated to the second century AD (Jones 2019, 53–4, fig 4.1). No 58.

Penzance College, Madron. Greisenised elvan. Mortar rim with grooves, later Roman period (Gossip and Thorpe 2010). No 34.

Shrubberies Hill, Porthleven. Piece of greisen mortar, S4, from upper fill of ditch [710]; dated to the fourth century AD (Jones, forthcoming). No 36.

Mountside Road, Par Lane, St Blazey. Grooved rim of elvan mortar, approximately 370mm in diameter and so possibly a Trethurgy bowl. Context [436] is dated to the later third to early fourth century AD. (Rainbird *et al*, in preparation). No 59.

Gear, St Martin-in-Meneage. Greisen. Side of mortar with slight footring and slightly grooved rim. Found by owner inside hillfort, in area with third–fourth century AD Roman-period pottery in the ploughsoil (Edwards and Kirkham 2008, 90–91, fig 32). No 93.

Nancemere, Truro. Rim of an elvan mortar; other elvan pieces indicate on-site working; no published details (Higgins 2009). No 32.

Weights

Sixteen carved stone mensuration weights were listed in Quinnell (1993) and demonstrated to be a distinctively Cornish feature, apparently not made or used in other parts of *Britannia*. The question of any correlation with standards of weight likely to be relevant was reviewed and dismissed. Few of these weights were dated, the earliest being deposited before c AD 300. There are now a further eight examples, of which that from Tremough structure 338/306 takes their chronology back to the second century AD. The varied shapes of these weights has always been apparent, but that from Hay Close is distinctive in being wider than its height. Two weights with iron hooks set in lead come from Killigrew and Nancemere; this feature was not present in the weights previously studied.

The two items from the midden dump at Atlantic Road, Newquay, are different forms of weight: MW57A is the first lead weight from a definite Roman context in Cornwall, although a lead weight was ploughed up with a small copper-alloy steelyard at Trenook Farm, Trenoweth, Lelant (Royal Cornwall Museum no 1990/102). S2, a small, carefully worked imperforate stone disc, may have been a balance weight, a type not previously identified in Cornwall (Henderson 1949, 131, pl 38). The latter interpretation may prove relevant in the study of small circular stone items usually considered either ‘counters’ or unfinished spindle whorls.

Gwithian, Gwithian. Site GM1 Greisen weight 375g built into a wall top, a context potentially dating to between the fifth and eighth centuries AD (Nowakowski *et al* 2007, 44; Quinnell 1993, appendix, with illustration).

Pabyer Point, Gorran. Part of weight, muscovite granite, deliberately broken (Borlase 2020, 46). No 87.

Tremough, Mabe. Structure 338/306 Fine-grained porphyritic elvan weight 1013g from entrance posthole [754], probably dating to the late second century AD. (Gossip and Jones 2007, fig 37, S8). No 74

Atlantic Road, Newquay. Lead weight with iron loop weighing 144g from midden [30], dating to the fourth century AD and later. A small, sandy, carefully worked slate disc S2 weighing 36g from the same context may be a balance weight (Reynolds, in preparation, MW57A). No 41

Killigrew, St Erme. Greisen weight S1 weighing 406g, with remnant of iron hook set in lead, from fill of inner ditch [3] probably dating to the third century AD. S2 in a fine-grained granite weighing 838g was unstratified (Cole and Nowakowski, forthcoming). No 10.

Hay Close, St Newlyn East. Modified elvan cobble S1, weight 1174g, elongated shape, from pit [11]; associated with post-Roman Gwithian-style pottery (Quinnell and Thorpe 2014, 135, fig 13).

Nancemere, Truro. Part of elvan weight, also a complete weight of greenstone / basalt with lead insert; no further published details (Higgins 2009). No 32.

Moulds

A small number of mould fragments were recorded in the previous report (Quinnell 1993), of which the most distinctive was both parts of a bivalve mould for a dish from St Just; these were mostly of greisen or greisenised granite. All three of the additional examples below are probably from moulds for casting metal plates or dishes.

Penhale, Fraddon. Greisenised elvan. Part of a mould for a plate from context 5725; the context is dated to the third to fourth centuries AD (Nowakowski and Johns 2015, S20). No 13.

Shrubberies Hill, Porthleven. Part of an unfinished sandstone mould S2 from gully [715], with a groove suggesting an intended plate mould (Jones forthcoming). No 36.

Halangy Down, St Mary’s, Isles of Scilly. Fine-grained granite. Fragment of a mould for a plate. The context is not closely dateable (Ashbee 1996, 102–4, fig 49, pl 31). No 86.

Materials and manufacture

In 1993 it was apparent that two materials were used for Trethurgy bowls and for mortars, elvan

and greisen. The former occurs in dykes around the granite intrusions of the south-west peninsula, although to only a limited extent in Devon. The latter occurs in patches in granite, most notably on the Tregonning and St Austell outcrops (Quinnell 1993, fig 1; note that there are rather more elvan dykes than shown). Both elvan and greisen are evenly textured and easy to work.

The Trethurgy bowl from Redruth is considered to be of Tregonning greisen, as were previously bowls or mortars from Trethurgy, Porthmeor and from London. There are no data for greisen artefacts being manufactured on sites where these are found and Roger Taylor remains of the opinion that greisen, particularly that from Tregonning, may have been worked in limited locations close to outcrops.

The Holy Street bowl and the Lane End mortar are recorded as of elvan, as are several mortar fragments from different sites. However, these identifications were provided a decade or more ago. In the last decade Roger Taylor has been distinguishing a sub-category of greisenised elvan. Greisenisation softens the elvan, making it easier to work. It is now apparent that the type of elvan used for artefacts could be carefully selected. The two mortar fragments from Penhale and that from Penwith College, Penzance, are of greisenised elvan, as is the mould fragment from Penhale and the three mortars represented by fragments from Nansledan. It is likely that many of the artefacts described in 1993 as of elvan are of the greisenised variety. The Trethurgy bowl fragment from Tremough is of greisenised aplite and that from Harlyn Bay of greisenised granite, materials not previously recorded for Cornish stone artefacts.

In 1993 unfinished elvan examples from Trethurgy and from the round at Castle Gotha suggested manufacture, at least of mortars, on settlement sites (*ibid*, 33): the unfinished mortar from Trethurgy showed distinctive chisel marks (Quinnell 2004, fig 64). This on-site working is confirmed by unfinished elvan mortars from the Newquay Strategic Road Corridor site, Nancemere round and, in greisenised elvan, from Nansledan. These sites demonstrate that elvan bowls were made both in rounds and on other sites and did not derive from a single centre.

Weights were shown by the 1993 study to have made use of lamprophyre, kaolinised granite and spilite as well as greisen. The recent examples

include the fragment of muscovite granite from Pabyer Point and Killigrew S2 in fine-grained granite. Elvan was not demonstrated to have been used for weights in 1993 but the more recently identified weights include the modified elvan cobble from Hay Close and the elvan fragment from Nancemere round. Moulds listed in 1993 were made both of greisen and other materials. The three recent examples are of greisenised elvan at Penhale, of sandstone at Shrubberies Hill, Porthleven, and of fine-grained granite from Halangy Down. There are no indicators for the location of manufacture of either weights or moulds. The range of materials used is suggestive of local manufacture from rock types available locally, although the use of greisen may indicate a Tregonning source for some.

Circumstances of deposition

In 1993 this subject was not considered; the list of artefacts, covering all finds going back to William Borlase, included a large number in the various categories with little or no contextual information. Deliberate deposition was addressed briefly in the publication of Trethurgy round with reference to the Trethurgy bowl fragment S5 and the bell skeuomorph weight S13 (Quinnell 2004, 132, 139), but did not, and does not, appear applicable to the majority of bowl and mortar fragments. A number of items in the present list, such as the weight from structure 338/306 at Tremough may have been deliberately deposited, but again the majority were apparently not. In the publication of the Newquay Strategic Road Corridor, Jones (2019, ch 11) provides an extensive and up-to-date overview of deliberate depositional practices in Roman Cornwall, which should ensure that these are adequately considered on sites excavated in the future.

The recent finds of two virtually complete Trethurgy bowls and a complete Cornish mortar are not paralleled by any earlier finds. The Redruth bowl was thinned by use, resulting in a small hole in its base; it is unclear whether the hole occurred at the end of use or when a fragment with cracks around it subsequently dropped out. The Holy Street bowl has also developed some cracks through use. The Lane End mortar still has a thick base. All three could have been complete when their use ceased. The Holy Street bowl, found in clearing out a drainage gully, has a strong association with

water: Holy Street is the site of a water mill of considerable antiquity. All three complete stone vessels, the result of considerable labour, may represent acts of deliberate deposition similar to those involving complete metal items, including the Treloy tin bowl and the lead and pewter vessels from the Bosence shaft (Penhallurick 1986, 200–202, 214–5).

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References

- Appleton-Fox, N, 1992. Excavations at a Romano-British round: Reawla, Gwinear, Cornwall, *Cornish Archaeol*, **31**, 69–123
- Ashbee, P, 1996. Halangy Down, St Mary's, Isles of Scilly. Excavations 1964–1977, *Cornish Archaeol*, **35**, 9–201
- Borlase, M, 2020. *Cornwall's trans-peninsula route: socio-economic and cultural continuity across the Camel / Fowey corridor*, Brit Arch Repts, Brit Ser, **653**, Oxford (Archaeopress)
- Casey, P J, and Hoffman, B, 1999. Excavations at the Roman temple in Lydney Park, Gloucestershire, in 1980 and 1981, *Antiq Jnl*, **79**, 81–144
- Cole, D, and Nowakowski, J A, forthcoming. Excavations at Killigrew 1996: an Iron Age and Romano-British industrial site on the Trispen bypass, Cornwall, in Jones, ed, forthcoming, section 3
- Edwards, K, and Kirkham, G, 2008. Gear and Caervallack, St Martin-in-Meneage: excavations by Time Team 2001, *Cornish Archaeol*, **47**, 49–100
- Eggers, H J, 1966. Römische Bronzegefäße in Britannien, *Jahrbuch des Römisch-Germanischen Zentralmuseums Mainz*, **13**, 67–164
- Gossip, J, and Jones, A M, 2007. *Archaeological investigations of a later prehistoric and a Romano-British landscape at Tremough, Penryn, Cornwall*, Brit Arch Repts, Brit Ser, **443**, Oxford (Archaeopress)
- Gossip, J, and Thorpe, C, 2010. *Penwith College, Penzance, Cornwall. Archaeological recording in advance of redevelopment: archive report*, Truro (Historic Environment Projects, Cornwall Council)
- Henderson, A M, 1949. Small objects in metal, bone, glass, etc, in J P Bushe-Fox, *Fourth report on the excavations of the Roman fort at Richborough, Kent*, Res Rep Soc Antiq London, **16**, 106–59
- Higgins, J, 2009. *Archaeological excavations at Nancemere Fields, Truro, Cornwall*, np (Darag)
- Hirst, F C, 1936. Stone mortaria in west Cornwall, *Proc West Cornwall Field Club*, **1**, 1, 11–16
- Jones, A M, 2019. *Excavation of later prehistoric and Roman sites along the route of the Newquay Strategic Road Corridor, Cornwall*, Oxford (Archaeopress)
- Jones, A M, forthcoming. Excavation of a Middle Iron Age and a Roman-period enclosure at Porthleven, 2014, in Jones, ed, forthcoming, section 6
- Jones, A M, ed, forthcoming. *Later prehistoric settlement in Cornwall and the Isles of Scilly: evidence from five excavations*
- Jones, A M, and Quinnell, H, 2014. *Lines of archaeological investigation along the north Cornish coast*, Brit Arch Repts, Brit Ser, **594**, Oxford (Archaeopress)
- Martyn, T, 1748. *A new and accurate map of the county of Cornwall from an actual survey*, London
- Michell, F, 1948. *Notes on the history of Redruth, Redruth*
- Nowakowski, J A, and Johns, C, 2015. *Bypassing Indian Queens. Archaeological excavations 1992–1994*, Truro (Cornwall Council) (digital publication)
- Nowakowski, J A, Quinnell, H, Sturgess, J, Thomas, C, and Thorpe, C, 2007. Return to Gwithian: shifting the sands of time, *Cornish Archaeol*, **46**, 13–76
- Padel, O J, 1985. *Cornish place-name elements*, English Place-Name Society, **56/7**, Nottingham
- Penhallurick, R D, 1986. *Tin in antiquity, its mining and trade throughout the ancient world with particular reference to Cornwall*, London (Institute of Metals)
- Quinnell, H, 1993. A sense of identity: distinctive Cornish stone artefacts in the Roman and post-Roman period, in M Carver, ed, *In search of cult: archaeological investigations in honour of Philip Rahtz*, Woodbridge, 69–78; reprinted, with some additional material, in *Cornish Archaeol*, **32**, 29–46
- Quinnell, H, 2004. *Trethurgy. Excavations at Trethurgy Round, St Austell: community and status in Roman and post-Roman Cornwall*, Truro (Cornwall County Council)

- Quinnell, H, 2019. Twenty years after Trethurgy: revisiting Roman-period settlement in Cornwall, *Cornish Archaeol*, **58**, 107–27 [this volume]
- Quinnell, H, and Thorpe, C, 2014. The finds, 129–39, in A M Jones, Hay Close, St Newlyn East: excavations by Cornwall Archaeological Society, 2007, *Cornish Archaeol*, **53**, 115–70
- Rainbird, P, 2020. *Land at Nansledan, Phase 4, Newquay, Cornwall: results of a programme of archaeological investigations and post-excavation assessment report*, Bradninch (AC archaeology report no ACD2018/3/0)
- Rainbird, P, Pears, B, Sims, R, and Valentin J, in preparation. Archaeological investigations of Romano-British and medieval settlement at Mountside, Par Lane, Par, St Blaise
- Reynolds, A, in preparation. Atlantic Road, Newquay: excavations on a Late Iron Age and Romano-British coastal site

St Blazey sundial

ANN PRESTON-JONES AND ELISABETH OKASHA

This short paper describes the early medieval cross-shaft at St Blazey Gate, Biscovey, and, in particular, the sundial cut on one side of it. This dial is compared with only two others known where the dial forms part of an early medieval carved monument. The purpose of including a dial on such monuments is discussed, with particular reference to the St Blazey cross-shaft.

sicut umbra transeunt dies – ‘like the shadow so the days pass’
(motto on the post-medieval sundial at St Levan church)

The St Blazey cross-shaft, shown in Figure 1, is a tall, slim monument of granite now standing in the churchyard of St Mary’s church, St Blazey Gate, near Biscovey, in the parish of St Blazey (at SX 0582 5358). The church, having been designed by the notable nineteenth-century London architect G E Street, is nowadays more celebrated than the cross-shaft (Beacham and Pevsner 2014, 396–7). However, the shaft, which may have been created almost 1000 years earlier, is also of great significance. The St Blazey cross-shaft has always been something of an enigma, its unusual shape setting it apart from other early medieval crosses in Cornwall, and its highly eroded decoration and inscriptions difficult to decipher. Its enigmatic status is enhanced by a small but significant detail which was first noted in 2013 but not elaborated upon at the time. This is a small sundial, or more correctly a scratch dial, on one narrow side (Preston-Jones and Okasha 2013, 119–20, illustrations 1–7, 353, 359–60, colour plate 8; the dial can be seen in illustration 3). On the basis of its carved decoration, the St Blazey cross-shaft is dated to the tenth or early eleventh century. The scratch dial appears to be an integral part of the sculpture and so a similar date for it must be assumed.

Sundials and scratch dials

Cornish sundials have been discussed by a number of authors over the last 50 years (including Crowley 1963; Clarke 1975; Martin 1994; Burge 2002). In 1963 Crowley gave a very useful summary. Like the others, Crowley’s focus was on the ‘golden age’ of sundials in the eighteenth century, from which period Cornwall has many very characterful, if rustic, examples, mainly carved on slate; however, she also summarised the evidence for earlier examples. She concluded that the county had no known Saxon dials and only three examples of simple scratch dials, at Michaelstow, Manaccan and Feock (Crowley 1963, 35; Clarke 1975, 3). Figure 2 shows the scratch dial at Michaelstow. Since then further examples of post-medieval dials have been recorded, notably by Burge, whose research on behalf of the British Sundial Society was published in 2002, but to the writers’ knowledge only one further example of a scratch dial has been identified, at Treworgey Manor, Liskeard (Oldham 2017, 5–7).

Although the St Blazey cross-shaft has been known since at least 1700, and a great deal has been written on it, most commentators have discussed the inscriptions and the interlace decoration while no-one appears to have noticed the dial. Even Arthur Langdon in 1894 failed to



Fig 1 The St Blazey cross-shaft. On the left is the main south face and (centre) the east side of the cross-shaft with the sundial circled. Both photographs were taken in oblique natural light. The third picture, on the right, was taken at night, using lights to highlight the sundial and the knotwork below it. (Photographs: Ann Preston-Jones and Andrew Langdon.)



Fig 2 The scratch dial at Michaelstow. This is approximately 120mm across and is at eye level, on the right (east) side of the porch. (Photograph: Ann Preston-Jones.)

identify the carving, noting instead ‘some curious and undefinable marks’ on the left side of the shaft, a description he modified in 1896 to ‘some undefinable markings’ (Langdon 1894, 313; 1896, 370). As noted above, it was only in 2013 that these markings were identified as a sundial: ‘The radial markings fanning from a small hole are superficially like those of a simple sundial (Ill. 3); but it seems too small and too simple to have functioned as such in reality’ (Preston-Jones and Okasha 2013, 120).

The difference between a ‘sundial’ and a ‘scratch dial’ (the latter sometimes referred to as a ‘mass dial’) is nothing to do with scratching, nor indeed with mass. The basic distinction is that early medieval sundials are discrete pieces of sculpture while scratch dials are usually roughly incised direct on to an existing stone, most often part of the fabric of a church (Green 1928, 491–3;

the distinction is fully discussed in Okasha, forthcoming). Features which both sorts of dials share are that all contain a central gnomon-hole and a number of lines or hour-marks. Early medieval sundials, which are often elaborate and carefully carved, may have been intended to function as rudimentary time-pieces. Their gnomon-holes were quite deep and apparently usable and indeed a stub of a gnomon still exists in one or two (Green 1928, 505, 512). However, it is unlikely that scratch dials were ever intended to tell the time. They are usually too simple and rudimentary, often consisting of only a few lines and a small portion of a circle; moreover many are cut on walls of churches where the sun never reached, including



Fig 3 The early medieval sundial at Saintbury, Gloucestershire. (Photograph: Richard Bryant, Corpus of Anglo-Saxon Stone Sculpture, 10, illustration 492.)



Fig 4 The early medieval sundial in the churchyard at Clynog Fawr, Gwynedd, north Wales, is characteristic of Welsh and Irish examples. It is cut at the top of a neatly-dressed 2.82m high shaft (Edwards 2013 264–6). (Photograph: © Crown Copyright: Royal Commission on the Ancient and Historical Monuments of Wales; Catalogue C547660, File Reference DI2011_0628.)

some interior walls (Green 1926; Champion 2015, 156–8). In some cases their gnomon-holes are deep enough to have held a gnomon; in other cases the gnomon-hole was shallowly constructed and was probably included because this was taken to be an essential part of a dial.

There are 33 early medieval sundials known in England, largely dating from the tenth to the twelfth century, most of which are fastened to church walls. As noted above, there are none in Cornwall and the nearest existing examples, geographically speaking, are in Gloucestershire and Hampshire. Figure 3 shows the Anglo-Saxon sundial at Saintbury, Gloucestershire. In Ireland

and Wales all existing early medieval sundials are, by contrast, free-standing pillars, with the dial cut at the top of one vertical face (Fig 4; on early medieval Irish sundials, see Hamlin 1987, 29–42 and www.sundials-ireland.com; on Welsh sundials, see Edwards 2013, 76). In England, scratch dials were cut direct on to church walls from the tenth century onwards, and the practice continued throughout the Middle Ages and beyond. Several thousand, perhaps as many as six thousand, are known altogether.



Fig 5 The early medieval carved panel depicting the Virgin Mary and Child at Inglesham, Wiltshire. The scratch dial is seen bottom left. (Photograph: K Jukes and D Craig, © Corpus of Anglo-Saxon Stone Sculpture.)

Dials on carved stone monuments

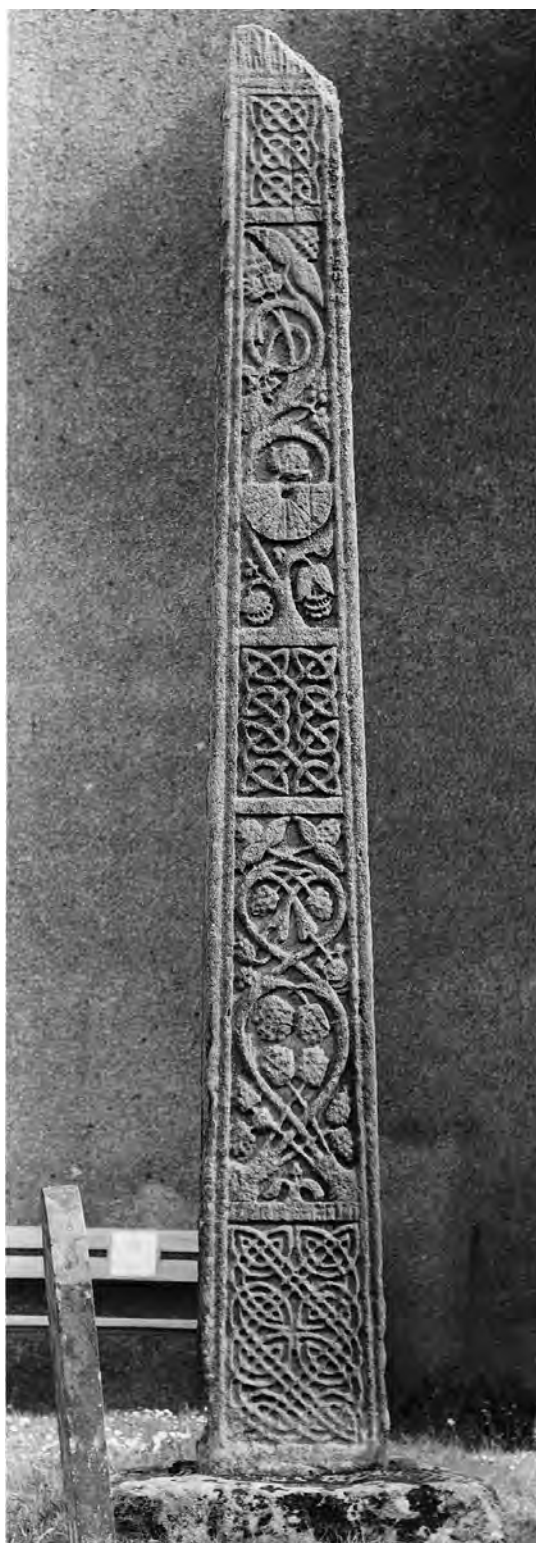
There are, however, three dials that fit neatly into neither the category of sundials nor that of most scratch dials. These three all appear on carved stone monuments. They are clearly not typical sundials, since they are not discrete pieces of sculpture in their own right, but nor are they typical scratch dials since they are not cut graffiti-like on to church walls. The three are: Inglesham in Wiltshire (Fig 5), Bewcastle in Cumbria (Fig 6), and St Blazey.

The dial at Inglesham is a typical scratch dial, consisting of a portion of a circle with a gnomon-hole and a number of irregularly-spaced hour-marks. It is clearly secondary, being cut on to the lower part of a carved stone panel depicting the Virgin and Child which also contains the beginning of an inscribed text reading + *Maria*-. The sculpture dates from the tenth or eleventh century so the dial is later than this (Cramp 2006, 217–9, illustrations 453–4). However, what is not clear is why it was cut on this carved panel since it does not seem particularly relevant to the figure sculpture. It is of course possible that the dial was cut to suggest a religious precept concerning the passing of earthly time and the need for people to consider their lives in that context; in this case the panel containing the Virgin and Child is not an inappropriate place. However, most scratch dials are cut on the walls of churches, not on sculpture. Probably the most obvious explanation for the Inglesham dial is that it was cut on the carved panel because of the conveniently smoothed flat surface there. Despite the statement in the *Corpus* entry (Cramp 2006, 217), there is no evidence that, since it was first observed in 1833, the panel has ever been set into an exterior wall of the church and plenty of evidence that since 1833 it has been in an interior wall (for example, Anon 1833, 399; Keyser 1921, 35; Okasha 1971, 82). While it is possible that the panel was in an exterior wall when the scratch dial was cut onto it, this is not a necessary conclusion since scratch dials are sometimes cut on interior church walls.

By contrast, the dials at Bewcastle and St Blazey are not typical scratch dials, but neither are they discrete monuments as true sundials are. In both

Fig 6 (Right) The south face of the Bewcastle cross; the sundial is two-thirds of the way up the shaft. (Photograph: T Middlemass.

© Corpus of Anglo-Saxon Stone Sculpture.)



cases the dials are integrated into the design of the sculpture of the cross-shaft on which they are carved. Both are small: the Bewcastle dial has a diameter of around 200mm, the St Blazey dial of around 130mm. Yet they are far apart both geographically and in terms of date. The dial at Bewcastle in Cumbria forms part of the decoration of a large sculptured cross-shaft dating from the first half of the eighth century. The dial at St Blazey in mid-Cornwall is also part of the decoration of a carved cross-shaft but one that dates from the tenth to the eleventh century.

The Bewcastle cross has been the subject of a great deal of scholarly discussion: the entry in the *Corpus of Anglo-Saxon Stone Sculpture* has a bibliography containing several hundred references, dating from 1607 until 1984 (Bailey and Cramp 1988, 61–72, illustrations 90–117, 119); in addition, much further work has appeared since. Of course, not all of these contain discussion of the dial, although many mention its existence. One influential recent work assumes that the dial ‘doubtless had practical functions’, including reminding the clergy to celebrate the monastic hours and reminding others to attend to more mundane tasks (Ó Carragáin 2005, 46). However, no Anglo-Saxon sundial was able to tell the time with the accuracy which might have been expected for the monastic services (Okasha, forthcoming). At best, it might have given a rough indication of time in summer and only of course when the sun was shining. On the Bewcastle cross it would in any case have been hard to read the time indicated on a dial of around 200mm in diameter, set some 3m from the ground. Ó Carragáin also suggests that the dial ‘functioned symbolically’ in liturgical terms (Ó Carragáin 2005, 46). However, it seems most likely that, like other Anglo-Saxon sundials (and post-medieval examples with their foreboding mottoes), the primary purpose of the Bewcastle dial was in fact merely to suggest a reference to the passing of earthly time.

St Blazey cross and sundial

While a great deal has been written about the Bewcastle dial, the St Blazey dial has not attracted attention. The St Blazey monument itself has certainly been well discussed in the scholarly literature; references to it have appeared since 1700, and the *Corpus* entry lists some 40 works

which mention it (Preston-Jones and Okasha 2013, 120). However, as noted above, very few of these actually mention the dial. This is partly accounted for by the fact that early commentators were more interested in the inscriptions on the two main faces, and less interested in the other ornament.

The St Blazey cross-shaft stands 2.38m (nearly 8 feet) high. Damage at the top indicates that it is incomplete and would originally have been taller. With the addition of a head, and a base-stone for support, it could once have stood up to 4m high and been an imposing monument. The carved decoration on the cross-shaft is all set above a flat raised band carved at the widest point of the shaft, the portion below the band being left plain on all four faces. As the cross is now positioned, the two broad sides face south and north. Both contain three panels: the south face has an undecorated top panel, followed by a panel containing a ring-knot, and a third panel with an inscription (see below). The north face has a top panel containing an incomplete four-strand plait, followed by an inscription in the middle panel; the third panel contains four simple knots arranged as a square. The narrow side facing west is plain, either by intention or because it was never finished. The narrow side facing east also has three panels. The top is undecorated while the third contains a simple four-strand plait. Between these two panels is a middle panel on which is carved the very simple semi-circular dial.

In its present setting, the dial is 1.5m (5 feet) above ground, so roughly at eye level. It extends the full width of the shaft and measures approximately 130mm across and 120mm high. The most prominent feature is the gnomon hole, 20mm across and approximately 15mm deep. The remaining detail is very difficult to discern in natural light because the cross-shaft is cut from a coarse-grained and highly eroded granite. However, careful examination under oblique light, as shown in Figure 1, indicates that the gnomon hole is set at the centre of a faint horizontally-incised line defining the top edge of the dial and that from this, three more incised lines radiate downwards, dividing the panel into four roughly equal segments. These lines all have a small bar cut at right angles near their ends. The bottom edge of the dial is slightly curved and below this a horizontal raised moulding divides the dial from the decorated panel below.

As noted above, there is some uncertainty about whether the gnomon-holes of scratch dials



Fig 7 St BlazeY cross-shaft, with a pencil acting as a simple gnomon. (Photograph: Ann Preston-Jones and Daniel Rose-Jones.)

would ever have supported a gnomon in reality, particularly if the purpose of these dials was largely symbolic. However, as Figure 7 shows, the St BlazeY dial is perfectly capable of supporting a simple gnomon made from a small piece of wood. Thus provided, the St BlazeY dial immediately acquires more presence and meaning, whatever its original purpose.

The integration of the dial within the decorative scheme of the cross, along with the degree of erosion which affects all the sculpture on the monument to a similar extent, make it highly likely that this sundial is an original feature. The division of the dial into four segments is a characteristic (though not necessarily a defining) feature of early medieval dials, as is the cross at the ends of the radiating lines. The latter feature is also seen on the Bewcastle cross dial.

The text inscribed on the south face is spread over three lines and reads + [CI]LRORON, where the first two (bracketed) letters are less clear than the rest. It is likely that this is a personal name, possibly with a Celtic first element. On the north face the text is set in two lines and is rather worn. Indeed, the upper line is not now legible but may

have contained a personal name as the lower line apparently reads [+ FILI-], probably the beginning of the Latin word *filius* 'son of'. The majority of those inscribed cross-shafts in Cornwall that are legible contain one or more crosses in their texts, as the St BlazeY text does.

However, St BlazeY is the only cross-shaft to include the word *filius* as part of a memorial formula. Simple memorial formulae, consisting of one or more personal names, with or without a term of family relationship, usually *filius*, occur most commonly on the earlier inscribed stones, the Category 1 pillar-stones (Okasha 1993, 11–16). Some of the other crosses contain similar texts which may well be commemorative, despite containing no word of family relationship; for example, the Lanherne cross (Preston-Jones and Okasha 2013, 152–5, illustrations 92–9). On the St BlazeY cross, the two texts are integrated into the carved decoration of the cross-shaft and are therefore primary, not later additions. It is thus likely that the cross was erected as a memorial to one or two people, although the texts are not sufficiently legible for this to be certain.

The inscription and the dial are not the only unusual features of the cross. The raised band around the centre is not found on any other early medieval cross in Cornwall. This form has more in common with the distinctive round shafts of Cumbria, North Yorkshire and in particular the Peak District, as, for example, those at Fernilea, Whitfield or Chebsey (Hawkes and Sidebottom 2018, 85–6, 210–13, 422–5, 515–8, illustrations 183–4, 233–4, 273–4; Bailey 1980, 186–8), or with two eccentric monuments in south Wales at Coychurch and Llandough; however, these Welsh monuments have separate parts which are socketed together and they are far more elaborate than the St Blazey cross (Redknap and Lewis 2007, 288–92, 329–37). In its absence of anything other than knotwork, the St Blazey monument bears a resemblance to the sculpture of the ‘panelled interlace’ group of Cornish sculpture, which includes well-known monuments like the Doniert stone and the cross-shaft at St Neot (Preston-Jones and Okasha 2013, 134–7, illustrations 51–5, 58–9, colour plate 2, St Cleer 2, Doniert stone; 171–2, illustrations 151–4, colour plate 30, St Neot 1). However, the style of carving on the St Blazey cross-shaft is rather different; it is lightly cut rather than deeply modelled, and none of the others in that group have the unusual central band.

With the principal groups of early medieval Cornish crosses centred around the West Penwith and Bodmin Moor granite areas, the cross at St Blazey Gate is slightly out on a limb, making it perhaps not surprising that its sculpture does not altogether conform with the majority of these monuments.

Although the cross has not moved far from its first recorded location, its original setting is uncertain. When first noted in 1700 the cross-shaft was standing about 200m to the east ‘by the Alms-House at *St. Blasey*’ (Moyle 1726, 237, quoting a letter of Edward Lhwyd); this was beside the highway which ran from Lostwithiel to St Austell and beyond, around the south side of the high ground of the Hensbarrow granite. Ogilby’s road maps of 1675 show that this was one of the main routes through Cornwall from Exeter to Truro and Land’s End (Quixley 2018, 57, 58; plates 19.1, 19.3). Since other early medieval crosses, like the Doniert stone, stand by roads in Cornwall, there seems little reason to doubt that the St Blazey cross-shaft could have had significance in this way at an earlier period. In 1760 the road was turnpiked and the location chosen

for a toll-house and gate (Thompson 2013, 123–4; Taylor 2001, 71), hence the name of St Blazey Gate. This road is now the A390. The stone’s prominence on this route is indicated by the fact that, like the Tristan Stone near Fowey, it is recorded on the Ordnance Surveyors’ 2-inch drawing of 1805 (Ordnance Survey 1805).

In 1754 Borlase noted that ‘In a little meadow adjoining to the place where this stone now stands, many human bones have been found, and I suspect that this Cross may have been remov’d from thence’ (Borlase 1754, 363–4). The field-names Great and Little Chaple Park recorded in the Lanhydrock Atlas and located on the north side of the road, close to the toll-gate, add another pointer to the original context of the cross (Holden *et al* 2010, 217). The Cornwall Historic Environment Record makes the further connection between the chapel fields, cemetery and cross-shaft with a chapel and cemetery of St Werrye, recorded in the parish in 1568, but this cannot be proved (Preston-Jones and Okasha 2013, 120; Cornwall Historic Environment Record MCO 9791). Although these various factors may point to the original function of the cross as either a wayside or chapel-yard cross, neither can be proved definitively and nor does either illuminate the choice of a dial as part of its decorative scheme or the use of the archaic FILIUS in its commemorative inscription.

The original patronage and commissioning of the cross also remain uncertain. Cornish early medieval crosses can usually be related to either secular or ecclesiastical patronage, with the Doniert stone and its likely naming of the last Cornish ‘king’ a clear example of secular patronage and the St Buryan cross likely to be related to the collegiate church established at St Buryan in the tenth century (Preston-Jones and Okasha 2013, 134–7, 127). The early medieval religious house of St Petroc at Bodmin lay less than ten miles to the north, but St Petroc’s church did not own land in the St Blazey area at the time of Domesday Book. St Blazey itself and St Blazey Gate are not recorded in Domesday Book. St Blazey Gate is perhaps most likely to have been within the royal manor of *Tewington* or Towan, for Henderson records that ‘the limits of the parish of St Austell with its chapelry of St Blazey seem to have been determined by the great manor of *Tewington*’ (Henderson 1955, 25). The manorial centre of *Tewington* or Towan lay six miles south-west of St Blazey Gate on the opposite side of St Austell Bay, but the cross may perhaps

have signified the landward approach to the manor from the north-east, as the Penzance Cross may have marked a route to the major Domesday manor of Alverton (Preston-Jones and Okasha 2013, 188).

Concluding remarks

In summary, the dial is clearly part of the original design of the St Blazey cross-shaft, just as the inscribed texts are. As noted above, the dial is integrated into the decorative scheme of the cross and is weathered to a similar extent, making it most likely that it is an original feature. It is anyway unlikely to be a later addition since, with so many other areas of the cross-shaft uncarved, it is more probable that a secondary scratch dial would have been added on one of the larger, plain surfaces. However, it is hard to see much relationship between the panels of carved interlace and knotwork and either the dial or with the texts; nor is there any immediately clear relationship between the dial and the texts. The fact that the cross-shaft is so eroded and may have been left unfinished may have deprived us of the clues that further decoration could have provided.

Nonetheless it is remarkable that at St Blazey Gate in mid-Cornwall is one of only two known sundials or scratch dials on an early medieval cross in the British Isles and that the other one should be on one of the earliest and most celebrated examples of Anglo-Saxon stone sculpture.

As noted above, the two dials on the St Blazey and Bewcastle cross-shafts share the fact that they, and they only, are part of the original decoration of a sculptured monument. There the similarity ends. The two dials are on crosses of very different dates in widely separated parts of the country. The Bewcastle dial is more elaborate than the St Blazey dial which, in its simplicity, is a typical scratch dial. In neither case was the dial functional, although for different reasons: St Blazey is too rudimentary and Bewcastle, although more elaborate, is too small and placed too high up on the cross-shaft to have functioned as a time-piece.

So what was the purpose of these two dials? The most likely answer to this question is that, like all sundials and scratch dials, they were carved to indicate the passing of time and so might have suggested to people their own mortality. Indeed, this could well have been used by the church as explicit moral teaching, that with the passing of

time people should consider the state of their souls. A further point is that on both monuments the texts contain personal names. Might it have been that the dials were also there in the pious hope that for much future time people would pray for the souls of the deceased persons named on the monuments?

We do not know why this unique monument, with the earliest sundial in Cornwall, was set up in St Blazey parish, but it is possible to make a tentative suggestion as to how it may have functioned. Let us imagine the cross, in its original form, standing on the wayside or in a chapel-yard or cemetery, with the sundial facing south, instead of east as it does now, and a gnomon in place (see Figure 7): the commemorative inscriptions would then have faced east and west, clearly visible in the sun's oblique rays around the middle of the day. A passing traveller or a visitor to the chapel would easily have seen both inscriptions, each naming a person of importance, now dead. On a sunny day, our visitor could not only have pondered the names of the commemorated, but also have witnessed the passing of time as the shadow of the gnomon crept from east to west across the dial. This may even explain why the least important and shaded 'north' side of the cross, the side opposite the sundial, was left uncarved.

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References

- Anon 1833. On ancient sculpture in England – sculpture of the Norman period, *Gentleman's Magazine*, **103**, 1, 395–9.

- Bailey, R N, 1980. *Viking age sculpture in northern England*, London
- Bailey, R N, and Cramp, R, 1988. *Cumberland, Westmorland and Lancashire-North-of-the-Sands*, Corpus of Anglo-Saxon Stone Sculpture, **2**, Oxford
- Beacham, P, and Pevsner, N, 2014. *The buildings of England. Cornwall*, New Haven (new edn)
- Borlase, W, 1754. *Observations on the antiquities, historical and monumental, of the county of Cornwall*, Oxford
- Burge, L, 2002. *Cornish church sundials: surveyed and investigated*, Truro
- Champion, M, 2015. *Medieval graffiti: the lost voices of England's churches*, London
- Clarke, C, 1975. Medieval scratch dials, *Cornwall Archaeol Soc Newsletter*, **17**, 5
- Cramp, R, 2006. *South-west England*, Corpus of Anglo-Saxon Stone Sculpture, **7**, Oxford
- Crowley, J, 1963. Cornish sundials I, *Cornish Archaeol*, **2**, 34–46
- Edwards, N, 2013. *North Wales*, Corpus of Early Medieval Inscribed Stones and Stone Sculpture in Wales, **3**, Cardiff
- Green, A R, 1926. *Sundials, incised dials or mass-clocks*, London
- Green, A R, 1928. Anglo-Saxon sundials, *Antiq Jnl*, **8**, 489–516
- Hamlin, A, 1987. Some northern sundials and time-keeping in the early Irish church, in E Byrne, ed, *Figures from the past. Studies on figurative art in Christian Ireland*, Dun Laoghaire, 29–42
- Hawkes, J, and Sidebottom, P, 2018. *Derbyshire and Staffordshire*, Corpus of Anglo-Saxon Stone Sculpture, **13**, Oxford
- Henderson, C G, 1955. The ecclesiastical history of the 109 western parishes of Cornwall [part 1], *Jnl Roy Inst Cornwall*, ns, **2**, **3**, 1–104
- Holden, P, Herring, P, and Padel, O J, 2010. *The Lanhydrock atlas*, Fowey
- Keyser, C E, 1921. An architectural account of the churches of Great and Little Coxwell, Coleshill, Inglesham, Buscot and Eaton Hastings continued, *Berks, Bucks and Oxon Archaeol Jnl*, **26**, **2**, 33–44
- Langdon, A G, 1894. The inscribed and ornamented cross-shaft at Biscovey, St Blazey, Cornwall, *Archaeol Cambrensis*, 5 series, **11**, 308–15
- Langdon, A G, 1896. *Old Cornish crosses*, Truro
- Martin, C, 1994. *A celebration of Cornish sundials*, Trewirgie
- Moyle, W, 1726. *The works of Walter Moyle esq; none of which were ever before publish'd*, T Sergeant, ed, **1**, London
- Ó Carragáin, E, 2005. *Ritual and the rood*, London
- Okasha, E, 1971. *Hand-list of Anglo-Saxon non-runic inscriptions*, Cambridge
- Okasha, E, 1993. *Corpus of early Christian inscribed stones of south-west Britain*, Leicester
- Okasha, E, forthcoming. Anglo-Saxon sundials, *Anglo-Saxon Stud Arch and Hist*, **22**
- Oldham, B, 2017. Rare religious objects discovered near Liskeard, *From Your Own Correspondents: an update from Cornwall Archaeological Society's Area Representatives*, December 2017, 5–7 [online] Available at: <https://cornisharchaeology.org.uk/wp-content/uploads/2017/12/FROM-YOUR-OWN-CORRESPONDENTS-December-2017.pdf> [accessed 1 August 2020]
- Ordnance Survey 1805. Ordnance Surveyors' 2 inch drawing, Fowey, Cornwall, [online] Available at: <http://www.bl.uk/onlinegallery/onlineex/ordsurvdraw/f/0020sd000000005u00321000.html> [accessed 1 August 2020]
- Preston-Jones, A, and Okasha, E, 2013. *Early Cornish sculpture*, Corpus of Anglo-Saxon Stone Sculpture, **11**, Oxford
- Quixley, R C E, 2018. *The antique maps of Cornwall and the Isles of Scilly*, Penzance (2nd edn)
- Redknap, M, and Lewis, J M, 2007. *South-east Wales and the English border*, Corpus of Early Medieval Inscribed Stones and Stone Sculpture in Wales, **1**, Cardiff
- Taylor, P, 2001. *The toll-houses of Cornwall*, St Austell
- Thompson, I, 2013. *Cornish milestones: the development of Cornwall's roads in the eighteenth and nineteenth centuries*, Truro

A contribution towards the architectural history of Launceston Priory

JOHN ALLAN

with contributions from RICHARD PARKER and ROGER T TAYLOR

This paper examines the evidence for the architectural history of Launceston Priory – principally its plan and architectural fragments. It argues that there was a major but largely undocumented rebuilding of the eastern limb of the priory church in c 1280 / 1300–1350. The windows of the choir and presbytery had the most elaborate Flamboyant Decorated tracery known in Cornwall; the reredos of the high altar was a work of great delicacy. Architectural details show links to St Augustine's, Bristol, and Exeter Cathedral, as well as to other work in Cornwall, in the period c 1325–50.

Dr Taylor's petrological study of the priory's building stones and floor-tiles has identified the source of the distinctive white tiles employed in the choir as a small outcrop of white clay close to Dutson, 1.8 km to the north east; other tiles were made in the Exeter area, and on the fringes of the granite.

The priory church of St Stephen-by-Launceston was one of the two largest ecclesiastical buildings in Cornwall. About 76–77m long, it was similar in size to the college church of Glasney (about 75m long: Cole 2016, 69–70), and appreciably larger than the churches of the other leading Cornish monastic houses, Bodmin Priory and St Germans (Bodmin about 60m long: Orme 2010, 143: 58m internally, with (say) 2m for wall thicknesses; St Germans about 48m long: *ibid*, 187; Beacham and Pevsner 2014, 542–3). The destruction of all three of the county's largest churches has distorted modern perception of the medieval ecclesiastical architecture of Cornwall, particularly the achievements before the great rebuilding of parish churches in the fifteenth and sixteenth centuries, leaving the impression of modest ambition and limited connection to the major buildings of other parts of the West Country (Allan 2017a). The recent publication of the excavation at Glasney has gone some way to redress this imbalance, showing that its church had high-quality architectural features

of the first half of the fourteenth century linked to Exeter Cathedral (Cole 2016). The present paper is intended to complement the study of Glasney with a consideration of the evidence at Launceston.

The priory site (SX 3280 8500) was excavated in the period 1888–93 by the local architect and antiquary Otho B Peter, who published a number of papers describing his discoveries (Peter 1889; 1892; 1893a; 1893b; 1896; 1910). The displayed remains consist of the core of the monument he uncovered: the choir and presbytery, with their flanking aisles and a porch to the north (Figs 1–2). Only the lower parts of the walls survived, generally no more than 1m high; after the excavations the walls were topped in many places with loose architectural fragments (Fig 5). Although the site seems to have been much visited in the early twentieth century, it suffered neglect in the late twentieth century and by 2000 and had become badly overgrown. An initial programme of clearance and survey was undertaken by the Cornwall Archaeological Unit

(CAU) in 2001 (Gossip 2002, which includes drawn and photographed elevations of the walls, detailed descriptions and initial interpretations).

In the summer of 2008 Launceston Town Council commissioned a further programme of conservation, redisplay and recording of the remains, funded by the Heritage Lottery Fund and other partners, with advice from English Heritage. The conservation work, by Darrock and Brown Ltd, was supervised by Parkes Lees Architects, and clearance and recording work was undertaken by James Gossip of CAU, with assistance from local volunteers and Cornwall Archaeological Society members (Fig 4c; Gossip 2011).

As part of this programme, the writer was invited by Cornwall Archaeological Unit to provide advice about the likely date of the exposed monument, and about the interpretation of the major collection of architectural fragments on the site. This led to commissioning Richard Parker to provide a new reconstruction drawing of the priory which would present the new interpretation to the public (Appendix 1, below). The results were presented in the following year (Allan 2009). The report, however, underlined the need for much more detailed recording of the architectural fragments than was feasible at that stage. I have therefore returned to the site in a private capacity on a number of occasions in the years 2014–19 to re-examine the fragments and make further measured drawings. The present report also includes a fuller discussion than that of 2009.

Historical background

We are now fortunate in having an authoritative modern account of the history of the priory (Orme 2010, 201–21; summary in Orme 2007, 14–17, 40–5). Its origins lay in a minster, founded before the Norman Conquest on the hill to the north of the town; its site is now occupied by the parish church of St Stephen-by-Launceston (which may retain portions of minster fabric). The community was re-established as a house of Augustinian canons in the 1120s, and in 1136 King Stephen confirmed the canons' right to move their house to the present low-lying site beside the River Kensey. The new buildings were sufficiently complete for the canons to move into them in 1155 (Hull 1987, xvi–xvii; Orme 2010, 204). The priory was staffed by 30 canons in the thirteenth century, but their number

declined to 23 by 1306, 15 in 1379 and 12 at the Dissolution (*ibid*; Peter 1889, 4, 6, 14).

Declining numbers did not reflect declining wealth. The priory rose to be the wealthiest monastic house in Cornwall, overtaking Bodmin by the end of the thirteenth century (Orme 2010, 211; for its estates: Hull 1987). Immediately before the house was dissolved, the *Valor Ecclesiasticus* (royal valuation of the church) of 1535 recorded its gross income as £392, or £354 net (Orme 2010, 219). This figure placed it sixth in wealth in the diocese of Exeter, its income less than half that of the great monastic houses of Plympton and Tavistock but not far behind the third, fourth and fifth of the monasteries of the diocese – Buckfast, Torre and Forde (see ranking in Holdsworth 1999, 210). The priory was dissolved in 1539; its income was then reassessed as £443 (Orme 2010, 219).

After the Reformation the church and main claustral ranges seem to have been demolished systematically, since none, or almost none, of their fabric stands above ground. By the nineteenth century the site was an open field named 'Priory Meadow' (*ibid*, 220).

The site plan

The plan of the priory, published by Peter in 1893 and subsequently reproduced on a number of occasions, is of great interest (Fig 1; Peter 1893a; 1893b; Wills 2001, 11; Orme 2007, 42; Orme 2010, 205; Beacham and Pevsner 2014, 291); as Nicholas Orme has pointed out, it is much the fullest record of the layout of any of the Cornish monastic houses (Orme 2007, 42–3). Unfortunately, the scale of the published drawing is so small that it shows little detail; if a larger original existed from which the published plan was copied, it has not been located. In an effort to examine its accuracy, the portion of the plan representing the exposed monument has been superimposed on the recent highly accurate CAU survey of the area (Gossip 2002, fig 2). Comparison shows that they are markedly at variance, and some of the details of Peter's plan, such as the positions of the shafts marking the bays in the aisles, are wrongly placed (Fig 2a). There are also concerning discrepancies between the depiction of the east end of the church in the 1893 plan and Peter's carefully measured and annotated plan of this area, published four years earlier (Fig 1b, from Peter 1889, 8, with the outlines of the

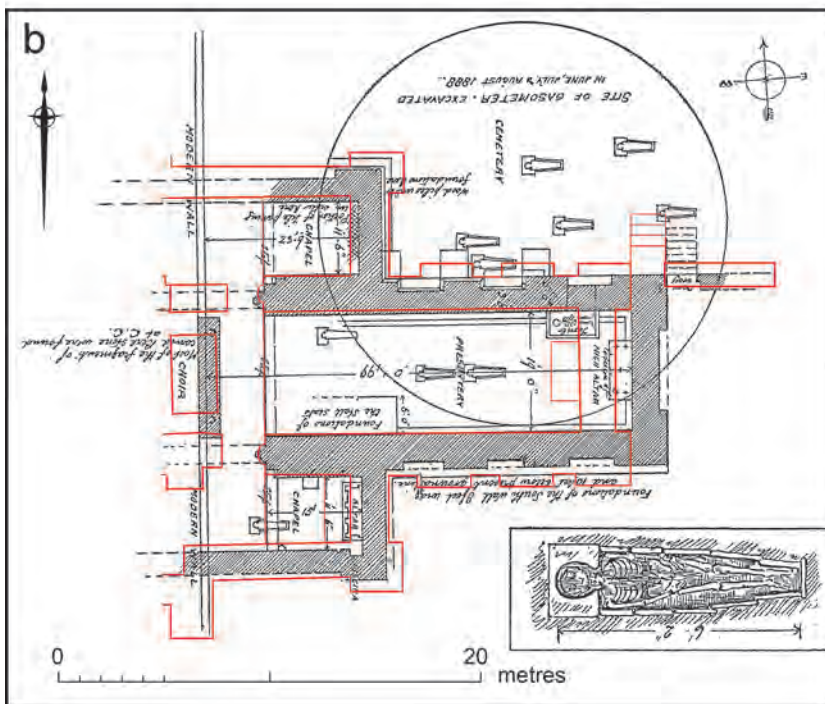
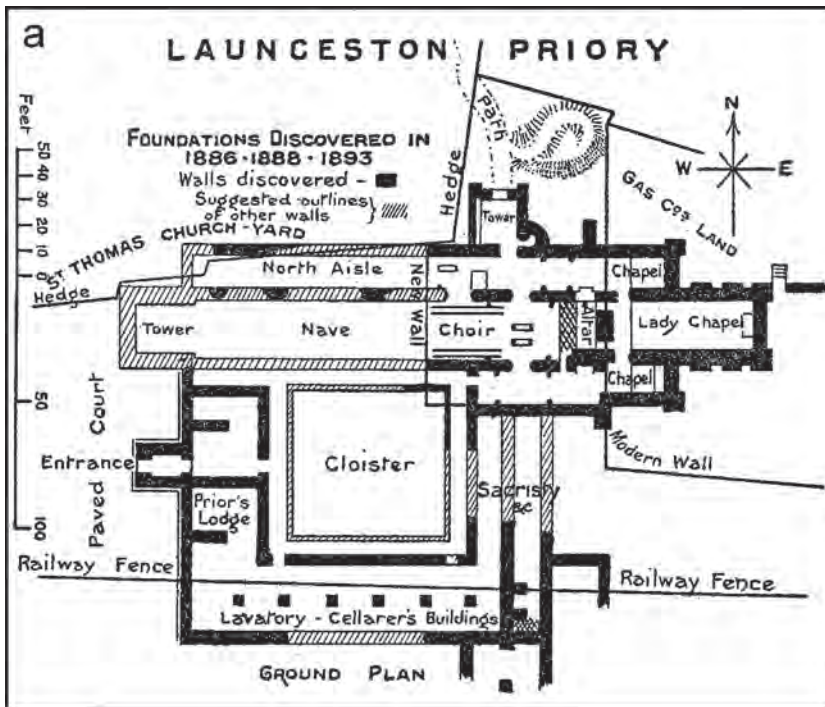


Fig 1 Launceston Priory: (a) Peter's overall site plan of 1893 (Peter 1893b). (b) His plan of the eastern end, inverted to orientate it (Peter 1889), with the outline of the 1893 plan superimposed.

1893 plan superimposed). The most likely reason is that the detailed plan of 1889 is accurate but was redrawn inaccurately at a smaller scale in 1893. While this does not cast doubt on its general reliability, the much-used plan of 1893 should not be trusted in detail.

The Lady Chapel and flanking chapels (Fig 1b)

Peter's record of 1889 provides information not only about the ground plan of the Lady Chapel and its flanking chapels, but about floor surfaces, burials, altars and other internal features; his notes add further information about the demolished superstructure, including evidence for stone vaults in the flanking chapels (Peter 1889, 17–18). The Lady Chapel consisted of four bays, the most westerly being flanked by chapels to the north and south, roughly square in plan, with three bays projecting eastward beyond them, the bay divisions

being marked by wide, shallow buttresses. The foundations of the walls extended to a depth of 11 feet (3.35m) below the present ground level, probably because the site was formerly marshy; Peter records that wooden piles were employed in the foundations on the north side (Peter 1889, 17–18).

The presbytery, choir and adjacent aisles (Figs 2a, 2b, 3, 4)

The portion of the church now exposed to view consists of the choir and presbytery, with aisles to the north and south and a porch or tower to the north of the north aisle; Fig 2b shows the CAU survey of 2001, with surrounding walls added from Peter's plan of 1893 and with annotations added by the writer.

The north and south walls of the choir and presbytery are pierced by arched openings and doorways, none of them the same. In the north wall,

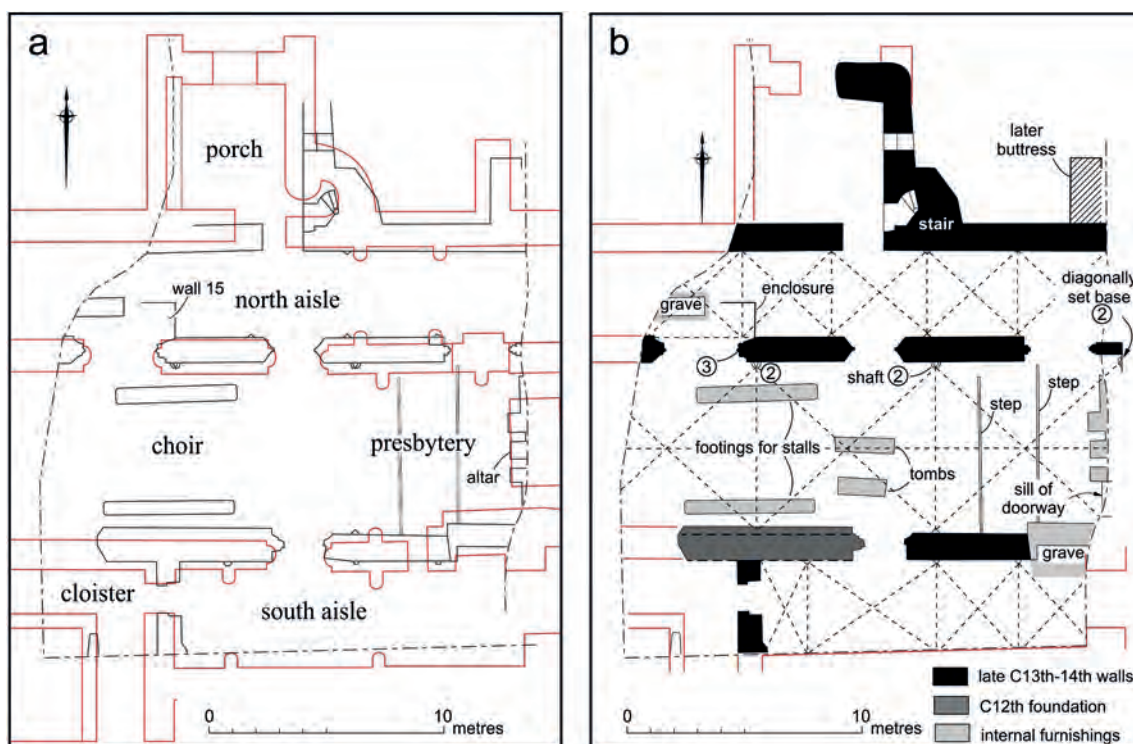


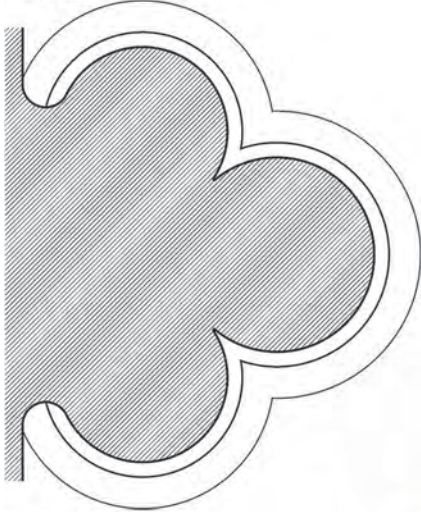
Fig 2 a) Best fit of the CAU survey of the monument of 2001 (black) with Peter's 1893 plan of the same area (red). (b) Suggested phasing and vault pattern (CAU survey, 2001, with additional detail from Peter (1893b) in red outline.)

the eastern opening is 2.4m wide, the responds being trefoils similar to Respond 1 (Fig 3), flanked on the eastern side of the arch by a chamfer with a roll moulding above a bar stop (illustrated when fully exposed in Gossip 2011, 47, fig 12). The central opening is a doorway 1.8m wide with very elaborate responds (Fig 4); being opposite the entrance from the north porch it is perhaps intended to make a particular impression, reflecting the importance of this part of the church. The western opening is similar to the eastern opening but wider (3.0m) and has cinquefoil responds (Fig 3, Respond 3), flanked by moulded chamfers with a central roll above a spurred stop (photo when freshly exposed in Gossip 2011, 47, fig 13).

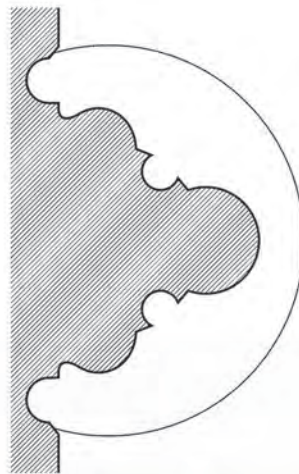
At the eastern end of the southern wall, the position corresponding to the opening in the north wall is instead taken by a thicker stretch of walling, formed around a tomb constructed on its southern side. The central opening is 1.8m wide, with rebates for a door on the south side and simple chamfers to the north. The size and character of the western opening, if there was one, are unknown, the wall being poorly preserved here.

In the main vessel of the church the rhythm of the bays is indicated by engaged triple shafts which would have risen to capitals from which the vaulting would have sprung. Their form is shown in Fig 3 (Engaged Shaft 2). They rise from the inner wall faces; three survive on the north side,

Respond 1



Engaged Shaft 2



Respond 3

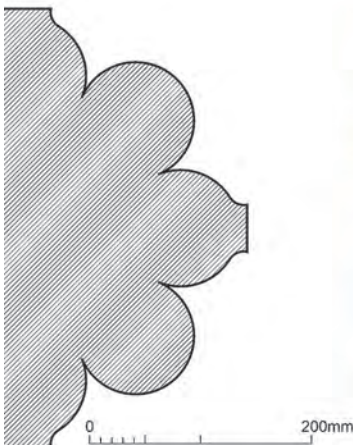


Fig 3 Profiles of engaged shafts and responds, with view of the south-western respond of the Lady Chapel (Respond 1), rebuilt beside St Thomas church. (Drawings and photograph: J Allan.)

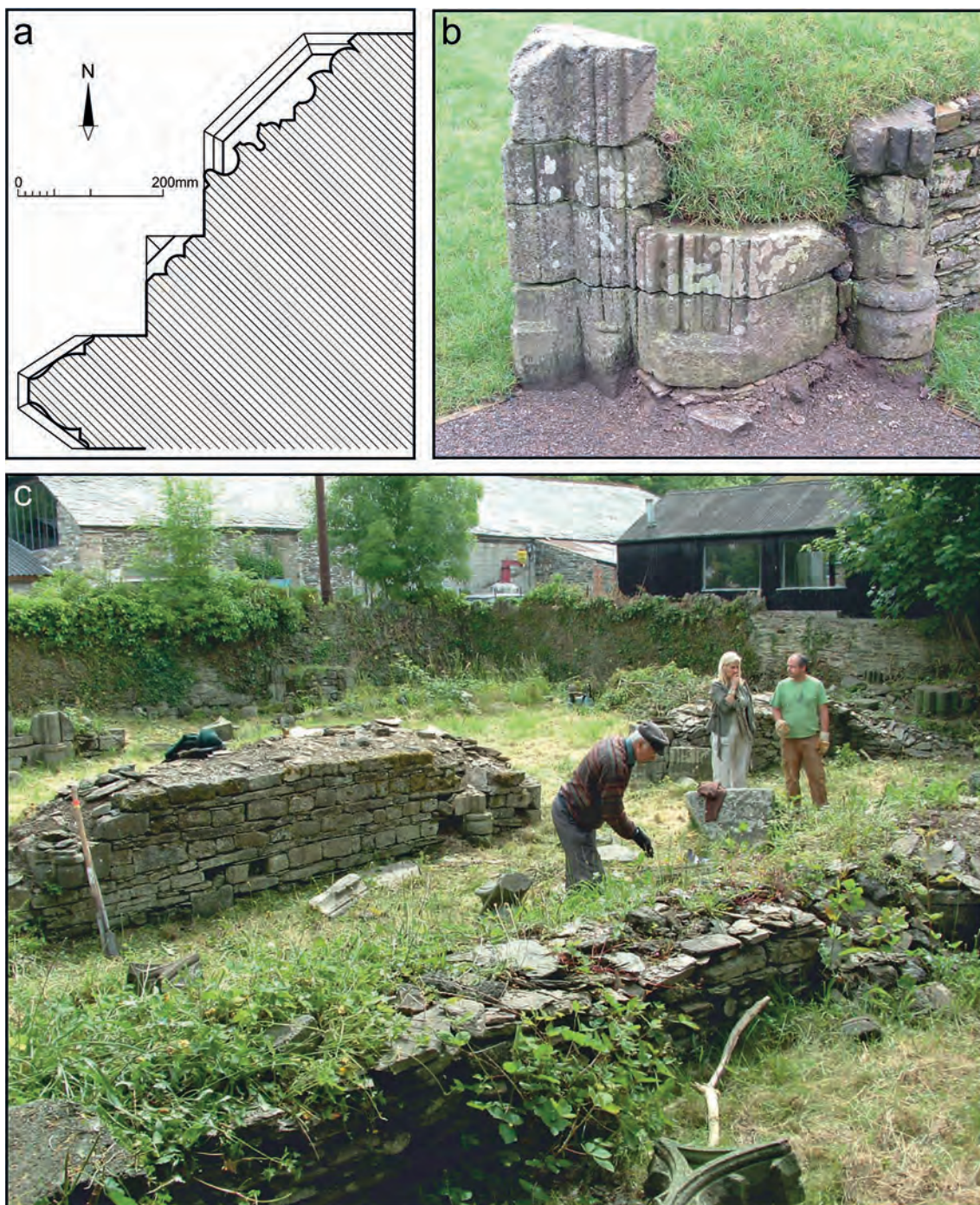


Fig 4 (a–b) Mouldings of the north doorway of the choir: (a) profile of the external face of the eastern jamb; (b) the western jamb, with shaft on the south side of the north aisle. (c) Clearance in progress in 2008; looking south west from the north aisle, with Arthur Wills in the foreground. (Drawing and photographs: J Allan.)

including the most easterly set diagonally (exposed below modern debris in 2008: Gossip 2011, 46–7, figs 11–12), spaced at intervals of 7.64m [25 feet 1 inch] (centre-to-centre), with only the base of the central one of the corresponding three surviving in the south wall. The choir is 7.35m wide internally; thus the shafts define bays which, unusually in a large medieval church, are almost square. Examination of the relationship of the ashlar shafts to their surrounding masonry shows no obvious structural breaks and they appear to be contemporary.

This part of the church displays a number of very unusual features. Major churches of the thirteenth and fourteenth centuries almost always had arcades supported on piers separating the main vessel of the church from the aisles. They mark the bay divisions; the rhythm of the bays of the choir and aisle therefore corresponds. Typically the aisle bays are roughly square, and the bays of the main vessel of the church are about twice as broad as the distance from pier to pier. At Launceston, however, the choir bays are roughly square, each corresponding to two aisle bays, and instead of an arcade of piers, continuous stone walls, punctuated at intervals by arches and doorways, separated the choir from the aisles. Moreover, the bay divisions in the aisles did not quite correspond with those in the central vessel of the church; it would not therefore have been easy to produce a coherent elevation in which the clerestory windows (discussed below) were placed above those in the aisle. These anomalies are considered further below.

Earlier wall foundations?

The wall footing separating the south side of the choir from the south aisle and adjacent cloister differs from all the others, being clay-bonded (in contrast with the mortar-bonded walls elsewhere), having a chamfered plinth on its outer side (which turns south, marking the north-east corner of the cloister) and being appreciably thicker than the other walls (1.46m at the foot of the plinth, 1.38m above; the others 1.03–1.09m). The north face of this foundation lies about 0.30m to the north of the projected line of the presbytery wall, and it lies closer to the stall foundation than the corresponding wall on the north side of the choir. These points indicate that this wall is earlier than the others, as Gossip and Berry also concluded

(Gossip 2002, 10). It is probable that when the choir was reconstructed in the fourteenth century, the new south choir wall was laid out on the line of the south presbytery wall (the dashed lines over the twelfth-century foundation shown in Fig 2b). It was subsequently demolished, leaving only its older footings.

A foundation in a corresponding position, along the southern side of the north choir aisle, was exposed in 2008 (Gossip 2011, 15 and Fig 14). This may simply have been an offset foundation but, as Peter Rose has noted (pers comm to the writer, 2020), it may equally have been the footing of a Norman wall preceding the gothic choir.

Internal features

A substantial foundation of slate rubble, rising almost 1m above the floor, projects from the centre of the east wall of the presbytery in the expected position of the high altar (Fig 12a; Gossip 2002, fig 41; 2011, 46, figs 10–11). Its front face consists of three short flat lengths of rough slate, the central one placed on the central axis of the presbytery, interrupted by trenches with ragged sides. These remains are intelligible as the rubble core of the high altar, formerly faced with blocks of dressed ashlar. The trenches would presumably have accommodated dressed stone blocks which would have risen to projecting shafts framing the panels in front of the rubble core, perhaps rising to canopies above. When CAU cleaned away loose debris from this area in 2008, a loose flat block of Beer stone approximately 150mm thick was noted, leaning on the north side of the foundation. Small parts of the face of a wall rising behind the altar are visible to each side; a large block with a horizontal upper face just above floor level on the southern side may have been the sill of a doorway.

Two narrow wall-foundations were found within the choir, running parallel to the north and south walls. They lie below the positions where the canons' stalls would have stood, and would presumably have supported the stall platforms (Fig 2b, 'footings for stalls'). No surface was visible when part of the choir floor was exposed in 2008.

To the east, the floor of the presbytery, formerly consisting of a rich pavement of inlaid tiles, rises in two steps. It remained exposed after excavation and was still partially visible as late as the 1960s; Service personnel are said to have taken tiles as souvenirs in the 1940s (A Wills and L Keen, pers

comm). A sophisticated detail is the use of dressed blocks to form the risers; behind a raised edging strip of stone, the upper surface of each block was recessed to accommodate floor-tiles bedded in a thin layer of mortar, flush with the raised edge of the step (Gossip 2011, 15).

The stone-lined grave in the prestigious position on the south side of the presbytery (Fig 2b 'grave'; Gossip 2002, 15; 2011, 15 and figs 7–8), is probably that of Roger of Horton (prior c 1308–22: Orme 2010, 220), whose 'fair tomb in the south aisle' was mentioned by John Leland in 1542 (Toulmin Smith 1907, 180). The grave occupies the position often reserved for the sedilia; the two may have been combined, with the sedilia on the north side, facing into the presbytery, and the tomb visible from the south, as in the monument combining these functions in the equivalent position at Crediton. The likelihood that it was Horton who secured this prime position is a probable indication that the remodelling of the presbytery took place in his time (cf the early fourteenth-century architectural fragments described below).

The choir aisles (Figs 2–4)

Doorways on each side of the choir (the *ostia chori*) open into the north and south aisles. They were given elaborate treatment; the complex mouldings of the northern one are shown in Figs 4a and 4b. Oddly, these doorways are not placed at the centre of the choir or aisle bays, or aligned with each other (Fig 2b). Moreover, the aisle bays, indicated by a number of surviving engaged shafts or shaft bases, do not quite correspond, either to those in the choir, or to each other. The very irregular spacing of the shafts marking the bay divisions in the south aisle, with a narrow western bay, and a wider one to its east which brought the aisle bays into rhythm with the divisions of the choir, will also be evident in Fig 2b. These irregularities strongly suggest that the eastern limb of the priory was not a completely new building but accommodated pre-existing features.

The aisle bays are not quite square; in the north aisle they measure 3.95 x 3.63m internally, so two aisle bays correspond or almost correspond to one in the main vessel of the church. Such narrow aisle bays must have limited the possibilities for window design, as Peter Rose has noted (pers comm to the writer, 2020). In the north aisle the shaft bases now stand well above ground level, showing that

the nineteenth-century excavators dug through the medieval floor level.

At the west end of the north choir wall, a further archway into the north aisle repeats the uncomfortable pattern described above, not quite corresponding to the projected position of an aisle bay to the east (Fig 2b). The base of its eastern respond (Figs 2 and 3, Respond 3) seems to have been trimmed back, perhaps to accommodate a later medieval screen within the arch. This evidence may relate to a wall foundation, with what appeared to be part of its northern end, partly exposed to the north of the respond in 2001 (Fig 2a, wall 15, from Gossip 2002, 15 and figs 2, 13–14). Excavation demonstrated that this abutted the choir wall; it may have been part of a medieval enclosure such as a chantry, enclosing the grave to the west, sometimes identified as that of Stephen Trediddan (prior c 1379–1403: Orme 2010, 221; for the identification as his tomb: Gossip 2011, 15).

The north porch

At the modern entrance to the site, on the north side of the church, part of a square porch is displayed. The doorway between this space and the adjacent north aisle again shows a puzzling disregard for conventional symmetry, aligning neither with the centre of the aisle bay nor with the doorway to its south (Fig 2b). The relationship between the porch, north aisle and stair turret was not clearly visible in 2008, but excavation in 2001 established that the porch stairs were added to the north aisle wall (Gossip 2002, 17 and fig 19).

It is likely that the ground-floor room would have had a ribbed vault, but the large dressed vault springer with three projecting ribs, now loose beside its east wall, probably did not come from it (see below, Fig 11.15). The stair in its east wall presumably led to a parvis – an upper room over the porch which may have provided accommodation for one or more sacristans (who were responsible for the security of the church and its treasures), or have been used as an archive room or treasury. The north porch of Exeter Cathedral served a combination of these functions (Brown 2011). It has been suggested that the stair led in turn to a higher room on a second floor, and the porch formed a tower (Peter 1893, plan reproduced here as Fig 1; Wills 2001, 1, 9 and model in Lawrence House Museum). This is possible but to this writer it seems less likely; the masonry seems

too insubstantial for a tower, especially on the east side, and the absence of buttresses to the east and west supports the conclusion that the porch was only two-storeyed.

The cloister

In 1889–93 Peter found a length of the eastern cloister walk, with its return along the south side of the church (Fig 1a). The wall surrounding the cloister garth, which would have carried the pentice roof, was unbuttressed, suggesting that the cloister walks did not have stone vaults. The north-eastern corner of this foundation was cleaned and re-examined in 2008 (Gossip 2011, 43, fig 6). It was remarkably narrow (0.4m), confirming that it could not have supported a stone vault, or even a wall with dressed stone openings. This suggests a light superstructure of timber rather than stone.

The nave

The nave lay to the west of the exposed monument. Nothing is firmly known about it beyond its long narrow plan with a north aisle but none to the south – perhaps a Norman aisleless nave with a later medieval aisle. Richard Parker's reconstruction (below, Fig 16) shows this interpretation.

Architectural fragments (Figs 5–13)

The architectural fragments from the priory form a large and highly informative collection, much of it in excellent condition. The stones remaining on-site amount to about 300–400 substantial pieces, including components of window tracery, mullions, jambs and hood mouldings; vaulting bases, shafts, ribs and bosses; doorway jambs and bases; arch mouldings; coping stones, and portions of internal fittings (Fig 5). Their complex shapes no doubt made them unsuitable for reuse when the priory's masonry was robbed after the Reformation. They were therefore abandoned at the site.

The precise provenance of most of this material was not recorded by Peter, although he mentioned that many carved stones including 'beautifully moulded arch stones, small circular shafts [and] window tracery' were found on the site of the Lady Chapel and flanking chapels (Peter 1889, 16–18). Although most fragments no doubt come from the east end of the church, the material may

include pieces from other priory buildings. Peter published measured sketches of only one of the moulded stones he recovered, alongside two Romanesque fragments which do not survive in the collection today and elevations of three different



Fig 5 (a) Postcard of the priory ruins c 1928. (b–c) The architectural fragments redisplayed in 2008: (b) window tracery, (c) vault ribs. (Photographs: J Allan.)

base mouldings which he found *in situ* (Peter 1889, 17). Some of the most distinctive fragments can be recognised in photographs and postcards showing the priory remains (for example, Fig 5a, said to date from 1928).

A further selection of the more choice specimens from Peter's excavation is now held in the Lawrence House Museum, where they have been joined by various other architectural fragments found elsewhere in Launceston which have been thought to come from the priory. In fact, many of the museum pieces said to be from the priory are clearly of post-medieval date, and must have been introduced from elsewhere. In view of the uncertainties about their provenance, they have been excluded from the present study, but the important series of Beer stone fragments described below seems genuinely to have come from the priory and is included here.

It is surprising that such an important group of finds has not attracted wider interest: these are arguably the finest group of gothic architectural fragments from any site in Devon and Cornwall. Some preliminary comments and drawings were made about the collection in 2002, but the initial conclusion that they date mainly from the fifteenth century (Gossip 2002, 11) will be challenged here. In tackling this collection, the profiles of the moulded masonry surviving *in situ* in the monument were drawn first (Figs 3–4); drawings of corresponding mouldings identified among the loose fragments were not repeated.

Building stones

In considering the character of this material, the building stones employed may first be noted. With about four exceptions, the moulded stones displayed on the site are carved in local volcanic ash (Appendix 2). The exceptions are fragments of Perpendicular tracery, noted below (Fig 11.16–17), and a free-standing pier, which are in granite and clearly belong to the fifteenth or early sixteenth century.

The choice of volcanic ash is helpful in establishing the date of the bulk of the collection, since there was a fundamental change in the choice of building stone in Devon and Cornwall in the later Middle Ages (for example, Allan 2017b; Allan and Blaylock 2018). With the exception of the few costly buildings where ashlar was employed, churches of the period before c 1350 throughout

the diocese were constructed with walls of rubble; the ashlar dressings were commonly of volcanic and metamorphic stones. After c 1350/1400 there was a major advance in the quality of building materials employed; granite became almost the universal choice for dressings and tracery, and the use of ashlar masonry became far more widespread. Launceston buildings illustrate the change; the windows of the church of St Thomas, just to the north of the priory, are typical of many others in being in granite, but with rubble walls. The church of St Mary Magdalene in Launceston is an example of the lavish use of granite, both for window tracery and for ashlar, in buildings of the fifteenth and sixteenth century (Beacham and Pevsner 2014, 297–9). The use of volcanic stone at the priory shows that nearly all the collection dates from before c 1400. We shall see that the most diagnostic stones in the collection are in the Decorated style and date from the late thirteenth and especially the early fourteenth century.

Vault ribs and vault form (Figs 5–6)

Two different vault rib profiles are represented in the collection, one simpler and probably earlier than the other (Fig 6, Ribs 1 and 2). Among the examples of type 2 are ribs whose straight sides and key-shaped upper projection (on which the stones of the vault webs sat), readily distinguishable from the curving tiercerons (the ribs between the vault springing and apex), mark them out as the horizontal stones at the ridges of the vault. The Launceston vaults therefore had either a ridge rib (running along the apex of the vault from east to west) or a transverse rib (running from north to south) or both. One fragment (Fig 6.8) incorporates the profile of a rib of this type in an arch voussoir. The large surviving springer fragment (Fig 11.15), perhaps from the aisles, demonstrates the presence of cross-ribs, and the use of clusters of three main shafts in the choir (Fig 3, Shaft 2) indicates the same. Surprisingly, only a single small vault boss and a half-boss are known from the site (Gossip 2002, fig 55, nos 2 and 4 – the former not seen by the writer); neither casts any light on the question of whether the elaborate tracery of the windows, described below, was complemented by one of the West Country's complex late Decorated vaults.

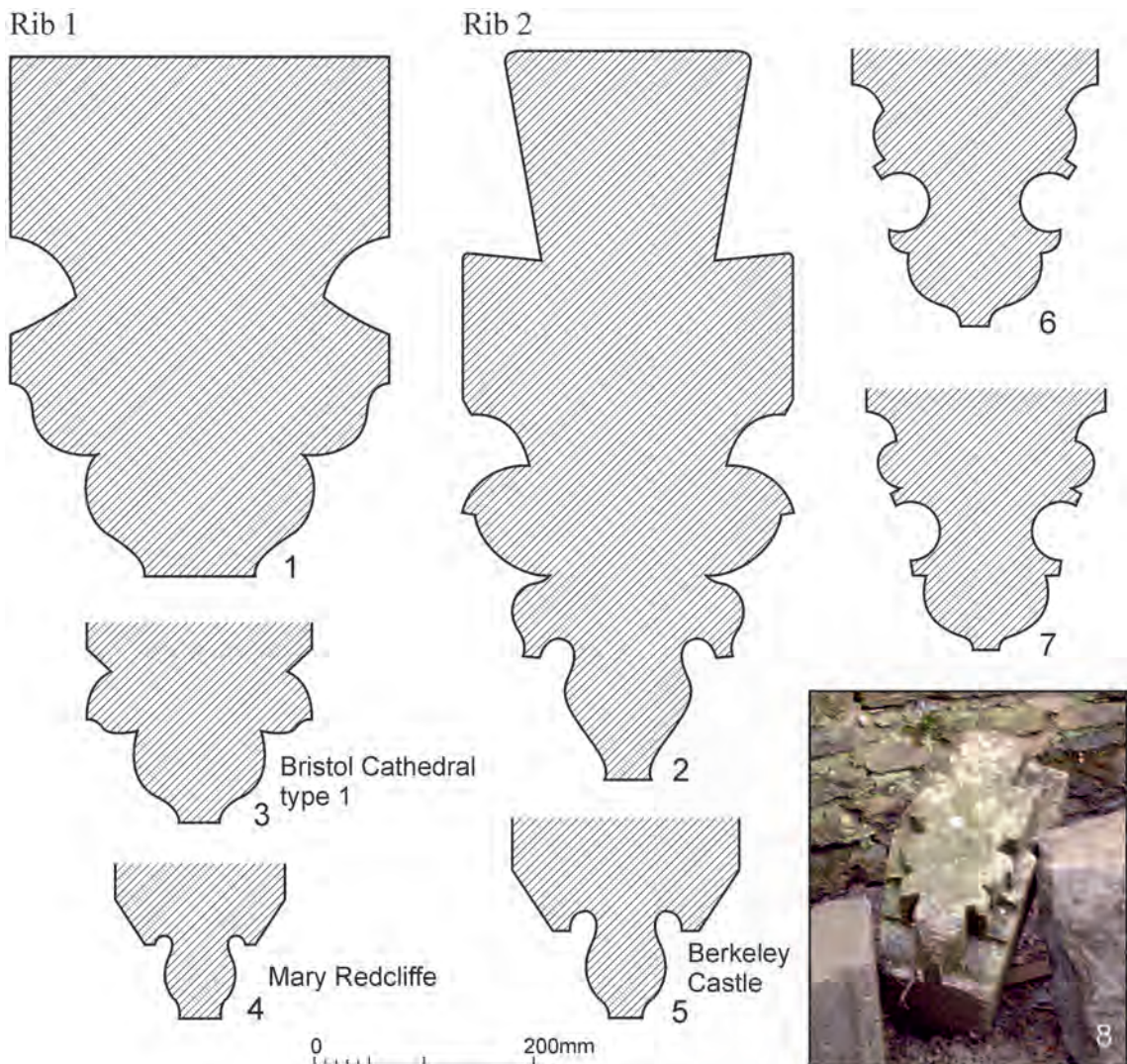


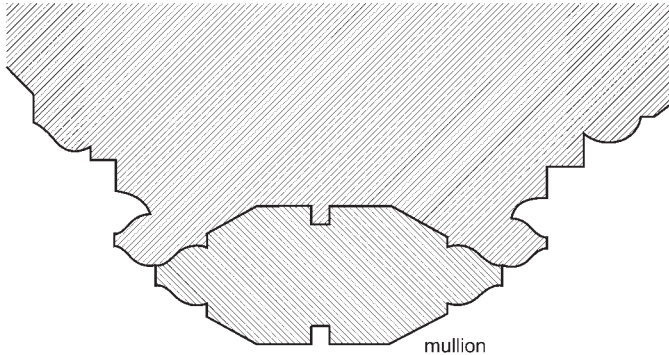
Fig 6 (Ribs 1–2) Profiles of vault ribs from the priory. (3–5) Profiles of vaults in Bristol and Berkeley Castle from Morris 1997, 50, courtesy of the British Archaeological Association. (6–7) The two principal rib profiles in the high vaults of Exeter Cathedral (J Allan.) Note that the entire stone is visible in Ribs 1–2, whereas the top portion, abutted by the vault web, is not visible in the other examples. (8) Junction of the vault rib of form 2 with the apex of an arch. (Graphic: J Allan/T Ives.)

Window mullions and jambs (Fig 7)

Numerous examples of common mullions are represented; their profile (with a central groove for window glass) is shown in Figure 7. This profile (or at least very similar ones) was widely used in late Decorated windows; examples elsewhere in England are illustrated, for example, by Sharpe

(1849a, pl D and 55) and Paley (1865, pls VI–VII). At least two jambs from large windows contain the same profile at their centres and therefore come from windows of the same design (the mullions superimposed in Fig 7). In both cases the moulding corresponding to the common mullion is flanked on each side by an outer ogee-and-fillet moulding. This can be interpreted as showing that the large

Window Jamb 1



Window Jamb 2

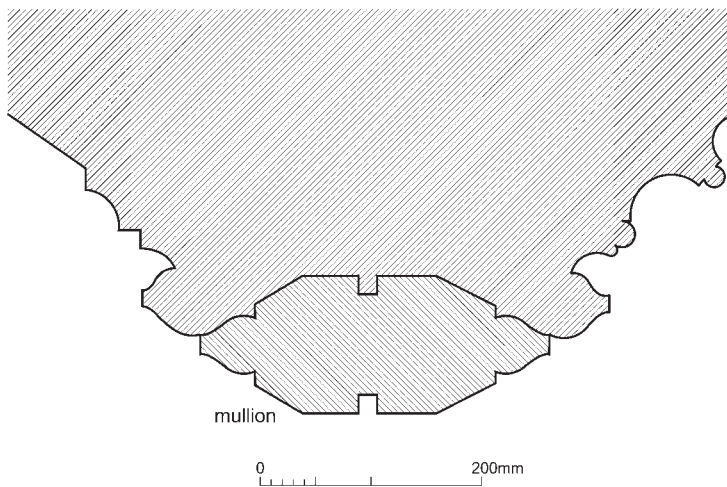


*Fig 7 Architectural fragments:
profiles of window jambs with
mullions superimposed. (Graphic:
J Allan/T Ives.)*

window from which they come had both common mullions which survive, and king mullions (which have the additional mouldings needed to frame pairs of lights or groups of three lights); no examples of the latter type were identified. If so, there must have been at least four lights in these windows, grouped in two pairs.

Regarding these profiles, Jon Cannon comments:

‘In the lapidary collection of Bristol Cathedral are two fragments of 14th-century stonework which show features in common with these window profiles. The pieces in question are numbered 6E and 20E in the recent catalogue by Kevin Blockley and myself. Both have or contain the ogee-mould-and-fillet feature shown as part of larger mouldings in your Fig. 7. The first I have identified as being from the oculus which lit the undercroft of what we assume was the abbot’s private chapel; the other may just be from a vault rib from its upper / main level. The chapel was demolished

in the 20th century, but we have a few earlier records of its appearance, albeit in a ruinous state. Although this is not a particularly unusual moulding in itself, the character of the wider mouldings of which they are a part is very comparable’ (pers comm to the writer, 5 June 2020).

Window tracery (Figs 8–11)

Perhaps the most exciting feature of the architectural fragments is the series of portions of tracery from complex windows in the Decorated style. They were recorded by making actual-size tracings, redrawn at smaller scale, on which photographs have been superimposed. A photograph of a complex three-dimensional object suffers some distortion; there are therefore some discrepancies between the measured line drawings

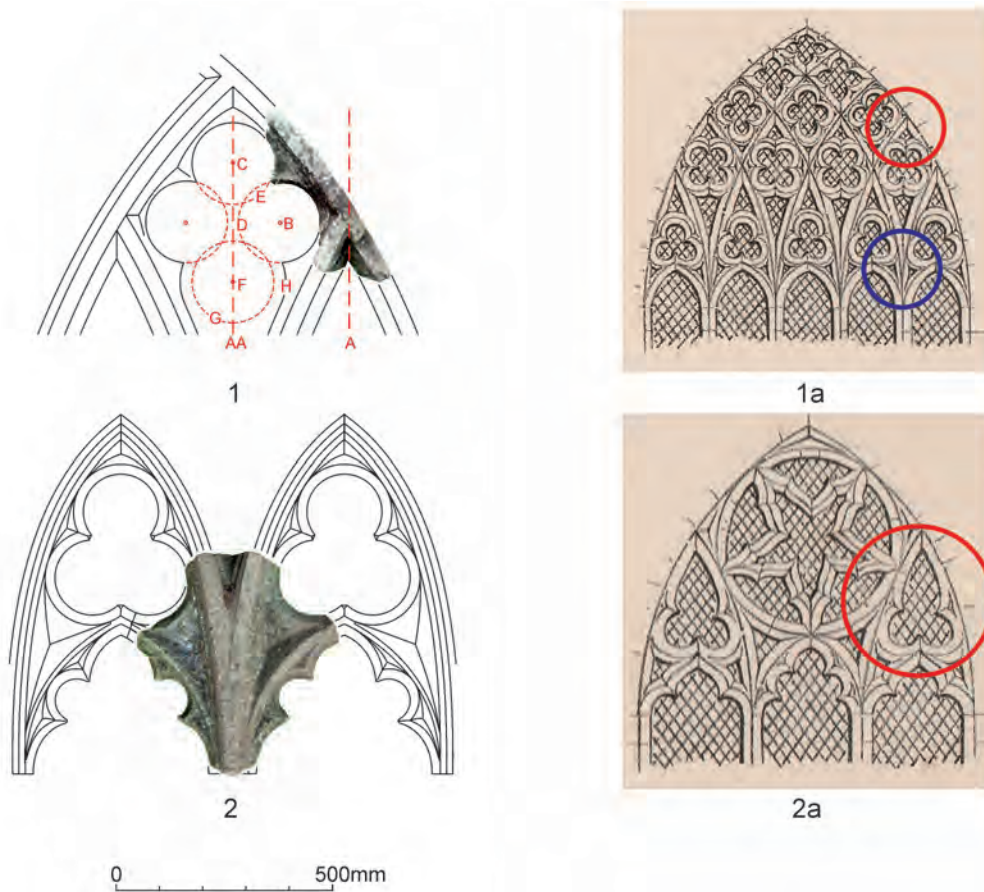


Fig 8 Window tracery fragments; (1a) *Lostwithiel*; (2a) *St Ives* (1a, 2a from Street 1853, pl 14. (Graphic: J Allan/T Ives.)

(which should be accurate) and the photos (which diverge in places).

Descriptions relate to the orientation shown in the drawings, but it is not certain that all pieces are the right way up. The fragments are described as if the windows from which they come were conventional ones with main lights and tracery above, and mullions from windows of this type are certainly present in the collection (Fig 6). It is not impossible, however, that the choir clerestory had windows of triangular form, like those at Westminster Abbey, Lichfield Cathedral, Hereford Cathedral and others.

Possible examples of Geometric Decorated tracery (Fig 8)

1. Fragment from one side of a light with internal cusps, with apex of an acutely pointed motif below. The plain top right surface shows that this comes from a position beside the frame of the window as shown. Perhaps from intersecting tracery, like the east window of *Lostwithiel* (Fig 8.1a, the suggested position circled in red, but the *Launceston* fragment was from a narrower window).
2. The junction of the heads of two cinquefoil lights, with sunken spandrels and a pair of larger foils above. The upper elements may be from a pair or a row of regular trefoils as

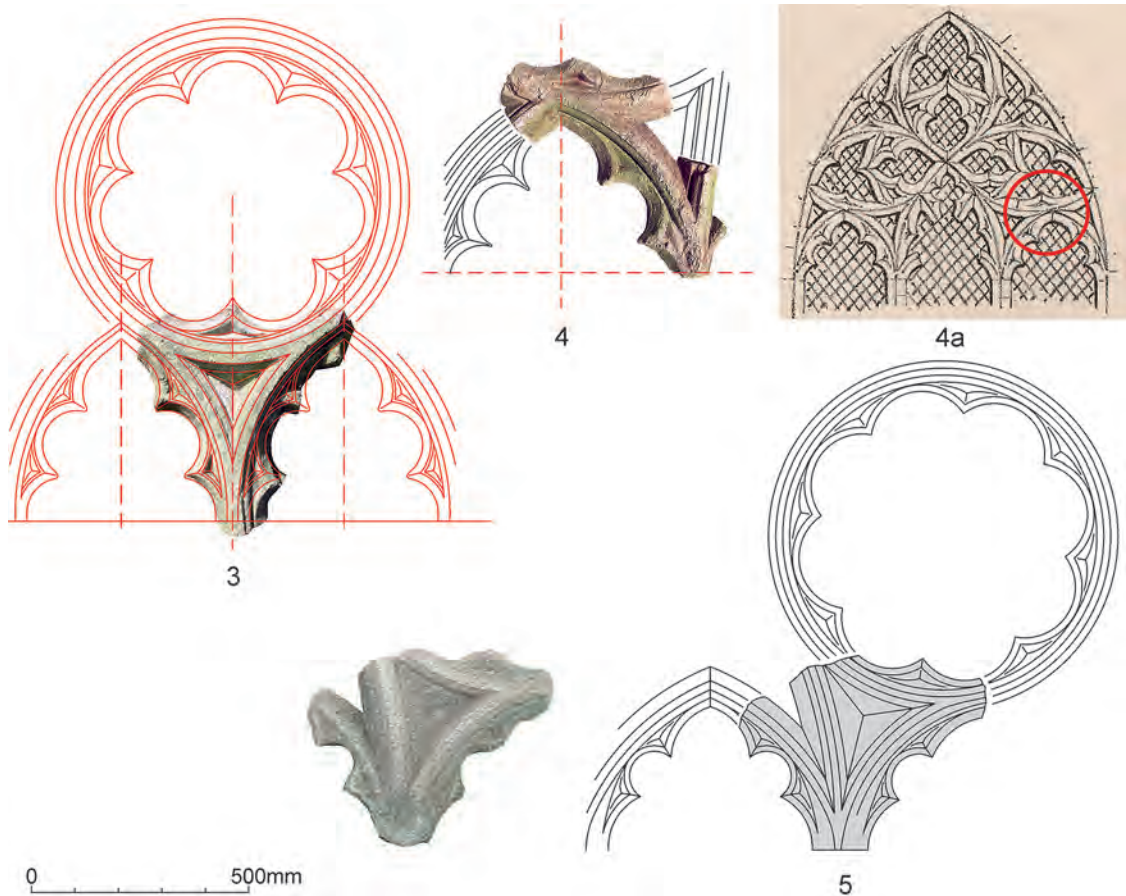


Fig 9 Window tracery fragments; (4a) St Thomas' Chapel, Bodmin (4a from *Street 1853*, Pl 14. (Graphic: J Allan/T Ives.)

in the same window at Lostwithiel (Fig 8.1a, ringed in blue, but in that case the main lights are uncusped); the trefoils might alternatively have had pointed upper foils, as at St Ives (Fig 8.2a, the trefoil circled).

Windows with large circular motifs or segments of them (Fig 9)

3. The junction of two cinquefoil window heads below a segment of a circle. The two window heads are different. The cusp of the internal foil in the circle is placed centrally above the two lower lights and when drawn out forms a septfoil as shown. An alternative might be that

the upper motif was a spherical triangle rather than a circle.

4. The apex and one side of a cinquefoil head, shown here as the head of a main light, the arc of a circle above with part of an internal foil which is not placed symmetrically over the light. The bar projecting to the right has a very shallow curve or was straight, cf Nos 6 and 7 below. Perhaps from the same design as No 5 below. The offset cusping of the upper element would not be generated by Geometric Decorated tracery, but could come from a flanking light above one of the more complex forms of later Decorated tracery. Fig 9.4a shows such an offset relationship in the east window of the eastern chapel (St Thomas's)

of Bodmin parish church. The tracery at Launceston may of course have been different; for the wide range of possible late Decorated designs which could create this relationship, see Sharpe 1849b.

5. The spandrel at the junction of four curving elements, at least three of them cusped. The upper arc can be expanded to form a circle with an internal octofoil, although it is perhaps more likely that it is a segment of a different design. Lower left could then form the head of a cinquefoiled light with a ?trefoil above. This, however, leaves a broad cinquefoiled light lower right whose spreading form is perhaps unconvincing. Unresolved; perhaps from the same design as No. 4.

Windows with complex late Decorated motifs (Fig 10)

6. Spandrel with outer hood mould (top right, 0.37m thick, with plain outer side) framing an arc of a circle 0.30m thick with two curving internal motifs (left side). A crucial detail is the small sunken (but not pierced) triangle at the junction of the circle and the inner motifs (circled and marked 'A' in the reconstruction), showing that these are a pair of spherical triangles. This design of six spherical triangles within a circle is also seen (with minor variations) at Sheviok (Fig 10.6a).
7. A projecting hood mould (0.44m thick), within which a straight bar of tracery projects (0.30m thick) with the apex of a trefoil-headed light (bottom left) and a motif with a four-centred curve, which I take to be a dagger (restored in dashed line to right). Straight bars of tracery are unusual in Decorated tracery, but the east window of St Ive parish church offers a local example (Fig 10.7a). See also fragment 8, also with a straight bar and therefore possibly from the same design.
8. One quarter of a circle (the joints A and C at right-angles), 0.26m deep with an internal cusped motif, interpreted as one of four trefoil-headed *mouchettes* (curving dagger-shaped motifs). The projecting element A to B is straight, and therefore apparently another component of a window with straight bars of tracery as No. 7 above. Fig 10.8a shows the top motif of the south clerestory window of Bay 17 of Exeter Cathedral, built in the period

1328–42 (Erskine 1983, 213–71), which seems a good match, except that the Launceston *mouchettes* have an additional pair of internal foils.

Miscellaneous (Fig 11)

9. The junction of four moulded ribs, their angles consistent with the junction of a group of three spherical triangles. Figs 11.9a–c show other examples of this motif with the relevant stone ringed: (a) in the north window of the chapels of SS Andrew and Catherine at Exeter Cathedral, c 1280 (Bishop and Prideaux 1922, 32–5); (b) the east window of the south aisle of St Germans; (c) the clerestory window of Bay 18 of the nave of Exeter Cathedral, c 1328–42 (Erskine 1983, 213–71).
10. The junction of two arches, the left with tracery bars, the right cusped (?one of a pair of trefoils).
11. Moulded bell capital of an attached shaft.
12. Junction of a vertical shaft of Engaged Shaft profile 2 (Fig 4) with a string-course. Presumably from the choir or presbytery, which have shafts of this form.
13. Base from the junction of two walls, probably from an aisle.
14. Capital with coarse leaf carving.
15. Large block with the springing of three vault ribs, now in the north porch. Since the porch is square in plan, and could have been vaulted in one bay, it seems unlikely that it comes from there, so perhaps from an aisle. (The photograph is not to scale).

Perpendicular tracery fragments (Fig 11)

16. Side of a cinquefoiled window head with light above, 0.23m thick. Volcanic stone rather than granite, showing the continued use of this stone for tracery in the fifteenth or early sixteenth century, when most tracery was in granite. 0.23m thick.
17. The vertical joint top right showing that this comes from the central light of a window with trefoil-headed flanking lights, reconstructable as shown. Whitish granite. The section (Fig 11.17a) has a shallow glazing groove.

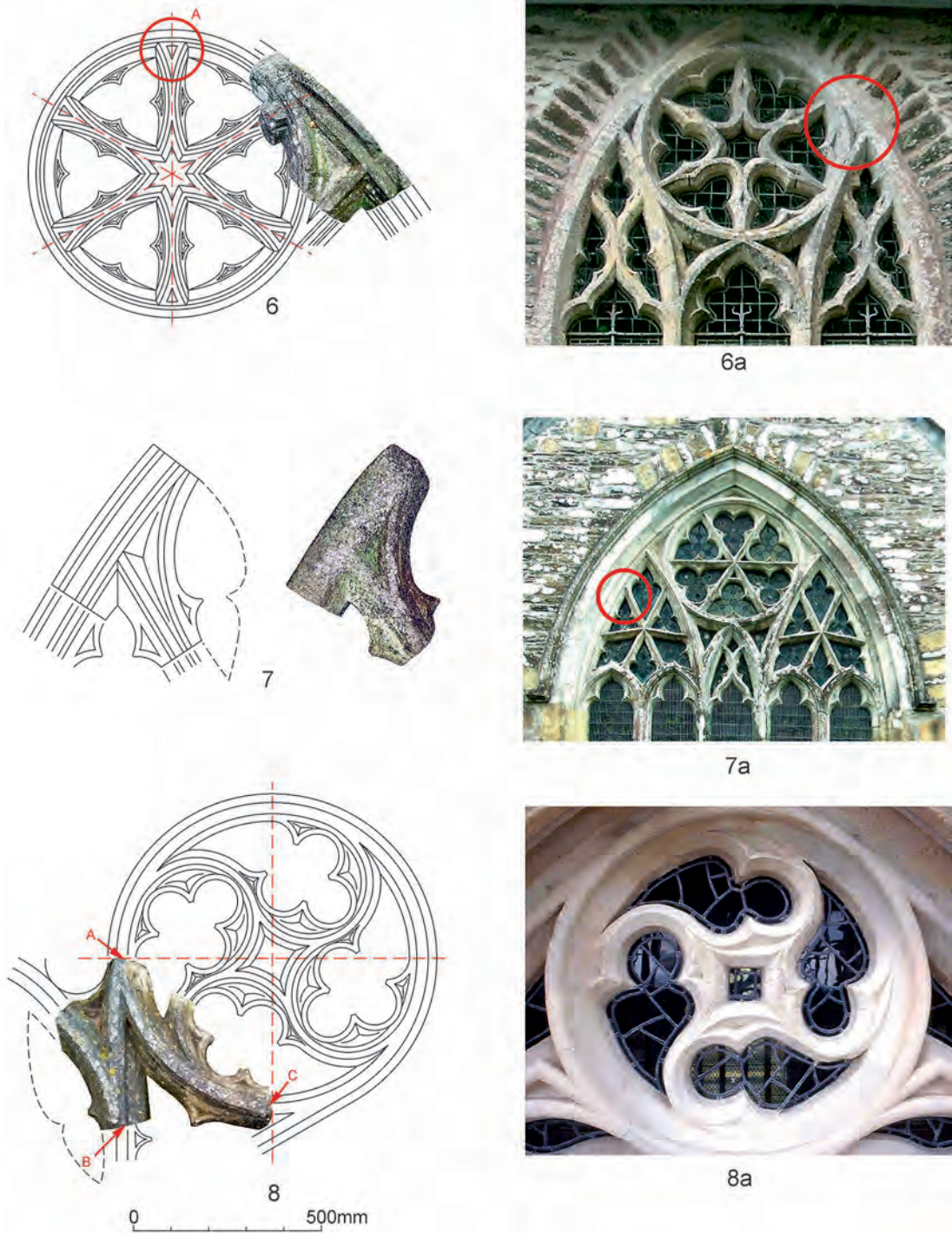


Fig 10 Window tracery fragments, with suggested reconstructions. (6a) Shevioc, east window. (7a) St Ive, east window. (8a) Exeter Cathedral nave, bay 17: detail of clerestory window. (Photographs: J Allan; graphic: J Allan/T Ives.)

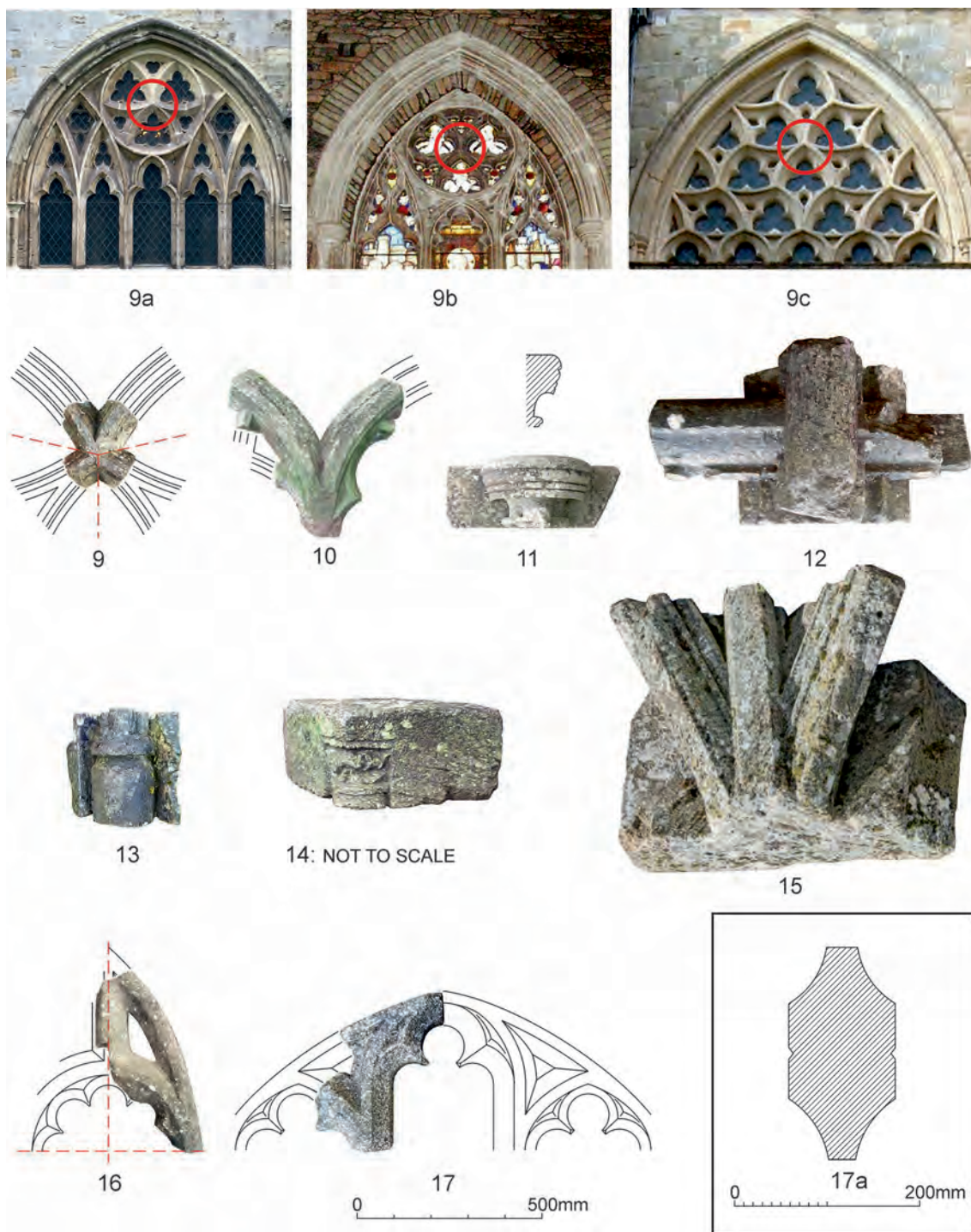


Fig 11 Architectural fragments, with windows of the chapel of SS Andrew and Catherine, Exeter Cathedral (9a), St Germans (9b) and the nave clerestory of Exeter Cathedral (9c). 14 and 15 not to scale. (Graphic: J Allan/T Ives.)

Fragments of Beer stone from the area of the high altar (Fig 12)

In the course of cleaning the area around the high altar in 1976, Arthur Wills recovered a series of richly carved fragments of Beer stone. They are carved with extraordinary delicacy. All the pieces recovered are illustrated.

(b) Fragments of small and tiny shafts and canopies, some with crockets, the foliage carving including leaves with raised veins; moulded shaft base (bottom right).

(c–e) Pendant terminal of a small and delicately carved canopy with an internal ribbed vault, (c) viewed from within, showing the junction of two vault cells, (d) from below with foliage boss, (e) external face of one of the canopies, with cusping.

This comes from a canopied structure with internal vaults, designed to be viewed from below and therefore projecting beyond the front of the structure from which it comes. This kind of feature is sometimes seen on late medieval tombs but the location of the find below the high altar suggests that that was its origin. The swirling leaf carving with raised ribs is similar to some foliage carving at Exeter Cathedral in the period *c* 1300–30. The cathedral's surviving sedilia (*c* 1313–20), which were continuous with its high altar screen, now lost, offer a possible parallel, although it is possible that this comes from the adjacent tomb (Fig 2b, 'grave'). Brian and Moira Gittos (pers comm) are reminded of the tomb of Blanche Mortimer at Much Marcle, Herefordshire, and the swirling leaf carving on the related tomb chest at Ledbury in the same county – works of the period 1330–50 which link up with the Exeter Cathedral style.

Other Beer stone fragments, now in Lawrence House Museum (Fig 13)

An annotation on Peter's plan of 1889 records that 'most of the fragments of carved Bere [Beer] stone were found on the east side of the high altar screen between 'C' and 'C' (these points will be seen on Fig 1b). He found further fragments when he dug on the western side of the screen in 1892–3, where he found 'numerous fragments of beautifully carved Bere stone . . . around the site of the altar' adding, 'These may have formed a portion of a screen behind it' (Peter 1893a, 250). They appear to be the Beer stone pieces now in Lawrence House Museum. Further fragments were apparently found

in the area of the tomb on the south side of the choir, which may have been that of Prior Roger de Horton (prior in 1308–20 x 1322; succeeded by 1327: Orme 2010, 220), so some pieces might come from there.

(a–b) Two heads, similar in scale, (a) with a band of tablet flowers, comparable to the square tablet flowers used on the west front of Exeter Cathedral, dating from *c* 1342–9 (for the dating: Allan and Blaylock 1991, 101–3).

(c) Hand.

(d) Beast with lolling tongue.

(e) Vine scroll with leaf and grapes, with (f) very similar vine scroll on the west front of Exeter Cathedral, *c* 1342–9.

(g–i) further foliage fragments, (g) in the bubbly 'seaweed' style, comparable to foliage carving at Exeter Cathedral *c* 1300–30, and Glasney (Allan and Blaylock 2016, 92–4, figs 20–1); (h–i) in the 'hooked leaves' style, also seen at Glasney and at Exeter in the 1340s (*ibid*, 99).

Further architectural fragments which may have come from the priory

Among the architectural fragments which are reputed to have come from the priory, three outstanding pieces may be mentioned here: the eroded portion of a lantern cross now at Lawrence House Museum, the superb Norman font in St Thomas' church, close to the priory site, and the tympanum fragment incorporated in the porch of St Thomas' church. In none of these cases, however, is there firm evidence that they come from the priory.

Floor-tiles

The assemblage of medieval floor-tiles encountered by Peter is one of the two major collections from Cornwall, the other being from Bodmin Priory. Peter published an account of his findings in *Archaeologia Cambrensis*, where few Cornish people would have seen it, focusing on tile designs; he recorded no fewer than 25 patterns (Peter 1896). No subsequent study has been published,

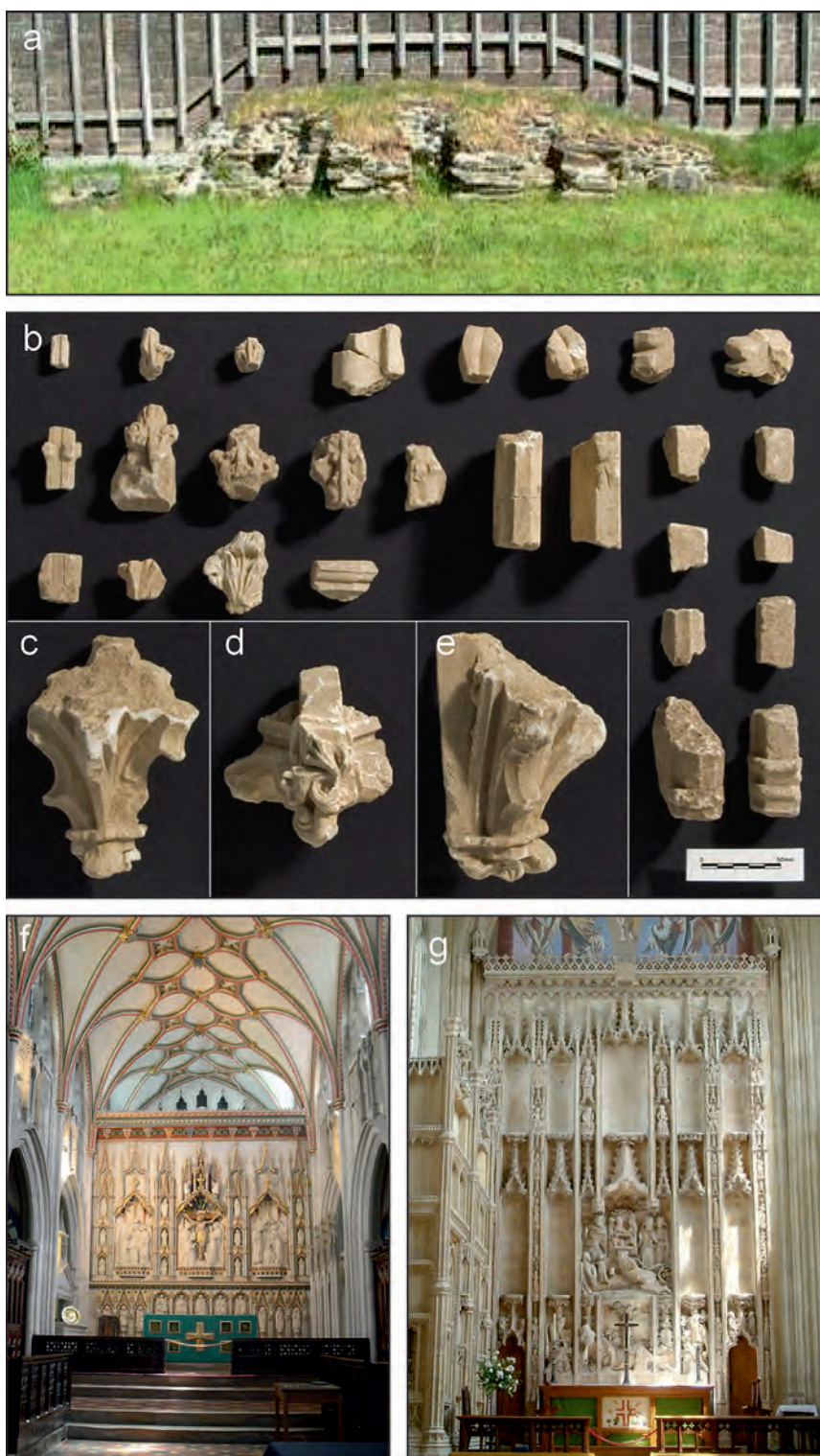


Fig 12 The high altar. (a) The present appearance: the rubble core with deep sockets representing the robbed ashlar facework. (b–e) Beer stone fragments recovered by Arthur Wills in 1976. (f) The choir of Ottery St Mary. (g) The altar and reredos of Christchurch Priory, Dorset. (Photographs: (b–e) G Young, (f) S R Blaylock; graphic: J Allan/T Ives.)

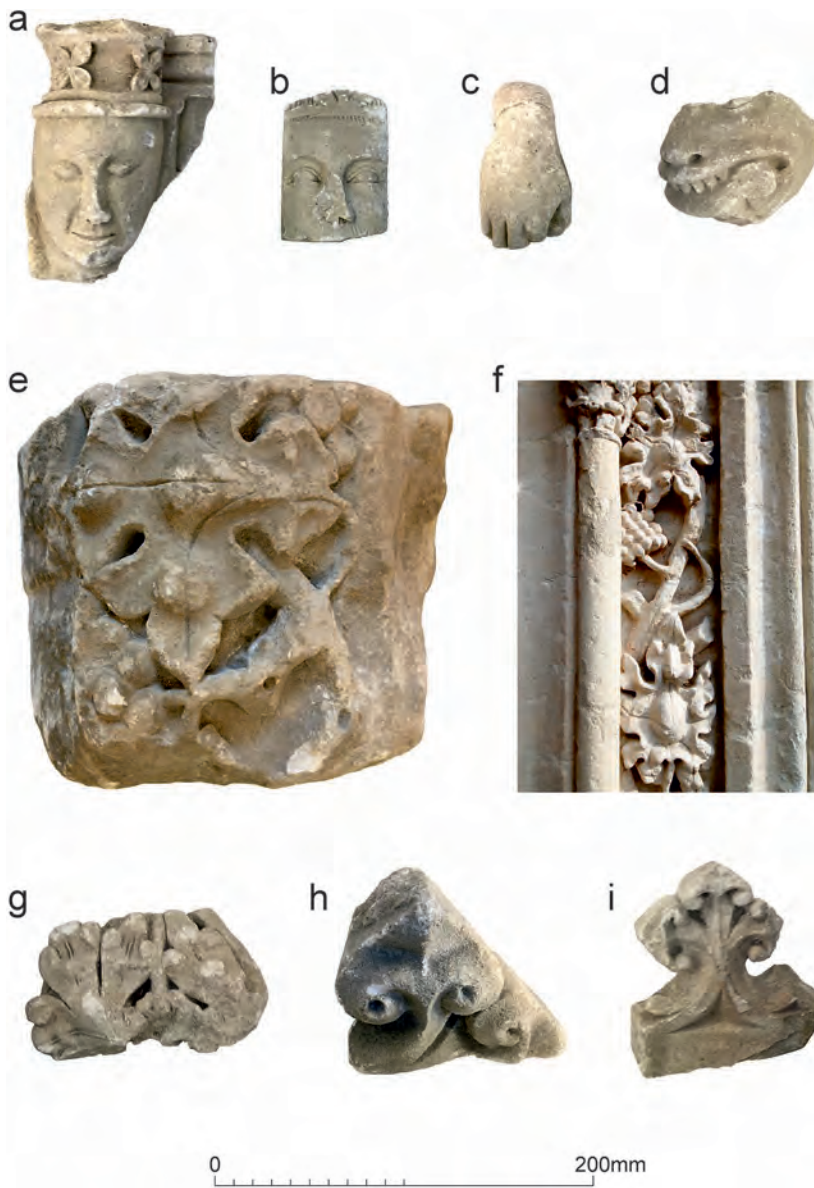


Fig 13 Beer stone fragments in Lawrence House Museum, Launceston, with (f) vine scroll on the west front of Exeter Cathedral. (Graphic: J Allan/T Ives.)

although they receive mention in a number of recent accounts of medieval floor-tiles elsewhere in Cornwall and Devon (for example, Allan and Silvester 1981; Keen 2019). Four boxfuls survive in the Lawrence House Museum, with a few in the British Museum (Eames 1980, I, 11, nos 339–41). The full collection will not be discussed here, since Laurence Keen is preparing a full study for a projected future volume of the *Census of Medieval Tiles in Britain*.

As a step towards a future publication, a petrological study of selected tiles was carried out in the present project, demonstrating that the priory pavements were made in at least three different tileries (Taylor, Appendix 3 below).

Group 1

One component of the assemblage is a series of heraldic tiles in fine red earthenware which came

principally or entirely from the chapel on the northern side of the Lady Chapel (Peter 1896, designs 2, 12–16, 17; discussed below). This group includes several design matches to tiles from the Exeter area, where they were made (Allan and Keen 1984, series 1; subsequent petrological study, for instance Taylor 2010). Loose finds collected from the choir in 1976 included one new design: a depiction of Sagittarius (rather like a pantomime horse – Fig 14). The only known matches to this design come from Polsloe Priory, Exeter (Allan and Keen 1984, 239, design 64).

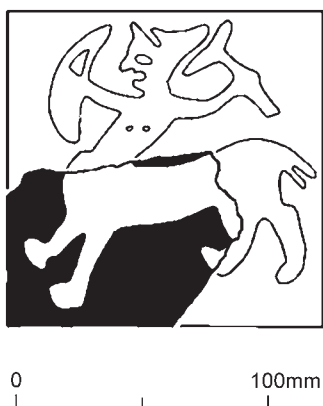


Fig 14 Tile of Exeter Series 1 found in 1976, showing Sagittarius. Scale 1:3. (Drawing: J Read.)

Group 2

A second distinctive group is extraordinary (possibly unique) in a British context in being made of white earthenware, inlaid with red clay. Petrological study shows that Peter (1896, 307) was right in believing that these were probably of local origin; advances in geological mapping in the 1970s now allow the probable source of the clay employed in these tiles to be established with some precision (Taylor, Appendix 3 below). If, as is probable, these tiles were primary furnishings of the choir, they can be dated to c 1330–50.

Other series

Dr Taylor's examination of the petrology of the remaining tiles shows that at least two other series of tiles containing granite-derived inclusions are represented. There is scope for work to see whether

these match, for example, the finds from Tavistock Abbey or Plympton Priory (Devon).

Discussion

Peter believed that 'all the remains discovered are of the purest 12th-century moulded type of architecture' (Peter 1893a; in 1889 he had thought that the pier bases he found were of Early English type: Peter 1889, 17). This view seems not to have been challenged by later writers but the plan form alone refutes this conclusion. The provision of a long Lady Chapel with integral chapels flanking the western bay, all with square ends, would not be expected in a mid-twelfth-century building, but the form came into widespread use in the thirteenth and fourteenth centuries.

Scale and design

When the plans of the eastern limbs of some of the major monastic and collegiate churches of the diocese of Exeter are compared, the ambitious scale of Launceston is apparent (Fig 15). The largest of the group, naturally, was Exeter Cathedral, under construction in 1280 (Bishop and Prideaux 1922, 30–8). Its plan of a three-bay Lady Chapel, the western bay flanked by small rectangular chapels, was a popular one; it may have derived from Salisbury Cathedral. Glasney, Ottery St Mary and Crediton had scaled-down versions of this layout, but at Launceston a four-bay Lady Chapel was built, almost as long as the cathedral's. Comparison of the plans of Launceston and Glasney with Ottery St Mary and Crediton emphasises the grander scale of the two Cornish buildings. On the other hand, Ottery St Mary and probably Glasney had the deeply projecting buttresses needed to support a stone vault, whereas the form of the shallow pilaster-like buttresses at Launceston (Fig 15), supports the conclusion that, like Crediton, it simply had a timber roof, as Peter (1889, 17) also concluded. His record of the recovery of 'a mass of decayed roofing slates' from the Lady Chapel, contrasting with the fallen remains of stone vaults in the flanking chapels, shows that the Lady Chapel was slated rather than being given the more costly covering of lead sheeting. The broad and closely set buttresses at Launceston would not have given scope for the wide traceried windows which were a progressive feature of Exeter. Thus, although the

eastern limb of the priory was ambitious in scale, its design was probably not in the forefront of West Country fashion.

The rebuilding of the east ends of large churches in the thirteenth and fourteenth centuries was usually undertaken in stages, normally starting at the east end. When a church had an eastern Lady Chapel with flanking side chapels, as here, this part of the church was commonly completed and brought into use before the construction programme moved to the choir and presbytery; Ottery St Mary and Exeter Cathedral are local examples of this practice. The evidence that Launceston Priory was rebuilt in this way may now be described.

The Lady Chapel and flanking chapels

The best evidence for the dating of the eastern part of the church was found in the northern flanking chapel, where Peter (1893b) noted the survival of a fragment of pavement of heraldic tiles (shown on his plan of 1889, reproduced here as Fig 1b; his annotation reads 'portion of tile paving *in situ* here'). He records that 'all the heraldic tiles were found here', together with some other tiles with inlaid individual letters, and that these were transferred to the newly created Town Museum in the South Gate (*ibid*, 18; for the designs see Peter 1896, 310–11). The tiles were transferred

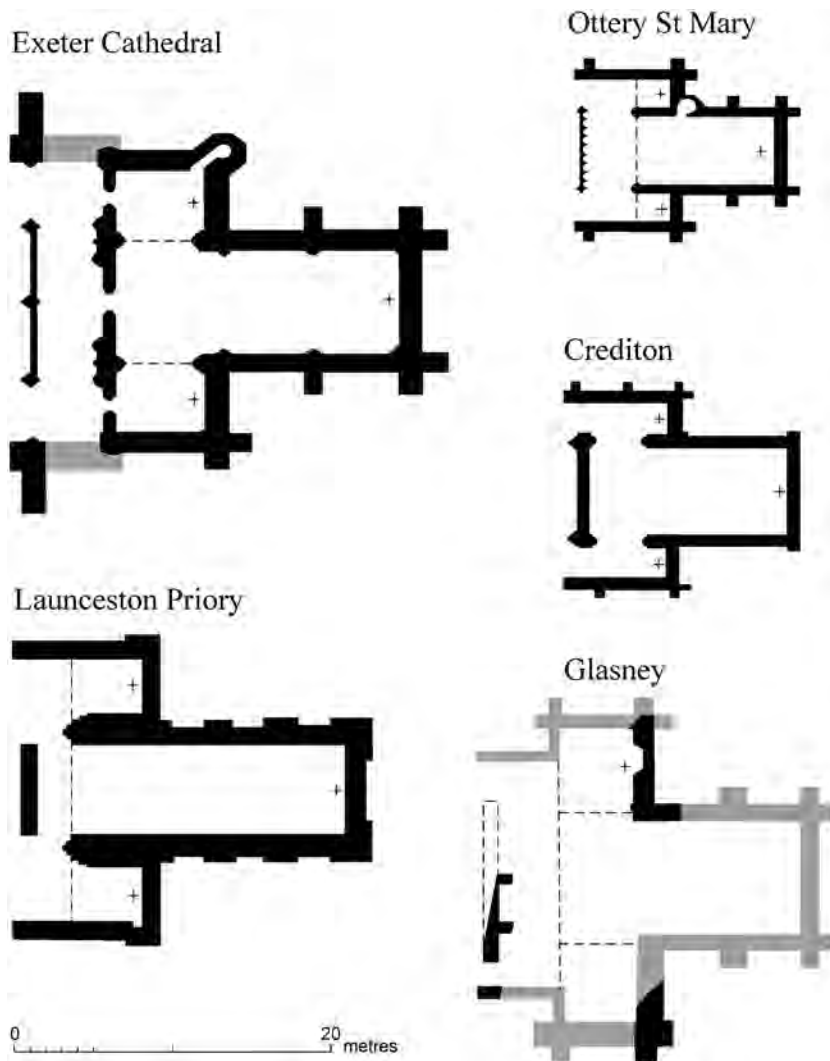


Fig 15 Comparative plans of the eastern ends of major churches in the Diocese of Exeter (Ottery St Mary from Coleridge and Hayward 1842; Glasney from Cole 2016, 88; Exeter from Kelly 1991, frontispiece. (Graphic: T Ives.)

in the 1950s or later to the Lawrence House Museum, where they are still held. The most frequent designs in the collection show the arms of Cornwall and those of Scotland; there are also a few of the arms of England, of France and of the Clare family (Peter 1896, 310–11, designs 2, 12, 13, 15 and 16). All these coats of arms display the high-born connections of Edmund, earl of Cornwall and his wife Margaret de Clare (Keen 2019, 225; his discussion explains the presence of the arms of Scotland). They married in 1272; he died in 1300, she in 1312. Pavements displaying this combination of floor-tiles, made in the same fabric and using the same tile stamps, are also known from three sites in Devon: Newenham Abbey, the Bishop's Palace, Exeter, and Exeter Greyfriars (Allan and Silvester 1981, 164–5; for the Bishop's Palace see descriptions in Devon Heritage Centre Z19/15/11 and Z19/15/18 [Pulman correspondence with Pitman Jones, 1846]; for the Greyfriars: Allan *et al* 2016, 242–4). Further afield, magnificent pavements of tiles were commissioned by the couple at Hailes Abbey, where Edmund was buried, and at Cleeve Abbey (recent discussion in Keen 2019). Comparison with Exeter Cathedral's dated sequence of tile pavements indicates that the group of designs represented at Launceston was made after the earliest cathedral pavements of c 1280, probably before c 1325 and certainly before the early 1330s (Allan and Keen 1984). They suggest that the Lady Chapel and flanking chapels may have been built with some form of patronage from Edmund of Cornwall and his wife Margaret, and perhaps from local families represented among the tiles, the chapels being completed in the years c 1290–1312.

When William Beaucyn founded a chantry in the Lady Chapel of the priory in 1312, therefore, the building was probably newly completed (Orme 2010, 206). A few years later, in 1318, Bishop Stapledon dedicated the priory church including two altars on the north side (Hingeston-Randolph 1892, 137). As Nicholas Orme has noted, this probably reflects the enlargement of the building (Orme 2010, 206). Since the architectural evidence, especially the tracery, indicates that the choir and presbytery were completed after this date (see below), this event probably marked the completion of the Lady Chapel and flanking chapels rather than the choir, although no obvious location can be suggested for the second altar in the north aisle which is mentioned in the document.

The presbytery and choir

The retention of earlier fabric?

The design of the choir of the priory, with continuous walls rather than an arcade, is hard to match, and only two southern English parallels come to mind: Milton Abbey (Dorset) and Rochester Cathedral (Kent), although Edmund Prior recorded that Wimborne Minster was a third example before it underwent drastic alterations in the nineteenth century (Prior 1899, 173–4, 'practically aisleless chancels'). The use of solid walls must have excluded much of the light in the aisles from the choir and presbytery, and the narrow widths of the aisle bays must in any case have restricted the size of the aisle windows. A possible explanation might be the retention of older fabric in the fourteenth-century building programme. This was the case at Milton Abbey, where the walls now dividing the fourteenth-century choir from the aisles show clear evidence that they were retained from the pre-1306 church (not evident in Royal Commission's account (RCHME 1970, 183–9) but noted by H Gordon Slade (1983, 63)). Likewise at Rochester the choir walls are believed to retain Norman masonry, masked by later work; in the remodelled choir 'as much as possible of the earlier fabric' was retained, perhaps for reasons of economy, and the new choir 'laid out around the existing church ... with minimal disturbance to the liturgical life of the monastery' (Draper 2006, 102). Similar motivation may explain some of the anomalies at Launceston but here the standing walls seem continuous with the fourteenth-century shafts which mark the bay divisions; although there are variations in the north and south walls of the presbytery and choir, recorded by Gossip (2002, 11–19 and figs 38–44), this writer could see no clear evidence that the shafts were inserted.

The form of the elevations

Did the choir have a two-part elevation (ground-floor wall with clerestory windows above) or one of three parts (with the addition of a triforium between the two)? The thinness of the walls (1.03–1.05m) excludes the possibility that the elevations could have incorporated a wall-passage; this argues against the presence of a triforium, whose structural purpose was to support the passage. The plan of the choir includes no substantial buttresses of the sort which might be expected in

a structure built on low-lying ground with a heavy stone vault. Considered with the thin walls and the evidence for a ribbed vault, this suggests that the elevations were not particularly tall. A two-part elevation appears likely. The elevation of each of the three bays of the choir and presbytery would, then, have consisted of a lower part with an off-centre opening, with a clerestory above lit by a fine Decorated window (see below), presumably set centrally within the bay. The clerestory will have helped to offset the potentially gloomy effect caused by the limited light reaching the choir and presbytery from the aisles.

The form of the vault or ceiling

The bases and shafts, both in the aisles and the choir, are relatively slight, and this has brought the suggestion that the main vessel of the church had a ceiling of timber rather than a stone vault (Gossip 2002, 20). Among the architectural fragments, however, are fragments of large vaulting ribs of two different profiles which can only have come from stone vaults, and these include several portions of ridge ribs. It is unlikely that these large ribs with their complex mouldings came from the small aisle bays, and much more probable that they come from a high vault over the central vessel of the church.

The progress of the building campaign

In comparing the architectural details of the Lady Chapel and choir, the responds are the only architectural element which survived *in situ* when Peter excavated the site. A trefoil with simple rolls was employed in the former, a more complex form with rolls alternating with ogee curves and broad fillets in the latter (Fig 3, Responds 1 and 3). This change in a major element of the elevations is likely to reflect a change in design of the sort commonly attributed to a change in master mason.

The change from a grouping of three large rolls in Respond 1 (in the Lady Chapel) to five smaller rolls in Respond 3 (in the western bay of the choir) is reminiscent of the change at Exeter Cathedral from large half-quatrefoil responds in the years c 1270–80 to more delicate bundles of smaller shafts after c 1300 (Jansen 1991, 38–46). This would fit with the dating of the floor-tiles in the chapel flanking the Lady Chapel of c 1300 (see below) and the early fourteenth-century architectural fragments, probably from the choir

and presbytery (also below). I am unaware of a close parallel to Shaft 2.

Vaulting

A second pointer to the presence of two different stages in the building programme (perhaps two different master masons) is the presence of two quite different profiles among the vaulting ribs (Fig 6, Ribs 1 and 2, the latter an especially complicated affair). The form of complex vaulting ribs was often specific to individual master masons or particular building programmes. It seems likely that the origin of the design lay outside Cornwall, since only one other fourteenth-century stone vault is known in the county – at Glasney – and that was clearly undertaken by the masons of Exeter Cathedral (Allan and Blaylock 2016, 92–8). The high vaults of Exeter Cathedral are also the most obvious place to seek a parallel for the Launceston vaulting profiles, but neither of these forms is at all like the Exeter profiles (Fig 6.6–7). Launceston Rib 1 is however very similar to a rib profile employed at St Augustine's, Bristol, now Bristol Cathedral (Morris 1997, 44, type 1), while the central element of Rib 2 corresponds to a form used at St Mary Redcliffe church, Bristol, and in Berkeley Castle chapel (*ibid*, 50, fig 2, both reproduced here, Fig 6, Nos 4–5). The first seems a convincing parallel; the second suggests familiarity with the same vocabulary of mouldings.

The late Richard Morris proposed that his type 1 ribs were the earliest of the vault rib profiles at Bristol Cathedral (c 1300–20); he attributed them tentatively to the master mason Nicholas de Derneford (*ibid*, 43–5), but his dating also drew on similarities to the forms used at Exeter in the same period. He linked the vaults at Berkeley Castle and St Mary Redcliffe, works datable to the late 1330s or a little later, to the celebrated master mason William Joy (*ibid*, 43–51). His interpretation of the Bristol Cathedral vaults has proved highly controversial, however, and Christopher Wilson has made a case for reversing Morris' proposed order (Wilson 2011, 75–8). On the Bristol evidence, then, there are therefore two possible contexts for Rib 1 at Launceston; either c 1300–20 or c 1330s or later. Rib 2, more complex and with similarities to work at Bristol of the 1330s, probably dates from c 1325–50. The significant point in the present context is that the fragments at Launceston indicate two different stages in the

vaulting programme, one showing a convincing link to Bristol, the other with points in common with the mouldings used there. As Nicholas Orme first pointed out to the writer (*pers comm*), this should not surprise us: St Augustine's was the leading house of the Austin canons in the region, and the canons of Launceston might naturally turn to them to supply a master mason.

A link to Launceston might also have arisen through patronage. St Augustine's was the mausoleum of the Berkeley family, and its most important patron until his death in 1321 was Thomas, the first Lord Berkeley. He had married Joan Ferrers, who died in 1310. The Ferrers family had connections to west Cornwall (Joan was born there) and south-west Devon. In the 1330s the rector of South Hill, a church about 10 km south of Launceston, was John de Ferrers, and he may have been responsible for the early fourteenth-century building work there, since the high altar of the church was dedicated in 1333 (Hingeston-Randolph 1897, 718). In the same year William Ferrers set up an archpresbytery at Bere Ferrers, about 30 km away in Devon, which like the group of works in the churches of south-west Cornwall shows close links to the cathedral (Allan 2017a). These are perhaps tenuous links; no documentary evidence for direct links between the Ferrers and Launceston Priory has been found.

Windows

If the vaults point towards Bristol, the window tracery points strongly to Exeter Cathedral. Although only fragments of their patterns have been reconstructed, the motifs employed show that they included exciting exercises in late Decorated design. Two pieces (Fig 8.1–2) probably come from geometric patterns and could therefore date from the late thirteenth century, although these simpler designs were still in circulation in the 1330s in the windows of the nave of Exeter Cathedral. Perhaps they came from the Lady Chapel. Alongside the circles, spherical triangles, trefoils, quatrefoils, (possibly with septfoils and octofoils) which had been used in Geometric Decorated tracery, the other fragments display the new architectural vocabulary of late Decorated curvilinear tracery: daggers, mouchettes and ogee curves. There are so many different patterns that it seems probable that, like Exeter Cathedral, the choir of Launceston was unusual in having different tracery in each

bay. These new motifs are also seen in works in late Decorated style in a closely related group of Cornish churches dating from the period c 1330–50, the key buildings being St Ive, Glasney, St Germans, St Michael Penkevil, Sheviock and Tywardreath (Allan 2017a). They show close stylistic links to the output of the Exeter Cathedral workshop (*ibid*). Launceston differs from this group in its mouldings and building materials, and is not so directly connected to Exeter, but the tracery patterns used here show a familiarity with the exciting new designs of the cathedral.

Other features point to the late date of this work in relation to the cathedral. Throughout its building programme (c 1270–1342) the cathedral window mullions were of simple design with flat chamfered faces. At Launceston a more developed profile with ogee curves was used (Fig 7). Prior to the 1330s the cathedral windows had lights with simple trefoil heads. Its nave windows, built in the 1330s, were also mainly of this design, but introduced the extra detail of cinquefoil cusping in a few lights. The group of Cornish churches with late Decorated tracery, described above, used both trefoil and cinquefoil cusping. Only cinquefoil cusping has been found at the priory.

The high altar screen

The fragments also throw light on the most important of the internal furnishings of the church: the setting of the high altar. A novel feature of a group of major early fourteenth-century West Country churches was their development of a grand reredos providing an impressive setting for the high altar. The earliest was at Exeter Cathedral (c 1313–26) but this has been destroyed (Sekules 1991a; 1991b); it was followed by impressive structures in the 1340s at Ottery St Mary and Christchurch Priory, Dorset, both by the Exeter Cathedral workshop (Fig 12f–g). The evidence for a screen of this sort at Launceston is therefore of great interest. It consisted of a projecting central element, divided into three bays, presumably with shafts rising from the vacant sockets in the core of the monument to canopies above, with a substantial wall arising continuously at the rear, and with richly carved architectural detail found around it. Like the examples at Ottery St Mary and Christchurch, this was of Beer stone, and some details here, such as the tablet flowers and vine scroll (Fig 13a, e) are very similar to their style,

which is closely linked to Exeter Cathedral's west front. The Launceston screen, therefore, probably also dates from the 1340s. One of the fragments shows that canopies with terminals hanging in mid-air formed part of the design. The extraordinarily delicate finials – real Decorated microarchitecture – suggests that the priory screen was as elaborate as those at Ottery St Mary and Christchurch Priory.

Conclusion

In sum, the priory church reflected an interesting mix of influences from within and outside the diocese. Its impressive features must have been the windows, vaults and furnishings. The tracery fragments show clearly that the priory had the most inventive and complex Decorated windows in the diocese after those at Exeter Cathedral, displaying the same vocabulary as the cathedral's famous nave series of the 1330s. Other features which clearly relate to the Exeter area are the heraldic floor-tiles and altar screen. The tiles were made in the Exeter area, and the altar screen was a work of the cathedral masons in the 1340s, incorporating features of great delicacy. It was undertaken at a time when the Exeter workshop was the predominant one in the region, undertaking work elsewhere in Cornwall, and in Dorset, as well as in Devon. On the other hand, the design of the main elevations, including the doorways and vaulting profiles, is completely different from that seen at Exeter Cathedral or elsewhere in the diocese. It has been argued that at least one of the vaults derives from Bristol, but it is alas the least exciting of the Bristol vault designs. Had it still been standing, the priory church would surely be seen as one of the key buildings in the architectural history of the West Country in the fourteenth century.

Postscript: future work

The present study of the architectural fragments was carried out by one person using simple hand-held equipment. In the future, the collection would make an excellent subject for the use of the three-dimensional digital recording using lasers which is now coming into use elsewhere. This would have eliminated the discrepancies between line drawings and photographs in the present account, and may have led on to new interpretations of the fragments. Further study should also entail lifting equipment; these heavy stones would ideally have been laid

out together to aid the identification of individual windows, but this was not possible in the present study. It is possible that parts of at least one large window could be assembled.

Appendix 1: Reconstructing Launceston Priory

Richard Parker

The reconstruction drawing (Fig 16) attempts to give an impression of the Augustinian priory at Launceston as it was in the late fifteenth century, a few decades before its Dissolution in 1539. Although much of the detail is speculative (since so little of the priory buildings remains above ground), the drawing aims to convey the magnificence and complexity of the lost buildings, to illustrate their layout around a cloister, and to give an idea of the probable architectural character of the buildings based upon the superb collection of architectural fragments either preserved at the site or reused in later buildings in the town.

In planning a drawing of this kind it is important to try to use the surviving elements of the structures which may still be visible today as a means of helping the viewer orientate themselves. These recognisable elements are usually brought into the foreground, and those areas where the details and form of the buildings are uncertain are pushed into the background and illustrated more vaguely. Sometimes, in cases of real uncertainty, one has to resort to artistically arranged clumps of trees and billows of smoke to disguise things which would otherwise be too speculative. In the case of Launceston, where so much of the structure has been lost, an alternative approach is simply to draw something plausible and wait patiently for someone to prove you wrong.

With Launceston Priory the obvious starting points were the beautifully displayed ruins of the presbytery and choir at the east end of the church, and the excavation plans made by Otho B Peter in the late nineteenth century, further researched by Arthur Wills in the late twentieth century (Figs 1a and 1b). Peter's excavation plan of the whole site (Fig 1a) indicates that, although he had established the layout of the east end of the church and the western and southern claustral ranges with confidence, almost the whole of the western part of the church was much less well established (though it clearly had only one aisle to the north

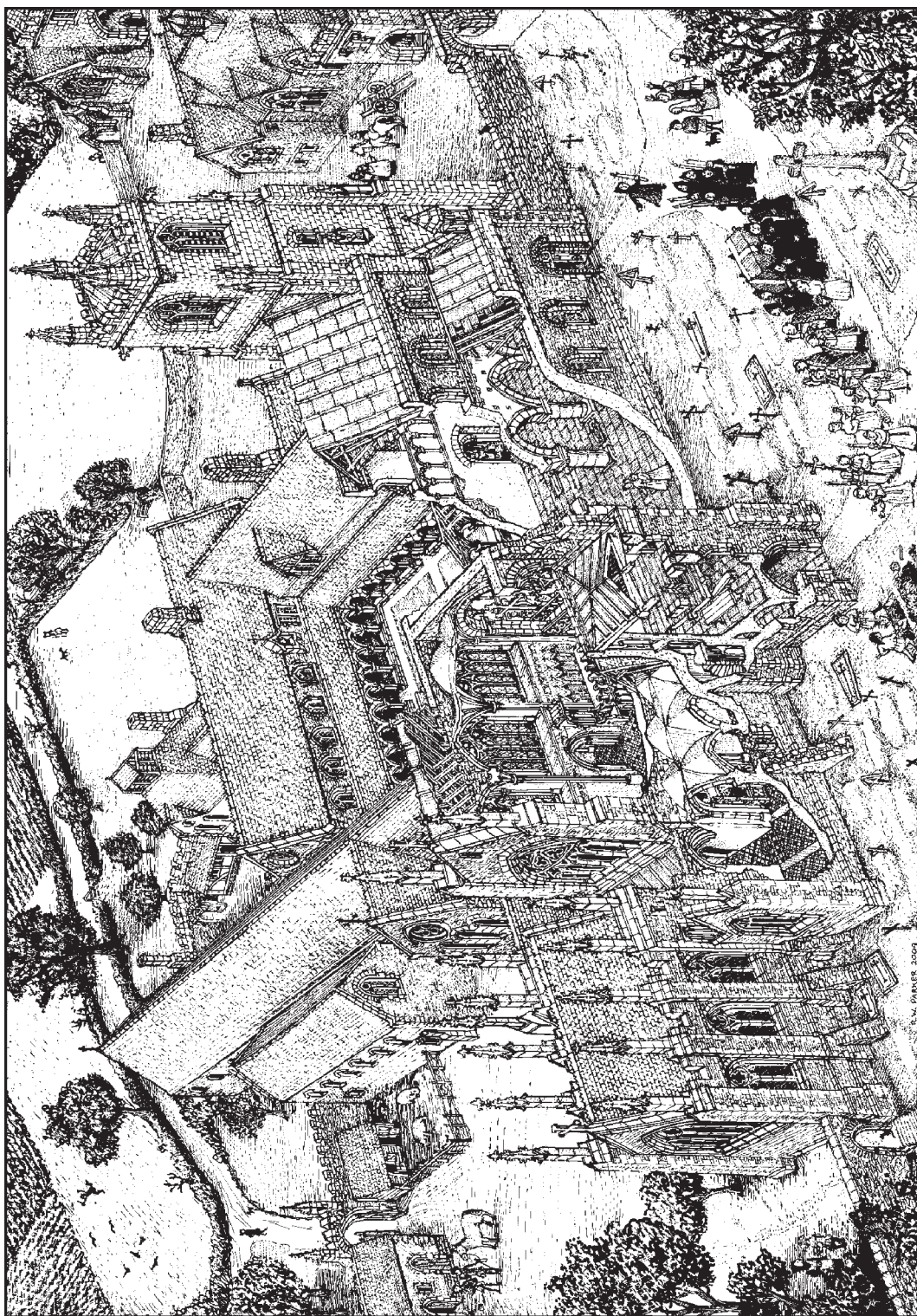


Fig 16 Reconstruction drawing showing the priory c 1500. (Drawing: Richard Parker.)

of the nave) and there were also sizeable gaps in the evidence for the east range of the monastic buildings, where one would expect to find the chapter house. Initially, this evidence suggested that the less confidently-established areas should be downplayed in the drawing, by featuring them in the background, and the more securely known areas featured in the foreground. Peter's drawing shows a number of exciting features, including a series of small square foundations in the centre of the south range of buildings, which would normally be occupied by the monastic refectory, suggesting that this range had a vaulted undercroft supported on pillars, and a projecting porch on the west range (which he identified as the prior's lodgings). These are tempting features to the reconstruction drawing artist, and together with a fine Cornish western tower at the end of the nave might have made an appealing drawing (Fig 17).

Although this projected view of the reconstructed buildings would have the advantage of reducing the visibility of areas such as the chapter house and those parts of the east range which were evidently not fully established by Peter, the architectural details that would have been visible from this angle, even in a cutaway view, would necessarily have been very speculative. The single aisle of the nave and the exceptionally interesting layout of the choir, presbytery and eastern chapels shown in Peter's plans (Fig 1b) would be understated

in the drawing and it would have been difficult for visitors to the site to relate the reconstruction drawing to what they could see on the ground.

Visitors to the site today approach the remains of the church from the north and are faced with the low ruins of the projecting north porch structure, with its distinctive polygonal stair turret, and the walls of the choir and presbytery beyond this. The nave, western tower and virtually the entire area of the cloisters now lie outside the site boundary, beyond the area of the displayed ruins and are not visible to the visitor.

For this reason it was decided that the visible areas of the ruins displayed today should feature in the centre foreground of the reconstruction drawing, cut away so that their forms might be easily recognised by visitors to the site (Fig 18). The other areas, of which only the ground plan is known, would be shown in the background. Cutting away helps to show the function of features like the spiral stair at the corner of the porch, relates plan to ruin, and also permits the artist to hint at the interiors of the buildings, including richly-tiled floors, complex vaulting systems and some of the liturgical furnishings, such as the canons' and prior's stalls and a canopied tomb chest near the high altar within the church. Taking the view from the north-east of the church also allowed the distinctive form of the east end of the church to be clearly shown, with an ambulatory or walkway



Fig 17 Preliminary sketch for a reconstruction drawing of the priory from the south west, showing features emphasised in Otho Peter's plan of the whole site, including a vaulted undercroft to the refectory and a porch to the west range. (Drawing: Richard Parker.)

running between the presbytery and the Lady Chapel, like that at Exeter Cathedral. This view also allowed the single aisle of the nave to be brought into prominence. Another advantage was that, although the general layout of the claustral ranges could be shown, their façades and details of their architecture (which are not well understood) could be left to the imagination.

In the finished drawing (Fig 16) the Lady Chapel, with its broad rectangular buttresses, augmented by later sloping buttresses and crowned by high pinnacles, is shown in the bottom left, with a gateway to the churchyard and a yard to the east. The window tracery in the Lady Chapel is shown as relatively modest, of Geometrical Gothic type

suitable for the later thirteenth century. The roof is shown as slated, reflecting Peter's discovery of fallen roof slates in this area. A little to the right, claspings the higher volumes of the presbytery and choir, the vaulted ceilings of the choir aisles and the low lead roof of the ambulatory are shown.

At the centre of the drawing, the large traceried windows of the presbytery and choir can be seen rising above these lower roofs. Although it would have been exciting and agreeable to illustrate the Gothic qualities of this part of the building, and draw further parallels with Exeter Cathedral, by a further array of tall pinnacles and flying buttresses, the archaeological evidence suggests that the vaulting system of this area was less than rational



Fig 18 Preliminary sketch for a reconstruction drawing of Launceston Priory, seen from the north east, showing the cutaways of the nave and presbytery. This sketch formed the basis of the final drawing. (Drawing: Richard Parker.)

and that the supports for the choir aisle and high vaults related rather poorly to one another without such a rational system of support. For this reason pinnacles and buttresses have been omitted. The presbytery and choir elevations are shown as two-storeyed, with a clerestory above solid walls enclosing the choir aisles, here shown with painted arcading over the stalls rather than stall canopies. The traceried windows of the clerestory are shown with complex Decorated Gothic patterns, including a huge east window with a rose of radiating trefoils based, somewhat loosely, on the more recognisable architectural fragments surviving on the site. The north 'porch', by which the visitor enters the site today, is here interpreted as a structure containing three storeys of chambers, the lower one being vaulted. I have chosen to reconstruct this as rather like the eastern transeptal block at Crediton or the north porch at Exeter Cathedral, housing an exchequer room or muniment room for administration on the first floor and a treasury above.

The choir is shown ending to the west at a broad, semi-circular arch surviving from the older Romanesque church and, beyond this, in the right-hand section of the drawing, it is assumed, based on Otho Peter's plan, that the nave and its single aisle survived from the twelfth-century church. The nave is thus shown as a tall volume with a canted timber ceiling concealing the roof and a blank

wall with a blind arcade and clerestory on the side facing the cloister. On the north side of the nave an arcade with scalloped capitals and unmoulded arches, loosely based upon that at St Germans, is shown opening upon the north aisle. The clerestory windows, as at St Germans, are not placed in the centre of each bay but above the spandrels of the arches, as in many West Country churches. The north-western doorway to the churchyard is based upon the surviving Romanesque door at the White Hart in Launceston town (Fig 19), which may have been reused from the priory buildings. The western end of the nave is closed by a huge late medieval tower with pinnacles on the offsets of the buttresses and a chunky pinnacle at each corner, loosely based upon that at St Stephen-by-Launceston.

The claustral ranges of the monastic buildings are shown laid out according to Otho Peter's plan with a long dormitory range running towards the top left, and a reredorter or lavatory block lying against its eastern wall. The chapter house, not excavated by Peter, is here given a prominent eastern gable and rose window, for didactic reasons, to show its importance in the complex even though no evidence of its form was recorded. Pigsties and stable yards are shown in the area to the east of these buildings, but it is equally probable that the infirmary buildings stood here, arranged around their own smaller cloister. Peter may not have found, or did not recognise, these.



Fig 19 Romanesque doorway reset at the White Hart Hotel, perhaps from Launceston Priory or Castle. (Photograph: J Allan.)

The refectory range, presumably overlying the cellarer's vaulted store, is shown in the top centre of the drawing, with the louvred roof of the kitchens beyond it and a bellcote, for summoning the canons to their meals, built into the wall facing the cloister. This detail is based upon the late fifteenth-century refectory at Cleeve Abbey in Somerset. The west claustral range is shown with a gabled element in the roof, a chimney and a western porch, to suggest that it has been converted, as Peter assumed, to form the prior's lodgings. The cloister walks are here shown as unvaulted, with a simple stone arcade in a thirteenth-century style supported upon paired shafts, but it is equally possible that the cloister arcades at Launceston were of timber.

All the other buildings shown are entirely speculative, but buildings like them may well have occupied these positions. To the right of the western tower, the priory entrance court is suggested in the top right hand corner of the drawing, with a gateway to the cemetery, a guest hall with a smoke louvre, a porch and chambers in a cross wing at one end, and beyond this is a gatehouse opening on to Town Mills Street (with a gate chapel alongside it). This area is now Priory Mews and Priory Lane. The street later known as Tredydan Road runs across the top left hand corner of the drawing, providing access to the farmyard from Wooda Lane. Beyond this the fields extend towards the town and a boy is scaring crows.

Peopling the drawings with clergy, cats and other figures helps to humanise the drawing and celebrate the life of this lost community. In the foreground of the drawing I have represented the cemetery, featuring a large churchyard cross. This area is now part of St Thomas' churchyard. The drawing shows a funeral procession leaving the nave of the priory church, led by an acolyte ringing hand bells, two taperers and a crucifer, and two thurifers with incense and a boat boy. Behind them, a group of three cantors sing the appropriate funeral antiphons and the celebrant walks in front of the coffin. One of the torch-bearers is late, to the consternation of the onlookers, and the priory servants are only just finishing the grave. Elsewhere on the site, a messenger has just arrived with disconcerting news from the wider world; two fashionable gentlemen are gossiping about current events in the stable yard and the Infirmarian, oblivious to all of the above, is flirting with a monastery servant in the shrubbery.

Appendix 2: The building stones of Launceston Priory

Roger T Taylor

At the invitation of John Allan, the writer examined the exposed walls of the priory, the large piles of architectural material accumulated at the site, fragments at Launceston Museum from Peter's excavation, and further pieces in the Arthur Wills collection prior to his donation of these fragments to the Lawrence House Museum. The following building stones are represented:

Slate

The standing walls of the priory are predominantly of local grey slate, which forms rectangular blocks of consistent thickness. The Geological Survey Sheet 337 (Tavistock) indicates that such slate underlies the site and the general area around Launceston.

Greenstones and tuffs

In the south wall of the choir, courses of rough ashlar blocks are interlayered with the slate. These are of soft cindery-textured greenish-grey and purple volcanic tuffs, containing some slate clasts.

Numerous window tracery and attached shaft bases on the priory site were examined. These are of gabbroic greenstone and greyish-green volcanic tuff. Some of the latter weathered to an iron-flecked buff colour. The tuff has some similarity to that used in St Thomas' church (see below).

The moulded blocks of the pillar base reassembled beside St Thomas' church (Fig 3) include a fine gabbroic greenstone showing traces of relict ophitic texture between feldspar and amphibole/pyroxene; the upper section is probably volcanic tuff. There is also a greenish agglomerate with purple clasts, similar to that used in St Thomas' church. It has not proved possible to suggest a particular rock outcrop or quarry sources for these local stones but the general stone type could have been quarried within a few kilometres of the site. Greenstone basic rocks, some probably intrusive, are mapped in several elongated outcrops extending north east from Polyphant to the south east of Launceston. Similar rocks crop out on either side of the Tamar at Greystone Bridge (SX 736 980) about 4 km south of Launceston. Here

the river provides a possible transport route for the stone.

Polyphant stone

Polyphant stone is a distinctive altered peridotite resembling serpentine. It is readily carved and was quarried just to the north of the village of Polyphant, Lewannick (SX 260 826). A fragment of a crucifix preserved in Launceston Museum appears to be of Polyphant stone. Only two further small fragments were seen on the site.

Granite

A few worked fragments of a light-coloured medium-grained granite with small feldspar megacrysts are present on the site. They are likely to have been obtained from the Bodmin granite to the west.

Beer stone

Otho Peter had identified the limestone found around the high altar as Beer stone – a fine white Lower Chalk freestone quarried near Beer in south-east Devon. A series of fragments of this stone was examined; they included sculpted heads excavated by Peter, now in Lawrence House Museum, Launceston, the very delicately worked shafts and canopy fragments in the Arthur Wills collection, and a single large fragment about 0.25m thick, still lying against the eastern side of the high altar. All are indeed Beer stone.

Mortar sand

The sand used for construction and rendering is fairly coarse, alluvial sand consisting mainly of reddish and grey rounded slate fragments with some quartz. It was probably sourced locally from the River Kensey or the Tamar.

Other related remains

St Thomas' church

The large ashlar blocks up to 1.34 x 0.35m on the south side of the church are of a light greyish-green agglomeratic tuff with purple angular lava fragments in a light greyish-green matrix. There

is also much use of a finer-grained greyish-green tuffaceous rock, similar to that used in the arch of the Norman doorway at the White Hart Hotel (below). Tabular local grey slate is used in the walls of the chancel. Grey granite is also used occasionally. The large size of some of the ashlar used in the church, with some individual tuff blocks probably weighing in excess of 0.25 tonne, suggests relatively short transport distances.

The Norman doorway reset in the White Hart Hotel, Launceston (Fig 19)

The building from which this fine Romanesque doorway was taken is not firmly known; it may have come from the priory, from Launceston Castle, or from a local parish church. The shafts forming its sides are of very dark volcanic agglomerate containing a scatter of clasts of purple lava. The arch is formed of greyish-green tuffaceous sediment with brown iron stained flecks, possibly pyrite. The colour contrast suggests that the shafts and arch come from different quarry sources within a volcanic succession.

Volcanic rocks including ashes and agglomerates are widespread. The nearest source of such rocks to the priory is the belt 3–4 km long extending from Launceston westwards, with more extensive north-west trending outcrops extending from Trebulet through Lewannick to St Clether.

Appendix 3: Petrological examination of floor-tiles from Launceston Priory

Roger T Taylor

Series 1

No examples were examined.

Series 2

Sample 1: Tile ex collection L Keen

Hard-fired inlaid floor-tile with a white-firing clay body. Temper forms 10–15 per cent of the body.

Quartz: colourless transparent to translucent, angular to sub-angular grains with abraded angles, 0.1–1.1mm.

Hornfels: micaceous slaty, grey and weathered, light pinkish to reddish-brown, generally tabular sub-rounded fragments, 2.5mm, rarely 7mm.

Feldspar: white, angular to sub-angular grains, some showing cleavage surfaces, 0.3–0.8mm.

Tourmaline: black fragments probably of tourmalinised slate and black vitreous angular fragments of schorl, 0.1–0.3mm.

Mica: rare cleavage flakes of biotite, 0.05–1mm.

Clay matrix: white-firing clay with white quartz up to 0.1mm and some finely divided white mica.

Sample 2: floor-tile at Lawrence House Museum

Fragment of a quarter-circle design with small floral ornaments at the corners (Peter 1896, 311, design 19), 25mm thick, with bevelled edges; small deep scoops at corners and centre. The clay body has fired pale cream; the inlaid pattern is in white slip. Temper forms about 20 per cent of the fabric.

Quartz: transparent to translucent colourless, angular to sub-angular grains, 0.1–1.5mm, rarely 2.5mm.

Rock fragments: slate, weathered brownish-red, sometimes buff to grey, oblate rounded fragments, 0.3–2.5mm. Siltstone/fine-grained sandstone, reddened rounded oblate fragments, 0.8–5.5mm.

Feldspar: white sub-angular grains, some showing cleavage, 0.4–1mm, rarely 1.5mm.

Tourmaline: rare black vitreous angular grains, 0.2mm.

Mica: biotite, sparse brown cleavage flakes, sometimes reddened, 0.1–0.6mm.

Large inclusion: a sub-angular fragment, 41mm across, apparently a piece of previously fired clay, slightly greyer in colour. The mineral content is generally finer than that of the enclosing tile but has similar constituents

including quartz, feldspar, muscovite and tourmaline with sparse biotite and grey slate/siltstone fragments. Muscovite is more abundant.

Matrix: creamy-white clay body with some fine-grained quartz and sparse finely divided muscovite.

Comment

These two samples were chosen from many tiles of the same fabric type; their clay and temper are so similar to one another that it may be presumed that they come from the same kiln source.

Their unusual cream- to white-firing fabric clearly shows that they have a different clay source from the samples of the other series. Such pale-firing clays are characteristic of the Tertiary ball clay deposits of Devon and are extremely rare in Cornwall. One small deposit of such Tertiary clay and sand is, however, exposed in the River Ottery, a tributary of the Tamar, where it flows through Werrington Park, about 1.6 km north of the priory (at SX 337866–340867) and in a stream about 1 km to the south (SX 344860–349386). This deposit was described for the first time as recently as 1982 (Freshney *et al* 1982), but was evidently known previously: in 1928 it was worked in a small pit near Dutson, producing bricks for local use (at SX 344862; *ibid*). As these clays are naturally exposed in stream banks to the east of Dutson, they are likely to have been known long before that. When test-fired, a mixed sample of these clays had a white to slightly off-white colour; they are almost certainly the source of the medieval floor-tiles of Series 2.

The most likely source of the tempering sand for these tiles is the River Lyd. The rarity of mica is unusual. Only the headwaters of the Lyd drain from the Dartmoor granite; this would account for the relatively low proportion of granite-derived minerals in the sand compared with sedimentary-derived fragments. Other immediately local rivers do not drain from the granite.

The granite-derived fabrics

Sample 3: floor-tile fragment

Hard-fired, pale pink oxidised to light grey reduced, 17mm thick. Inlaid white slip (*fleur de lis* fragment?) on upper face, with iron-speckled

brownish-green lead glaze over body, blotchy dark yellow over slip. Underside incorporating lump of slip clay(?), and with colourless glaze. Temper forms about 20 per cent of the fabric.

Quartz: transparent to translucent colourless to white, angular to sub-angular, very rarely well-rounded, 0.1–2mm, rare white vein quartz up to 3mm and one tabular fragment, 11mm.

Rock fragments: sandstone, light grey fine-grained quartzose, sub-angular to sub-rounded fragments, 1–4mm; siltstone, medium-grey finely micaceous sub-angular to rounded oblate, 1–2mm.

Fused fragments: dark grey to black vitreous, angular to well-rounded oblate fragments some with a finely vesicular, apparently partly fused, interior. Some appear as black spherical glassy bubbles, 0.2–3.5mm.

Feldspar: white to translucent, angular to sub-rounded grains, 0.1–1mm.

Mica: rare altered reddened cleavage flakes, up to 2mm.

Slip: contains very fine-grained colourless angular quartz, up to 0.05mm.

Comment: An unusual temper with a granite and country rock-derived stream sand component, together with vesicular partially fused fragments. Their source is uncertain, but as the tile matrix shows no evidence of particularly high-temperature firing, it seems likely that they are kiln cinder debris.

Sample 4: Lawrence House Museum acc 1534-1984

Floor-tile. Moderately hard-fired, pink oxidised fabric, the upper surface with inlaid white slip. Temper forms 5–10 per cent of the fabric.

Quartz: transparent to translucent colourless angular to sub-angular grains, 0.1–2.1mm.

Feldspar: a scatter of white angular to sub-rounded grains, 0.2–1.8mm.

Rock fragments: a scatter of red and grey sub-rounded oblate slate/mudstones, 0.5–2.0mm.

Tourmaline: sparse black angular grains, 0.1–0.5mm.

Mica: rare cleavage flakes of muscovite and biotite, up to 0.6mm.

Comment: A sparse temper with granite-derived inclusions intermixed with slates/mudstones.

Sample 5: floor-tile at Lawrence House Museum

Corner fragment of a floor-tile, oxidised outer surface, medium-grey reduced core, the upper surface split off, the bevelled edges with smudges of white slip and glaze spots; the underside has been laid on a bed of sand. Temper forms 30–40 per cent of the fabric.

Quartz: abundant angular to sub-angular and rarely sub-rounded grains, 0.1–1.8mm.

Feldspar: white, soft altered and hard translucent cleaved grains, 0.1–1.2mm.

Mica: Biotite, cleavage flakes, 0.8–1mm, rarely 1.6mm.

Muscovite: cleavage flakes, 0.2–0.4mm.

Tourmaline: sparse black sub-angular grains, 0.1–0.2mm.

Composite grains: quartz/biotite, quartz/feldspar grains, 0.8–1.2mm.

Rock fragments: slate, rare reddish brown and grey sub-angular to rounded fragments, 0.8–2.1mm.

Comment: A tile with a granite-derived sand temper generally similar to the ridge tile no. 6 below.

Sample 6

Ridge tile with moulded crest. Oxidised surfaces with medium grey reduced core. Temper about 30 per cent in the fabric, with sanded surfaces.

Quartz: translucent to transparent, colourless angular to sub-angular and sometimes sub-rounded grains, 0.1–1mm.

Feldspar: soft white altered sub-angular grains; translucent to white less altered grains, some showing reflective cleavage surfaces, 0.1–1.2mm.

Mica: Biotite, a scatter of dark brown cleavage flakes, 0.1–0.8mm.

Muscovite: fine cleavage flakes in the matrix, mainly less than 0.05 mm.

Tourmaline: black angular grains, 0.2 mm.

Rock fragments: rare reddish-brown, tabular and rounded, micaceous slate fragments, 0.8mm and 2.5mm.

Comment: A granite-derived temper, sourced from stream sand outside the granite contact zone. The relatively well-sorted nature of the sand suggests some form of preparation such as sieving.

General comment on the granite-derived fabrics

The floor- and ridge-tile fragments examined show wide variations in temper and firing, although they share the common element of tempering sand composed of a mixture of inclusions derived in varying proportions from the Dartmoor granite and the local country rocks. This could indicate different manufacturing sites or different production batches. The predominantly granite sands could have been dug from the beds of the rivers Tavy or Walkham, which have extensive headwaters on the Dartmoor granite sand; collection at different times could account for the varying proportions of granitic and country rock elements. If these rivers are the sources of the tempering sand, the estuarine sediments of the Lower Tavy and Tamar could have been the sources of clay.

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References

- Allan, J P, 1984. *Medieval and post-medieval finds from Exeter*, Exeter Archaeological Rep, **3**, Exeter (University and City Council)
- Allan, J P, 2009. *Notes towards an architectural history of Launceston Priory*, Exeter Archaeological Rep, **09.58**
- Allan, J P, 2017a. Exeter Cathedral and church architecture in Cornwall in the early 14th century, in Holden 2017, 49–64
- Allan, J P, 2017b. The building stones of Norman Devon, *Devon Building Group Newsletter*, **35**, 31–42
- Allan, J P, and Blaylock, S R, 1991. The structural history of the West Front, in Kelly 1991, 94–115
- Allan, J P, Blackmore, S, and Passmore, A J, 2010. Archaeological investigations around Crediton parish church, *Proc Devon Archaeol Soc*, **68**, 113–98
- Allan, J P, and Blaylock, S R, 2016. The architectural fragments, in Cole 2016, 89–100
- Allan, J P, and Blaylock, S R, 2018. The architectural fragments, in Brown 2018, 217–42
- Allan, J P, Henderson, C G, and Weddell, P J, 2016. A summary of the archaeological evidence for the late medieval friary, in Orme 2016, 235–51
- Allan, J P, and Keen, L, 1984. The medieval floor-tiles, in Allan 1984, 232–47
- Allan, J P, and Silvester, R J, 1981. Newenham Abbey, Axminster, *Proc Devon Archaeol Soc*, **39**, 159–71
- Ayers, T, and Tatton-Brown, T, 2006. *Medieval art, architecture and archaeology at Rochester*, British Archaeological Association Conference Transactions, **28**
- Beacham, P, and Pevsner, N, 2014. *The buildings of England: Cornwall*, New Haven and London (Yale University Press)
- Bishop, H E, and Prideaux, E K, 1922. *The building of the Cathedral Church of St Peter in Exeter*, Exeter and London (Townsend).

- Brown, S W, 2011. Exeter Cathedral Dogwhipper's Room: Archaeological Recording, Stewart Brown Associates unpublished report, copy in Exeter Cathedral Library & Archive
- Brown, S W, 2018. *Excavations and building recording at Buckfast Abbey, Devon, 1984–2017*, Devon Archaeol Soc Occasional Paper, **21**
- Cannon, J, and Williamson, B, 2011. *The medieval art, architecture and history of Bristol Cathedral: an enigma explored*, Woodbridge (Boydell)
- Cole, D, 2016. Excavations at Glasney College, Penryn, *Cornish Archaeol*, **55**, 65–117
- Coleridge, F G, and Hayward, J, 1842. An account of the church of Ottery St Mary, *Trans Exeter Diocesan Architect Soc*, ser 1, **1**, 3–63
- Draper, P, 2006. The late twelfth-century east end of Rochester Cathedral, in Ayers and Tatton-Brown 2006, 97–113
- Eames, E S, 1980. *Catalogue of medieval lead-glazed earthenware tiles in the British Museum*, London (British Museum)
- Erskine, A M, ed, 1983. *The Accounts of the Fabric of Exeter Cathedral, 1279–1353. Part 2: 1328–1353*, Devon & Cornwall Rec Soc, new ser, **26**
- Forde, D, Munby, J and Scott, I R, 2019. *Torre Abbey, Devon. The archaeology of the Premonstratensian abbey*, Oxford (Oxford Archaeology monogr, **29**)
- Gossip, J, 2002. *St Thomas Priory, Launceston, Cornwall*, Truro (Cornwall Archaeological Unit, report 2002R004), available online at: http://map.cornwall.gov.uk/reports_event_record/2002/2002R004.pdf
- Gossip, J, 2011. *Launceston Priory, Launceston, Cornwall: clearance and archaeological recording in advance of consolidation*, Truro (Historic Environment Projects, Cornwall Council; report 2009R047), available online at: <https://doi.org/10.5284/1008979>
- Hingeston-Randolph, F C, ed, 1892. *The register of Walter de Stapeldon, Bishop of Exeter*, London and Exeter (G Bell and Sons)
- Hingeston-Randolph, F C, ed, 1897. *The register of John de Grandisson, Bishop of Exeter. Part II, 1331–1360*, London and Exeter (G Bell and Sons)
- Holden, P, ed, 2017. *New research on Cornish architecture: celebrating Pevsner*, London (F Boute)
- Holdsworth, C, 1999. Ecclesiastical institutions in 1086 and monastic houses c 1300, in R Kain and W Ravenhill, eds, *Historical atlas of South-West England*, Exeter (University Press), 206–11
- Hull, P L, 1987. *The cartulary of Launceston Priory*, Devon and Cornwall Record Society, new ser, **30**
- Jansen, V, 1991. The design and building sequence of the eastern area of Exeter Cathedral, c 1270–1310: a qualified study, in Kelly 1991, 35–56
- Keen, L, (ed) 1997. *Almost the richest city: medieval art and architecture at Bristol Cathedral*, British Archaeological Association Conference Transactions, **19**
- Keen, L, 2019. Ceramic paving tiles, in Forde *et al* 2019, 215–30
- Kelly, F, ed, 1991. *Medieval art and architecture at Exeter Cathedral*, British Archaeological Association Conference Transactions, **11**
- Morris, R, 1997. European prodigy or regional eccentric? The rebuilding of St Augustine's Abbey Church, Bristol, in Keen 1997, 41–56
- Orme, N, 2007. *Cornwall and the Cross: Christianity 500–1560*, Victoria County History: England's Past for Everyone, Chichester (Phillimore)
- Orme, N, 2010. *The Victoria Histories of the Counties of England: A history of the county of Cornwall II: religious history to 1560*, Woodbridge (Boydell and Brewer)
- Orme, N, 2016. The Franciscan friars of Exeter, *Proc Devon Archaeol Soc*, **74**, 217–54
- Paley, F A, 1865. *A manual of Gothic mouldings with directions for copying them and determining their dates*, 3rd edn, London (Van Voorst)
- Peter, O B, 1889. *Launceston Priory: the substance of a lecture, 7th January, 1889*, Launceston
- Peter, O B, 1892. Excavations on the site of Launceston Priory, *Jnl Roy Inst Cornwall*, **11**, 1–6
- Peter, O B, 1893a. Note of further excavations on the site of Launceston Priory, *Jnl Roy Inst Cornwall*, **39**, 249–51
- Peter, O B, 1893b. Launceston Priory: some interesting particulars, *Western Weekly News*, 22 July 1893, reproduced as Notes on Archaeology and Kindred Subjects: Launceston Priory, *The Reliquary and Illustrated Archaeologist*, **1** (1894), 113–16
- Peter, O B, 1896. Notes on encaustic tiles and the designs portrayed on them, particularly with reference to recent discoveries at Launceston Priory, *Archaeol Cambrensis*, 5 ser, **13**, 307–14
- Peter, O B, 1910. Launceston Priory, Cornwall, *Jnl Roy Inst Cornwall*, **56**
- Prior, E S, 1899. *A history of Gothic art in England*, London (G Bell and Sons)
- RCHME, 1970. *An inventory of historical monuments in the county of Dorset. Volume 3, Central Dorset, part 2*, Edinburgh (HMSO)
- Sekules, V, 1991a. Early 14th-century liturgical furnishings, in Swanton 1991, 111–15
- Sekules, V, 1991b. The liturgical furnishings of the choir of Exeter Cathedral, in Kelly 1991, 172–9
- Sharpe, E, 1849a. *A treatise on the rise and progress of Decorated window tracery in England*, London (Van Voorst)
- Sharpe, E, 1849b. *Decorated windows: a series of illustrations of the window tracery of the Decorated style of ecclesiastical architecture in England*, London (Van Voorst)
- Slade, H G, 1983. [Summer meeting at Weymouth] Milton Abbey, *Arch Jnl*, **140**, 61–3

- Street, G E, 1853. On the distinctive features of the Middle Pointed churches of Cornwall, *Trans Exeter Diocesan Architect Soc*, ser 1, **4**, 86–102
- Swanton, M, ed, 1991. *Exeter Cathedral: a celebration*, Exeter (Wheatons)
- Taylor, R T, 2010. Petrological study of medieval floor-tiles, in Allan *et al* 2010, 167–8
- Toulmin Smith, L 1907. *The itinerary of John Leland in or about the years 1535–1543*, vol 1, London (George Bell & Son)
- Wills, A, 2001. *Launceston Priory 1126–1539*, Lawrence House Museum monogr, **10**, Launceston
- Wilson, C, 2011. Gothic metamorphosed: the choir of St Augustine’s Abbey in Bristol and the renewal of European architecture around 1300, in Cannon and Williamson 2011, 69–147

On the waterfront: excavations at Quay Street, Lostwithiel, Cornwall, 2002

JAMES GOSSIP

with contributions from

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In 2002 archaeological recording was carried out on a site at Quay Street, Lostwithiel. Excavation revealed a series of probable riverside revetment walls constructed as land was reclaimed and the river silted up. This process of land reclamation progressed eastwards over time, away from the medieval street frontage and towards the modern course of the river. Reclamation material comprised building rubble and domestic rubbish, with the first reclamation episode probably taking place as early as the fifteenth century. More substantial walls and floors associated with late medieval pottery were recorded closer to the street frontage, probably representing late medieval structures.

Petrological and chemical analyses of pottery recovered during the investigation, and comparisons with wares from other sites, indicate that Lostwithiel-made pottery was distributed widely across eastern Cornwall during the medieval period. Chemical analysis demonstrates that Lostwithiel was the sole source of a series of coarseware samples found at Tintagel. It is very probable that Bunning's Park-type ware, hitherto thought to be distinct from Lostwithiel wares, was also produced in the town.

In May 2002 the Historic Environment Service, Cornwall County Council (now Cornwall Archaeological Unit, Cornwall Council), was commissioned by Gardiner Theobald Management Services to undertake archaeological recording work at a former garage site in Quay Street, Lostwithiel, in advance of development of a new Co-op store. The site is located in the heart of the medieval town, opposite the Freemason's Hall which forms part of the range of Grade I Listed medieval administrative buildings now known as the Duchy Palace (Fig 1).

Traces of walls possibly representing part of a medieval quay had been noted beneath the forecourt of the garage (Sheppard 1980) and again to the south of the site, where a sequence of riverside structures has been recorded with large quantities of slate and pottery wasters used

as hardcore for land reclamation (Rose 1982). The site was therefore considered to have high potential for important buried archaeological remains.

The site lies close to the west bank of the River Fowey, centred on NGR SX 10503 59716 (Fig 1). Solid geology in this area is Lower Devonian Meadfoot Beds (slate, grit and thin limestone) and is overlain by head deposits and alluvium in the river valley (Geological Survey of Great Britain 1974, sheet 348).

Historic background

[Based on material in the excavation archive report (Gossip 2007), including historical research by Dr J Mattingly (2007), with additions.]

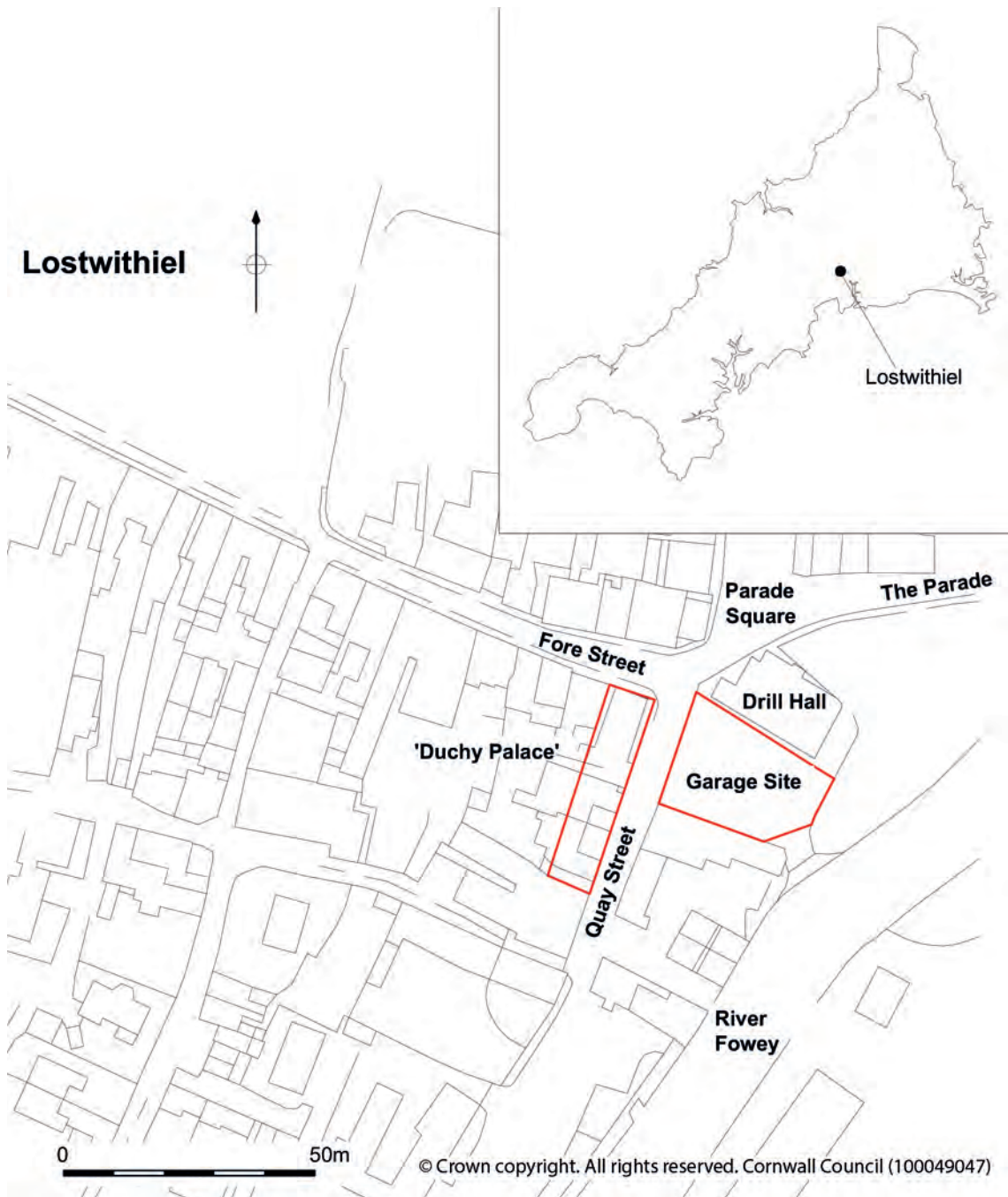


Fig 1 Quay Street, Lostwithiel: site location.

Lostwithiel became a borough in about 1194, when a market is mentioned for the first time (Sheppard 1980, 39; Polsue 1870, 175–6; Letters 2013). It was noted as an important port in 1205 and in 1269 the borough became the administrative centre for the Earldom of Cornwall; an administrative complex, now known misleadingly as the Duchy Palace, was erected on ground acquired by 1291 (Sheppard 1980, 39). The Earldom was succeeded by the Duchy of Cornwall in 1337 (Fraser 1993, 23–4; Kowaleski 2001, 7). Before 1315 Lostwithiel was the sole coinage town for tin in Cornwall (Hext 1891, 22), and until various dates in the post-medieval period the assize courts, county courts and county elections were also held there (Berry *et al* 2008, *passim*).

A riverside quay was extant by 1291 (Sheppard 1980, 39) and the medieval Haveners' accounts for Lostwithiel include frequent references to rollage, a 'payment for rolling casks of wine from their landing place on the shore to the cellar for storage' (Kowaleski 2001, 325). Medieval imports to Lostwithiel included wine from Bordeaux, salt, iron, corn, pitch, dried fruits and garlic, while exports comprised tin, cloth, cured fish, cheese, salted hogs, hides and pottery (Fraser 1993, 25; Douch 1969, 34). However, trade was adversely affected by both the building of a bridge over the Fowey *c* 1280 and by tin streaming further upstream, both of which caused silting of the river. In 1352 tin workings were blamed for ruining the fishery and mills at Lostwithiel and in 1357 for ruining the haven of Fowey (*Reg Edward Black Prince*, 1931, II, 26, 121). In the 1450s stone for repairs to the Great Hall of the Duchy complex was brought by barge from Pentewan to St Winnow and then transhipped to a 'small barge' to be brought upstream to 'Courteys More', from where it was carried to the town (Whitley 1912–13, 228). Leland noted about 1540 that '[ba]rges yet cum [with] marchanties (merchandise) [with]in half a [mile] of Lostwithiel' (Smith 1964, I, 206), but Camden reported in the early seventeenth century that the river could hardly bear 'the least barge that is' (cited in Sheppard 1980, 39). Nonetheless, a number of quays on the river are recorded in eighteenth- and nineteenth-century documentary sources and some river trade evidently continued.

Lostwithiel was a centre for pottery production from the medieval period into the nineteenth century (Douch 1969; Allan, below). There have been several finds of pottery wasters in the area,

particularly on the lower slopes of the steep east-facing hillside on the north and west sides of the town (Miles 1976; 1979; Cornwall Historic Environment Record (HER) MCO 907; 23373; 26739). Large quantities of medieval and post-medieval pottery have previously been recovered during archaeological recording in the Quay Street area (HER MCO 908; CCRA 1982, 10–11; Rose 1982; notes by John Allan in HER information file).

The history of Quay Street and the former garage site are traced in the archive report (Mattingly 2007) and summarised here. After the building of the administrative offices for the Earldom in the late thirteenth century the site formed part of the river frontage and possibly a quay for the complex. By 1549 at the latest, the plot was in the hands of the knightly Curteys family, who also owned a quay downriver at Pill. When the Curteys died out in the male line in 1606, the property passed to Edward Bere of Totnes and by the mid-seventeenth century may have come into the hands of the Robartes family of Lanhydrock.

A mid-eighteenth-century map shows an inlet from the River Fowey labelled 'Dung Pool' dividing the area on the east side of Quay Street fronting the Duchy Palace complex from the Parade to the north east (reproduced in Berry *et al* 2008, 33). It has been suggested that the inlet may have been a surviving portion of the tail race of a medieval mill (*ibid*), although excavated evidence for the river having formerly extended over the southern part of the garage site makes this interpretation less tenable (below). The same map shows the garage site with one or two small buildings on the western frontage to the street with the land to the rear noted as 'Herb Gardens granted by Lease 17 June 1689' (*ibid*). A map of 1834 (Fig 2) shows a block of buildings along the street frontage of the site with a small rectangular structure – perhaps a jetty – projecting into the dung pool inlet on the waste ground to the east. A contemporary sketch by George Bell Lawrance shows a garden gate and wall at the northern end of the site (Fraser 1993, frontispiece).

The Ordnance Survey 1st edition 25in: 1-mile map (surveyed 1880) shows two properties on the street frontage of the site. By *c* 1918–19 it had been sold by Lord Robartes to E H Dingle. The Co-operative Society purchased the main part of the site before 1939 and ran a store there until at least 1946. Subsequently the site became a garage.



Fig 2 Detail from 1834 map of the Earl of Mount Edgcumbe's property in Lostwithiel (Archives and Cornish Studies Service ME/2399). Buildings are shown on the Prison Lane (now Quay Street) frontage, probably those also depicted on the Ordnance Survey 1st edition 25in map (Fig 3) and represented by wall 301 (Fig 4). The inlet off the river stretching as far as The Parade can be clearly seen and includes a small structure, probably a jetty. This inlet became cut off from the river and known as the 'dung pool'. (With kind permission, Archives and Cornish Studies Service).

Archaeological recording

The archaeological work on the site aimed to record all archaeological features, layers and finds affected by development. In particular, it was hoped that a better understanding could be gained of medieval activity in the area and early use of and infilling along the waterfront. The work was undertaken initially as a watching brief, with an archaeologist present during groundwork excavations to identify and record any archaeological features, layers and finds exposed during the site works.

It was agreed on completion of the initial watching brief work that two trenches would be excavated along the line of a ground-beam trench running centrally east – west through the site. In addition, all other ground beam trenches and stanchion bases were to be inspected and all archaeological deposits recorded.

The eventual extent of this programme of archaeological recording was a 20 per cent sample of the development site (Fig 4). The areas of archaeological intervention reported on in this paper were:

Trench excavations: Trenches 1 and 2 aligned approximately east – west, providing a section through the site. Trench 3 was a small intervention to the north of trench 1, which merged into watching brief 7 (WB7). Trench 4 merged with watching brief 5 (WB5).

Ground beam excavations (GB1 – GB5): additional excavations for ground beams (the 'footprint' of the building carried out across the site).

Watching brief excavations (WB1 – WB7): additional small trenches excavated adjacent to ground beam trenches.

Results of the excavation

Excavation trenches (Fig 4)

Trench 1: walls 504, 540, 512

The principal features recorded in trench 1 were walls 504, 540 and 512 (Fig 4). Each of these had been sealed beneath layers of overburden representing successive dumped deposits, culminating with the concrete surface of the garage site. Wall 504 was constructed from faced killas rubble; it was 0.62m wide and stood 0.55m high and was sealed beneath modern overburden (573) and a layer of compacted silt clay (574) which was perhaps imported prior to redevelopment of the site in the twentieth century. Below layer (574) the construction cut [576] for wall 504 could be clearly seen, cutting through deposits (500) and (505), level layers of sandy clay lying above a thin layer of hard red clay (539) which had also been truncated by construction of wall 504.

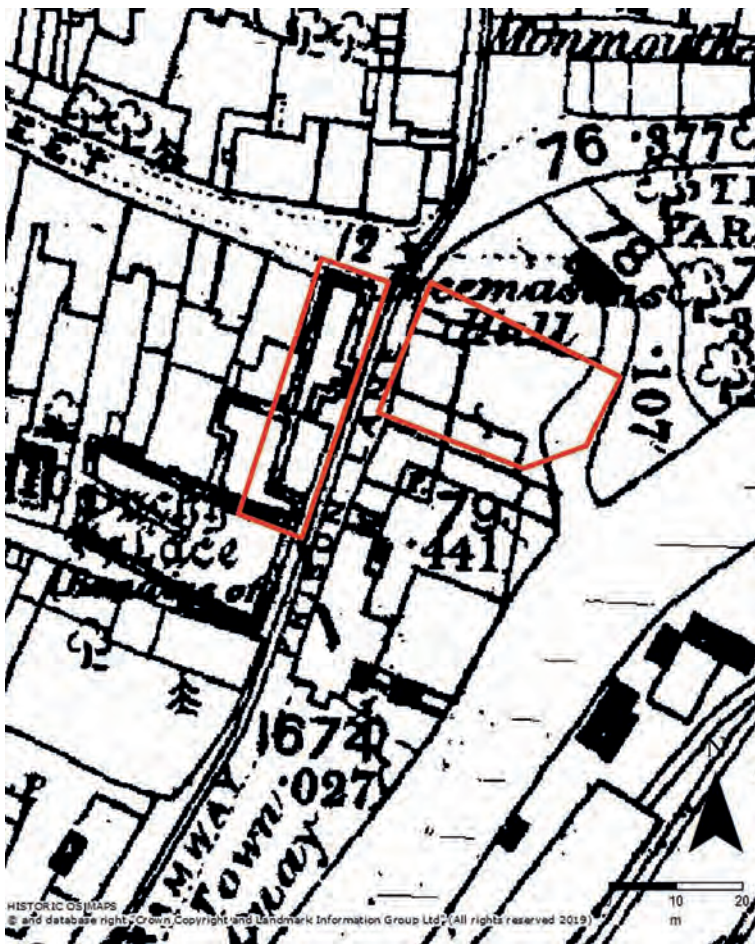


Fig 3 Detail from Ordnance Survey 1st edition 25in: 1 mile map, surveyed in 1880.

Directly beneath wall 504 and used as its foundation was the wider and more substantial wall 540, the location of which must have been known to the builders of wall 504. Wall 540 was 1.25m wide and survived to a height of at least 1.6m (the base of the wall was not reached). Beneath a hard clay layer (539) and abutting the top of the western side of wall 540 was (577), a compact floor comprising lime mortar and crushed shillet. This in turn sealed a friable layer of crushed slate (579). Wall 540 apparently returned to the west against the northern baulk of the trench, running towards the modern road. Excavation of the trench did not advance below this depth which at this point was 1.1m below the modern surface.

On the eastern side of wall 504/540 the pattern was different, comprising a number of stony

clay layers accumulated or dumped between this wall and wall 512, described below. Abutting the eastern face of wall 540 was deposit (507) / (538), irregularly laid slate slabs forming a rough paved surface between walls 512 and 504, 0.9m below the surface. A fragment of decorated ridge tile was recovered from this deposit. Below this was a band of dark brown silt (534) / (543) 0.32m thick which produced pottery consisting entirely of late medieval Lostwithiel wares (Appendix 1, sherds 1–3, below), and layer (545) which produced similar material. Underneath this was a thin band of crushed slate (569) above a layer of gravel (570) at least 0.4m thick. These deposits were accumulated against the eastern side of wall 540 and probably pre-date walls 504 and 512; they appeared to have been cut through by [546], a possible construction cut for wall 512.

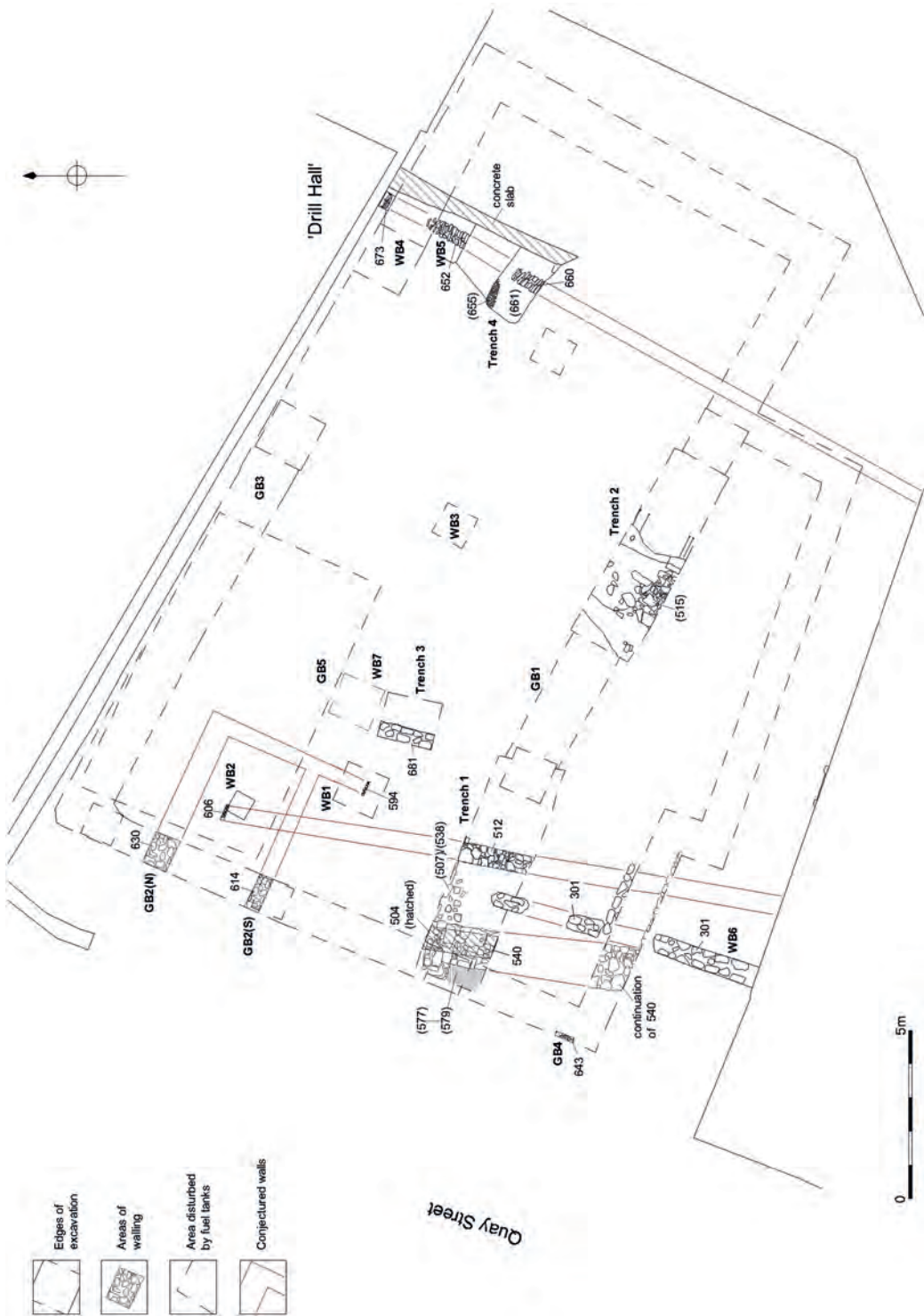


Fig 4 Plan of excavated areas and features. (© Cornwall Archaeological Unit.)

To the east of walls 504 and 540 was 512, an unmortared killas rubble wall 0.6m wide and excavated to a depth of 1.4m, although the base of this wall was not reached (Fig 5). The truncated top of the wall was encountered 0.65m below the modern surface. Its western face was vertical and evenly dressed whereas its eastern face leaned to the east and was of more ragged construction. A series of deposits appear to have accumulated against this eastern face including, at the bottom of the trench, stony clay layers (537) and (536), a 0.6m thick homogenous reddish-brown silt clay layer (535), and, above this, a dark brown silt clay deposit (510) containing fifteenth- or sixteenth-century Lostwithiel ware sherds and a pre-1650 clay pipe stem (Thorpe, below). Compacted above (510) was a deposit of rubble (647), perhaps collapse from the wall, and above this

were further deposits, including (505) (containing fourteenth- to fifteenth-century sherds), (563) and (560), stone and rubble spreads and dumps which in turn had been truncated by service trenches [565] and [561].

Wall 512 appears to have extended to the north north east and was recorded in WB2 as 606. It was not however recorded in the ground beam trench to the south of trench 1.

Trench 2: cobbled surface (515)

Trench 2, extending eastwards from GB1, revealed a sequence of deposits. Beneath the stony mixed overburden (513) (immediately underlying the modern concrete surface) and brown silt clay (514) was cobbled surface (515). This had been disturbed on its eastern side where (513) became deeper.



Fig 5 Walls 540 and 512 revealed in trench 1. (Photograph: © Cornwall Archaeological Unit.)

The cobbled surface sealed six deposits apparently representing successive episodes of dumping and which contained intrusive modern material. The trench was excavated to a depth of 1.4m. Sherds of Lostwithiel ware pottery were recovered from deposit (523), the lowest recorded deposit in the trench.

Trench 3 / watching brief 7: wall 681

Trench 3 was excavated immediately to the south of WB7. A number of layered deposits were recorded below a modern concrete wall (695). Beneath the concrete, silt clay layers (683) and (684) overlaid surface (686) which comprised pebble cobbles in a clay matrix 0.12m thick. This overlay a layer of mortar and fragmented stone (687). Below this was a thin silt clay layer (688) and a mid orange-brown silty deposit (682) at least 0.45m thick. This layer sealed wall 681, projecting from the western section of the trench, which incorporated a sherd of pottery dated to the fifteenth or sixteenth centuries (Thorpe 2007). The wall was constructed from killas rubble with a dressed and coursed eastern face. The top of the wall survived 0.78m below the surface and it stood at least 0.25m high (the trench was not excavated to the base of the wall). Wall 681 was aligned approximately north-south, parallel with walls 512, 504 and 540.

Trench 4: wall 660, cobbled surface (655)

This trench was located close to the eastern boundary of the property, just to the south of WB4, and merged with WB5. A roughly coursed rubble killas wall 660 surviving to a height of 0.6m represented the continuation of wall 652 observed in WB5. This wall was also seen in WB4 to the north as 673. The wall had largely collapsed.

On the western side of the wall a dark grey silt clay (656) had accumulated, overlying (655), a cobbled surface comprising rounded pebbles set into a clay matrix. Cutting this surface was the construction cut [664] for wall 660 / 652, which was filled by grey silt clays (654) and (653). Sealed by the cobbled surface and cut by the wall construction were deposits (650) / (651), a layer of clay and vertically set killas stones forming a surface, overlying a homogenous grey clay (661), and, below this, another deposit of vertical stones. Deposit (650) contained a sherd of fifteenth- to mid-sixteenth-century Lostwithiel ware pottery but it is possible that this was residual.

Ground beam trenches (Fig 4)

Ground beam 1 (GB1): cobbled surface (582)

GB1, located between trenches 1 and 2, revealed a series of horizontal deposits including silt clays



Fig 6 Wall 660 revealed in trench 4. (Photograph: © Cornwall Archaeological Unit.)

(584) and (583), together 0.75m thick), which were overlain by a cobbled surface (582). These were truncated by cuts [585], a brick-lined tank containing deposits (586) and (587), and a drain-pipe trench [581]. The trench was excavated to a maximum depth of 1.2m.

Ground beam 2 south (GB2S): wall 614, river gravel (618)

The principal discovery in GB2 was wall 614, aligned east–west, perpendicular to the modern road. The wall measured 0.5m wide and stood at least 0.8m high and was sealed by a brown silty clay with large proportions of stone rubble (612). The top of the wall survived 0.16m below the stripped surface. The structure was well faced on both sides and was constructed of dressed killas blocks bonded with an earth and lime mortar. Below this were numerous deposits which were very different on either side of the wall. On the north side were bands of silt clays varying in colour, the uppermost of which, (615), was a greasy black charcoal-rich silt. This and the two deposits beneath it, (558) and (616), sloped up towards the wall face and appeared to have been dumped against it. Layer (617) below this is likely to represent a more gradual accumulation against the wall.

To the south of wall 614 above the base of the trench were a series of four thin horizontal layers, the lowest of which, (622), was crushed grey slate or shillet 0.3m thick. Above this were bands of clay (621) and (620), which were sealed by (619), a mortar and crushed shillet surface 0.06m thick. Layers above this, (618), (557) and (556), sloped down towards the wall and appear to have been tipped from the south. Deposit (618) was a 0.3m thick layer of fine river gravel and (557) and (556) were stony silt clays, probably all riverine deposits.

Ground beam 2 north (GB2N): wall 630, surface (628)

Opened 2.5m to the north of GB2S, this excavation revealed a series of horizontal layers sealing unmortared killas rubble wall 630, 0.9m wide, the truncated top of which was visible at a depth of 1.2m from the surface. The overlying deposits comprised modern hardcore and tarmac with a thin black silt lens (627) over mixed brown stony silt clays (625), (626) and (631). Immediately

overlying the wall was a deposit of crushed slate or shillet (629), above which part of a compacted lime mortar floor (628) survived (0.15m above the wall). All layers had been truncated by modern services.

Ground beam 3 (GB3)

Beneath modern overburden (633), four horizontally layered deposits comprising stony silt clays of varying colour were identified in this trench. The trench was excavated to a depth of 1.4m.

Ground beam 4 (GB4): wall 643, surface (648)

GB4 located to the south of trench 1 revealed a series of deposits overlying a killas rubble wall 643 aligned east–west, perpendicular to the modern road, 0.5m wide and 0.8m high (not fully excavated), the top of which was revealed 0.56m below the ground surface. Both faces comprised dressed stonework roughly coursed and it was covered by a single deposit (554) which, because it sloped downwards to the north, had apparently been deposited from the south. Thin horizontal layers to the north of the wall included (648), a shillet and mortar surface, possibly a floor which may have been contemporary with the wall.

A little further to the east was a continuation of wall 540 at a depth of 0.75m below the surface (see trench 1 above).

Ground beam 5 (GB5)

A series of undulating deposits comprising stony silt clays were recorded in an area adjacent to trench 3 where wall 681 was located; this wall did not extend into this trench.

Watching brief areas

Watching brief 1 (WB1): wall 594, river gravel (593)

In WB1, located 4m north of trench 1, the modern overburden comprised tarmac (588) over a layer of stone and concrete (589). Beneath that, a mid grey-brown silt deposit (590) sealed the top of wall 594. The wall was constructed from killas rubble blocks and stood at least 1.24m high and 0.5m wide. Only a very small section of the wall survived as it had

been truncated to the north and south, but it was clear that it had been aligned north east to south west. The mortar bonding had degraded.

On the wall's eastern side was a deep (1.2m thick) homogenous deposit of dark grey-brown silt clay and redeposited river gravels (591). Beneath this was a deposit of yellow gravel (593), probably a relict riverbed, upon which the wall had been founded. The western side of the wall was stepped out by 0.2m at a depth of 0.8m from the top of the wall. This side of the wall was covered by a brown-yellow silt clay (592) 1m thick. The trench was excavated to a depth of 1.7m.

Watching brief 2 (WB2): wall 606, floor (599)

WB2 was a small rectangular trench excavated 4.5m to the north west of WB1. Beneath modern overburden (595), cobbled surface (596) and a deposit comprising mixed stone and silt clay (597) was a blue-grey killas block wall 606. This was 0.62m wide and at least 0.7m in height and almost certainly represents a continuation of wall 512 recorded to the south in trench 1. The top of the wall was reached 0.7m below ground level and was abutted by a compact mortar floor (599) 0.06m thick. The wall above the level of floor (599) may have been demolished and levelled, resulting in mixed stone and silt clay deposit (597). To the east, below mortar floor (599), were five thin horizontal banded deposits comprising silt clays of varying colour. Beneath these was a thicker deposit of mid-brown silt clay. The trench was excavated to a depth of 1.5m.

Watching brief 3 (WB3)

This was excavated to a depth of 1m, 5m east of WB7. Three deposits were recorded, sealed by tarmac (607). The deepest of these was (610), a homogenous brown silt clay at least 0.55m thick. No other archaeological features were revealed.

Watching brief 4 (WB4): wall 673, wall 674

This section immediately north of WB5 revealed a continuation of wall 652, recorded here as 673. The wall was 0.6m wide and oriented north east to south west and was sealed beneath modern make-up layer (665). The wall was cut by wall

foundation [669], the northern boundary wall of the site. A concrete slab foundation (694) had been built up against wall 673 and extended to a depth of 1m below the surface, below which was a killas-built rubble wall 674 bonded with lime mortar, 0.7m wide and on the same alignment as 673. To the west of this wall were several banded horizontal layers: the uppermost three deposits (665), (666) and (672) comprised mixed brown and grey stony silt clays and below these were a sticky grey clay (678), fine grey silts (675) and (676) and a fine brown sandy gravel (677). Deposits (675) and above had been cut by [680], the construction cut for wall 652 / 673, while (676) ran underneath the wall. Deposits (672) (666) and (678) contained sherds of Lostwithiel ware pottery and are likely to represent basal deposits from the river prior to reclamation of this area.

The cobbled surface (655) recorded in WB5 to the south did not extend into this trench.

Watching brief 5 (WB5): wall 652

WB5 was located at the eastern end of the site, 4m to the south of the drill hall adjoining its northern side and merged with trench 4. Below modern overburden (658) was a deposit of stony clay overlying the top of a roughly coursed killas rubble wall 652 surviving to a height of 0.7m, 0.3m below the modern surface. Its western face was standing vertically but the eastern side of the wall had suffered considerable collapse; as the wall continued to the north east as 673 it can be assumed that the original width was 0.7m. No bonding material was evident, although it is possible that the mortar had eroded.

Watching brief 6 (WB6): nineteenth-century wall 301

This wall, aligned north north east – south south west and projecting from the southern boundary of the site, was revealed immediately (0.24m) below the modern concrete surface. It survived intermittently in three sections, the northernmost of which was recorded in trench 1 overlying deposit (574). It was constructed from dressed killas blocks bonded with a strong lime mortar. The wall was 0.6m wide and stood 0.25m high. It had been constructed directly on silt clay deposit (302).

The finds

C M Thorpe

An assemblage totalling 336 artefacts was recovered during the project, with 237 sherds of pottery, approximately 70 per cent of the collection, forming the largest component, together with metalwork, clay pipe, roof tile, bone and glass. A total of 95 artefacts (28 per cent) came from spoil heaps, or during clearance and cleaning, and were thus unstratified; the remainder came from recognisable features or layers. A complete list of the finds, by context, is included in the archive report (Gossip 2007).

The earliest identifiable material from the site is of medieval date (fourteenth to fifteenth century), a total of 25 sherds being recovered. These came from contexts (101), (402), (500), (501), (502), (505), (506), (532), (534), (543), (550), and (551), although those from contexts (402), (500), (501), and (506) were residual in nature.

Sherds corresponding to Bunning's Park / Stuffle ware form the largest part of the collection (but for reconsideration of this ware see Allan *et al* below). All vessels appear to be domestic coarse wares (cooking pots, jugs, cisterns). It is possible that all were manufactured locally in the Lostwithiel area.

There was a greater number of finds from the late medieval – early modern period (fifteenth to mid-sixteenth centuries), totalling 205 sherds (86 per cent of the collection). These were recovered from contexts (111), (112), (202), (302), (402), (414), (500), (501), (503), (504), (506), (508), (510), (523), (533), (536), (539), (545), (548), (554), (555), (559), and (650). Only the material from contexts (501), (506), (510), and (523) was clearly residual in nature, which suggests that the rest of these features most probably date from this period.

Lostwithiel ware dominates the collection, with only one unstratified sherd of an imported Saintonge vessel of late medieval type. Vessel forms are again predominantly domestic types that would have been found in any household.

This pattern of total domination of local ceramics to the virtual exclusion of other wares is not unusual; complete domination of the local market is also found in other major pottery production centres, including, for example, north Devon (John Allan, pers comm). Other sites of this period investigated in Cornwall, including Truro, St Michael's Mount and Tremough, near Penryn, show a greater variety of wares, including some

imported foreign vessels. Even on these sites, however, local Cornish wares predominate.

Activity on the site continued to the eighteenth century, although only 34 artefacts of this later period were recovered. Of note is the presence of North Devon coarseware, which forms around one-third of the assemblage. This marks the start of the decline of the Cornish ceramic industry, which was destined to be supplanted by cheaper mass-produced domestic coarse wares from north Devon, Somerset, Bristol, and Staffordshire.

There was practically no material evidence (other than from unstratified contexts) that can be attributed to the nineteenth and twentieth centuries. It seems that domestic waste produced by occupation of the site must have been dumped elsewhere.

Discussion

The investigations revealed features related to the use of the site over several hundred years. The earliest elements include wall 540, possibly part of a building sited on the medieval street frontage. This land, which belonged to the Robartes family in the eighteenth century, is depicted on the well-known Buck engraving of 1734 (Fig 7) and buildings are shown in this area (above). However, it is not known whether the walls recorded close to the street frontage related to these buildings. Dating evidence for the wall comes from dumped deposits (500) and (505), which were cut by its construction trench; these range in date between the fifteenth and sixteenth centuries (Thorpe, above) and wall 504, built on top of the more substantial 540, must therefore be later than this. A short distance to the east, wall 512 (continued to the north as 606) may have acted as a riverside wall behind these properties. A slate-paved surface (507), built between walls 504 and 512, lay above dumped deposits (534) / (543), which contained Late Medieval Coarse Wares (Lostwithiel ware) dating to the fourteenth or fifteenth centuries (Appendix 1, sherds 1–3, below).

Subsequent episodes of riverside reclamation are represented by successive episodes of dumping and another wall 681 constructed parallel with wall 512. A single sherd of fifteenth- to sixteenth-century Lostwithiel ware pottery was incorporated in the structure of 681 (Thorpe 2007), which must therefore be of that period or later.



Fig 7 The 1734 engraving by Nathaniel and Samuel Buck showing the ruins of the Duchy administrative buildings (Duchy Palace) and buildings on the foreshore of the River Fowey opposite what is now the Freemason's Hall. One of these may have belonged to the Robartes family of Lanhydrock, which held land here from the seventeenth to the nineteenth centuries. Fragments of walling revealed by the excavation (particularly (540) and its associated floor) may represent the remains of these buildings.

A further wall 660 / 652 / 673 revealed at the rear of the property retained dumped deposits and a cobbled surface (655) and represented the latest phases of land reclamation on the western edge of an inlet (Fig 2) which later became the 'Dung Pool'. Dating of this wall is again problematic because of a lack of stratified pottery; a single sherd of fifteenth to mid-sixteenth century Lostwithiel ware from deposit (650) (which was cut by wall 660 / 652 / 673) should not be seen as conclusive evidence of date. It is possible that the cobbles formed part of a yard, and that the wall was the riverside boundary relating to buildings shown on the 1834 map (Fig 2) and 1st edition Ordnance Survey map of c 1880 (Fig 3).

The investigations revealed deposits and structures consistent with the historical information and artefactual evidence, showing varied use and occupation of the site from the fourteenth or fifteenth centuries up to the present. The ceramic assemblage comprises a small but important collection of material which has allowed analysis of fabric and vessel forms, shedding further light

on what was the most substantial centre of pottery production in medieval Cornwall.

The earliest structural evidence on the site comprises walls and floors of buildings which were probably part of the medieval street frontage. Wall 540, with the associated mortar floor and slate floor foundations, appears to represent the corner of a building, perhaps even one of those represented on the Buck engraving of 1734 (Fig 7). Dating the structure is problematic, but pottery from deposits sealing both the floor and wall suggest a date in the fourteenth or fifteenth centuries.

Although much of the pottery in these dumped deposits could be residual, particularly in Lostwithiel where such a large quantity of waste material was available, no later artefacts were recorded alongside the medieval pottery. The late medieval date for the structure is therefore a confident one. It is possible that the walls running perpendicular to Quay Street on the north side of the site – 614 and 630 – also formed part of buildings on the late medieval street frontage. These buildings would have occupied a prime

location in the medieval town, with easy access to the river for trade.

Deposits to the rear of the buildings suggest successive phases of flooding, and it is likely that the River Fowey, at its tidal extent here, often lapped against these walls, building up layers of silt overlying clean river gravels. At some point a small area of land was reclaimed to the rear of the building represented by wall 540, and faced on the landward side by wall 512, perhaps in an attempt to formalise the shoreline with a usable quay. A quay in this area could have been developed for and used by the administrators of the Duchy buildings. The space between the walls of the building and quay was filled with successive 'dump' episodes and included sherds of Lostwithiel ware of fourteenth- to fifteenth-century date and an area of paving (538), probably part of the quayside surface.

The area to the east of wall 512 was further reclaimed subsequently. Again, this was achieved by the wholesale dumping of material, including discarded pottery and pot-wasters, in layers on the eastern side of the wall. One of these dumped layers, (510), contained re-deposited Lostwithiel ware of fifteenth- to sixteenth-century date and clay pipe stems, believed to pre-date 1650 (Thorpe 2007). A small section of the wall was recorded as 606 in WB2 close to the northern corner of the site, and it is assumed that this section of quayside walling extended across the entire plot. An area of mortar floor (599) associated with this section of wall suggests the presence of another structure. Another wall, 594, which was located in WB1 just east of the line of walls 512 and 606, may represent another riverside wall on a slightly different alignment.

A similar pattern was observed showing the accumulation of soils and dumping of deposits on the western side of wall 594, and riverine deposits (gravels and silts) on its eastern side. These were subsequently overlain by more dumped material as reclamation of land continued eastwards. Trench 3, a little further east again, revealed wall 681 parallel with 512. This too was overlain by dumped waste material containing pottery dated to between the fourteenth and seventeenth centuries and subsequent surfacing, including a cobbled surface (686) dating to some time after the seventeenth century.

Wall 301 and associated masonry appears to represent part of buildings along the frontage clearly shown on the nineteenth-century maps of

the site. A quay held by a Mr Hicks was recorded at the back of the property in 1839 (Mattingly 2007, 24), but continued silting of the river pushed its course further eastwards, leaving only a small inlet accessible to the site.

It is possible that features closest to the river, wall 660 / 652 and cobbled surface (655), were the latest phases of reclamation activity on the riverside (Figs 2 and 3). Reclamation of land and use of the site continued up to the edges of the small inlet from the River Fowey known as the Dung Pool shown on maps up to the 2nd edition Ordnance Survey 25in (revised 1905). It has been suggested that the Dung Pool could represent the remains of a tailrace associated with the fourteenth-century Prince's Mill (Berry *et al* 2008, 33). If this is the case it makes the interpretation of walls as post-fourteenth century riverside revetments problematic, although it is possible that successive flooding episodes following the fourteenth century could have made the dumping of material for land reclamation an ongoing necessity. The presence of riverine deposits across the site suggests that this is likely to be the case.

Appendix 1: The pottery from Quay Street, Lostwithiel, and its wider context

John Allan, with contributions from Roger T Taylor and Michael J Hughes

The pottery recovered from Quay Street in 2002 forms a fairly modest collection of 245 sherds with a wide chronological range from the fourteenth–fifteenth centuries to the nineteenth. There are no substantial stratified groups among these finds, and no internal dating evidence. There is nevertheless sufficient material here to present a range of the fabrics and vessel forms in use in the late medieval and early modern town. Since Lostwithiel was probably the most important pottery centre in Cornwall from at least the late thirteenth century until the final closure of its kilns after 1862, most of the sherds will have been made in the town. The opportunity has therefore been taken to set these finds in a wider context and to introduce the use of chemical analysis of the body clays of medieval and later pottery in Cornwall, starting the process of building up a database which promises to bring a new precision to ceramic studies in the county. Once more this approach has been combined with

formal analysis and with Dr Taylor's petrological study, which is greatly advancing the understanding of pottery of all periods in the south west.

Background

Since Leslie Douch published his paper 'Cornish earthenware potters' (Douch 1969), it has been evident that Lostwithiel was a considerable potting town. Douch found four definite records of medieval pottery production at Lostwithiel, the earliest being a group of references in the early fourteenth century (Douch 1969, 45–7), to which may now be added a fifth reference in the Caption of Seisin of the Duchy of Cornwall of 1337 (Hull 1971, 37). Douch assumed that a sixth reference to an individual named *le Poter* extended the history of production back to c 1200, but this man, a witness to a deed, may well have been a maker of metal rather than earthenware pots (*cf* Le Patourel 1968, 102).

Archaeological evidence for the Lostwithiel potteries was first identified by Trevor Miles in the 1970s; he described the local fabrics and published about 40 vessel forms from two different sites (Miles 1976; 1979). While recognising problems in dating such material, he suggested that both collections belonged broadly to the late fifteenth century. In the light of what is now known about south-west English pottery, the bowls in each collection (Miles 1976, 116, nos 3–5 and 9; 1979, 10 and 11) should be dated to the sixteenth century or even the early seventeenth (Allan 1984, 100–1), while the typical medieval cooking pot and jug forms which are strongly represented on each site (Miles 1976, 1–7, 14–16, etc; 1979, 1, 8, 12–14) are probably of (?late) fourteenth- or fifteenth-century date; contrast, for example, the forms from West Colliford (Litt and Austin 1989, 148–54). Each collection probably represents a spread of material covering at least the fifteenth and sixteenth centuries.

The publication of the thirteenth–fourteenth-century pottery from Bunning's Park (O'Mahoney 1989a) and the sixteenth-century pottery from West Colliford (Litt and Austin 1989) has provided the fullest local studies of ceramics in the Lostwithiel area. These sites lay on the fringe of cultivated land on Bodmin Moor, only 14 km (9 miles) from Lostwithiel. The town was shown to be the source of most of the pottery used at West Colliford in the sixteenth century. Unexpectedly, a different picture

appeared at Bunning's Park. Following detailed initial examination of inclusions and fabric textures, the local pottery excavated there was classified into five fabrics; thin-sectioning then showed that three of these (fabrics 1, 3 and 4) were variations of the same basic ware, accounting together for approximately 80 per cent of the total collection (fabric A, the variants now numbered A1, A3 and A4); the other two (2 and 5) were variations on a second fabric (fabric B, the variants now B2 and B5) (O'Mahoney 1989b). The petrological report indicated that there was not a good match to the samples then examined from Lostwithiel, and it was concluded that a different source or sources, presumably closer to the site – perhaps rural kilns on Bodmin Moor – was represented by the bulk of the collection. The term 'Bunning's Park ware' was coined to describe this material. Subsequent analyses of the collections from Davidstow Moor (O'Mahoney 1987) and Tintagel (*idem* 1989a) found that this same 'Bunning's Park-type' ware was by far the most common fabric at these sites.

Catalogue of selected material from Lostwithiel 2002 excavations (Figs 8 and 9)

Sherds 1–4 are unglazed, wheel-thrown Lostwithiel wares with thin bodies of late medieval type. Unless otherwise stated, all vessels are of Lostwithiel-type ware.

- 1–3. Vessels from context (534), a small fourteenth- or fifteenth-century group consisting solely of unglazed wheel-thrown Lostwithiel wares with thin bodies of late medieval type.
1. Jug with pinched spout and oxidised surfaces.
2. Overlapping sherds forming the upper half of the profile of a jar.
3. Jar rim, heavily sooted.
4. Shoulder or basal angle of a vessel with applied thumbed strips. It is uncertain which way up this sherd should be; it seems probable that it is a shoulder fragment, as drawn, since the applied strips show no signs of wear. Possibly a curfew. Context (543).
5. Jug body with rolled neck above two white-painted horizontal lines. The handle does not join but probably belongs. Context (202).
6. Jug handle. Context (302).

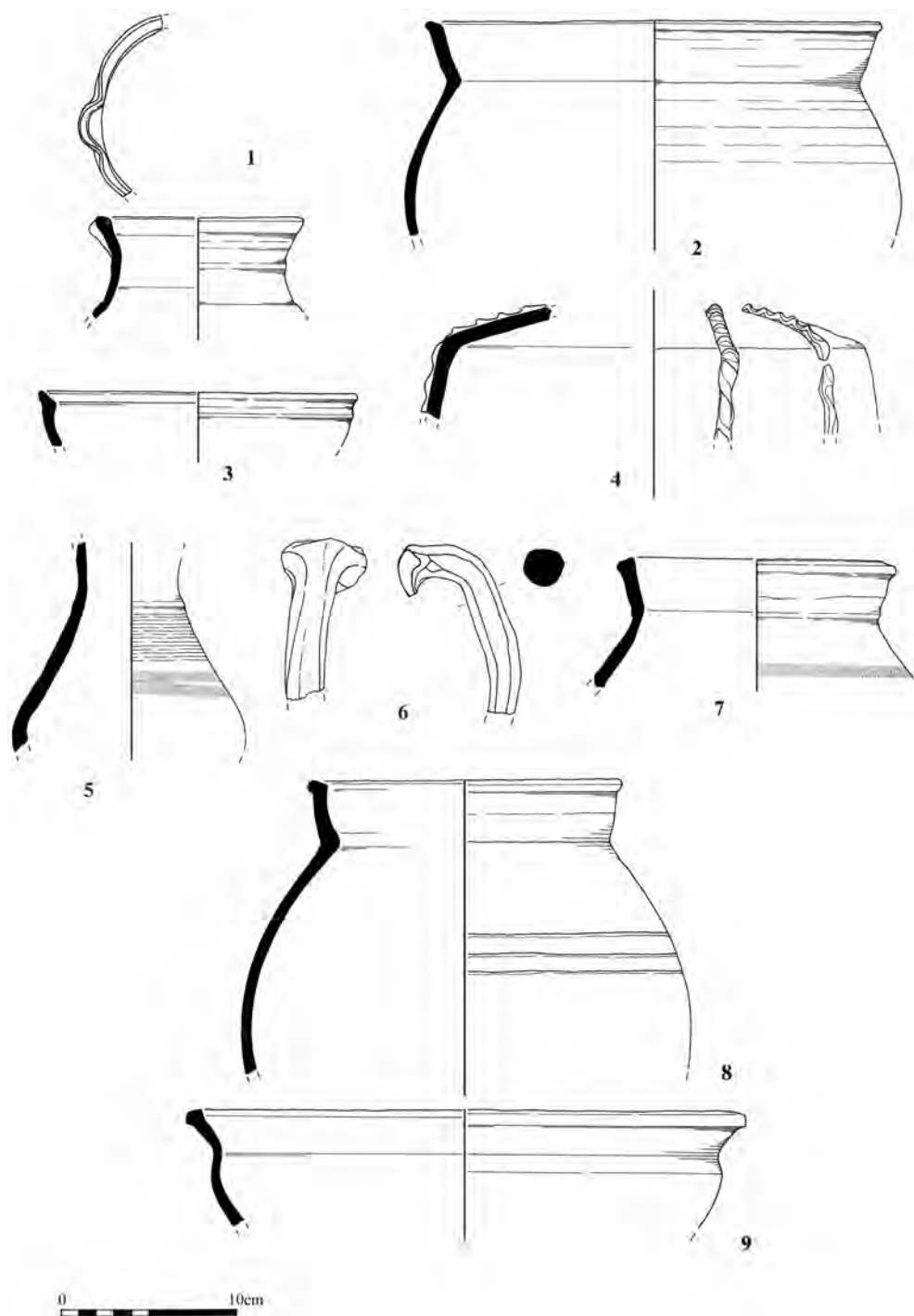


Fig 8 Illustrated pottery vessels 1–9 (scale $\frac{1}{4}$ actual size). (Drawing: Carl Thorpe.)

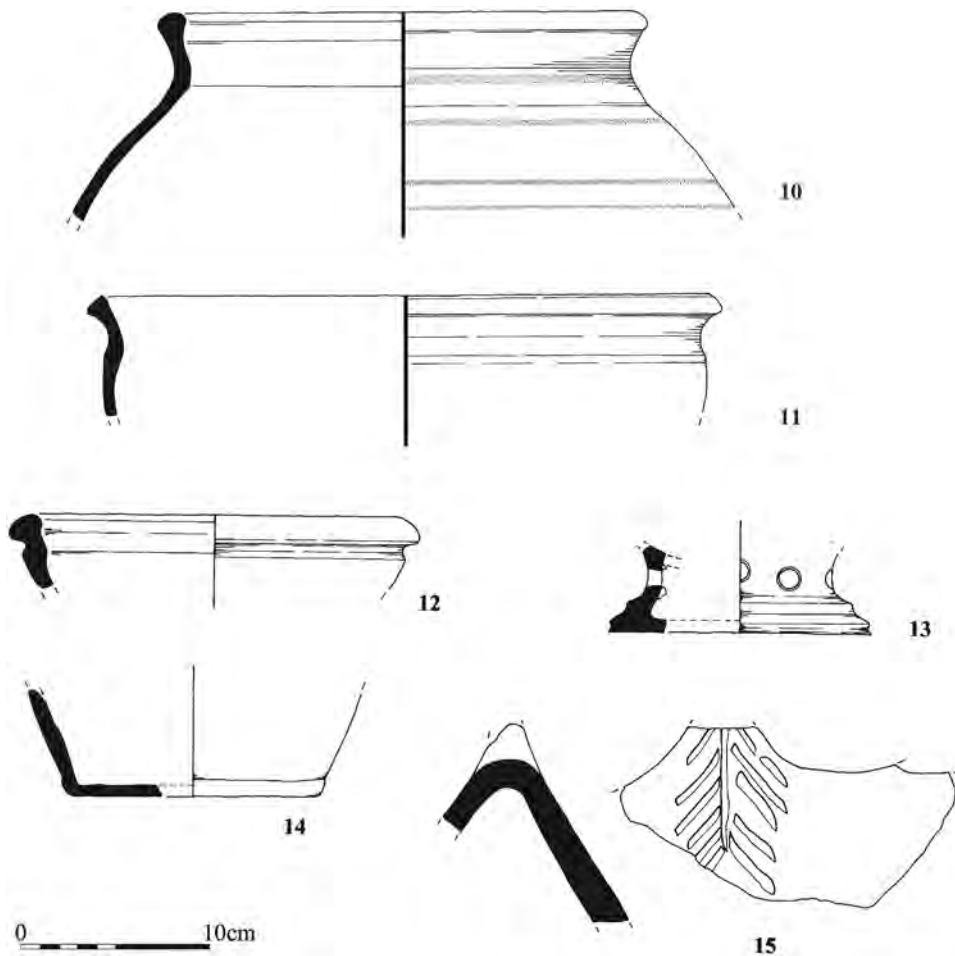


Fig 9 Illustrated pottery vessels 10-14 and ridge tile 15 (scale $\frac{1}{4}$ actual size).
(Drawing: Carl Thorpe.)

7. Jar / cooking pot with white-painted line and patch of sooting. Context (500).
8. Wheel-thrown jar or cooking pot. Context (523).
9. Large wheel-thrown jar with pale grey self-slipped surfaces. (Unstratified).
10. Unglazed wheel-thrown jar. Context (523).
11. Bowl rim, sooted externally, unglazed. Context (650).
12. Bowl with internal mid-green glaze. (Unstratified).
13. Chafing dish base with splash of external mid-green glaze. Context (506).
14. Jar base with internal mid-green glaze. Context (553).
15. Unglazed ridge-tile sherd with typical incised 'fir-tree' motif. Context (507).
16. Not illustrated: bodysherds of a large globular Saintonge jug with typical fine white fabric and mottled copper-green glaze. In view of the large size of the vessel, this probably comes from a *pégau*, a large globular jug with three broad handles and a spout. (Unstratified.)
17. Not illustrated: massive sherd from a North Devon cloam oven, 30 mm thick, with heavy knife-trimming along one

edge, showing that this was the edge of the oven door. Heavy external and internal sooting. (Unstratified.)

18. Not illustrated: base of a crucible of late eighteenth- or early nineteenth-century type. Dense white stoneware fabric with vitreous patches. (Unstratified.)

The sampling project

In an attempt to develop the study of the Lostwithiel wares and to consider further their relationship to sherds found on other sites in east Cornwall, a small initial study was carried out for the present project. It examined a total of 25 vessels from the following five sites:

- Lostwithiel Quay Street 2002: five drawn pieces (nos 2, 7–9, 14), and one heavily tempered tile from the finds described. Listed in Table 1, **1–6**.
- Lostwithiel 1978. Three sherds among the finds published by Miles (1979). Table 1, **7–9**.
- Lostwithiel, Quay Street: three samples from unpublished material, largely of sixteenth- – seventeenth-century date, excavated by Peter Rose for Cornwall Archaeological Unit in 1982. Table 1, **10–12**.
- Bunning's Park. Seven samples: two each of fabrics A3, B2 and B5, single sherd of A4. Table 1, **13–19**.
- Tintagel. Six published vessels (O'Mahoney 1989a, nos 39–40, 57, 60–1 and one other) selected among the Bunning's Park wares (Table 1, **20–25**).

Each vessel was examined under the binocular microscope by Dr Taylor and was submitted to chemical analysis; a selection of samples was also thin-sectioned.

The petrology of the temper of Lostwithiel pottery

Roger T Taylor

Since medieval pottery wasters were first published from Lostwithiel by Trevor Miles (Miles 1976; 1979), the most obvious feature of the town's medieval and later pottery – the abundance of muscovite (white mica) among the inclusions – has been recognised by pottery researchers. Brief

general descriptions of the fabric in thin-section have been published by Vince and Brown (1989), and the character of the Lostwithiel fabrics has been considered further by the writer (Taylor and Allan 1998–9, 187–8). The present project offers the opportunity to improve upon these published definitions by offering fuller descriptions of a range of sherds, based on examination both in thin-section and by study of the surfaces of sherds under the binocular microscope at x20 magnification. The comments below are based upon the examination under the binocular microscope of a wide range of sherds from the different excavations in Lostwithiel. Finds of 'Bunning's Park' ware from Bunning's Park, St Neot (O'Mahoney 1989b), and sherds from Davidstow Moor (*idem*, 1987) and Tintagel (*idem*, 1989a) were also examined in an effort to resolve the question of whether this ware actually represents the output of a different kiln.

Description of sample sherds

Inclusions are listed in approximate order of frequency. Thin-section numbers refer to the regional collection of medieval and later ceramics of Exeter City Museums.

Kiln wasters from Quay Street, Lostwithiel, 2002

SAMPLE AND THIN SECTION 60

Ridge tile fragment, thick oxidised surfaces with reduced core. Temper forms approximately 25 per cent of the fabric.

Quartz: colourless, translucent, angular to sub-angular, some grains with abraded edges, rare rounded grains, 0.2–2.0mm.

Feldspar: white angular and cleaved fragments. Perthitic orthoclase and rare oligoclase identified in thin section, 0.15–2mm.

Rock fragments: bleached and brown oxidised slate fragments, grey reduced in the core, rounded and elongated rounded. Composite grains of quartz/tourmaline and rare quartz/feldspar/biotite. A wide range of grain size up to 5mm.

Mica: muscovite flakes up to 0.75mm.

Mica: biotite as rare brown flakes up to 0.75mm.

Tourmaline: a scatter of black angular grains of schorl. Golden brown and blue in thin section, 0.1–0.7mm.

Comment: a granite-derived temper with abundant sedimentary fragments forming some 25–30 per cent of the temper.

SAMPLE AND THIN SECTION 61

Waster, base angle sherd. Hard-fired, medium-light grey reduced, oxidised interior and across broken edges. A poor interior glaze. Temper forms approximately 15–20 per cent of the fabric.

Quartz: colourless translucent, angular to sub-angular grains some with abraded and rounded edges, 0.2–2mm, mainly 0.4–7mm.

Feldspar: white mainly angular to sub-angular and some cleaved grains of orthoclase and one plagioclase grain identified in thin section, 0.3–0.7mm.

Rock fragments: slate, brown and grey micaceous, silty and silty banded, rounded and elongated rounded fragments, 0.2–1.6mm. Fine-grained biotite hornfels.

Composite: quartz biotite fragment 0.6mm.

Mica: muscovite thick flakes appearing as rectangular laths in thin section, 0.2–1.2mm.

Mica: biotite, brown flakes up to 0.5mm.

Tourmaline: identified in thin section, five yellowish green and bluish sub-angular grains 0.1–0.4mm.

Comment: a granite-derived temper similar to 60 but less abundant and generally finer in grain size. Slaty rock fragments are a major component.

Samples from Lostwithiel PMGF

SAMPLE AND THIN SECTION 62

Bodysherd. Thick oxidised surfaces with a discontinuous reduced core. Shows spalling and

has a path of glaze in the interior. Temper forms approximately 10 per cent of the fabric.

Quartz: angular fragments 0.05–0.15mm, a scatter of grains up to 0.6mm.

Rock fragments: rounded to sub-rounded slate and siltstone fragments 0.2–1.2mm, mainly around 0.5mm. A few rounded hornfels fragments, 1–1.2mm, comprising a fine aggregate of quartz and mica.

Mica: muscovite flakes 0.05–0.1mm.

Mica: biotite, a single brown flake 0.3mm.

Comment: a generally very fine-grained granite-derived temper with a scatter of coarser grains giving a very smooth finish.

SAMPLE AND THIN SECTION 65

Ridge tile fragment, decorated, oxidised, porous, hard. Temper forms approximately 25 per cent of the fabric.

Quartz: colourless translucent angular grains with a few showing abraded edges. Up to 2mm.

Feldspar: white angular to sub-rounded some cleaved perthitic orthoclase, possible microcline and a few sericitised and fresh plagioclase grained identified in thin section. Up to 0.8mm.

Rock fragments: buff and grey, micaceous slate, rounded and elongated rounded fragments 0.5–2.5mm. Rounded, pale buff fine-grained aplitic granitic 1.0mm.

Mica: muscovite flakes 0.2–1.2mm.

Mica: biotite rather sparse brown to dark brown flakes 0.2–1.5mm.

Tourmaline: a scatter of dark brown to black angular schorl grains, grains, golden yellow and blue-green in thin section.

Comment: Granite-derived temper with abundant rock fragments, generally similar to sample 60.

SAMPLE AND THIN SECTION 66
(LOS PMGL)

Base angle sherds. Grey reduced with oxidised interior surface extending over a broken edge. Traces of interior glaze. Hard fired. Temper forms approximately 15 per cent of the fabric.

Quartz: colourless white translucent to transparent angular grains, 0.1–0.2mm. A considerable proportion of quartz less than 0.1mm occurs in the matrix.

Rock fragments: grey micaceous slate and a few siltstone fragments generally rounded, many around 0.5mm but up to 1.0mm.

Feldspar: white translucent angular cleaved grains of orthoclase and one small plagioclase grain identified in thin section, 0.1–0.8mm.

Mica: muscovite flakes 0.1–0.6mm.

Tourmaline: one black grain of schorl and a single blue grain seen in thin section, 0.4 and 0.2mm.

Comment: a generally similar temper to sample 61.

General comment

The decorated ridge tile (sample 65) is typical of the muscovite-rich ceramics regarded as characteristic of pottery made at Lostwithiel. Samples 60 and 65, however, although granite-derived, are not as rich in muscovite as those previously described from Quay Street. Sample 62 is distinctive in its generally very fine-grained temper and also resembles one of the rim sherds in the inspection collection, LSWL QS 4. Samples 61 and 66 have a lower temper content and show some similarities to the green-glazed wares; 66 appears to be the most muscovite-rich. The abundance of slaty rock fragments is distinctive in this selection of material.

As previously suggested by the writer (Taylor and Allan 1998–9), a likely source of the tempering sand used for the coarse wares is the Fowey to the north of Lostwithiel, where streams draining from the Bodmin Moor granite would supply the granitic component, while the sedimentary rock component would come from the surrounding country rocks. It is probable that there would be

appreciable variation in the proportions of different mineral components of the sand used from batch to batch and year to year according to stream flow and erosion.

This selection of sherds from Lostwithiel confirms the previous general conclusion that it is likely to prove difficult to make confident matches of medieval granite-derived tempers from excavation sites with wasters from individual Cornish kiln sites. Comparative study of a selection of sherds from Tintagel, Davidstow Moor and Bunning's Park shows that these were not readily distinguishable from the Lostwithiel wares, but this topic needs more work.

ICP–AES and ICP–MS analysis
of pottery from Lostwithiel,
Bunning's Park and Tintagel

Michael J Hughes

Lostwithiel was a major pottery-making centre from the thirteenth to the nineteenth century (above). The excavation carried out in 2002 gave the opportunity to select for chemical analysis a variety of fabrics present in a typical town site, compare them with kiln waste from previous excavations in the town, and to look further afield to see how far this material was circulating.

Chemical analysis of the fabric of pottery provides a means of identifying ceramics which have been made from the same clays and are therefore likely to have been made at the same location, by looking for very similar patterns of chemical composition of the clay fabric. Pottery made from different clay sources will reflect differences in local geology in the chemistry of their clays. Especially where the local rocks show good variations in rock type, as in the south west, even fairly closely spaced sources may show chemical differences. Such provenance studies have a long history of use in archaeology (for background, Orton and Hughes 2013, 160–89; Hunt 2017, 14–161), but only in recent years have analyses of West Country medieval wares begun to be made systematically. Published examples of the latter undertaken by the writer include studies of the pottery from Cleeve Abbey, Somerset (Allan 1998), Haycroft Farm, Membury, Devon (Allan and Langman 2002), and Sherborne Old Castle, Dorset (Allan 2003).

The questions which this chemical analysis project attempted to answer were the following:

1. In parallel to the fabric descriptions and thin-sectioning of typical pottery from Lostwithiel, do the ceramics produced there show a distinctive chemical pattern or 'signature'?
2. A recent technical study of fabrics from Bunning's Park in St Neot parish concluded that the pottery was made in the vicinity of the site rather than at Lostwithiel. How does the chemistry of the pottery from that site compare to pottery from Lostwithiel?
3. A final question is how widely Lostwithiel's pottery was distributed. As a first step towards a wider study, samples of medieval pottery found at Tintagel, previously believed to match that from Bunning's Park, were examined to consider whether it relates to either that site or to Lostwithiel.

While inductively-coupled plasma atomic emission analysis (ICP–AES) was used for chemical analysis of the pottery fabrics in the three previous studies cited above, a recent development has been for the laboratory concerned to carry out an additional analysis of the same material by inductively-coupled plasma mass spectrometry (ICP–MS). Recent SW England applications include North Devon pottery found on Lundy Island (Allan and Blaylock 2005) and Saxo-Norman wares in Somerset (Allan, Hughes and Taylor 2011). The technique of ICP provides rapid analyses for major, minor and trace elements in the same sample, is widely available, and is much used in geological laboratories (Potts 1987; Thompson and Walsh 1989). Its application to ceramic studies has been described by Hunt (2017, 399–423). The mass spectrometry version of ICP is an enormously sensitive analytical method and adds a further range of trace elements, present at very low levels in the pottery, to the resulting analytical profile of each pottery fragment. The resulting very detailed analytical profile of an individual pottery sherd makes significant improvements to the uniqueness of each analysis. It therefore becomes much clearer whether or not the analyses of a number of sherds show that they are made from exactly the same clay. Simply adding more elements makes it easier to distinguish pottery from different centres where the geology is changing only subtly between centres.

In the present project, among the elements added by the mass spectrometry technique are those such as uranium and thorium which have quite different geochemical behaviour from the suites of elements previously analysed by ICP–AES. Other useful elements measured by ICP–MS include caesium and rubidium which have proved consistently valuable in earlier pottery analysis studies using neutron activation. The ICP–AES technique used here measures 27 elements and the mass spectrometry version measures another 26 elements. Six elements are measured by both techniques (yttrium and five rare earth elements, namely lanthanum, cerium, samarium, europium and dysprosium) but the MS version has superior detection limits and precision, so the results produced by that technique were used in preference in the statistical work.

Chemical analysis

Powdered samples were obtained from each sherd using a hand-held 12-volt drill fitted with a 2mm diameter solid tungsten carbide drill bit. The powders were analysed for 27 elements by ICP–AES and 26 elements by ICP–MS at the Department of Geology, Royal Holloway, University of London, by Dr J N Walsh using the department's routine technique (Thompson and Walsh 1989). In addition to the pottery sherds, one standard reference brick clay of known chemical composition was analysed (Brick Clay NBS679 produced by the National Institute of Standards and Technology, Washington DC). This clay has been repeatedly included by the author as an 'unknown' in ICP projects on ceramics as a batch-to-batch check on analytical quality. The list of samples analysed is given in Table 1 with the full ICP–AES results, and the ICP–MS analyses are given in Table 2.

Statistical interpretation of the chemical analyses

Initial review of the analyses indicates a fairly striking similarity across many elements, with no sherds which are notably different in clay chemistry from the rest. They are generally low in lime, except a few Lostwithiel sherds and one from Tintagel which are slightly higher, in the range 5–8 per cent calcium oxide. The concentrations of the rare earths are moderate to high compared

to English pottery generally, but the minor alkalis rubidium and caesium have strikingly high concentrations, approximately double those generally found in pottery clays elsewhere. Merefield (1981) has noted high levels of caesium and rubidium associated with Dartmoor granite, and the granite intrusion near St Austell has values of caesium (28 parts per million) and rubidium (300ppm) which are comparable to Lostwithiel pottery. Of direct relevance to this project, given the probable source of the tempering sand from the Fowey (see Taylor, this paper) is an analysis of a Cornubian granite from De Lank Quarry, Bodmin Moor containing 32ppm caesium and 410ppm rubidium (Scrivener 2006, 260–1 and table 11.1). These elements, together with potassium and the rare earths, are distinctly higher than in pottery from sites in Devon and Somerset published by the writer in previous studies of West Country pottery (Allan 1998; 2003; Allan and Langman 2002; Allan and Blaylock 2005; Allan, Hughes and Taylor 2011).

Full interpretation of the analyses requires multivariate statistical techniques, which examine many elements simultaneously. A variety of such computer programs are used in archaeology (Baxter 1994; Orton and Hughes 2013, 175–182), and as the numbers of analyses in this study were relatively few, principal components and cluster analysis were chosen as most appropriate. These programs extract the main features of chemical differences among the whole set of analyses, which provide a chemical ‘fingerprint’ for each sherd. The computer program SPSS version 10 was used for the statistics. As is customary, the analyses were first converted to logs before using principal components. This reduces the undue influence on the outcome by elements whose concentrations have significantly larger absolute numbers than others. Because we were fortunate in having at our disposal analyses for over 45 elements in each sherd from the ICP-AES and -MS results, we were able to select 30 well-measured elements from across the Periodic Table to represent the chemistry of the pottery. These were: aluminium, iron, magnesium, calcium, sodium, potassium, titanium, manganese, chromium, lithium, nickel, scandium, vanadium, yttrium, and zinc (by ICP-AES: Table 1) and uranium, thorium, rubidium, caesium, lanthanum, cerium, praseodymium, neodymium, samarium, europium, gadolinium, holmium, ytterbium and lutetium (by ICP-MS: Table 2). Elements were

omitted which had poor analytical precision or which may be subject to leaching from the pottery fabric by the groundwater in the soil. Cobalt was also omitted because the drill bit contains significant amounts of the element.

Principal components statistics on the chemical analyses

The analytical data for many elements is conveniently summarised by a plot of the first two principal components arising from the statistical computer program. Such a plot is a type of chemical map, so that sherds with very similar chemical analyses will plot close together; such close groupings will therefore suggest a common clay origin and may be used to suggest the origin of sherds analysed which are of unknown origin, by their position on such a plot.

The plot of the first two principal components is shown in Figure 10. Different symbols are used to indicate the sherds from Lostwithiel, Bunning’s Park and Tintagel. Many elements contribute positively to the first component so that sherds with generally higher concentrations of elements plot towards the right of the figure (that is, with higher values of the first principal component). However, a number of the metals (iron especially, followed by vanadium, chromium, and thorium) act in the opposite sense; higher amounts of these are found towards the left of the plot. Geologically, more acidic rocks such as granites have higher concentrations of iron and lower amounts of rare earths, so that the local geology is reflected in the pattern of this Figure. The second component (the vertical axis of Figure 10) has major contributions from chromium, titanium, vanadium, titanium and thorium, but negatively with sodium, magnesium and manganese.

It is clear that there is a separation in Figure 10 between the Lostwithiel and Bunning’s Park sherds, indicating some chemical differences between the sherds from the two sites. All of the Tintagel sherds however fall among the spread of the Lostwithiel sherds, indicating production there; none are mixed in with those from Bunning’s Park. One Tintagel sherd (no 20 – Z44L) falls outside the Lostwithiel ‘spread’, but its position on the figure strongly links it with Lostwithiel. It has the highest calcium and strontium of all the samples analysed (7.42 per cent calcium oxide; 228ppm strontium) and is generally lower in the concentrations of

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Table 1. List of samples of pottery analysed in this project, and full analysis results by inductively-coupled plasma atomic emission spectrometry (ICP-AES). Key: sample = item number assigned; Lab no. = analysis number in the batch); Chemical element symbols: Al₂O₃ aluminium; Fe₂O₃ iron; MgO magnesium; CaO calcium; Na₂O sodium; K₂O potassium; TiO₂ titanium; P₂O₅ phosphorus; MnO manganese; Ba barium; Co cobalt; Cr chromium; Cu copper; Li lithium; Ni nickel; Sc scandium; Sr strontium; V vanadium; Y yttrium; Zn zinc; Zr zirconium; La lanthanum; Ce cerium; Nd neodymium; Sm samarium;

ICP sample no	Lab no	identifier	Al2O3*	Fe2O3*	MgO*	CaO*	Na2O*	K2O*	TiO2*	P2O5	MnO*	Ba	Co	Cr*	Cu
Lostwithiel Quay Street 2002															
1	P1	drawing 2	16.84	6.84	1.30	1.87	0.50	3.15	0.78	1.22	0.088	402	25	99	42
2	P2	drawing 7	18.70	6.64	1.40	4.34	0.50	4.30	0.73	0.20	0.091	392	63	92	26
3	P3	drawing 8	18.01	6.80	1.18	1.07	0.39	3.93	0.71	0.38	0.048	378	22	88	31
4	P4	drawing 9	17.88	6.43	1.21	0.96	0.41	3.98	0.76	0.12	0.071	371	29	92	28
5	P5	drawing 14	16.91	4.63	1.00	2.23	0.30	3.20	0.94	0.71	0.043	457	28	112	24
6	P6	tile	17.09	7.03	1.58	4.37	0.67	3.69	0.77	0.16	0.109	415	33	94	21
Lostwithiel 1978															
7	P7		18.90	7.11	1.52	5.25	0.48	4.08	0.80	0.13	0.096	407	24	96	28
8	P8		20.01	7.57	1.38	2.96	0.48	4.45	0.78	0.16	0.070	430	44	101	25
9	P9		18.80	6.96	1.50	5.74	0.69	4.60	0.75	0.29	0.096	422	33	88	29
Lostwithiel Quay Street 1982															
10	P10		18.29	6.22	1.72	7.36	0.53	3.83	0.78	0.18	0.126	422	23	94	40
11	P11		18.46	4.37	1.39	3.99	0.36	3.37	1.00	0.12	0.034	470	37	126	20
12	P12		19.97	7.00	1.43	2.73	0.45	4.05	0.84	0.15	0.067	470	41	110	26
Bunning's Park															
13	P13	A3	15.62	8.56	0.57	0.25	0.27	3.99	1.01	0.25	0.154	425	12	127	25
14	P14	A3	18.25	7.16	0.55	0.20	0.19	2.67	0.95	0.10	0.028	322	22	113	28
15	P15	A4	16.72	7.85	1.29	0.84	0.29	2.36	0.91	0.19	0.061	299	21	118	31
16	P16	B2	16.59	9.00	0.63	0.27	0.21	1.83	0.77	0.10	0.024	333	18	110	25
17	P17	B2	18.76	8.34	0.57	0.31	0.21	2.46	0.87	0.26	0.022	319	12	115	34
18	P18	B5	14.57	6.31	0.91	0.18	0.31	1.82	0.81	0.11	0.047	286	15	102	26
19	P19	B5	16.11	8.41	0.85	0.31	0.25	1.83	0.88	0.49	0.060	307	15	118	32
Tintagel															
20	P20	Z44L	15.81	7.17	1.49	7.42	0.43	3.44	0.66	0.38	0.163	377	27	83	29
21	P22	SA(61)	17.42	7.13	1.50	2.15	0.43	2.93	0.84	0.22	0.066	400	29	108	23
22	P23	SA(60)	17.94	7.19	1.60	4.29	0.54	3.81	0.80	0.28	0.100	416	26	97	23
23	P24	SA(40)	16.12	6.48	1.26	2.04	0.39	3.36	0.73	0.22	0.072	387	26	88	27
24	P25	SA(57)	17.21	7.48	1.52	3.17	0.35	3.03	0.85	0.19	0.094	387	47	106	24
25	P26	SA(39)	16.91	6.49	1.45	2.80	0.42	3.04	0.85	0.50	0.070	429	32	102	25
Reference	P21	NBS1679 brick clay	20.74	13.75	1.35	0.47	0.14	2.94	0.93	0.15	0.235	467	23	108	35

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Eu europium; Dy dysprosium; Yb ytterbium; Pb lead. The elements Al_2O_3 to MnO are in weight percent; all the rest are in parts per million (ppm). The zirconium figure is unreliable due to incomplete dissolution of minerals containing this element (principally zircon), and the chromium and nickel unreliable due to contamination. The elements indicated with a * were used in the statistical tests to interpret the analyses. P21 is the standard clay analysed as a batch-to-batch reference sample, NBS1679 brick clay.

<i>Li*</i>	<i>Ni*</i>	<i>Sc*</i>	<i>Sr</i>	<i>V*</i>	<i>Y*</i>	<i>Zn*</i>	<i>Zr</i>	<i>La</i>	<i>Ce</i>	<i>Nd</i>	<i>Sm</i>	<i>Eu</i>	<i>Dy</i>	<i>Yb</i>	<i>Pb</i>
80	49	15	166	112	22	199	86	43	71	44	7.3	1.4	4.1	2.5	23
91	45	15	159	114	23	115	83	46	77	47	7.9	1.4	4.5	2.5	27
83	62	14	108	101	16	129	79	40	69	41	6.9	1.3	3.6	2.1	29
81	46	14	94	92	19	119	77	41	62	42	7.6	1.4	4.0	2.1	36
60	45	17	121	120	20	84	92	52	83	53	8.5	1.6	4.3	2.3	116
73	55	14	165	110	17	173	54	42	68	43	7.1	1.2	3.7	2.0	25
97	47	15	166	114	20	116	66	42	69	43	6.6	1.2	3.9	2.3	22
94	50	16	143	118	22	114	74	43	65	45	7.4	1.3	4.4	2.4	29
99	45	15	179	102	22	105	65	40	69	41	6.4	1.2	3.8	2.3	24
113	48	15	187	104	30	116	74	46	70	49	8.7	1.6	5.7	2.9	131
81	42	17	133	126	27	77	90	53	91	54	9.0	1.7	4.9	2.6	660
89	54	17	150	130	22	139	73	46	74	47	6.9	1.5	4.4	2.3	399
51	48	15	57	169	14	77	87	38	71	39	5.2	1.1	3.0	2.0	38
49	39	16	41	143	14	88	69	41	70	41	6.2	1.0	3.0	1.9	32
56	55	15	71	141	16	179	65	45	76	46	6.9	1.3	3.8	2.0	38
39	54	17	38	146	14	97	74	27	53	28	5.5	1.1	3.1	2.2	23
46	43	17	52	146	16	102	71	34	65	35	6.5	1.2	3.3	2.1	32
43	48	14	37	112	13	86	70	21	42	22	3.9	0.7	2.6	1.7	145
35	51	16	40	142	15	88	68	35	64	36	6.6	1.1	3.1	2.0	31
74	46	13	228	99	20	121	47	35	57	36	6.5	1.0	3.8	2.0	18
80	47	17	153	125	20	154	58	42	74	43	7.1	1.2	3.6	1.9	35
69	48	16	192	113	22	124	59	45	77	46	7.1	1.3	4.1	2.1	22
83	42	14	136	106	18	111	54	39	66	40	6.4	1.2	3.5	1.8	24
74	54	16	167	125	22	162	62	44	76	45	7.6	1.4	4.0	2.2	23
72	43	16	174	120	20	129	52	42	70	43	6.3	1.3	3.6	2.0	27
61	59	24	76	161	36	114	97	50	93	53	8.3	1.6	6.3	3.7	23

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Table 2. List of samples of pottery analysed in this project, and full analysis results by inductively-coupled plasma mass spectrometry (ICP-MS). U uranium; Th thorium; Rb rubidium; Nb niobium; Cs caesium; Y yttrium; Rare earth elements: La lanthanum; Ce cerium; Pr praseodymium; Nd neodymium; Sm samarium; Eu europium; Gd gadolinium; Tb terbium;

<i>CP sample no</i>	<i>analysis</i>	<i>identifier</i>	<i>U*</i>	<i>Th*</i>	<i>Rb*</i>	<i>Nb</i>	<i>Cs*</i>	<i>Y</i>	<i>La*</i>	<i>Ce*</i>	<i>Pr*</i>	<i>Nd*</i>	<i>Sm*</i>
Lostwithiel Quay Street 2002													
1	P1	drawing 2	3.51	13.2	197	16.5	13.3	22	42.4	82.2	10.2	42.7	7.79
2	P2	drawing 7	3.66	13.1	284	16.6	18.6	24	45.1	88.8	11.0	44.4	8.21
3	P3	drawing 8	3.09	13.2	255	14.8	16.7	17	37.6	78.3	9.7	40.1	7.52
4	P4	drawing 9	3.85	13.6	260	15.4	18.9	20	41.5	77.4	9.4	38.2	7.13
5	P5	drawing 14	3.40	14.0	191	21.0	18.9	27	56.8	108.3	13.2	53.0	9.77
6	P6	tile	2.48	11.6	242	16.7	14.8	20	46.3	90.1	11.0	43.2	7.91
Lostwithiel 1978			3.82	13.3	284	19.2	20.4	22	47.2	88.9	10.7	41.8	7.89
7	P7		3.00	12.1	295	17.5	19.1	24	41.7	80.7	10.0	40.8	7.71
8	P8		3.67	12.4	286	17.1	19.8	21	43.3	79.4	9.5	37.9	6.93
9	P9												
Lostwithiel Quay Street 1982			4.80	14.1	265	18.9	23.0	32	49.3	93.9	12.0	48.5	9.59
10	P10		3.07	14.0	192	20.9	18.3	26	57.4	110.3	13.6	54.3	10.54
11	P11		3.68	13.2	250	18.6	21.6	25	47.9	90.6	11.3	44.8	8.52
12	P12												
Bunning's Park			3.70	17.6	258	22.7	17.1	17	40.0	85.2	9.6	38.8	6.71
13	P13	A3	3.49	15.4	174	21.1	12.6	17	46.6	86.9	10.4	41.8	7.51
14	P14	A3	3.50	14.3	138	20.1	9.6	20	47.0	94.2	11.4	46.3	8.86
15	P15	A4	2.80	13.4	113	16.3	9.5	16	33.6	66.1	8.1	33.2	6.64
16	P16	B2	3.69	15.1	147	17.7	11.2	17	38.1	77.0	9.5	38.9	7.37
17	P17	B2	2.88	12.9	98	16.1	9.0	14	21.8	51.2	6.0	24.2	4.90
18	P18	B5	3.02	14.0	83	17.1	6.7	15	37.4	75.7	9.2	36.9	7.07
19	P19	B5											
Tintagel													
20	P20	Z44L	3.16	11.0	211	13.3	13.3	20	36.3	71.2	8.8	36.3	6.90
22	P22	SA(61)	2.69	13.2	183	18.1	12.2	23	48.8	89.7	11.2	48.1	8.86
23	P23	SA(60)	3.40	15.2	234	18.0	14.5	23	48.7	95.1	12.1	50.9	9.20
24	P24	SA(40)	3.21	13.2	214	17.1	19.9	21	43.6	83.2	10.4	42.8	7.76
25	P25	SA(57)	2.71	13.3	177	18.9	12.5	25	48.1	94.7	11.4	48.0	9.03
26	P26	SA(39)	2.76	12.8	171	18.9	13.4	23	49.5	89.9	11.1	46.1	8.57
Reference													
	P21	NBS1679 brick clay	3.32	15.1	213	18.4	10.7	41	58.1	113.8	13.9	57.7	10.87

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Dy dysprosium; Ho holmium; Er erbium; Tm thulium; Yb ytterbium; and Lu lutetium; Ag silver; As arsenic; Pb lead; Cd cadmium; Tl thallium; Mo molybdenum; Sb antimony; Bi bismuth. All are in parts per million.

<i>Eu*</i>	<i>Gd*</i>	<i>Dy</i>	<i>Ho*</i>	<i>Er</i>	<i>Yb*</i>	<i>Lu*</i>	<i>Ag</i>	<i>As</i>	<i>Pb</i>	<i>Cd</i>	<i>Tl</i>	<i>Mo</i>	<i>Sb</i>	<i>Bi</i>
1.45	6.57	4.37	0.83	2.27	2.20	0.31	0.3	17.4	24	0.1	1.4	0.7	0.8	0.4
1.49	6.83	4.46	0.81	2.29	2.05	0.30	0.3	11.4	27	0.3	1.4	0.5	1.2	0.8
1.32	6.01	3.37	0.67	1.91	1.90	0.27	0.2	39.4	28	0.1	1.5	0.5	1.0	0.6
1.32	5.80	3.75	0.75	2.03	1.89	0.27	0.3	20.0	36	0.1	1.4	0.7	2.1	1.6
1.73	7.64	4.13	0.86	2.40	2.25	0.31	0.4	14.4	119	0.0	0.7	0.9	0.9	0.4
1.46	6.37	3.74	0.69	2.02	1.67	0.24	0.3	8.5	27	0.1	1.2	0.7	0.8	0.5
1.39	6.39	3.92	0.86	2.19	1.89	0.27	0.3	11.1	28	0.3	1.5	0.6	0.7	0.7
1.48	6.23	4.39	0.80	2.33	1.98	0.28	0.3	9.4	31	0.1	1.1	0.6	0.8	0.6
1.34	5.78	3.65	0.72	2.03	1.92	0.27	0.3	18.4	27	0.3	0.6	0.6	0.8	1.8
1.80	8.23	5.65	1.08	3.08	2.63	0.38	0.4	9.1	138	0.1	1.2	0.6	1.9	7.8
1.88	8.25	4.60	0.86	2.56	2.57	0.32	0.7	12.7	652	0.1	1.6	0.6	1.2	4.6
1.55	7.05	4.41	0.88	2.47	2.13	0.32	0.4	8.8	400	0.0	1.3	1.4	1.2	1.0
1.21	5.12	2.94	0.56	1.66	1.65	0.25	0.4	39.9	37	0.1	1.0	1.2	0.9	1.4
1.29	5.58	3.29	0.59	1.75	1.68	0.25	0.3	27.2	33	0.2	0.8	1.2	0.9	1.0
1.47	6.77	3.86	0.70	1.95	1.73	0.25	0.3	27.9	39	0.1	0.7	1.2	0.9	0.6
1.21	5.05	3.46	0.67	1.99	1.95	0.30	0.3	20.6	26	0.0	0.8	1.4	2.1	0.7
1.30	5.72	3.59	0.68	1.90	2.11	0.28	0.3	29.1	33	0.0	0.6	0.6	0.9	2.1
0.92	3.90	2.62	0.54	1.55	1.62	0.25	0.3	11.4	158	0.1	0.5	1.1	1.1	0.7
1.23	5.21	3.15	0.61	1.78	1.70	0.25	0.3	16.0	33	0.1	1.1	0.7	0.8	0.4
1.30	5.77	3.64	0.71	1.92	1.61	0.25	0.3	29.8	28	0.1	1.1	0.7	0.8	0.4
1.57	7.17	4.12	0.77	2.16	1.92	0.27	0.4	12.4	42	0.3	1.1	0.8	1.0	0.6
1.63	7.39	4.37	0.80	2.23	1.86	0.27	0.3	8.3	28	0.2	1.2	0.7	0.8	0.6
1.43	6.33	3.74	0.71	1.99	1.74	0.25	0.4	24.0	32	0.2	1.4	0.8	1.0	0.6
1.65	7.19	4.60	0.87	2.40	2.10	0.30	0.3	12.3	30	0.5	1.0	0.8	0.8	0.5
1.55	6.68	4.30	0.77	2.17	1.90	0.28	0.5	14.8	35	0.1	1.2	0.6	1.3	0.5
1.93	8.92	6.56	1.32	3.84	3.52	0.52	0.3	7.6	24	0.1	1.0	1.3	0.8	0.7

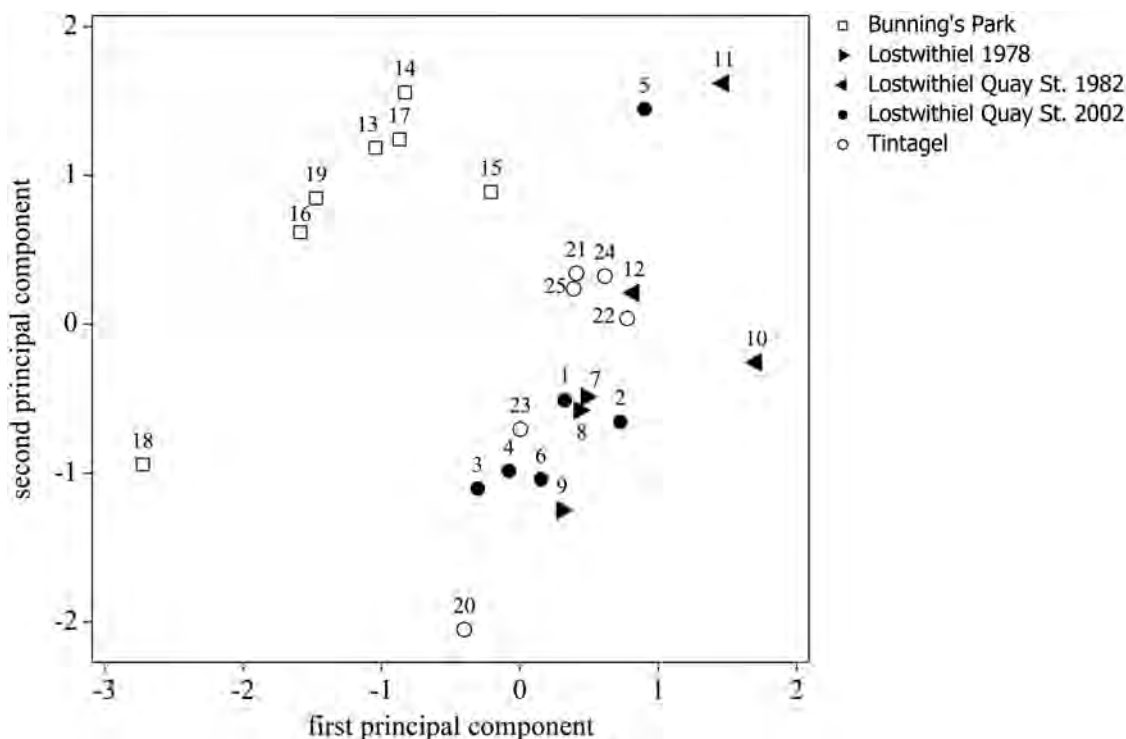


Fig 10 Plot of the first two principal components arising from ICP analyses of pottery analysed in this project; sherds are identified by sample number. The first principal component is associated in decreasing order of contribution with many rare earths (loadings greater than c. +0.8); calcium (+0.83); lithium (+0.80); caesium (+0.71); magnesium (+0.70) and potassium (+0.69) – higher concentrations of these in samples on the right. The second component is associated with: chromium (+0.91); vanadium (+0.82) and thorium (+0.74) – higher concentrations of these in samples nearer the top.

many elements, which would ‘push’ it towards the left of the figure.

Some ‘sub-groups’ seem to be present within the sherds from Lostwithiel and Bunning’s Park. Two closely-associated groups occur on the right of the figure: a group of nine containing five of the six Lostwithiel (2002) sherds (1–4, 6), all three of the 1978 kiln waste sherds and a sherd from Tintagel (23); and a group of five just above them to the right containing four Tintagel sherds (21–2, 24–5) and one Lostwithiel 1982 sherd (12). Both groups seem entirely consistent with Lostwithiel production. Taylor (this paper) has shown that petrologically the Lostwithiel pottery contains distinctive inclusions of muscovite (white mica) and suggests that the variation in proportion of granitic component and slaty rock fragments in

the pottery fabric arise from year to year variation in their proportions in the bed of the Fowey. Such variations would explain the two main chemical sub-groups. Two Lostwithiel sherds (nos 5 and 11) have notably higher concentrations of the rare earths, and thorium, chromium and vanadium, but lower iron. A fabric richer in slaty rock fragments than the 2 groups would be consistent with such a pattern. The Bunning’s Park sherds separate from the two Lostwithiel groups in Figure 10 into one main group of five (13, 14, 16, 17 and 19) and two outliers (15 and 18). When the average composition of this group of five is compared to that of the group of nine Lostwithiel sherds, the latter are consistently higher in many of the major and trace elements (including the rare earths) apart from iron, titanium, vanadium, thorium, scandium

and niobium which are lower. The Bunning's Park sherds are consistently very low in calcium oxide (average 0.27%) compared to those from Lostwithiel (average 2.52%). However a plot of the second and third components (not shown) intermingles four of the Bunning's Park sherds (15, 16, 18 and 19) with all the Tintagel and Lostwithiel sherds (apart from 5 and 11), and three of these from Bunnings Park (15, 16 and 19) are close to Tintagel sherds 21, 24 and 25, which in Figure 10 are in the sub-group of five sherds (right of centre). The plot of the second and third components shows a separate subgroup which includes Lostwithiel 5 and 11 and the other Bunning's Park sherds 13, 14 and 17. These are the topmost five sherds in Figure 10 and the presence in it of two Lostwithiel sherds suggest a common origin there for them all. While this Figure usefully divides the pottery into subgroups which show consistent chemical patterns between the pottery from the respective sites, the plot of the second and third components indicates an underlying basic chemical similarity in pottery fabric between the Lostwithiel and Bunning's Park sherds. One possible conclusion is that all these small sub-groups arise from slightly different periods or locales of production at Lostwithiel – it not being necessary therefore to search for an alternative production site for the Bunning's Park sherds.

Cluster analysis applied to the chemical analyses

Cluster analysis takes a different approach from principal components in seeking to associate analysed items into groups or clusters with fairly similar analyses. When the products of different potters are analysed, we expect that cluster analysis will group the sherds from each source into different clusters. The QuickCluster option in the SPSS program was used, which is based on the 'k-means' version of cluster analysis, widely used in archaeology. As a convenient starting option, the program was asked to associate the sherds into ten clusters using the concentrations of the same 30 elements used for principal components. This produced two clusters of nine and five sherds: the larger cluster resembled the largest subgroup in principal components but Tintagel 22 and Lostwithiel 12 replaced Lostwithiel 6 and 9; the cluster of five included the same three from Tintagel (21, 24 and 25) as principal components,

Lostwithiel 1 and one from Bunning's Park (15). The other five of the Bunning's Park sherds (13, 14, 16, 17, 19) formed four small clusters, while the pairs 5 and 11, and 9 and 10 from Lostwithiel formed clusters, Tintagel sherd 20 and Lostwithiel 6 formed another pair and Bunnings Park 13 and 19 were singles. The cluster analysis results add general support to the groups identified by principal components.

Conclusions

The chemical analysis of a large number of elements measured in each pottery sherd included in this study has been possible through the combined use of two types of plasma spectrometry, ICP-AES and ICP-MS. The addition of elements obtained by plasma mass spectrometry is a recent innovation and has been especially useful for notably widening the range of elements measured and increasing the accuracy for the rare earth elements. The analyses have been interpreted with principal components and cluster analysis.

The results of the statistical interpretation showed that the pottery made at Lostwithiel does have a particular chemical 'signature'. A specific feature is the high concentration of two alkali elements, caesium and rubidium, which were measured by plasma mass spectrometry. Subgroups appear to be evident within the chemical 'spread' represented by the finds from Lostwithiel; this is entirely typical of production at multiple locations within a town, probably at different chronological periods. The chemical distinction between pottery found at Lostwithiel and that at the nearby site of Bunning's Park seems most likely to reflect different productions or periods within Lostwithiel's output. Six sherds of medieval pottery from the 1930s excavations at Tintagel all showed a chemical composition typical of Lostwithiel pottery, indicating their production in that town. Using the 'signature' for Lostwithiel pottery defined here it will in future be possible by analysis to recognise other examples of its products found at other sites.

Conclusions

John Allan

The pottery in everyday use in Lostwithiel shows a wider variety of temper and surface appearance

than has been evident hitherto; the temper is highly distinctive in some vessels, less so in others. Despite this, both the petrological and the chemical analyses indicate the overall similarity of the wares from all the sites examined in this project. Dr Taylor's petrological study concludes that a selection of sherds from Tintagel, Davidstow Moor and Bunning's Park are not distinguishable from Lostwithiel wares. The results of the chemical analyses are more specific: Dr Hughes notes that 'the chemistry of the Lostwithiel material appears to be sufficiently distinctive to allow the recognition of this potting centre' in future studies. He comments on 'the fairly striking similarity across many elements' and concludes that 'it is now very probable they do represent production at Lostwithiel, but using slightly different clay' (*in litt* to the writer, July 2020).

The results of the analyses of the Tintagel Castle pottery make a significant change in understanding of that collection. In the published classification of the coarsewares from the site (O'Mahoney 1989a, 1–3), the pottery attributed to Lostwithiel, characterised by abundant white mica inclusions, formed a minor component, just six per cent of the total by sherd count. The bulk of the collection, forming 58 per cent of the same total (84 per cent of the Cornish vessels), was classified as 'Stuffle-type' ware, later renamed 'Bunning's Park-type' ware. Dr Hughes' analyses show that six randomly chosen samples of the latter fabric from Tintagel have a chemical signature forming a tight group which convincingly matches the material from Lostwithiel. The sampled Stuffle-type ware at Tintagel was, therefore, made at Lostwithiel. If the analysed material is accepted as an adequate sample, the town appears to have been the source of almost all of Tintagel's Cornish wares, amounting to 64 per cent of the entire collection of pottery found at the castle, compared with 30 per cent from north Devon (*ibid*, 1).

The initial publication of the Bunning's Park ceramics, based on the results of thin-sectioning, concluded that the bulk of the pottery used there (O'Mahoney 1989b, fabric A) was probably made in dispersed rural kilns, perhaps on the edge of Bodmin Moor. The present study shows that the Bunning's Park sherds form a tight grouping adjacent to the kiln waste from Quay Street, Lostwithiel. It has also shown that there is no meaningful distinction between the chemistry of

the sampled Bunning's Park fabrics A and B, and that the Bunning's Park ware found at Tintagel was in fact made at Lostwithiel. Moreover, Dr Taylor's petrological study has not found a distinction between the petrology of the Lostwithiel and Bunning's Park sherds. It may also be noted that other examples of Bunning's Park pottery have been found close to Lostwithiel (for example, from the site of a bungalow on the road between the town and Restormel Castle), and to its south (at Par, for instance); O'Mahoney correctly notes (1989b, 137) that its distribution would be consistent with production at Lostwithiel.

The most probable explanation of this range of information seems to this writer to be that Bunning's Park ware was in fact made at Lostwithiel, but that thirteenth- or fourteenth-century kiln waste contemporary with it has not yet been found in the town. Here it may be noted that the Bunning's Park wares are all hand-made, while most or all of the Lostwithiel town waste is wheel-thrown, suggesting that the former material is earlier in date. This problem will need further work in the light of new finds, but at present it seems reasonable to describe this material in future as 'Lostwithiel-type' rather than 'Bunning's Park-type' ware. We suggest that other less distinctive vessels containing granite-derived inclusions should be described as 'granite-derived', since there were evidently various kilns along much of the south coast of Cornwall and in south Devon producing them. The study suggests that the pattern of medieval pottery production in eastern Cornwall represents supply from a few major centres (principally Lostwithiel and north Devon, the latter supplying most of the pottery to sites towards the north-eastern corner of the county such as Penhallam: Beresford 1974), with a little material from St Germans and perhaps other centres), rather than from a variety of small scattered suppliers.

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References

- Allan, J P, 1984. *Medieval and post-medieval finds from Exeter, 1971–1980*, Exeter Arch Repts, **3**, Exeter
- Allan, J P, 1998. Cleeve Abbey: the pottery, *Proc Somerset Archaeol Nat Hist Soc*, **142**, 41–75
- Allan, J P, 2003. A group of early thirteenth century pottery from Sherborne Old Castle and its wider context, *Proc Dorset Nat Hist Archaeol Soc*, **125**, 71–82
- Allan, J, and Blaylock, S, 2005. Medieval pottery and other finds from Pig's Paradise, Lundy, *Proc Devon Archeol Soc*, **63**, 65–91
- Allan, J, Hughes, M J, and Taylor, R T 2011. Saxo-Norman pottery in Somerset: some recent research, *Proc Somerset Arch Nat Hist Soc*, **154**, 165–84
- Allan, J P, and Langman, G, 2002. A group of medieval pottery from Haycroft Farm, Membury, *Proc Devon Archaeol Soc*, **60**, 59–73
- Austin, D, Gerrard, G A M, and Greeves, T A P, 1989. Tin and agriculture in the Middle Ages and beyond: landscape archaeology in St Neot parish, Cornwall, *Cornish Archaeol*, **28**, 5–251
- Balchin, W G V, 1983. *The Cornish landscape*, London (rev edn)
- Baxter, M, 1994. *Exploratory multivariate analysis in archaeology*, Edinburgh
- Beresford, G, 1974. The medieval manor of Penhallam, Jacobstow, Cornwall, *Med Arch*, **18**, 90–145
- Berry, E, Blackman, T, Buck, C, Cahill, N, Colwill, S, Mattingly, J, Powning, J, and Thomas, N, 2008. *Lostwithiel: 'the fairest of small cities'. Historic characterisation*, Truro (Historic Environment Service, Cornwall County Council)
- CCRA 1982. *Cornwall Committee for Rescue Archaeology 7th Annual Report, 1981–82*, Truro
- Douch, H L, 1969. Cornish earthenware potters, *Jnl Royal Inst Cornwall*, **6**, 33–64
- Fraser, B, 1993. *The book of Lostwithiel*, Buckingham
- Gossip, J, 2007. *On the waterfront: excavations at Quay Street, Lostwithiel, Cornwall, 2002*, Truro (Historic Environment Service, Cornwall County Council)
- Hext, F M, 1891. *Memorials of Lostwithiel and Restormel*, Truro
- Hull, P L, 1971. *The Caption of Seisin of the Duchy of Cornwall, 1337*, Devon Cornwall Rec Soc, ns, **17**, Exeter
- Hunt, A M W, 2017. *The Oxford handbook of archaeological ceramic analysis*, Oxford
- Kowaleski, M, 2001. *The Havener's accounts of the Earldom and Duchy of Cornwall, 1287–1356*, Devon Cornwall Rec Soc, ns, **44**, Exeter
- Le Patourel, H E J, 1968. Documentary evidence and the medieval pottery industry, *Med Arch*, **12**, 101–26
- Letters, S, 2013. Online gazetteer of markets and fairs in England and Wales to 1516 [Cornwall] Available at: <http://www.history.ac.uk/cmh/gaz/gazweb2.html> [accessed 23 August 2018]
- Litt, S, and Austin, D, 1989. Pottery, West Colliford Mill, in Austin *et al* 1989, 147–64
- Mattingly, J, 2007. Historical background to Quay Street, Lostwithiel, in J Gossip 2007, 16–29
- Merefield, J R, 1981. Caesium from former Dartmoor volcanism: its incorporation in New Red sediments of SW England, *Jnl Geol Soc*, **138**, 145–52
- Miles, T J, 1976. Late medieval potters' waste from Lostwithiel, *Cornish Archaeol*, **15**, 115–7
- Miles, T J, 1979. Late medieval potters' waste from Lostwithiel, *Cornish Archaeol*, **18**, 103–4
- O'Mahoney, C, 1987. Pottery from sites at Davidstow Moor and Treligga, 186–92, in P M Christie and P Rose, Davidstow Moor, Cornwall: the medieval and later sites. Wartime excavations by C K Croft Andrew, 1941–1942, *Cornish Archaeol*, **26**, 163–95
- O'Mahoney, C, 1989a. The medieval pottery from Tintagel Castle, *Inst Cornish Studies Spec Repts*, **8**, Truro
- O'Mahoney, C, 1989b. Pottery: Bunning's Park, in Austin *et al* 1989, 133–47
- Orton, C, and Hughes, M, 2013. *Pottery in archaeology*, Cambridge (2nd edn)
- Potts, P J, 1987. *A handbook of silicate rock analysis*, Glasgow
- Polsue, J, 1870. *A complete parochial history of the county of Cornwall*, **3**, W Lake, ed, Truro
- Register of Edward the Black Prince preserved in the Public Record Office, pt II: 1351–1365*, 1931, London
- Rose, P, 1982. Observation of post-medieval pottery on Quay Street, Lostwithiel, unpublished field report, Historic Environment Record, Cornwall Council
- Scrivener, R C, 2006. Cornubian granites and mineralization of SW England, in P J Brenchley and P F Rawson, eds, *The geology of England and Wales*, London (Geological Society) (2nd edn), 260–7
- Sheppard, P, 1980. *The historic towns of Cornwall*, Truro (Cornwall Committee for Rescue Archaeology)
- Smith, L T, ed, 1964. *The itinerary of John Leland in or about the years 1535–1543*, London (5 vols)
- Taylor, R T, and Allan, J P, 1998–9. Addendum: a note on the petrology of Cornish potteries, 186–9, in P Stead, Investigations at nos 4–6 Pydar Street, Truro, *Cornish Archaeol*, **37–8**, 178–89
- Thompson, M, and Walsh, J N, 1989. *A handbook of inductively coupled plasma spectrometry*, Glasgow (2nd edn)
- Thorpe, C M, 2007. Appendix 1: the finds catalogue, in Gossip 2007, 32–44
- Vince, A, and Brown, D H, 1989. Pottery: petrological analysis of some pottery from south Cornwall, in Austin *et al*, 165–7

Archaeological and historic building recording at the former Penwith Street Depot, Penzance

ANDREW PASSMORE

with contributions from DEBRA COSTEN and PAUL RAINBIRD

Archaeological and historic building recording on land at the former Penwith Street Depot, Penzance, uncovered the partial remains of nineteenth-century Camberwell Street, which had been demolished as part of so-called ‘slum clearance’ in the middle of the twentieth century. Constructed on part of the former road in the immediate post-Second World War period were three prefabricated Horsa-type huts, which were recorded prior to demolition. The archaeological and historic building observations are described and the social history of the terraced houses is briefly discussed.

Archaeological works and historic building recording on land at the former Penwith Street Depot, Penzance (centred on SW 4741 3062; Fig 1) were carried out by AC archaeology between June 2017 and November 2018 prior to and during groundworks for the redevelopment of the site. The site is located within the town to the north east of the centre and within the Penzance Conservation Area. It occupies a roughly rectangular area of approximately 0.4 ha defined by Penwith Street to the north west, Cross Street to the south east and the alleyways serving the rear of properties on Mount Street and Adelaide Street to the north east and south west, respectively (Fig 2). The site slopes down to the south east, which is reflected in the terraces of Mount Street and Adelaide Street, whilst the connecting roads slope down to the north east. The underlying solid geology comprises Devonian slate and siltstone of the Mylor Slate Formation (British Geological Survey 2019).

The site was previously in use as a Penwith District Council works depot. An historic environment assessment prepared to support the planning application identified standing historic buildings on the site, to be demolished during the redevelopment, and the good potential for surviving buried remains for earlier buildings on part of the site (Costen 2016). The works reported here were required by Cornwall Council as a condition of the grant of planning permission and comprise the historic building record of 1940s Horsa huts and associated brick boiler house and a watching brief during groundworks which resulted in the recording of the foundations of nineteenth-century terraced houses on either side of former Camberwell Street, which was demolished in the mid-twentieth century.



Fig 1 Site location.

Historical background

Debra Costen, Andrew Passmore and Paul Rainbird

Penzance benefits from its inclusion within the Cornwall and Scilly Urban Survey, which researched and reported on the town's development and historic character (Cahill 2003). The town originated as a medieval fishing village and from the fourteenth century a weekly market was held. It did not achieve borough status until 1614, but from 1663 was a 'coinage town' for the taxation of tin produced in the region. By the early nineteenth

century Penzance, unusually for Cornish towns, 'combined many roles: agricultural market, servicing industry; port, communications hub, genteel residential centre and resort' (Kirkham and Cahill 2011, 325); this was further enhanced by the railway terminus in 1859 connecting with London and locations between.

The success of Penzance resulted in a fivefold growth in the population from 1660 to 1805, by which time it numbered 4,000 residents (Kirkham and Cahill 2011, 326). Generally within Cornish urban centres, population growth was largely

accommodated within the historic core; however, at Penzance much of the growth appears to have been accommodated by greenfield development of blocks of land, mostly defined by field plots, and often largely detached from the historic core (Cahill 2003, fig 3). The pattern of streets defining the Penwith Street Depot was one of these blocks and sits on what formerly was Camberwell Street. The exact date of this development is not known, but historic map evidence shows that it was between 1809 and 1841. Mount Street was part of this development and a conduit head attached to no 37, at the eastern end of the street, has an inscription dated 1827 (National Heritage List for England 1220960), which may be early in the development; Courtney (1878) reports that Adelaide Street was begun in 1828 and took a dozen years to complete and Camberwell, Mount and Penwith Streets followed this, giving a

possible date as late as 1840 for Camberwell Street. However, on 20 April 1836 Francis Paynter, who was recorded as the owner of the whole street on the 1841 Penzance tithe apportionment (and was presumably the developer), was leasing property in Camborne Street to Daniel Rogers, carrier, of Penzance, and Humphrey Trembath, yeoman, of Gulval (Caldwell 2009; Archives and Cornish Studies Service AD656/95). Camborne Street was a short-lived name for Camberwell Street and is crossed out on the 1841 Penzance tithe map, being replaced in handwriting by Camberwell Street, which was formed by a pair of terraces facing on to a narrow street.

Clark's (1849) report for the purpose of assessing the sanitary conditions of Penzance under the auspices of the Public Health Act found that the town had no sewerage, no house drainage and only a small amount of access to water, with



Fig 2 Extract from the 1878 Ordnance Survey 1:500 town map.

only six public pumps, of which four were out of order at the time of his visit. Also, in the three months ahead of his visit 79 deaths by dysentery had been reported to the district registrar. Several parts of the town were picked out by Clark as being in a particularly poor state, including Camberwell and neighbouring streets. Clark (1849, 8) says, with apparent dismay, that '[t]he east side of the town has everywhere an excellent fall towards the sea, but no advantage has been taken of this circumstance to secure anything like drainage. Here also there are ruinous privies and open cess pools, the overflow of which is exposed in gutters and ditches, fringing the houses and courts.'

Despite this revealing report Camberwell and neighbouring streets, which were only a little more than a decade old at the time of the report, survived unchanged. Map evidence shows that the street was complete by the time of the 1841 tithe map. This shows that the small houses were given a small yard to the front, despite the street being no wider than a large alley, and a larger yard to the rear. Cahill (2003, 65) described this part of Penzance (his 'Lescudjack and the Battlefields' character area) as '[a]n extensive zone of 19th century housing, predominantly terraces and rows, with accompanying institutional buildings, set tightly on a grid of streets laid across sloping terrain north of the core of Penzance.' Most of these buildings are occupied in the present day, but in 1939 Camberwell Street became subject of a demolition order (National Archives (Kew) HLG 23/20198: Penzance Borough, Camberwell St Housing Confirmation Order; date of order 22.3.39). Local accounts suggest that many of the properties in Camberwell Street had been vacated in preparation for their clearance, but demolition ceased on the outset of the Second World War, leaving the houses standing empty until clearance started again later in the war (Martin 2018; Shaw 2003). An early post-war aerial photograph records the partial demolition of buildings at the top end of the street with those in the middle still standing and those at the bottom replaced by Horsa huts and a brick tower (Picture Penzance 2019).

During the post-war period the whole site was redeveloped. Initially, during the late 1940s the southern part was rebuilt, with the depot being constructed to the north later. The 1:2500 Ordnance Survey map of 1963 shows the north-western two-thirds of the site as a 'Corporation Yard', containing several buildings, and the south-

eastern remainder, containing the Horsa huts and brick tower, as 'Water Board Offices'.

Historic building recording

The surveyed buildings comprised three derelict Horsa huts and an attached brick boiler house. All were located in the southern third of the site, separated from the remainder of the former depot to the north west (Fig 3). The buildings were terraced into the hillside, and where necessary the huts were supported on raised foundations. The south-west side of the plot was defined by a concrete block retaining wall to the Adelaide Street service alley, and to the south east along Cross Street by part of the brick boiler house, a low rendered concrete block wall and an iron fence. A summary of the building descriptions is presented below with full descriptions available in Passmore (2017).

The huts

The huts were contiguous and aligned north east to south west, extending across the width of the property, with the south-easterly pair, closest to Cross Street, measuring approximately 26m by 8m, with the other 20m long with an external loading stage at the north-east end. In each hut the frame was constructed of vertical chamfered concrete pillars, infilled with 'panels' of large ceramic blocks, similar in size to concrete blocks, set onto a concrete cill. These are not a common building material, but have been recorded in similar buildings, now demolished, at Westlands School in Torquay (Manning and Passmore 2000). These blocks were capped by concrete wall plates incorporating central shallow chamfers above the larger panels. The truss spacing was equidistant on the side elevations, but the arrangement incorporated two narrower bays on the gable elevations. The foundation below the cill was red brick laid in English bond. The upper sections of the gables were finished with corrugated asbestos sheets, each incorporating a central vent covered with the same material. The roofs were pitched and finished with corrugated asbestos sheets incorporating rows of plastic roof lights. The walls incorporated original doors and windows. Hut 1 contained a window set at the south-east end of the wall. It appeared to have a metal frame, which would be typical of the period. In the same



Fig 3 General view of the Horsa huts at the eastern tip of the development area, looking west, with Cross Street to the left and the service alley behind the Mount Street houses to the right. The closest is hut 1 and the gable end of hut 2 can be seen. The shorter hut 3 is hidden to the rear. To the left is the brick boiler house with water tower.

elevation hut 2 incorporated a doorway at the north-west corner.

The brick building

This structure was constructed of white-painted brickwork laid in English bond, and comprised two elements: a single-storey garage to the south east and a tall one- and two-storey structure to the north west with the first floor being a tower. All the roofs were flat with felt coverings.

Comments

Horsa was an acronym for ‘Hutting Operation for the Raising of the School-leaving Age’. In 1947, following the Education Act of 1944, the school-leaving age was raised from 14 to 15, and Horsa huts were constructed to provide extra accommodation. The design of the Horsa hut

follows on from temporary prefabricated buildings designed and constructed during the Second World War. They were designed to be utilitarian but incorporated subtle architectural features such as the chamfering on the trusses and window lintels, while remaining robust and easy to construct. The attached brick building would have functioned as a boiler house and fuel store, with a water tower at first-floor level. Such buildings were commonly constructed onto Horsa huts.

There is no record of the huts being used as a school and, although designed for the purpose, it is clear that Horsa huts were flexible spaces which could be used for multiple purposes. It is most probable that in this instance they were constructed for a temporary Post Office sorting office, as reported in *The Cornishman* (11 July 1946, p6). This later became known as the Cross Street sorting office and was mentioned in *The Cornishman* in 1950 (24 August, p2) when a postal worker was

charged with stealing from the Post Office and the theft of parcels in the post.

By 1963 the buildings were being used as Water Board Offices (1:2500 Ordnance Survey map). At that date responsibility for water supply was with the local authority, and it appears that since the outbreak of the Second World War the whole development site had been in local authority ownership.

Watching brief

As expected, the south-east portion of the site had been subject to significant previous truncation, and no archaeological deposits were exposed. Similarly, most of the central and south-west side of the north-western portion of the site was also heavily disturbed, with this disturbance generally correlating with the positions of the (demolished) mid-twentieth-century depot buildings. Camberwell Street itself survived at the north-west end of the site, with a row of 11 houses uncovered on its east side and more truncated remains of four houses on the opposite side (Fig 4). The archaeological investigation essentially involved clearance and cleaning down to surviving walls and flooring followed by recording. There were only a few finds, a notable one being a cast iron oven door made by P B Corin / Anchor Foundry / Penzance which dates to after 1900 (for full finds descriptions see Payne (2019)). A summary of the house remains is provided below with more detailed descriptions available in Passmore (2019).

The street and street frontage

A 12.5m length of Camberwell Street was exposed (Fig 5). It measured 1.60m wide with a concrete surface incorporating a gutter along its east side. Both sides were edged with granite kerbs. Unlike the adjacent streets there were no associated pavements, but the houses had 3m deep front yards. Some of these yards had granite boundary walls between the properties and historic photos show wooden fences to the front. There was some evidence for cobbled surfaces in the yards, but others were finished with secondary concrete or contained garden soil. Paths to the front doors were finished with either concrete or earlier red tiles, slate, or cobbles, and were defined by slate or granite edging. North west of house no 22 the street

had a cobbled surface, mostly replaced in tarmac, and here part of the granite boundary wall to the rear of a property on Penwith Street survived.

The north-east terrace houses

The houses were broadly identical (although the plan form was generally reversed on pairs of houses). They were constructed with granite exterior and party walls, the latter being of either thicker granite incorporating fireplaces or, between pairs of houses, thinner brick on granite or mortar foundations. The larger granite walls were made of two faces with a rubble fill which was bonded by brown clay. One butt joint on the rear wall between houses 27 and 28 indicates that there was a sequence in the building of the terrace on this side of the street, with the houses from 28 to the south east constructed earlier than those to the north west. Each house measured 4.80m deep by 3.75m wide internally and contained two principal rooms served by a front entrance hall.

House 23 was the end property in the terrace on the north-east side of Camberwell Street, and was slightly larger than the other recorded houses, measuring 5.25m deep by 4.40m wide internally. The internal partitions were constructed of red brick. All were originally plastered, which partially survived, generally adjacent to the floors. Where surviving, the entrance halls had a slate floor, as did the kitchens of houses 23 and 32, but the majority of the rooms had concrete floors (Fig 6), some with fragments of a lino covering. There was very little evidence for original floors, which, where present, were of slate laid onto a bedding of lime mortar. Contemporary cement skirting also survived in some houses. Consistent areas of disturbance (including evidence of burning) within the rear rooms, behind the entrance hall, indicated the position of stairs to the first floor. Adjacent to the position of the stairs were doors originally to rear yards, but often outshuts were added providing extra internal space (Fig 7). The front rooms had central windows with partial walk-in reveals. No evidence for windows in the rear rooms was identified. Historic photographs in the Morrab Library show that the houses had six-over-six pane hornless sash windows with single first-floor windows only on the front and rear elevations (e.g., Fig 8). Both the front and rear rooms were heated with brick-lined fireplaces, with slate or other stone hearths; rarely fragments of stoves survived *in situ*

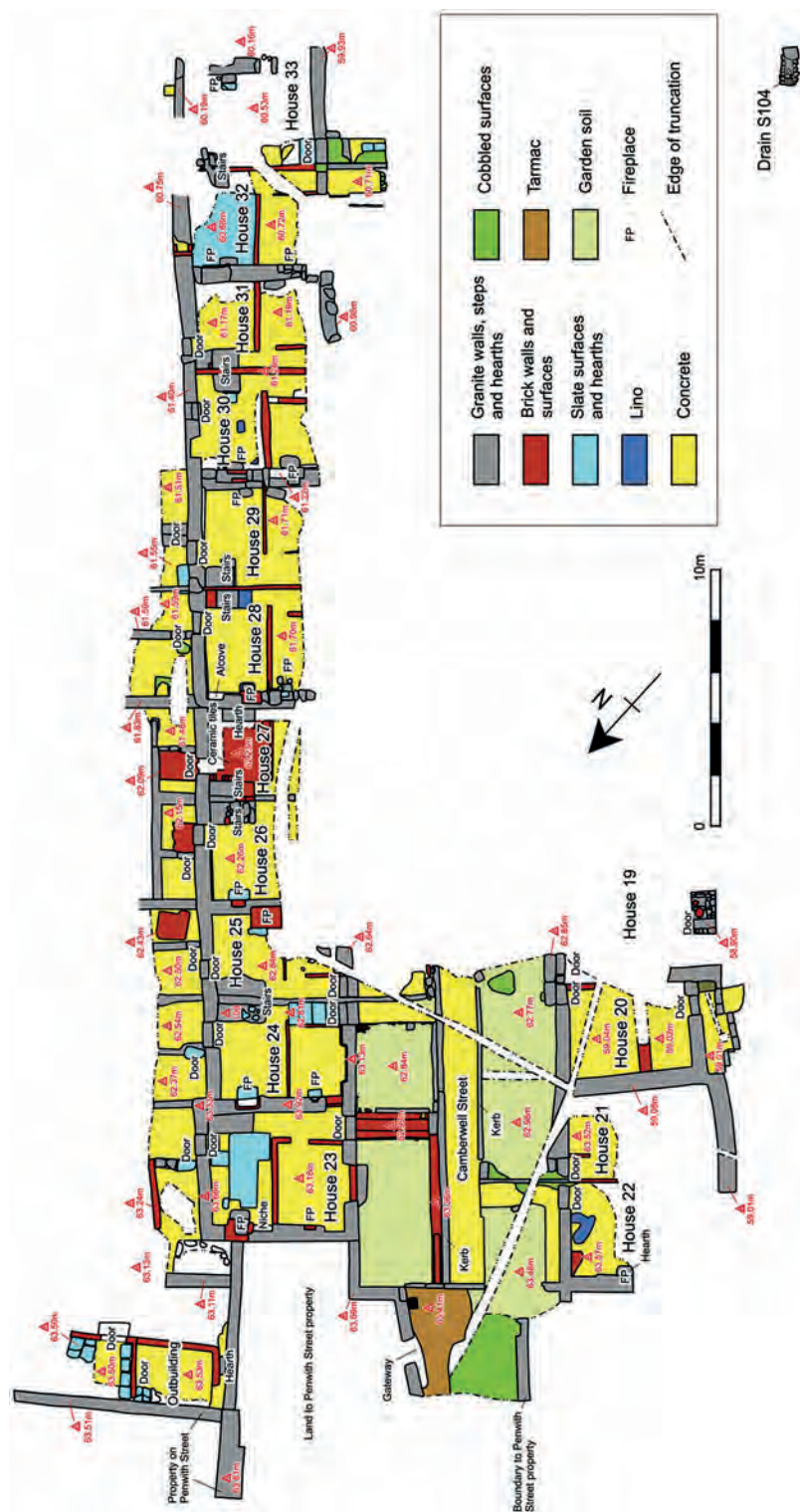


Fig 4 Plan of archaeological observations.



Fig 5 General view of the site showing Camberwell Street (foreground) with houses 23–26 to the rear as well as the front yards of houses 23 and 24.



Fig 6 Houses 23 (foreground) and 24, showing the slate flag floor in the kitchen of house 23, looking south east.



Fig 7 The rear yards and outshuts to houses 26 and 27 showing brick surfaces, looking south east.

in the rear rooms, indicating that kitchen facilities were located here. The positions varied slightly to allow for fireplaces, in adjacent properties, in the party walls.

Walls and structures north of house 23

Historic maps show two yards to the north of house 23 associated with a pair of larger houses on Penwith Street. Parts of the granite boundary walls of the western yard were exposed, incorporating a pedestrian gateway from Camberwell Street. The granite rear wall of the north-western house was exposed, and within its yard was a two-roomed brick extension to the building. This had slate and concrete floors.

The south-west terrace houses

The highly truncated remains of houses 19–22 were exposed at the north-west corner of the site. As on the opposite side of the street, the end house (22) was (very slightly) larger than the adjacent houses. Where present all had concrete floors,

although in house 22 part of a slate floor survived. Only the footings of the walls remained, and there was only limited evidence for external doorways. Fragments of internal partitions survived in houses 20 and 21. The only remaining fireplace was in the north-west wall of house 22. Externally, the front yards of houses 20–22 consisted of garden soil with the remains of concrete and cobbled paths. To the rear, part of an extension or rebuild of the rear outshut of house 20 survived, with granite walls and a cobbled and concrete surface.

Drain S104

Removal of the retaining wall between the northern and southern portions of the site exposed a north west to south east aligned granite drain (S104). It was exposed for a length of 1.48m and had internal dimensions of 0.60m wide by 0.84m deep. There were no finds.



Fig 8 Camberwell Street, Penzance, 1934 (with the kind permission of the Morrab Library, Penzance). The emptiness of this view perhaps indicates that the photograph was taken shortly after the street was abandoned in preparation for demolition. The house looking down the street with the arched door is 16 Penwith Street, which is still occupied, showing that many contemporary houses, although extended to the rear, often knocked through on the ground floor, and provided with modern services and insulation, are still successfully inhabited in the present day.

Discussion

Andrew Passmore and Paul Rainbird

The excavations at the former depot site on Penwith Street uncovered the remains of 15 terrace houses on Camberwell Street (originally Camborne Street), as well as parts of the rear of three properties on Penwith Street. No earlier archaeological deposits were exposed, and the few earlier finds recovered are clearly residual.

The houses were small two-up, two-downs constructed of granite under slate roofs. Slightly larger buildings were located at the ends of terraces. The fronts of the houses were set back behind small front yards. The 1841 Penzance tithe map shows that some of the houses had rear outshuts with later Ordnance Survey maps showing smaller

structures – probably privies – adjacent to the rear alleyways. Parts of the rear outshuts survived and where upstanding walls were present they were constructed of brick laid onto granite foundations. No internal fittings (such as drains) were present, and the outshuts were probably stores with food larders.

The houses had consistent internal floor plans with two ground-floor rooms accessed via an entrance hall; all internal partitions were brick. Stairs to the first floor were located behind the entrance with fireplaces in each room located on the opposite side of the rooms to the entrance hall and staircase. Many of these were brick lined and the historic photograph of Camberwell Street (Fig 8) shows brick stacks above the rooflines. The evidence for ranges shows that the rear rooms were

kitchens. The range door noted above dated to the early twentieth century and there is considerable evidence for other early twentieth-century updating of the houses. In most houses this took the form of replacement concrete (and in some cases lino) floors within the houses, rear outshuts, rear yards and front paths, replacing slate flagstones within the main rooms of the houses and cobbles, bricks and slate flags elsewhere. The finds recovered from the demolition deposits hint at the presence of electricity, and at the time of their abandonment a local account states that the houses had gas (Shaw 2003; Gibson 2018); pipes recorded outside houses 23 and 24 (Fig 5) may have been gas pipes and Figure 8 shows what appear to be public street gas lamps.

Comparison with workers' cottages elsewhere

The Camberwell Street houses may be considered as representing workers' cottages. In comparison with neighbouring Mount Street, Adelaide Street and the others (Fig 2), the layout of Camberwell Street seems more cramped, although the distance between the fronts of the houses on either side of the street is only a little less than on the surrounding streets; but instead of opening on to the street the addition of the front yards creates the narrow width of the roadway itself. Despite the house plots being of a similar length in Camberwell Street as in the other surrounding streets, the way the space has been used is different. The Camberwell Street houses are mostly smaller than those in the surrounding streets and are also made up of mirror-image twinned houses, unlike the terraced houses in the surrounding streets.

Excavations providing comparanda are more typical of the industrial north of England. Early nineteenth-century cottages at Hall's Court in the Ancoats area of Manchester found one-up-one-down back-to-back cottages with a footprint of 15.75 sq m (Nevell 2014). The Camberwell Street cottages had a slightly larger footprint of approximately 18 sq m, but also had access through a rear door to a yard, and a small fenced off area to the front. The Camberwell Street properties were also of better quality compared with the Manchester cottages, which had all their party walls constructed only one brick thick (*ibid*), whereas at Camberwell Street the party walls containing back-to-back fireplaces were stone built and significantly thicker. Elsewhere in Manchester,

at Loom Street, back-to-back cottages constructed between 1807 and 1813 had maximum footprints of 4m by 4m (16 sq m) but were also furnished with a heated half cellar (*ibid*). Notably absent from excavated Manchester workers' cottages were running water in most properties and outside privies throughout the nineteenth century; in Camberwell Street, although none were excavated, historic mapping and Clark's 1849 report indicate that earth closets were provided at the rear of the yards. In Manchester, as elsewhere in the industrial north, communal privies were provided, but these were often small in number compared with the number of households they serviced; for example, at New Drop in Kirkham, near Preston, Lancashire, in 1851, just four privies were provided for 39 houses (Timmins 2013). In regard to provision of privies, the Camberwell Street residents appear to have been significantly better off.

By the 1830s concerns were being raised nationally that the living conditions provided by workers' housing were leading to higher mortality rates, with frequent epidemics of cholera, typhus and dysentery (Newman and Newman 2008). The main culprit for these problems was regarded as the back-to-back housing which, only having one external wall, did not allow for a through draft of air, which was considered essential for healthy living. These back-to-backs were either knocked through, to create two-up, two-downs or demolished, and in places like Accrington, Lancashire, for example, from the 1850s on, the bulk of new builds 'were two-up, two-down terraced cottages, with a front living room, rear kitchen and a small back yard containing a privy with an ash pit' (*ibid*, 191). So, although Camberwell Street was part of a dense development of terraces, they were of a type that was probably regarded as good provision for workers' families in the first half of the nineteenth century. The key problem with Camberwell Street may be regarded as the size of the road which gave poor access to the fronts of the properties and gave an impression of cramped conditions. In reality, this 'cheek-by-jowl' living was little different from the confined organic development of fishermen's cottages in many of the harbour villages of the county.

Although the quality of the housing provision may be regarded as having been comparatively good compared to northern English workers' cottages (and many similar contemporary houses are still lived in: *cf* Figure 8), the number occupying each

Table 1 Census data from 1841 to 1911 for excavated houses 20–33 showing for each household: number of adults/trades/number of children (Source: The Genealogist)

House no.	1841	1851	1861	1871	1881	1891	1901	1911
20		5/shoemaker, basket maker, baker's apprentice, plumber & glazier's apprentice/2	3/cordwainer, bookbinder/0	2/shoemaker/3	4/mariner, butcher, coachbuilder/3	4/laundry mangle woman, tailorress, groom-stable boy, errand boy/0	2/general labourer/0	2/tailor's errand boy/0
21		2/shoemaker/4	3/labourer, cordwainer/3	5/labourer at coach shop, shoemaker x 2, labourer, apprentice/3	2/dressmaker, general labourer/0	2/coachbuilder labourer/0	2/house painter/1	2/carpenter (house)/0
22			2/marine store dealer/2	3/marine store dealer, domestic servant/1	5/marine store dealer, domestic servant, smiths x 2, laundress/6	2/pork merchants assistant/2	2/basket maker/ 2	2/groom/0
23			3/machine fitter, basket maker/3	5/charwoman, draper's apprentice, errand boy, mason, basket makers apprentice/2	3/tailorress, copper miner/1	1/-/3	4/tailorress, building (mason), baker/ 2	4/PT instructor, charwoman, nursery (domestic)/ 2
24		3/school mistress, farm labourer/0	3/keeps a school, butcher/2	4/railway fireman x 2, millwright /5	2/ laundress, seaman/2	Uninhabited	2/general labourer/4	2/farm labourer/ 3
25		2/cutler and brazier /4	3/licenced hawker, coachmaker, smith/4	2/ labourer, housekeeper/0	3/ charwoman, general labourer x2/0	1/-/0	2/sailor and naval reserve/0	3/railway labourer GWR, errand boy/ 1
26	7/mason x 2, shoemaker x 2/2		3/mason/0	3/mason/0	2/bootmaker/0	3/shoemaker x 2/0	2/ tailor/ 1	4/bakers assistant, basket maker/ 2

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27	2/labourer/0	2/highway labourer/0	4/dressmaker, ironfounder apprentice/0	3/shoemaker/ 2	1/stone mason (in Scilly)/2	2/cab driver/0	2/quay labourer/1	2/labourer/1
28		1/shoemaker/0	2/cordwainer/0	1/(husband at sea)/2	1/(husband at sea)/3	2/mason/5	3/wall mason x 2/1	2/house mason/0
29		4/shoemaker, shoemaker's apprentice, shoebinder x 2/0	2/cordwainer, bootbinder/0	2/ shoemaker, shoebinder/0	3/mariner, shoemaker/3	4/groom, butcher's apprentice, tailoress, retired shoemaker/0	2/mariner/2	3/fisherman, tailor's errand boy/0
30		2/paper maker/0	3/ hawker of glass, shoemaker/0	4/house painter, servant, dressmaker/2	2/stone mason/2	4/mason x 2, mason's apprentice/3	2/plasterer/1	2/plasterer/0
31		2/stone mason/2	3/house painter, servant/3	No entry	2/boot and shoemaker/0	2/stone mason/1	3/general labourer, house painter/0	7/charwoman, errand boy x 2, nurse girl, chagirl, retired cellarman (coal stores)/1
32		2/shoemaker/1	3/cordwainer/0	2/painter-journeyman/1	2/cab driver/0	3/ship's labourer, carpenter's apprentice/0	4/house painter, domestic servant, errand boy/1	2/butcher/2
33			2/cabinet maker/1	2/dressmaker/2	2/wheel wright/0	2/blacksmith and gas fitter/2	2/hotel porter/5	2/fireman (GWR)/0

Table 2 Names of lessees / household heads in the Penzance tithe apportionment 1841 and census data 1841–1911 (with age and birthplace), for the excavated houses nos 20–33 (Sources: Cornwall Record Office and The Genealogist). Note: PZ=Penzance.

House no.	TA 1841	1841	1851	1861	1871	1881	1891	1901	Census 1911
20	Plot 641 – William Paul	-	William Paul/49/PZ	William Paul/59/PZ	William Paul/69/PZ	Thomas John Oates/46/PZ	Susan Oats/51/-	John Jenkin/40/PZ	Margaret Reynolds/39/St Erth
21	William Michell	-	John Tresider/35/PZ	John Tresider/44/PZ	John Tressedder/54/PZ	John Tressedder/64/PZ	John Tresidder/74/PZ	Charles Pengelly/22/PZ	John Hackpen/29/Newlyn
22	Mr Wallis (lessee)	-	-	William Chappel/38/Buryan	William Chappel/-/Buryan	William Chappel/54/PZ also, 'Back of 22' – Harriet Rich/67/PZ	Mary Hockin/27/PZ	Thomas Young/42/Falmouth	Edwin Charles Came/26/PZ
23	Alice Davey	-	-	John Boon/34/Manchester	Elizabeth Boon (husband away)/49/Ludgvan, also, Charles Wallis/46/PZ	Elizabeth Arundell/81, St Just	Margaret Nicholls/30/Sancreed	Margaret Nicholas/39/Sancreed	Joseph Stanley Smith/30/PZ
24	Plot 619 - John Richards	-	Thomasina Richards/63/PZ	Thomasina Richards/73/PZ	George Friend/31/Bridford, Devon	Emma Tenbeth/50/Woolwich, Kent	Unocc.	Richard L. Harvey/33/Newlyn	William John Oliver/30/Gulval
25	Thomas Gendall	-	Thomas Wakefield/25/Plymouth	Thomas Wakefield/37/Plymouth	James Roach/48/PZ	Alice Lavars/50/Sancreed, also, James Roach/57/PZ, also, William Martin/20/PZ	Alice Roach/60/Sancreed	James Smith/31/Dawlish, Devon	William Carpenter/36/PZ
26	Plot 621 – John Uren	John Uren/50	-	John Uren/74/Gulval	Honor Uren/92/Buryan	Thomas Davy/42/St Just	Thomas Davy/51/St Just	George C Hancock/30/PZ	John Robert Lucas/33/London

27	Plot 622 – Francis Richards	Francis Richards/ 50	Francis Richards/70/ Gulval	Mary Tredwin/60/ Crowan, Cornwall	William Carbis/59/Paul, Cornwall	Ellen Allen (husband stone mason in Scilly)/24/PZ	Joseph Mitchell/50/PZ	James H Ford/28/ Madron	William Shearing/54/ Norwich, Norfolk
28	Mrs Fleming	-	Charles Wallis/69/PZ	Charles Wallis/80/PZ	Mary J James (husband at sea)/35/PZ	Mary J James (husband at sea)/44/PZ	William Allen/36/Gulval	William Allen/46/Gulval	William Allen/56/Gulval
29	Mr Hall	-	Henry Wallis/40/PZ	Benedict Henry Wallis/50/PZ	Benedict Henry Wallis/60/PZ	Joseph Bailey/42/ Falmouth	Grace M Bailey/55/ Perranuthnoe	Robert H George/30/ Sennen	James Henry Ford/40/ Madron
30	Unocc	-	Edward Lewis/31/PZ	Edward Lewis/42/Lynn, Norfolk	William Henry Oaks/39/PZ	Reginald Stevens/30/PZ	Reginald Stevens/40/PZ	Edward F Ford/37/Gulval	Edward Frank Ford/47/PZ
31	Unocc	-	William Henry Roberts/24/ Camborne	William Henry Oaks/29/PZ	Unocc	Thomas Wallis/43/ Sancreed	William J Stevens/55/PZ	William Stevens/67/PZ	Martha Luke/41/ Chyandour, Gulval
32	blank	-	William Carbis/39/Paul	William Carbis/49/ Paul, also, Grace Bailey/25/?, Cornwall	William H Harry/27/PZ	Joseph Mitchell/41/PZ	William Nicholas/52/ Sancreed	Sarah Williams/44/ Milford, South Wales	John Brewer/33/PZ
33	Dionysus Tremewan	-	-	John Richard Fleming/22/PZ	Mary J Mills (husband at sea)/35/PZ	James Peake/35/PZ	Phillip Henry Nicholls/41/PZ	William J Johns/34/Truro	Mary Eliza Casey/58/ London

cottage must have made a difference to quality of life. For example, no 22 was occupied by 10 people on census night 1881 (Table 1). This comprised three generations of the Chappell family; this is an extreme example, with most households being much smaller.

Social history

The tithe and census records dating from 1841 through to 1911 have been consulted for the recorded houses, nos 20–33. These records cannot be considered full until 1861 onwards, but the earliest have allowed the house numbers (first recorded in 1861) to be matched to the excavated buildings, with John Uren in no 26 Camberwell Street from 1841 until 1861 and William Paul in no 20 from 1841 until 1871 (Table 2). The houses were numbered consecutively going uphill on the left 1 to 22 and back down on the right from 23 onwards.

The places of birth of heads of household show little change over the 70 years covered by the census data, with the majority being locally born. There are a few patterns that may be discerned in

regard to the trades of occupiers of the excavated buildings. For example, between 1841 and 1861, of the 26 households where the occupation was recorded, 11 contained at least one shoemaker (shoemakers were also known as cordwainers); this was the case for one of two houses where occupations were recorded in 1841, five of 10 houses in 1851 and six of 14 in 1861 (Table 1). In this regard, it is interesting to find that in 1839 Penzance market reportedly had 30 to 40 stalls selling pairs of boot and shoes and due to the large number involved in the trade a Shoemakers' Club was formed as a special benefit society (Courtney 1878). According to Courtney (*ibid*, 12) there were only two stalls at the market in 1875 and this matches the decline found in Camberwell Street, with three shoemakers in 1871 and 1881, one in 1891 and none in 1901 and only a 'bootmaker's errand boy' in 1901. Otherwise, no other trades stand out except sprinklings of masons and labourers of various types.

Perhaps of note, at least in regard to absence, is that very few people in this harbour town appear to be directly involved with the sea; in 1871 and again in 1881 Mary James' husband at no 28 was



Fig 9 The True Love during her construction in a back yard; the photograph is dated 1900, but more probably c 1905 (with the kind permission of the Morrab Library, Penzance). The moving of this small fishing vessel from the rear of no 14 Camberwell Street required the demolition of several walls and attracted a crowd of 'fully a thousand people' (Cornishman, 18 May 1905). This is the lane between Camberwell Street and Adelaide Street. The house facing up the lane is 9a Cross Street, which still survives, albeit with a heavily modernised facade.



Fig 10 Camberwell Street, Penzance, dressed for Carnival, c 1920 (with the kind permission of the Morrab Library, Penzance). A decade later *The Cornishman* (25 August 1932, p2) reported that 'Hundreds of residents and visitors came to Camberwell-street this (Saturday) morning to see the imposing decorations for Carnival Week. The street is one blaze of colour: flags, festoons and streamers combining to make a very pleasant effect on the eye. Outside each entrance an arch has been erected, and there is an arch of welcome at the top end of the street. There is quite an artistic effect about the whole, and it is no exaggeration to say that this is the finest piece of decorative work in the town at the present time. ...Now, Camberwell-street having done itself great honour, has achieved for carnival itself. A collecting box was fixed at each end of the street, and as a result, £10s 3s. 2d. has so far been received for Carnival funds. On Monday the decorations were photographed, and the Mayor will present each of the 43 tenants with a copy.' This photograph and description illustrates a great sense of community spirit within the street, with a desire to collect funds for others, despite the inhabitants living in what was already regarded in the nineteenth century as sub-standard housing.

'at sea' and in 1881 there were two mariners listed, a 'ship's labourer' in 1891 and in 1901 there is a mariner, 'quay labourer' and 'sailor and naval reservist'. In 1911 there is a 'fisherman' only. Although a 'marine store dealer' is at no 22 from 1861 to 1881 this is a term for a rag and bone man.

A colourful addition to this small number is a Mr Ellis (at no 14, not one of the exposed houses), who, over several years up to May

1905, constructed a small fishing vessel, *True Love*, in his back yard (Fig 9). In the presence of a huge crowd, and with help from east coast fishermen, the vessel was moved into the lane between Camberwell Street and Adelaide Street and then down to Cross Street, breaking through the walls of back yards on its way (*Cornishman*, 18 May 1905, pp 3 and 6; 17 August 1905, p2; 6 September 1906, p5).

The archaeological recording has brought to light a street that for a century provided residences for mainly local people involved in a variety of occupations. This narrow street made it distinct from the other similar streets of terraces surrounding it and appears to have allowed for a sense of community to develop, which is certainly indicated by the celebrated decorations of the Penzance Carnival in the 1920s and 30s (Fig 10). The main contributors to poor conditions in Camberwell Street are likely to have been wider public health issues such as limited and contaminated water supplies and lack of efficient sewerage systems, rather than the buildings themselves; perceptions change, and had the houses survived to the level of completeness shown in Figure 8, today they could have been candidates for listing.

Demolition of the street in the 1930–1940s can be seen in the context of Penzance Borough Council's wider programme of slum clearance, better known and more extensive in neighbouring Newlyn, where the clearance programme produced much opposition, including a protest voyage to London in the fishing boat *Rosebud* in 1937 (Mattingly 2009, 152–65). The subsequent use of the site for a Post Office sorting office and council depot caused considerable disturbance to the below-ground remains of many of the houses, with only evidence for a few of the houses at the top end of the street surviving.

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archaeology under the project code ACD1606. In the longer term it is hoped that they will be transferred to a suitable repository as advised by the Royal Cornwall Museum.

References

- British Geological Survey 2019. *Geology of Britain online viewer* [online] Available at: www.bgs.ac.uk
- Cahill, N, 2003. *Cornwall and Scilly Urban Survey. Historic characterisation for regeneration: Penzance, Truro* (Cornwall County Council)
- Caldwell, I, 2009. *The story of Francis (Frank) Paynter and his relations* [online] Available at: www.newman-family-tree.net/The-Story-of-Francis-Paynter%20by%20Ian%20Caldwell.html
- Clark, G T, 1849. *Public Health Act (11 and 12 Viet., Cap. 63.). Report to the General Board of Health on a Preliminary Inquiry into the Sewerage, Drainage, and Supply of Water, and the Sanitary Condition of the Inhabitants of the Town of Penzance*, London (Her Majesty's Stationery Office)
- Costen, D, 2016. *Penwith Street Depot Site, Penzance, Cornwall: historic environment impact assessment*, Bradninch (AC archaeology document no ACD1397/1/0)
- Courtney, L, 1878. *Half a century of Penzance (1825–1875) – from the notes by J S Courtney*, Penzance
- Herring, P, Kirkham, G, Johnson, N, Sharpe, A, Cahill, N, Berry, E, and Thomas, N, 2011. Post-medieval Cornwall, *Cornish Archaeol*, **50**, 315–50
- Kirkham, G, and Cahill, N, 2011. Post-medieval towns, in Herring *et al*, 324–31
- Manning, P, and Passmore, A, 2000. *Archaeological recording of a Second World War building at Westlands School, Torquay, Phase 1*, Exeter (Exeter Archaeology)
- Martin, G, 2018. Builders have unearthed a lost Victorian street in Cornwall, *Cornwall Live* [online] Available at: <https://www.cornwalllive.com/news/cornwall-news/gallery/penzance-lost-victorian-street-found-2007845>
- Mattingly, J, 2009. *Cornwall and the coast; Mousehole and Newlyn*, Chichester
- Nevell, M, 2014. Legislation and reality: the archaeological evidence for sanitation and housing quality in urban workers' housing in the Ancoats area of Manchester between 1800 and 1950, *Industrial Archaeology Review*, **36**, 48–74
- Newman, C, and Newman, R, 2008. Housing the workforce in 19th-century east Lancashire: past processes, enduring perceptions and contemporary meanings, *Post-Medieval Archaeol*, **42**, 181–200
- Passmore, A, 2017. *Penwith Street Depot Site, Penzance, Cornwall: results of historic building*

- recording, Bradninch (AC archaeology document no ACD1606/2/0)
- Passmore, A, 2019. *Penwith Street Depot Site, Penzance, Cornwall: results of archaeological monitoring and recording*, Bradninch (AC archaeology document no ACD1606/3/0) [online] Available at: doi.org/10.5284/1051914
- Payne, N, 2019. The finds, in Passmore, 6–8
- Picture Penzance, 2019. Aerial pic of Penzance [online] Available at: www.picturepenzance.com/media/aerial-pic-penzance-.22418/
- Shaw, D, 2003. Raggedyass kids, *WW2 People's War. An archive of World War Two memories – written by the public, gathered by the BBC* [online] Available at: <https://www.bbc.co.uk/history/ww2peopleswar/stories/48/a1149248.shtml>
- The Genealogist website [online] Available at: www.thegenealogist.co.uk/
- Timmins, G, 2013. Housing industrial workers during the 19th century: back-to-back housing in textile Lancashire, *Industrial Archaeology Review*, **35**, 111–27

Millbrook: a ‘new’ medieval town?

GRAEME KIRKHAM

This note proposes that Millbrook, in south-east Cornwall, should be understood as one of the planned ‘new towns’ established in Cornwall in the medieval period by substantial landowners. It briefly reviews some evidence for the settlement’s historic topography, status and development, and for its economic functions during the medieval and early post-medieval periods.

Millbrook (centred on SX 4233 5211) lies in the parish of Maker, in south-east Cornwall (Fig 1), and in the modern era is generally regarded as a large village. However, the topography of its historic core, together with records of early fourteenth-century grants of markets and fairs, together suggest that it originated as a planned medieval town. As with all of the other known medieval urban centres in Cornwall, its early form appears to be that of a ‘street town’, set out along a single principal axis (Kirkham and Cahill 2011). In this instance the street gave access to a landing place on Millbrook Lake, a sheltered arm of the Hamoaze branch of Plymouth Sound. Notably, the street also formed part of a significant long-distance routeway. This ran from Cremyll, 3.7 km east of Millbrook, the landing point for an important ferry link with Stonehouse, on the east side of the Hamoaze, first documented in the eleventh century; from Millbrook it continued west along the coast via West Looe into mid- and west Cornwall; this was the route taken by Celia Fiennes, for example, when she travelled into the county in the 1690s (Bennett 2007, 28, 35; Cornwall and Scilly Historic Environment Record (HER) MCO 23230; Chope 1967, 122). Other medieval Cornish ‘throughfare towns’ (cf Fox 1999, 403), with their principal streets similarly located on major through-routes, include West

Looe, Grampound, Saltash, Camelford and Redruth.

The Maker tithe map of 1841 is rather schematic in its portrayal of buildings and plot boundaries within Millbrook; a fine 1784 map of the Plymouth area by William Gardner shows Millbrook’s buildings well but not plot boundaries (National Archives MR 1/1385). The first detailed, large-scale depiction of the settlement is therefore the 1st edition Ordnance Survey 6 in map, surveyed 1856–66 (Fig 2). This shows the settlement with its principal axis, West Street, lying roughly west–east and following the lower part of the stream valley which descends from the hills to the west to enter the sea at Millbrook Lake, to the east. Narrow, elongated parcels resembling classic medieval burgage plots extend back from narrow street frontages on the north and south sides of the main axis. These plots are not uniform in size and orientation and may represent several phases of expansion. Most are relatively short by comparison with burgage plots found elsewhere – only around 40m from street frontage to rear boundary in the lower part of the street, compared with 100m and more in Tregony and Grampound, for example – but this may be a consequence of the constraints of the site, with steeply sloping valley sides to north and south and the street paralleled by a stream to the south and what may have been a pre-existing

0 m 200

M

Millbrook

Newport Street

St Andrew's Street

West Street

Millbrook Road

Post Office

Millbrook Farm

Chapel of St. Mary

Millbrook

240

routeway to the north (below). Burgage plots in West Looe, also on the south coast routeway and in a similar valley location, are also rather shorter than examples on less constricted sites.

West Street is generally narrow but the central portion is shown as slightly wider than the continuations of the street to west and east, resembling at a reduced scale the classic 'cigar-shaped' main streets found in other medieval towns (for instance, Tregony, Helston (Coinagehall Street) and Redruth (Fore Street). Property boundaries around the eastern end of West Street also hint at the former existence of a large triangular or trapezoidal open area, now infilled, which may originally have served as a space for markets and fairs. Again, such features can be paralleled elsewhere (Kirkham and Cahill 2011). The eastern side of this space would have fronted onto a landing place or quay, also now infilled, at the landward end of Millbrook Lake. A map of c 1539 shows the town in stylised form as a linear cluster of single-storey dwellings close to a landing place for small vessels (Stuart 1991, pl 1).

Millbrook's origins as a planned urban settlement are likely to date to the early fourteenth century. In 1319 Richard de Champernoun – the Champernowne family were substantial landholders in both Devon and Cornwall in the medieval period (Lysons and Lysons 1814, lxviii; 1822, cxxxix–cxl) – received grants from King Edward II for a Tuesday market and an annual three-day fair on the vigil, feast and morrow of St Michael at his 'manor of Inneswerke' (*Calendar Charter Rolls* 1908, 415); the former Insworke manorial complex, first recorded in 1250 (HER MCO 9993, 15058), lay 700m north east of the present centre of Millbrook. Padel (1988, 123) notes the place-name Millbrook as first recorded in 1342. However, an acre of land at Millbrook formed part of an exchange in 1266 (Archives and Cornish Studies Service (ACSS) ME/655) and an agreement made in 1432 referred to what were probably farm holdings at 'South Milbroke' (ACSS ME/1314); Hals, in the early eighteenth century, referred to 'Millbrook' as bounding the northern part of Maker parish (Polsue 1867–72, III, 245). It is possible, therefore, that the name originally referred to an area, plausibly focused on the stream valley in which the settlement lies, and subsequently became attached to the new town. Carew noted in the late sixteenth century that the settlement 'lurketh between two hilles . . . borrowing his name from a mill and little brook,

running therethrough' (Chynoweth *et al* 2004, 101r). The precise location of the medieval mill is unknown, although it was probably on the south side of the eastern end of West Street (HER MCO 23171).

Millbrook was not included among Cornwall's medieval towns by Beresford (1967), Sheppard (1980) or Fox (1999), but Henderson (1935, 23) noted it as one of a number of seigneurial boroughs in the county, 'without mayors, members or charters'. It was cited as a borough in 1495 and as the 'burgus [town] of Mylbroke' in a building lease of 1524, which also refers to 'burgenses' (burgesses) (National Archives CP 25/1/34/45, no 9; ACSS CY/480). Later documents also refer to the 'borough of Millbrook' (for example, ACSS ME/306; ME/520; P152/2/139; AD/1310/2). The corporate seal of the borough, showing a mill by a brook in rural surroundings and with the legend '*Sigillum de Milbrookia*', was recorded by Worth (1874, 288) (Fig 3). The existence of a seal implies burghal functions and Worth noted that its holder described himself as 'borough reeve'; a 'portreeve' was mentioned at Millbrook at about the same time, although his powers were said to be 'very limited' (Polsue 1867–72, III, 254). A house with possible sixteenth-century origins at Dadbrook, just to the south of the town, was said to have formerly been the 'Court House' of the tithing (Insworke) (Polsue



Fig 3 The Millbrook borough seal (Worth 1874).

1867–72, III, 251; MCO HER 10783; Pool 1981, 331). Hals claimed in the early eighteenth century that until the time of Henry VIII Millbrook sent two MPs to Parliament, although this has been rejected by later commentators (Lysons and Lysons 1814, 212; Polsue 1867–72, III, 246, 254).

There is little information on Millbrook's function as a market and fair centre. Carew, c 1600, noted a weekly market there; by the early nineteenth century this was 'long disused' (Chynoweth *et al* 2004, 53v; Lysons and Lysons 1814, xxxvii–xxxix, 212, although see Hitchins and Drew 1824, II, 445). The original fair continued into the post-medieval period, latterly on 29 September, and a new fair was added on 1 May at some point prior to the late 1780s; in the nineteenth century both were primarily cattle fairs (Owen 1788, 10; Lysons and Lysons 1814, xl, 212; Polsue 1867–72, III, 254).

In the early modern period Millbrook was known as a port and fishing centre. Leland, in the 1530s, described it as a 'rich fisher town', subsequently a 'simple fisher town' (Gray 2000, 24, 31). Norden (1728, 96), probably writing in the 1580s, noted it only as a 'hamlet within the haven of Hamoze' [Hamoaze], but Carew, who lived nearby at Antony, described it as 'a village of some 80 houses . . .', adding: 'in my remembrance (which extendeth not to above 40 yeeres) this village tooke great encrease of wealth and buildings, through the just and industrious trade of fishing, and had wel-neere forty ships and barks at one time belonging thereunto' (Chynoweth *et al* 2004, 101r). Elsewhere in his *Survey* Carew specified that 'Barkes and Ships' were used for 'trafficke' (that is, trade), and records of vessels belonging to Millbrook suggest some importance as a mercantile port (*ibid*, 27r; *cf* Gray 1990; Whetter 2002, 128); several late sixteenth- and seventeenth-century wills and other documents refer to Millbrook merchants: National Archives PROB 11/85/152; ACSS AP/C/366; AP/T/380; AD/1310/1–2; AP/D/723). However, Carew also hinted that the recent wars with Spain had blighted the town's maritime trade and encouraged it rather, as a 'suburbiall market' to Plymouth, to take advantage of its position by 'intercepting, if not forestalling, such corne and victuals, as passing thorow their streights, cannot for want of time or weather, get over Crymell passage, to the other' (Chynoweth *et al* 2004, 101r). Carew's use of the term 'streights' neatly emphasises Millbrook significant position on the route from south Cornwall to Plymouth's

important commercial focus (Fig 1). Proximity to Plymouth and the potential for supplying shipping may have been part of the context for the construction of a large tide mill on the northern edge of Millbrook Lake, the inlet to the east of the town, in the late sixteenth century; the surviving structure has a 1598 date stone and architectural fragments of broadly contemporary date (Gaskell Brown and Watts 2011).

The primary purpose of this note is to highlight Millbrook's origins as a medieval planned town, elements of which can still be seen in its layout. Although the settlement did not survive as a significant urban centre, it merits consideration alongside those with similar beginnings already known in Cornwall and the wider south west (Kirkham and Cahill 2011; Fox 1999). Further work is required to develop this identification and to decipher other aspects of the settlement's historic layout and development. Some initial thoughts on the latter are outlined below.

The present Newport Street and its westerly continuation along St Andrew's Street may represent an early link between the manorial centre at Insworke and the long-distance route running west along Cornwall's south coast referred to above, joining the latter at Hounster Hill, just to the west of the town. If this was the case, the new urban settlement established along West Street in the early fourteenth century was sited immediately below and parallel to this axis, presumably to take advantage of less steeply sloping land alongside the through route from Cremyll where this passed through the valley bottom, and to align on the landing place at its eastern end. Subsequent development, perhaps the 'great increase of . . . building' in the later sixteenth century which Carew reported (above), appears to have incorporated the probable earlier route into the built-up area of the town: buildings apparently following Newport Street towards Insworke are shown on a map of c 1591 (Stuart 1991, pl 8) and the name 'Newport' was documented in 1601–2 and again in 1621 (ACSS AP/J/6; ME/306). (It conceivably preserves a reference to the town's medieval origins as a 'new' market centre (*cf* Gelling 1978, 78).) The survival of sixteenth- or seventeenth-century buildings on St Andrew's Street (HER MCO 10866) and towards the western end of West Street (HER MCO 10867; National Heritage List for England 1140606) hints that Carew's 'great increase' was also at least partly accommodated

in these areas. The name of St Andrew's Street, while possibly having some historic resonance as a reference to the patron saint of fishermen, or the important medieval parish in Plymouth, may not be early: the first documentary reference identified dates only from 1845 and in 1719 this route was referred to simply as the highway from Newport Street to 'Hownston' (now Hounster) (ACSS WW/697; Plymouth Archives 252/3).

Author's note

Grateful thanks to Cynthia Gaskell Brown for comments on a draft of this note and for sight of a copy of the 1784 Gardner map.

This paper originated as a record for the Cornwall and Scilly Historic Environment Record (MCO 15732), following a conversation in 2009 with the late Nick Cahill. It has been revised and expanded, within the limitations imposed on research by current pandemic precautions, and is dedicated to Nick's memory, with sincere thanks for all he taught us about understanding Cornwall's historic towns and industrial settlements.

References

- Bennett, F, 2007. *The roads of Devon and Cornwall*, np
- Beresford, M, 1967. *New towns of the Middle Ages: town plantation in England, Wales and Gascony*, London
- Calendar of the Charter Rolls preserved in the Public Record Office, London: Edward I, Edward II: A.D. 1300–1326, 1908, London (HMSO)
- Chope, R P, 1967. *Early tours in Devon and Cornwall*, Newton Abbot
- Chynoweth, J, Orme, N, and Walsham, A, eds, 2004. *The survey of Cornwall*, by Richard Carew, Devon and Cornwall Record Soc, ns, **47**, Exeter
- Fox, H, 1999. Medieval urban development, in R Kain and W Ravenhill, eds, *Historical atlas of south west England*, Exeter, 400–7
- Gaskell Brown, C, and Watts, M, 2011. *Insworke tide mill, Millbrook, Cornwall: archaeological report, building record and interpretation of the mill*, Millbrook
- [online] Available at https://archaeologydataservice.ac.uk/archiveDS/archiveDownload?t=arch-1133-1/dissemination/pdf/cynthiag1-112837_1.pdf [accessed 7 January 2021]
- Gelling, M, 1978. *Signposts to the past: place-names and the history of England*, London
- Gray, T, ed, 1990. *Early Stuart mariners and shipping: the maritime surveys of Devon and Cornwall*, 1619–35, Devon and Cornwall Record Society, ns, **33**, Exeter
- Gray, T, 2000. *Cornwall: the travellers' tales*, volume one, Exeter
- Henderson, C, 1935. A note on the origin of Cornish towns, in A L Rowse and M I Henderson, eds, *Essays in Cornish history* by Charles Henderson, Oxford, 19–25
- Hitchins, F, and Drew, S, 1824. *The history of Cornwall, from the earliest records and traditions, to the present time*, Helston (2 vols)
- Kirkham, G, and Cahill, N, 2011. Medieval towns, *Cornish Archaeol*, **50**, 306–14
- Lysons, D, and Lysons, S, 1814. *Topographical and historical account of the county of Cornwall*, London
- Lysons, D, and Lysons, S, 1822. *Magna Britannia; being a concise topographical account of the several counties of Great Britain. VI: Devon*, London
- Padel, O J, 19888. *A popular dictionary of Cornish place-names*, Penzance (Alison Hodge)
- Polsue, J, 1867–72. *A complete parochial history of the county of Cornwall*, W Lake, ed, Truro (4 vols)
- Pool, P A S, 1981. The tithings of Cornwall, *Jnl Royal Inst Cornwall*, ns, **8**, **4**, 275–337
- Norden, J, 1728. *Speculi Britanniae Pars: a topographical and historical description of Cornwall*, London [facsimile reprint, Newcastle upon Tyne, 1966]
- Owen 1788. *Owen's new book of fairs*, London
- Sheppard, P, 1980. *The historic towns of Cornwall: an archaeological survey*, Truro (Cornwall Committee for Rescue Archaeology)
- Stuart, E, 1991. *Lost landscapes of Plymouth: maps, charts and plans to 1800*, Stroud
- Whetter, J, 2002. *Cornwall in the seventeenth century: a study in economic history*, Gorran (Lyfron Trelyspen; reprint of 1974 edition)
- Worth, R N, 1874. The common seals of Cornwall, *Jnl Royal Inst Cornwall*, **15**, 278–94

Recent work in Cornwall 2019

This summary does not necessarily include all work carried out in Cornwall during a particular year. Some archaeological work is deemed commercially sensitive and the resulting client reports are not made publicly accessible for a period after the work is complete. In normal circumstances these reports should be lodged with the Cornwall and Scilly Historic Environment Record via OASIS (Online Access to the Index of archaeological investigationS: online at <https://oasis.ac.uk>) and will become available at some future date via the grey literature library provided by the Archaeology Data Service (<https://archaeologydataservice.ac.uk/archives/view/greylit/>).

Note that in some instances work included here was carried out at an earlier date but the resulting report was only completed in the specified year.

AC archaeology

*Land at Tregoddick Farm, Madron
(SW 4541 3199)*

An archaeological trench evaluation was undertaken during June 2019 on land at Tregoddick Farm, Vingoe's Lane, Madron. The evaluation comprised machine excavation of five trenches, each 1.7m wide, totalling 100m in length. A previous geophysical survey had identified one anomaly running north east – south west in the southern part of the field which was thought to represent a linear archaeological deposit or recent ground disturbance. The evaluation established that the results interpreted from the geophysical survey were generally accurate, with the targeted blank locations revealing negative results. The single geophysical anomaly was found to be of geological origin. There were no archaeological features, deposits or finds and no evidence was found to indicate that the medieval settlement of Tregoddick was located here or that the medieval settlement of Madron previously extended into this area.

- Project Supervisors: Tom Etheridge and George Gandham.

*Land at Atlantic Farm, Stratton, Bude
(SS 2232 0517)*

Archaeological monitoring and recording were undertaken during January 2019 on land at Atlantic Farm, located approximately 1 km to the south of Stratton on land to the east of the A39. The work comprised the monitoring of groundworks associated with the creation of 12 foundation platforms for new holiday lodges. The site covered parts of four adjacent plots that prior to commencement were under pasture or occupied by camping pitches. Groundworks comprised the machine-stripping of soils from 12 areas each measuring a maximum of 18m by 9m. The work exposed a single ditch in one of the areas. This was dated by four sherds of Roman pottery recovered to around the second century AD. The function of the ditch was not established but it probably represented some form of plot or enclosure boundary.

- Project Supervisor: Stephanie Ralph.

Lametton Mill, St Keyne (SX 25040 61000)

An historic building record of Lametton Mill was prepared on behalf of the private owners

in January 2019, prior to redevelopment of the derelict building into residential accommodation. The building has a long history and is documented as a manorial corn (or grist) mill from 1610. The survey identified masonry, possibly of medieval or early post-medieval date; this pre-dates the main masonry of the current mill which may be of late seventeenth- or early eighteenth-century date. In the mid- to late nineteenth century production was increased and the single waterwheel replaced with two new wheels in different locations. Floor space within the mill was also increased. The structure was adapted in the late nineteenth century for the production of animal feed, a process which involved replacement of the existing milling machinery with new steel roller plant. The building was further increased in size, and new internal fittings including bins and chutes installed. The mill continued in use until 1966 when milling ceased and it closed; all the machinery was then removed and sold. The survey identified the layout of the mill both when it was used to grind corn, and to produce animal feed; the current arrangement of fittings generally relates to the latter, although some earlier fittings survive, most notably the remains of hurst frames (structures supporting the gearing and millstones).

- Project Manager: Andrew Passmore. Project Officer: Stella De-Villiers.

*Electricity Distribution Reinforcement,
Morwenstow
(SS 20884 12665 to SS 24023 14433)*

Archaeological survey, monitoring and recording were undertaken between February and December 2019 before and during groundworks for the trench installation of an electricity distribution reinforcement cable over a distance of 5 km between the GCHQ Composite Signals Organisation Station Morwenstow and the Heathfield Cross substation. Earthwork survey of an area of possible shrunken medieval settlement to the north east of Eastaway Manor identified two possible house platforms, but most of the other features can be related to field boundaries which are shown from historic mapping to have been present in the middle of the nineteenth century and only removed during the twentieth. Archaeological monitoring and recording were undertaken in selected areas where potential for medieval settlement had been identified, but failed to uncover any archaeological features or deposits.

The few finds, comprising two sherds of pottery and a horseshoe, were derived from overlying deposits and are of post-medieval date.

- Project Supervisor: Chris Blatchford.

*Land at Nansledan phase 4, Newquay
(SW 8394 6135)*

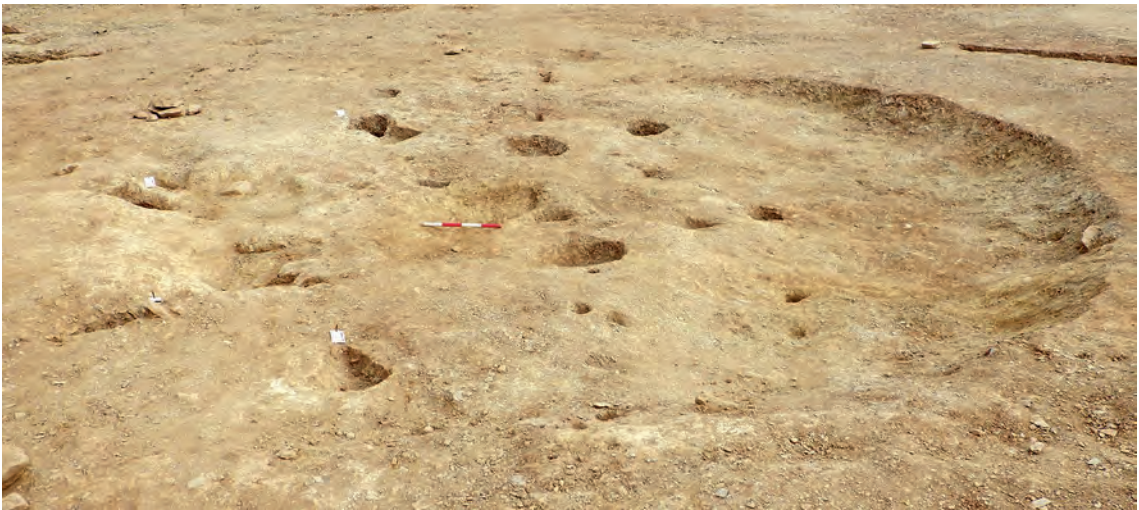
An excavation and watching brief on land at Nansledan, Phase 4, Newquay, was undertaken prior to and during groundworks associated with a residential development between April and August 2019. The site is one of a number of phased development plots at Nansledan and covers a broadly rectangular area of approximately 2 ha, including an arm in the south west. In the north of the site two pits contained parts of three vessels of Late Neolithic Grooved Ware and nearby were two roundhouses of probable Middle Bronze Age date located on artificial terraces in the slope. The south-west area contained settlement evidence of Later Iron Age to early Roman date, until around the mid-second century AD, in the form of two roundhouses, working areas, gullies, ovens and pits. A small number of finds indicate use of the site continuing through the Roman centuries and subsequent post-Roman period.

- Project Officers: Abigail Brown and Chris Caine.

*Land north of Stratton Road, Bude (SS 2231
0630)*

An archaeological investigation was undertaken between September and October 2019 on land north of Stratton Road, Bude. The overall application area covers approximately 15 ha of agricultural land between Bude and Stratton. The archaeological work comprised three open area excavations which targeted the results of a previous trial trench evaluation. The findings included a probable late prehistoric roundhouse represented by a ring gully and, in a separate area, a currently undated deposit of cremated skull in a shallow pit covered by a flat stone. Some limited further prehistoric use of the site in the form of pot sherds and postholes was also exposed, while the remaining archaeological features were undated, diffuse or represented post-medieval plot boundaries.

- Project Officer: Stuart Randall.



*Roundhouse [1366], hollowed into sloping ground at Nansledan, Newquay. 0.4m scale.
(Photograph: © AC archaeology.)*

Polgrean Place, St Blazey (SX 06857 54422)

An historic building record of a group of Cornish Unit houses at Polgrean Place, St Blazey, was prepared in November 2019 prior to a redevelopment comprising replacement of 66 existing residential and six commercial units with

60 residential and two commercial units. Polgrean Place was constructed in the late 1940s or early 1950s and comprised a residential development of Cornish Unit houses. These are a prefabricated local design using concrete frames and pre-cast panels with wooden roof structures finished with ceramic tiles. The buildings comprised standard



*Cornish Unit flats at
1–11 Polgrean Place,
St Blazey. (Photograph:
Graeme Kirkham.)*

semi-detached Type I houses and variations of the Type I design, with blocks of flats containing four, six and 12 units. As well as a general record of the overall development, a detailed record of a sample of the individual properties was made. Each house or flat had a plan form capable of duplication in either semi-detached design or in blocks of flats. Most properties had been updated, and few original fixtures and fittings survived, mainly skirting board, cupboards, and evidence for fireplaces in the kitchens and living rooms.

- Project Officer: Stella De-Villiers.

Cornwall Archaeological Unit

Tyringham Road, Lelant (SW 5437 3741)

An archaeological watching brief was undertaken during summer and autumn 2018 at Lelant, in a large field to the north of Tyringham Road. A total of 13 features was identified, including four pits, three pit or postholes, a ditch, a ditch or lynchet, a historic-period boundary, cultivation furrows and a linear stony spread. In addition, 515 finds were collected, of which 90 were stratified.

Just over half of the stratified finds came from a small Early Bronze Age pit, which produced 45 sherds of Beaker pottery, four worked flints, three utilised stones (possibly associated with metalworking) and some charcoal. Two potentially Romano-British sherds were recovered from another pit fill but these were clearly residual since medieval and post-medieval pottery also came from the same context. This mixing might suggest that ploughsoils have been enriched with midden material over a long period. Twenty-three unstratified sherds spanning the period from the tenth or eleventh century to the sixteenth century AD were collected, with a further seven excavated from pits on the site. Windblown sand was recorded as a component of the topsoil, an underlying sand layer and a buried ploughsoil. Its presence enabled the survival of 64 fragments of potentially medieval or just possibly prehistoric animal bone, which is generally rarely preserved in Cornwall. Further analysis was recommended for the pit finds and bone.

- Project Officer: Anna Lawson-Jones.

Ocean Bowl, Pendennis Rise, Falmouth (SW 81716 32244)

A programme of archaeological recording and investigation was undertaken during groundworks for a sewage pipeline on a site which was formerly the terminus yard of the railway line connecting Truro to Falmouth, constructed by the Cornwall Railway in 1863. It is also close to the reputed location of an underground bunker, possibly of World War II origin. The area was covered by a thick layer of compacted stone with an average thickness of 0.4m below current ground level; this can be identified as railway ballast for the rail yard. There was no evidence of the possible World War II bunker. No pre-modern features of archaeological interest were recorded over the area of the site and no artefacts were recovered.

- Project Officer: Carl Thorpe.

Chynhalls Cliff, Coverack, St Keverne (SW 78293 17477)

Historic boundary recording and a watching brief were carried out in April 2019 on footpath maintenance works on Chynhalls Cliff. The works provided access across a historic boundary to a new footbridge, replacing one damaged by storm flooding. The site is in an area of relict fields, potentially prehistoric in origin, extending east to a Scheduled Monument, the Iron Age promontory fort or 'cliff castle' of Chynhalls Point approximately 100m to the east.

The project was designed to guide the groundworks and to record a boundary which was lowered to allow passage over it of a new path connecting to the replacement bridge. It involved consulting historic maps, recording the boundary prior to disturbance by photography and profile drawing and similar recording for comparative purposes of a nearby boundary (boundary 2) cleared of scrub as part of the works but not disturbed. A watching brief was undertaken on boundary 1 as it was lowered by hand – stones were simply lifted off it – to allow the new footpath to cross it.

The boundaries were only clearly visible where they had been cleared of scrub for the footpath works and so could not be surveyed visually or well understood as part of the wider field system, which is otherwise obscured by dense woody undergrowth. However, the results of the desktop study and fieldwork indicate that boundary 1,

affected by the groundworks, is likely to date to the later nineteenth century. Boundary 2, which was not disturbed, is earlier: it appears to have been rebuilt from the base of a substantial lynchet of the kind indicative of ancient farmland. While likely to be prehistoric in origin, however, it has been rebuilt at some time, most probably also in the nineteenth century. The two boundaries are likely to form part of a late post-medieval phase of intensification and reorganisation of the field system on the coastal slope, involving significant clearance of the abundant large stones to improve land and to stock-proof fields against the adjacent area of coastal rough grazing.

- Project Officer: Cathy Parkes.

Portreath harbour sea wall (SW 65479 45329)

Archaeological recording was carried out during groundworks associated with repairs to Portreath harbour sea wall, which had been breached during Storm Eleanor on 3 January 2018. The Mole, Outer Basin, New Basin and Inner Basin of the harbour are all Grade II Listed Buildings; the damaged section of wall fell within the curtilage of the Listed structures and the work was subject to Listed Building consent. The harbour dates to the eighteenth century and falls within Area V(iii) of the Cornwall and West Devon Mining Landscapes World Heritage Site (WHS). The Mole is believed to have been in part constructed over a prehistoric submerged forest and associated peat beds between 6000 and 4000 years old.

The groundworks were undertaken in two phases: test pitting to investigate the nature of the ground followed by excavation of a trench for the concrete foundation for the replacement section of sea wall. The only archaeological feature uncovered by the test pitting was a stone-lined culvert revealed in test pit 3. Its orientation suggested an association with a building built against the eastern face of the sea wall shown on the 1840 Illogan tithe map. This may have been a wash house or a latrine, with the culvert running towards it. It proved possible to leave the culvert *in situ* and intact as it lay beyond the footprint of the main foundation trench.

At the location of the breach the trenching demonstrated that the sea wall had been constructed directly onto sand; no evidence was recorded for the prehistoric submerged forest or peat beds. The compacted surface of a nineteenth-century coal yard was recorded at varying depths below

current ground level on the eastern side of the sea wall in both the test pits and the main foundation trench. Other than the surface of the coal yard and the culvert no other archaeological features were recorded over the area of the site, and no artefacts were recovered.

- Project Officer: Carl Thorpe.

Prospect Place, Falmouth (SW 80868 32761)

A programme of photographic recording and an intermittent watching brief were carried out on a site in Prospect Place, behind 10 Church Street, Falmouth, in advance of construction of student housing. The site was small and steeply terraced, divided into upper and lower portions quarried into the east-facing slope, with historic walls on all sides and both levels. It is located in an area which was developed during Falmouth's rapid



Prospect Place, Falmouth. An impressive section of walling and buttress, probably dating to the mid-eighteenth century, reprinted after being revealed by site clearance work. (Photograph: © Cornwall Archaeological Unit.)

post-medieval expansion. By the later nineteenth century it had become densely occupied by working class housing and was subject to slum clearance in the 1930s.

A total of 15 walls was identified on the site, several of which showed evidence of associated phases and features dating from the eighteenth to the twentieth centuries. The most significant of these formed a corner up to approximately 5m high and was evidently originally part of a structure of some status, being partly constructed in granite ashlar, as was a later supporting buttress; it is likely to date to the mid-eighteenth century. In addition, three demolition-associated contexts and two nineteenth-century layers associated with floors were recorded.

- Project Officer: Anna Lawson-Jones.

Trethevy Quoit, St Cleer (SX 25948 68808)

In February 2019 Cornwall Archaeological Unit was commissioned by Cornwall Heritage Trust to monitor groundworks associated with construction of a new hedge boundary to the south east of Trethevy Quoit. The groundworks involved the removal of two strips of turf and topsoil, each 31m long and 0.3m wide, to provide the footing for a new hedge. The groundworks were shallow and no buried archaeological features were identified. Finds were limited to a single possible worked stone.

- Project Officer: Ryan P Smith.

Isles of Scilly Historic Environment Research Framework: updated resource assessment and research agenda, 2019

The first two stages of the Scilly Historic Environment Research Framework (SHERF), the Resource Assessment and Research Agenda, were completed in December 2012. SHERF was funded by English Heritage (now Historic England) with contributions from the Isles of Scilly AONB Unit, the Council of the Isles of Scilly and the Duchy of Cornwall and had as its aim the provision of a structure in which to make decisions about future historic environment research in the Islands. It is part of a Historic England initiative to prepare a series of research frameworks for the whole country.

Since the 2012 SHERF document was completed three major publications have appeared

on the historic environment of Scilly: Katharine Sawyer's 2015 PhD thesis *Isles of the Dead? The setting and function of the Bronze Age chambered cairns and cists of the Isles of Scilly*, *The Lyonesse Project: a study of the evolution of the historic coastal and marine environment of the Isles of Scilly*, published in 2016 and authored by a team of contributors including Dan J Charman, Charles Johns, Kevin Camidge, Peter Marshall, Steve Mills, Jacqui Mulville, Helen M Roberts and Todd Stevens, and Duncan Garrow and Fraser Sturt's *Neolithic Stepping Stones: excavation and survey within the western seaways of Britain, 2008–2014* which appeared in 2017, as well as numerous other reports of archaeological interventions.

These three publications represent major advances in understanding of Scilly during prehistory, particularly during the Mesolithic, Neolithic and Early Bronze Age, and consequently, in June 2018, a project to update SHERF was commissioned by Historic England. The Resource Assessment provides a comprehensive overview of the islands from the Palaeolithic to the present day, offering an accessible and up-to-date review of the current state of knowledge about the historic environment. It also aims to define the character of the resource and act as a reference to inform decisions on the future of that resource. The Research Agenda highlights the principal gaps in our knowledge and areas where Scilly's historic environment has the potential to contribute to national and international research questions.

- Project Officers: Charles Johns, Peter Dudley.

Trevose Head, St Merryn (SW 8578 7815)

Cornwall Archaeological Unit (CAU) undertook an archaeological watching brief during the undergrounding of high voltage electric cables on Trevose Head. No buried archaeological features were identified during the works but a range of finds was recovered from the trench spoil, including three flint cores and a number of beach pebbles, two sherds of medieval Lostwithiel Ware and a sherd of Barnstaple Ware. The site is within an area of known lithic scatters of Mesolithic date and the unstratified finds support the existing evidence for human activity on the headland in the prehistoric period. The pottery is likely to derive from the small early to later medieval settlement centred on the present Trevose farm.

- Project Officer: Fiona Fleming.

Cotehele House sewerage project, Calstock
(SX 42239 68609)

An archaeological watching brief and recording was carried out during trenching for the installation of a new sewerage collection system and accompanying utility conduits at Cotehele House. The works involved the excavation approximately 200m of trenches connecting the waste systems from the ancillary buildings of the Cotehele complex to a new disposal system and collecting tank to the east of the main car park. The trenches were on average 0.6m wide and in places up to 3m deep. Deposits were disturbed by many service trenches and there was evidence for considerable truncation of potentially archaeological layers. No archaeological features were identified and finds were restricted to modern pottery and animal bone.

- Project Officer: Ryan P Smith.

Penzance heliport, Ludgvan (formerly Gulval)
(SW 48974 31522)

A two-week excavation was undertaken at the proposed Penzance heliport site off Jelbert Way, west of Penzance, in November 2018 on a complex Early – Middle Bronze Age barrow. This had been located by geophysical survey and was subject to a partial evaluation excavation in 2017 by Southwest Archaeology. A programme of geoarchaeological deposit modelling and augering for palaeoenvironmental sampling was carried out by Allen Environmental Archaeology, designed to look at the wider site setting.

Significant features identified included a central complex comprising two small stone cists and an attached stone-built linear feature. One of the cists contained a small copper object and the other a blood-red pebble. The cist complex was located at the approximate centre of an oval barrow ditch with traces of an internal bank, the whole overlain by a double-tiered mound. The lower layer was strikingly black in colour, incorporating quantities of powdery charcoal. Radiocarbon dates resulting from the evaluation include one of 1750–1622 cal BC (95.4 per cent) from the lower fill of the barrow ditch with two rather later Middle Bronze Age dates obtained from pit contexts.

A central pit within the mound identified by the evaluation is now interpreted as a later extractive pit, targeting barrow material, and seen as linked to similar pits which cut down through the eastern side of the mound. These pits appear to have been open

for only a short time before they were backfilled and the fills incorporated residual and disturbed Bronze Age deposits. Further disturbance was recorded over the northern portion of the barrow ditch, where a shallow scoop contained burnt stone and charcoal; a piece of slag found in an adjacent ditch may have been associated with this feature. A stone-built field drain almost certainly of post-medieval date was found in the same area.

Recommendations for further work include specialist study of the artefacts from the cist complex, lithics from the barrow and prehistoric worked stone objects recovered from redeposited contexts. Environmental samples will be submitted for assessment and analysis with the intention of recovering charcoal and plant macrofossils which can be submitted for radiocarbon dating. Pollen analysis may also be possible. It is proposed that the full excavation report is submitted for publication in a future volume of *Cornish Archaeology*.

- Project Officer: Anna Lawson-Jones. Project staff: Ryan P Smith, Megan Val Baker. Volunteers: Richard Hoskins, Sara Rogers, Chris Chappell, Joel Smith, Ben Moore, Lilly Roberts, Andy Jones and Oscar Lawson-Jones.

Trerice, St Newlyn East (SW 84064 58446)

The National Trust commissioned a programme of archaeological recording and investigation during groundworks for a sewer scheme involving a new treatment plant and drainage pipes at Trerice. The scheme involved the excavation of pits for tanks as part of the sewage processing works, and pipework running close to the gardens of the Grade I Listed Trerice house and close to the manor barn, a Grade II Listed Building. The area was the site of an early medieval settlement and a large medieval house is recorded here in the fourteenth – fifteenth centuries. The existing house and barn are of sixteenth-century date.

During the work four prehistoric flints were recovered from the waste-water pipe trench; a flint core and blade are potentially of Mesolithic date (8000–4000 BC). This is the first time that evidence for prehistoric activity has been recorded at Trerice. A stone-lined culvert was recorded adjacent to Trerice Cottage. No direct dating evidence for this feature was found; it is, however, on a slightly different alignment to the buildings of the southern wing of the late sixteenth- or early seventeenth-century barn complex so may pre-



The excavated double cist complex at the Penzance heliport site, with the linear stone setting in the foreground. (Photograph: © Cornwall Archaeological Unit.)

date them. It is known that a complex of leats and tunnels associated with water management was constructed under the house and barn in the sixteenth century and the recorded culvert may have formed part of that system.

- Project Officer: Carl Thorpe.

*Land to the north of Wheal Agar, Pool
(SW 67454 41932)*

A programme of archaeological recording and investigation was carried out during groundworks for the development of 12 dwellings and associated infrastructure on land formerly occupied by a 1960s warehouse (most recently used by the

Cornish Paper Company) on land to the north of Wheal Agar. The western part of the site is within the Cornwall and West Devon Mining Landscape World Heritage Site, while the southern boundary is bordered by the East Pool mine complex, a Scheduled Monument run as a museum by the National Trust.

The scheme involved surface stripping of five areas totalling approximately 784 sq m for the foundations of new buildings and a large attenuation tank. No evidence for any archaeology was recorded and no finds recovered. It is very likely that levelling prior to the construction of the 1960s warehouse had removed any potential archaeology from the site. Some loose concrete blocks (although no extant foundations) were recorded which may be remains of an outbuilding belonging to the Taylor's Shaft complex of East Pool mine depicted on an Ordnance Survey 6in map of 1945.

- Project Officer: Carl Thorpe.

*Cornwall Monument Management Project:
archaeological conservation work 2018–19*

With funding from Historic England, Cornwall Archaeological Unit (CAU) undertook a programme of conservation work on six Scheduled Monuments between July 2018 and March 2019.

Three of the projects focused on medieval crosses. The early medieval inscribed stone and cross in the churchyard at Sancreed had, with the base in which it is set, become unstable and was at

risk of falling. The work straightened and stabilised the cross, although retaining the slight lean which has become part of its character, revealed the base in which it is set (formerly from Treganhoe) and made visible for the first time in many years the inscriptions on the shaft.

The late medieval cross of Catacleuse greenstone in the churchyard at St Endellion, reputed to have come from Tresungers, had suffered damage from tree branches falling on it during storms in early 2014. It had previously been mounted – with an unsuitable hard cement – on a ‘shaft’ which was probably formerly part of a granite window mullion. It was not possible to remove the cement without possible damage to the cross but some was carefully chipped away and replaced with an appropriately coloured lime-based mortar. A new base-stone was made for the cross from reclaimed granite and it was re-erected on a new site in the churchyard at St Endellion. Now standing 0.86m high, it has considerably more presence than in its previous location.

A wayside cross, probably originally brought from Sancreed, was formerly set up in the vicarage garden at St Just-in-Penwith. The vicarage was sold in 2014 and the cross subsequently moved to the church. The Monument Management Project work was planned to re-erect it on a new site in the churchyard where public access and appropriate management could be ensured. A new base of reclaimed granite was made and the cross lifted and set within it using a lime mortar.



At the end of the second day of clearance work at Castilly henge.

(Photograph: © Cornwall Archaeological Unit.)



Before and after clearance in the area between the two inner ramparts at Prideaux hillfort. (Photograph: © Cornwall Archaeological Unit.)

The other three monuments targeted for work were earthwork enclosures in need of extensive scrub and vegetation clearance: King Arthur's Hall, on King Arthur's Downs, St Breward, on Bodmin Moor, and Castilly henge and Prideaux hillfort, both in Luxulyan. In each case, the scrub clearance has considerably increased the 'legibility' of the earthworks and, in the case of King Arthur's Hall, the visibility of the granite orthostats lining the interior, but has also reduced the risk of damage. Making the form of the monuments more easily visible has also raised new questions regarding their history and interpretation. The work has also made other initiatives potentially more feasible, including a possible dating project using Optically Stimulated Luminescence at King Arthur's Hall and continuing management work at Castilly and Prideaux.

Prior to the project, four of the monuments were on the Heritage at Risk register and the other two were considered vulnerable and in declining condition. Three are now regarded as low risk and stable and two are vulnerable but in improving condition. Only one remains on the Heritage at Risk register but this is in improving condition and there is a plan for its further improvement.

- Project Manager: Ann Preston-Jones. Project Officers: Anna Lawson-Jones, James Gossip.
- Specialists: KPK Builders of Burncoose, Redruth, at Sancreed; C F Piper and Sons (stone masons) at St Endellion; Adrian Thomas (stone mason), at St Just; Tom David (Naturally Green) at King Arthur's Hall, Castilly and Prideaux.

Longrock, Penzance SW 49306 31196))

A programme of archaeological evaluation was carried out at Longrock, between Penzance and Marazion, in advance of a programme of rock armour construction and coastal sea defence works. Two 10m long trenches located on the beach in front of the Longrock Business Park were monitored and recorded during mechanical excavation. The proximity of prehistoric forest and peat remains recorded to the west by the Historic Environment Record suggested that similar deposits could exist in the immediate area of the rock armour installation. Royal Air Force air photographs taken in 1946, subsequently plotted by the National Mapping Programme, also indicated that World War II coastal defence features existed in the vicinity.

No archaeological remains were identified in the trenches (although one unexpectedly cut a layer of black, viscous oil at a depth of 2m), but one of five boreholes opened as part of the project was found to contain basal tidal creek or river deposits. Potential remains, however, for both the early environmentally significant layers and World War II features to be present in the immediate area and recommendations were made for further archaeological monitoring on works in the area.

- Project Officer: Anna Lawson-Jones.

Hayle Foundry, Hayle (SW 55871 56933)

An intermittent watching brief based on photographic recording was carried out during repairs to a short length of walling forming part of the former Hayle Foundry hammer mill complex, this now making up part of the eastern boundary wall of an amenity area called Hayle Millpond Gardens. The site is part of a Scheduled Monument and the watching brief was a condition of the Scheduled Monument Consent for works to remediate wall destabilisation caused by intrusive buddleia growth. The repairs were undertaken in January 2019 by Cormac and the final works were completed in July. No new archaeological findings resulted.

- Project Officer: Martin Andrewes.

Tregenna Lane, Camborne (SW 64140 39788)

Historic building recording and archaeological monitoring were carried out on an abandoned

early nineteenth-century farmstead on Tregenna Lane, Camborne. The historic building recording (equivalent to a Historic England Level 2 Building Survey) was undertaken prior to demolition of the site and was followed by an archaeological watching brief which further informed the building record and also monitored topsoil stripping for the identification of any buried archaeological features.

Structural survival of the derelict buildings on site was very poor and little could be identified in the way of additional architectural features beyond the definition of some external wall lines and badly disturbed internal partition wall bases. No entrances or window openings survived but a section of a granite flagstone surface was exposed in the larger of the two buildings on site, thought to be an agricultural barn, possibly a shippon. Within the main farmyard an extensive and well-preserved cobbled surface was exposed. The stone boundary walls enclosing the farmstead were also well preserved and there were several historic granite gateposts; some *in situ*, some probably re-sited. Early nineteenth-century iron entrance gates also survived in their original position.

The only below-ground feature identified during the monitoring stage was a stone-lined and stone-capped drain within the curtilage of the former farmhouse, also thought likely to be of nineteenth-century date.

- Project Officers: Dr Fiona Fleming, Connor Motley, Anthony Angove.

Tregenna Lane, Camborne (SW 64014 39662)

Following a geophysical survey which had revealed linear anomalies associated with ditches and a scattering of pits, evaluative archaeological trenching was undertaken in three fields located just south of Tregenna Lane on the western side of Camborne. Seven evaluation trenches were mechanically opened and 13 features excavated. In total, 11 ditches, a remnant bank and a possible pit were recorded. Of the 11 ditches, four were distinct and potentially early. They were markedly deep and steep-sided, with narrow, often stepped bases. They are of possible Romano-British date. Other later ditches were shallower and broader; they were cut through the lower ploughsoils and are considered to be potentially medieval and / or post-medieval in date.

Some of the ditches retained evidence for former banks. Others contained stony upper fills,

one of which produced much of a twelfth- to thirteenth-century vessel. In general, the ditches were remarkably clean and largely devoid of finds. Almost all were sealed beneath thick homogenous-looking topsoil, which included some visible ploughsoils. Finds, although infrequent, included some Bronze Age flint, a single undiagnostic body sherd of Iron Age or Roman date, a small number of sherds of medieval pottery and a greenstone whetstone which may also be medieval, together with post-medieval and modern material.

- Project Officer: Anna Lawson-Jones.

Levant Engines, Trewellard, St Just
(SW 36848 34495)

The National Trust commissioned a programme of archaeological recording and investigation during groundworks associated with a scheme to install a new fibre optic feed to the Trust property at Levant Engines. The scheme involved the installation of 97m of new ductwork and a new inspection chamber between the east side of the principal Levant mine buildings and the Trust office via a route along a roadside verge. The principal Levant Mine buildings are Grade II Listed and the property also falls within the St Just mining district of the Cornish Mining World Heritage Site.

No evidence for any early archaeology was recorded. Four metal pipes, three of cast iron, and one of lead were recorded in a length of trench centred at SW 36847 34503. The function of these pipes is uncertain. They are oriented towards the Levant mine engine house immediately to the north west (SW 36834 34509) and it is possible that they supplied water to the boiler. However, it is also possible that the cast iron pipes were simply for drainage of water from the roofs of buildings that once stood on the south-west side of the road. No evidence was found for a smithy marked on the Ordnance Survey 1st edition 25-inch map of c 1880 and no artefacts were recovered during the project.

- Project Officer: Carl Thorpe.

Penrice Academy, Charlestown Road, St Austell
(SX 02930 52160)

A watching brief was carried out on approximately 100m of trenching for a gas pipeline to a new school science building at Penrice Academy. The watching brief was required because this (south west) side of the school complex is open to a

playing field in which the Scheduled prehistoric standing stone known as the Longstone is located. The sites of several Bronze Age round barrows are recorded nearby.

Previous CAU watching briefs in 2018 covered works for the science building itself and a related soakaway. These found that the north part of the playing field nearer to the school complex is at least partly 'made ground', presumably to level the playing field, while the area closer to the Longstone still has potential for buried archaeological remains. The gas pipeline watching brief indicates that the area through which it passed is relatively undisturbed but did not produce any evidence of buried archaeological features or artefactual material.

- Project Officer: Cathy Parkes.

Household Waste Recycling Centre, Newquay
(SW 83287 60393)

Cornwall Archaeological Unit was commissioned to undertake an archaeological watching brief during the excavation of ground investigation (GI) pits in the area of a proposed new Household Waste Recycling Centre on the southern outskirts of Newquay. Previous archaeological investigations included geophysical survey, evaluation trenching and excavation along the route of the Newquay Strategic Route to the west of the site. Some of these investigations had extended into the site and provided evidence of activity spanning the Bronze Age to Roman periods.

The works involved the excavation of four test pits, two bore holes and five shallow trenches for pressure testing. A probable archaeological feature, a ditch or pit, was identified in one of the pressure testing pits and two pieces of flint were recovered from the topsoil in a test pit. One was a broken knife of Mesolithic to Early Bronze Age date, the other a beach pebble probably deriving from post-medieval manuring of the field with sea sand or seaweed.

- Project Officer: Sean Taylor. Project Officer: Ryan P Smith.

Land north of Town Mill, Mill Lane, Grampound
(SW 93450 48810)

A watching brief on land north of Town Mill, Mill Lane, Grampound, revealed a number of features relating to the development of the site from the

early nineteenth to the late twentieth century. These included a wall which may have formed part of a feature recorded as a pig yard by the tithe survey of c 1840, wall footings and a cobbled surface belonging to a large building or yard shown on the Ordnance Survey 2nd edition 25-inch map of c 1907, and the mid- to late-twentieth century remains of a modern piggery which had been built over it.

- Project Officers: Sean Taylor, Anthony Angove and Connor Motley.

St Michael's Mount, Marazion
(SW 51569 30057)

In November 2017 suspected articulated human remains were revealed during floor reduction works within the island shop on St Michael's Mount; the shop itself is a Grade II Listed Building. Following the discovery Cornwall Archaeological Unit undertook a week-long programme of archaeological excavation, recovering a single intact but poorly preserved skeleton from a shallow, irregular and disturbed grave cut. The shape of the body shadow and close positioning of the long bones indicated that the body had been wrapped in a shroud for burial. The head and teeth were absent and may have been removed by past rodent activity. Other visible features within the reduced floor levels were also recorded; two small cuts nearby were on the same alignment as the shallow grave in which the skeleton was found and may represent the last vestiges of the graves of children.

Osteological analysis was carried out on the remains, which are probably those of an adult (>18 years) male. A radiocarbon date of cal AD 1278–1404 (95.4 per cent probability) was obtained for the remains; the medieval date can be added to those from a small number of other dated skeletal remains from the Mount.

- Project Officer: Anna Lawson-Jones. Skeletal analysis: Jo Higgins.

Steward's House, St Michael's Mount, Marazion
(SW 51568 30075)

Cornwall Archaeological Unit (CAU) undertook a programme of archaeological excavation and recording within the Grade II Listed late eighteenth- or early nineteenth-century Steward's House in St Michael's Mount village, close to the head of the causeway from the mainland. The project formed

part of an extensive programme of floor removal, replacement and restoration work. At the time of the project a cobbled floor was already known to exist under the southern front room of the building and a human skeleton dated to the medieval period had been found below floors in the adjacent shop building (above).

Significant features identified during the work included a number of cobbled floors, evidently of several phases. These were recorded throughout the ground floor plan of the house but all pre-dated it, relating to earlier structures on the site. Part of the area had formerly been occupied by an open-fronted building with an external cobbled yard divided from it by stone post-pads and post settings. There was also evidence for a timber-framed wall, pre-dating adjacent cobbling. A large and unusually well-preserved internal earth and lime floor was uncovered beneath two of the rooms in the house; this was flanked to east and west by early cobbling which included features associated with probable mid-seventeenth-century material.

In one area the remains of a sunken wooden barrel were found, inserted through a cobbled floor. This had preserved fish bones and scales at its base and had probably originally been used for fish storage or small-scale processing. The barrel had later been backfilled with a broken pantile deposit before having a pouch or bag of pistol and musket balls placed on top beneath a wooden barrel lid, the rim of which survived as a clear impression. The most surprising discovery was a rectangular cut, still partly lined with wood, containing a dense undisturbed store of gunpowder with two pistol balls placed on the top. This has been interpreted as a magazine box. Two unstratified, differently sized cannon balls were found in the overlying deposits.

The magazine box, cache of gunpowder and pouch of ammunition, plus the other musket, pistol and cannon balls recovered are all considered likely to be of mid-seventeenth-century date, from around the time of the Civil War (during which the Mount was besieged) or soon after. Both the barrel and box had been sunk through pre-existing cobbled flooring, suggesting that at least some of the floors here pre-date, perhaps significantly, the seventeenth and eighteenth centuries.

In addition, two test pits revealed earlier features and deposits beneath the cobbled (and earthen) floors. These largely remain unexcavated. On the basis of a small number of finds and the recently excavated medieval skeleton found beneath

the adjacent shop at a similar level, some of these earlier features may date to the thirteenth–fourteenth century or earlier.

- Project Officers: Anna Lawson-Jones, Carolyn Royall, Anthony Angove.

Arrallas Ponds, St Enoder (SW 88160 53733)

A watching brief was undertaken on the excavation of geotechnical test pits within the area of two fishponds near the medieval and post-medieval manorial centre of Arrallas, St Enoder. The ponds were first recorded on the Ordnance Survey 1st edition 25-inch map of c 1880, at which time the lower pond also formed a header for Arrallas corn mill. The project was undertaken under the Environmentally Designated Fund in relation to the proposed dualling of a 14.4km section of the A30 between Chiverton Cross and Carland Cross.

Data obtained from the test pitting confirmed the construction materials and condition of the south and north dams. That to the north was entirely constructed from built-up soils and clays and has become severely eroded; the south dam, which pounded the larger of the two ponds, had a stone-face on its upstream side, protecting an earthen core, the lower portion of which contained a greater proportion of stone than the upper. The stonework of the dam has been damaged and removed in places and is also subject to penetration by vegetation but in general the condition of the dam is good. A stone bridge to the north of the two ponds was heavily overgrown and it was not possible to ascertain its state of preservation. The structure was at least 4.9m wide and 1m high over the channel but the length was not apparent. Where visible the stone appeared to be dressed but the type of stone could not be determined. The bridge foundation is at least 2-3m below present water and silt levels.

- Project Officer: Ryan P Smith.

Morvah Cottage, Portloe, Veryan (SW 9501 4101)

An archaeological watching brief was carried out at Morvah Cottage, near Portloe, during construction of an access track which breached two historic boundaries, the eastern one of which appeared to fossilize the bank of a 'round' or enclosed settlement of prehistoric – Roman date (Historic Environment Record MCO 50241) plotted from air

photographs and suggested by the presence nearby of the Cornish place-name element *ker*.

A single deeply cut ditch was identified under the western boundary hedge cut by the track, although possibly on a slightly different alignment. By contrast, the field boundary at the eastern end of the access track, which was potentially associated with the cropmark enclosure, revealed no trace of an enclosure ditch. The eastern boundary did, however, contain a lot of stone which could have been reused from an earlier bank or boundary. A water-rounded stone with indications of possible use was recovered from the ditch below the western boundary and an unstratified sherd of medieval pottery from the access track.

A second watching brief was undertaken during topsoil stripping for construction of a dwelling to replace the previous twentieth-century bungalow on the site. No evidence for any early features or artefacts was recorded and it appeared that the development area within the possible enclosure had been landscaped, probably in the course of building the earlier house on the site and establishing a garden, and this may have removed all evidence of an early settlement.

- Project Officers: Ryan P Smith; Carl Thorpe.

Brookhouse Inn, Henver Road, Newquay (SW SW 82710 52049)

An archaeological watching brief was undertaken at the Brookhouse Inn, Henver Road, Newquay, during removal of the building and associated car park. The site is in close proximity to an Iron Age – Romano-British round with associated structures and enclosures identified from cropmarks (HER MCO 33183) to the north and a second Iron Age round (HER MCO 49004) to the south. Two ditches were identified, interpreted as the remains of a post-medieval boundary of medieval origin. A redeposited worked flint and a rounded pebble with a smooth face possibly from use were recovered from the upper fill of one of the ditches.

- Project Officer: Ryan P Smith.

Penpol Creek tide mill, Feock (SW 81224 38877)

Restronguet Creek Society commissioned Cornwall Archaeological Unit to supervise the archaeological excavation of part of an historic bone mill at Penpol Creek, thought to have come

into operation in the early nineteenth century. The milled bone was used in a nearby lead smelter. Members of the Society excavated the wheel pit and associated walls of the mill on the shore of the creek where previously only the faintest remains had been revealed at low tide; the structure is completely submerged at high tide.

The work revealed that the wheel pit and head race were considerably better preserved than had been expected, and exposed well-built granite walls and a well-preserved section of mill wheel collapsed into the base of the pit. A subsequent phase of activity was suggested by the later construction of a timber launder and salt-glazed pipes through these remains. A range of finds mainly dating to the eighteenth and nineteenth centuries was recovered from the silts filling the wheel pit and covering the walls.

- Project Officers: James Gossip, Ryan P Smith.

Molesworth Street, Trevena, Tintagel
(SX 05683 88345)

A watching brief was carried out during the digging of twelve ground investigation test pits in advance of a proposed housing development covering approximately 0.75 ha to the west of Molesworth Street in Trevena, Tintagel. The site lies adjacent to the core of the historic settlement of Tintagel and immediately south of the site of the medieval chapel of St Denys. No evidence for any early archaeology was observed.

- Project Officer: Carl Thorpe.

Par Beach, St Austell Bay (SX 08540 53230)

Following an earlier Heritage Impact Assessment, a watching brief was carried out during construction of new timber beach huts on the inland edge of stabilised dunes behind the centre of Par Beach. The site adjoins a World War II defensive line, in particular its central rear gun emplacement; the positions of these features were plotted from air photographs during the Cornwall part of the National Mapping Programme (HER MCO 41643). The works revealed no traces of the gun emplacement or other archaeological features.

- Project Officer: Cathy Parkes.

Porth Island and Trevelgue Head, Newquay (SW 8250 6306)

A programme of archaeological recording was undertaken to satisfy conditions required for Scheduled Monument Consent (SMC) during groundworks for a scheme of fencing and signage works on Trevelgue Head, Porth, Newquay, a Scheduled Iron Age promontory fort incorporating two Bronze Age barrows.

A total of 52 postholes was excavated to accommodate posts for fencing or hazard warning signs. No archaeological features were recorded in the course of the excavations and no artefacts were recovered from within the postholes. Five flints were picked up from the surface of paths crossing the headland and island. All appear to be Mesolithic in date and can be seen as part of a background level of prehistoric activity across the site.

- Project Officer: Carl Thorpe.

'Lighthouse', Raven's Lane, Old Grimsby, Tresco, Isles of Scilly (SV 89284 15716)

Cornwall Archaeological Unit (CAU) was commissioned to observe and record groundworks on an area of land at Raven's Lane, Old Grimsby, Tresco. The clearance involved the removal of material around 1m deep, predominantly sandy earth. It was ascertained that the land had been subject to dumping and landscaping on at least two occasions, the earlier in the late twentieth century when groundwork was carried out on the house to the north of the site. Fragmented post-medieval and modern pottery, two redeposited pieces of worked flint and modern artefacts were found within the two main deposits uncovered during the groundworks. Clearance down to the sand did not reveal any features.

- Project Officer: Ryan P Smith.

Palais de Danse, Barnoon Hill, St Ives
(SW 51761 40622)

Tate St Ives commissioned a historic building record of the former *Palais de Danse* at the junction of Barnoon Hill and Ayr Lane, St Ives. In its later period of use (1961–1975) the building was owned by the sculptor Barbara Hepworth, who used it as a studio for working on her larger works. It is sited diagonally opposite the Trewyn Studio, now the Barbara Hepworth Museum.



The former first-floor dancehall, originally the cinema auditorium, as remodelled c 1951. (Photograph: © Cornwall Archaeological Unit.)

The *Palais de Danse* has a long and complex history and a total of eight major construction phases were identified by the recording work. The present building was initially constructed in the late eighteenth century as a three-storey town house fronting Ayr Lane, with associated premises and stables. The yard to the east was at this time in separate ownership and is likely to have contained a fish cellar and dwellings. The properties were altered and extended during the nineteenth century; buildings associated with the western property extended north from the town house along Barnoon Hill where, by the early nineteenth century, a workshop and navigation school had been built. Later in the nineteenth century a second dwelling fronting Ayr Lane was created above an earlier workshop, adjoining the eighteenth-century house.

In 1911 the buildings occupying the western property were radically redeveloped to create a central hall at first-floor level to house St Ives' first cinema, the *Picturedrome*, as well as providing a small public hall, a shop and storerooms. In c 1925 the central hall was converted to become a dancehall by inserting a new sprung maple dance floor over the sloping cinema floor. It was at this time that the building first became known as the *Palais de Danse*. In c 1937 the two halls and the yard to the east came into single ownership when they were bought by St Ives Cinemas Ltd and at that time major remodelling works were undertaken. A further phase of remodelling was



Graffiti discovered in a cupboard at the top of stairs leading to the former projection room. (Photograph: © Cornwall Archaeological Unit.)

undertaken in 1951. In 1960 Barbara Hepworth purchased the property and undertook alterations to convert it for use as a studio. Since her death in 1975 the building has been left much as it was at that time with only minor repair works being undertaken.

The building was gifted to the Tate by the trustees of the Dame Barbara Hepworth Will Trust in 2015 and it is now the intention to conserve and bring it back into use to complement the adjacent Barbara Hepworth Museum and Tate St Ives. The historic building record was undertaken as an initial stage of the works, to provide a better understanding of the building and help inform a forthcoming conservation management plan as well as any future alterations or conservation works. The building has been Listed Grade II by Historic England, in large part due to its use by Barbara Hepworth during the 1960s and 1970s but also for 'historic associations during the building's life as a community and entertainment space' (National Heritage List for England 1468044).

- Project Officers: Jo Sturgess, Connor Motley.

White House Farm, St Blazey (SX 06983 55262)

A watching brief was undertaken during the digging of nine geological investigation test pits at White House Farm, St Blazey. The test pitting was carried out to inform a proposed flood alleviation scheme. Archaeological recording for two of the test pits revealed layers that may be associated with a farmhouse and reservoir recorded on the St Blazey tithe map of c 1840.

- Project Officer: Anthony Angove.

Crab's Ledge and Bathinghouse Porth, Tresco, Isles of Scilly (SV 89709 13771 and SV 89420 13561)

Tresco Estate, with grant funding from Historic England, commissioned Cornwall Archaeological Unit (CAU) to work with project partners to undertake a drone photographic survey of intertidal remains on the southern shore of the island of Tresco, Isles of Scilly, and create a 3d model to be made available online for 'virtual' exploration of the site.

The sites surveyed are Scheduled prehistoric field systems and settlement remains located on adjoining beaches on the south coast of Tresco at Bathinghouse Porth and north of Crab's Ledge.

Both sites are vulnerable to coastal erosion and are periodically buried by beach material; they were listed in Historic England's Heritage at Risk register for 2019. The aim of the project was to record the two Scheduled Monuments using drone and photographic mast survey to inform management plans and to model the sites for people to explore and enjoy online. The surveys were planned to define the visible extent of the sites and to provide details of individual features sufficient to enable their stability (or otherwise) and risks to them to be better monitored.

The fieldwork was carried out between late September and early October 2019 during a period of very low tides. The mapping drone provided georeferenced photography across the project site and was deployed effectively in a single short window of low tide and improved weather. Mast photography, and drawing of structures based on this, was completed for the three main exposures of intertidal field boundaries in the group north of Crab's Ledge. The field system and other features at Bathinghouse Porth, more extensive and partly obscured by seaweed, were not included in the mast survey; some ground photography was carried out there. Bathinghouse Porth was included in the drone survey, and the features visible were drawn in plan from the drone photographs by CAU. The project demonstrated that scaled plans can be produced rapidly from drone imagery as well as from the mast photos. The mast photography provided photogrammetry of individual boundaries, used for the 3d model.

In addition to a detailed report, the main outputs of the project were the photographic record, including digital 3d terrain models produced from overlapping overhead photographs and posted on the online 3d platform SketchFab, together with scaled 2d plans and profiles of the Crab's Ledge structures produced using Cloud Compare and AutoCAD digital tools and AutoCAD drawings of the visible Bathinghouse Porth structures. The drawings can be displayed in Geographical Information System (GIS) mapping.

The project has recorded details of some of the Isles of Scilly's most striking intertidal sites and it is hoped that the 3d model it generated will attract more people to consider the forms and meanings of this remarkable heritage. The drone survey showed the full visible extent of the field systems, with patterns resembling Bronze Age 'coaxial' systems found elsewhere (sea-level modelling by the

Lyonesse Project indicates that their locations were dry land in the Early Bronze Age (c 2500 – 2000 cal BC) but had become intertidal by the beginning of the Middle Bronze Age, c 1500 cal BC). The project did not involve detailed inspection and description of features on the ground. However, the photographic and drawn records include boundaries with facings of laid slabs, as well as large boulders (from which they have often been termed ‘boulder walls’) which may run through to form part of faces on both sides. Facing is visible on the north-east sides of all boundaries; facings on their other sides, exposed to south-west gales, would seem to have been broken up by the sea. The facings presumably retained cores of rubble stone and perhaps also earth.

A few saddle quern fragments incorporated in boundaries at Crab’s Ledge and Bathinghouse Porth and others recorded on the foreshore nearby presumably came from settlement sites in the vicinity. Several circular features at Bathinghouse Porth were identified as ‘hut circles’, or roundhouses as these are now termed, in previous phases of fieldwork. However, these are considerably smaller than dwellings recorded elsewhere: the internal diameter recorded for one example is only 3.5m. One was found to have a field boundary attached to it, so at least some of these features may be prehistoric buildings, perhaps used for storage or other functions related to economic exploitation of farmland or shore.

- Project Manager: Cathy Parkes. Project Team: Charles Johns; Tom Goskar; Kevin Camidge (Cornwall and Isles of Scilly Maritime Archaeological Society: CISMAS); Duncan Scobie (drone pilot); Rowley Corey–Wright (HexCam Ltd: drone providers).

(NB. The 3d visualisations of the Tresco intertidal boundaries can be viewed online by searching for ‘Tresco’ on the SketchFab website: <https://sketchfab.com/>)

Cotswold Archaeology

*Land adjacent to Bickland Industrial Park,
Bickland Water, Falmouth (SW 78773 32542)*

A watching brief identified two Early Neolithic pits containing pottery and worked flints, as well as an Early Iron Age hearth and pit, dated by radiocarbon dating of environmental remains. A possible medieval ditch and an ephemeral feature most probably relating to medieval agriculture were found, as well as several undated pits and ditches. Two of the undated pits were in close proximity to the Early Neolithic and Early Iron Age activity and may possibly have been contemporary.

- Project Supervisor: Christina Tapply.



One of the boundaries recorded at Bathinghouse Porth, Tresco. (Photograph: © Cornwall Archaeological Unit.)

*Higher Nansloe Farm, Helston
(SW 65897 26703)*

An excavation by Cotswold Archaeology identified seven Neolithic pits and a Beaker-period pit. Longer term settlement began during the Early to Middle Bronze Age when a settlement of two roundhouses was established. Later Bronze Age remains comprised a possible structure within what may have been an enclosure. Iron Age rectilinear fields and associated trackways suggestive of livestock management were also present, together with pits and postholes and two probable cist burials. One of the cists contained a notable metalwork assemblage, including weaponry.

- Project Officer: Jonathan Orellana. Senior Publications Officer: Jonathan Hart.

*Launceston Priory Gasworks, Priory Lane,
Launceston (SX 32838 85017)*

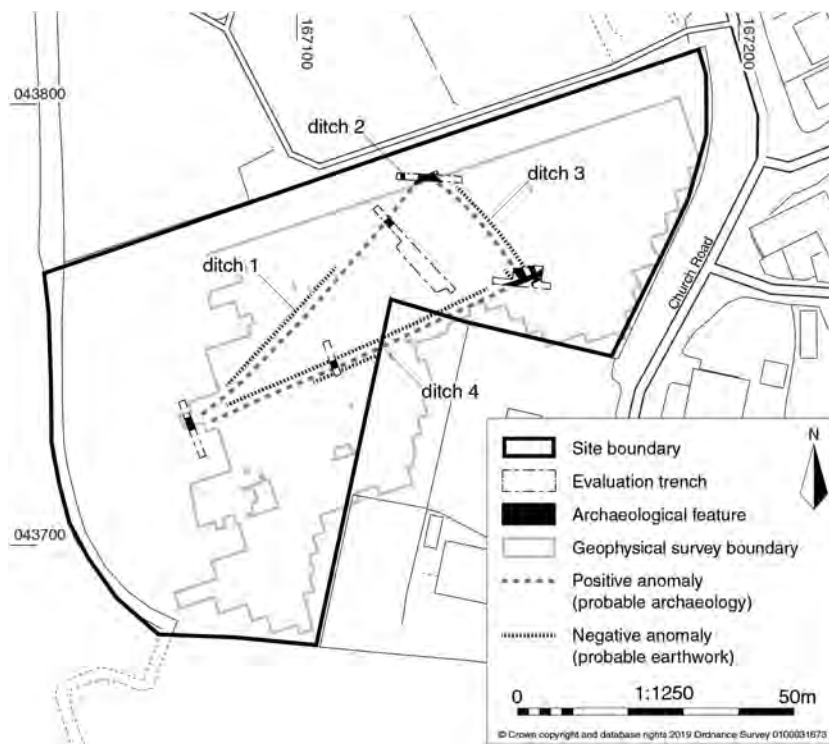
A watching brief by Cotswold Archaeology identified no features or deposits of archaeological significance.

- Project Officer: Jonathan Orellana.

*Land off Church Road, Illogan
(SW 67146 43783)*

An evaluation confirmed the results of a preceding geophysical survey which recorded a triangular arrangement of linear anomalies, corresponding to probable field system ditches (ditches 1–4). Other pit-like geophysical anomalies equated to variations in the natural substrate (not shown). Two of the ditches were undated artefactually, but the remainder were dated to the post-medieval period. One of the undated ditches (Ditch 1) was stratigraphically the earliest identified feature and possibly represents part of an earlier, potentially medieval field system. This ditch was on a different alignment to the post-medieval field boundary ditches; it was also truncated by two of the later ditches (Ditches 3 and 4). Ditch 1 contained a number of large stones within its fill; these are suggestive of ditch-side bank material which had slumped into the ditch and/or was used as backfill.

A small assemblage of seven sherds of unglazed medieval pottery and 18 sherds of post-medieval pottery was recovered. The medieval material was all residual in the later features and was too abraded



*Location and plan of the
site off Church Road,
Illogan.*

to determine manufacturing methods. Identifiable fabrics within the medieval assemblage were limited to three sherds of possible Lostwithiel type. Vessels represented in the medieval assemblage included a jar with an everted rim (Lostwithiel fabric), a jar with an incurved, everted rim and a probable bowl (possibly a pancheon).

The medieval settlement of Illogan was situated in the vicinity of the parish church of St Illogan, first referenced in 1235. The evaluation site lies approximately 275m south of the medieval church site in what would have been the agricultural hinterland of the settlement.

- Project Supervisor: Jerry Austin.

Broadmoor Farm, Saltash (SX 40240 60220)

An evaluation identified a number of undated ditches and pits. Three of the ditches correspond to historic field boundaries recorded on nineteenth-century cartographic sources.

- Project Officer: Jonathan Orellana.

Review

Cornwall, connectivity and identity in the fourteenth century, by S J Drake, 2019. Boydell Press, Woodbridge. ISBN 978-1-78327-469-7. Hb, £60; eBook (PDF), £19.99; xx + 490 pages.

The primary aim of this book is to present Cornwall as a region which was fully integrated – ‘connected’ in modern historiographic parlance – with the English nation state during a key period of the medieval era, to demonstrate how fourteenth-century Cornwall ‘cohered with the rest of the kingdom while remaining a quite remarkable place’. It is intended as a corrective to what the author sees as the prevalent separatist and ‘Kernowcentric’ view of Cornwall’s historic position as a ‘conquered and colonized land’. Accordingly, it examines the wide range of connections and involvements which Cornishmen (and those studied are predominantly men) had in the affairs of the state, the national church, in regional and local administration, the law, military matters, trade and economic activity. To aid this the author provides an outline of the official posts and institutions which made up Cornwall’s administrative structure for the period, through which many of these linkages operated. This is potentially helpful in disentangling the bewildering range of offices and functions involved and is backed by a lengthy appendix

detailing Cornwall’s office-holders during the fourteenth century.

‘Connectivity’ is also a significant theme in the author’s scrutiny of the vexed question of ‘identity’, which identifies multiple strands linking the members of what the author terms the ‘commonalty’ of Cornwall’s gentry. These networks extended well beyond the immediate bounds of kinship and neighbourly proximity, however, running through, for example, the Duchy administration, ties to gentry elsewhere in the south west with similar interests (in the tin industry, for instance), and through connections with London and the wider national economy and polity. Many of these links required movement, and the extent of travel by the gentry, clergy, merchants, military and legal men and officials, often accompanied by retinues of followers and administrators, is at first surprising; it is clear that in no sense were these groups insular or isolated, despite Cornwall’s remote situation. Drake concludes that during his ‘long’ fourteenth century (extending, in terms of the evidence adduced, across the fifteenth), ‘[A]lthough some people lived out their whole lives within the county’s boundaries, *many thousands* [his emphasis] of Cornishmen and women ranged widely across England and beyond’. Over the same period many ‘outsiders’ also had roles within Cornwall.

This is not a work which directly addresses Cornwall's standing or buried archaeology but there is, nonetheless, much here to illuminate key aspects of the context in which particular elements of the material remains of the period arose. To take an obvious example, the work offers an understanding of the wider functions of and context for the major administrative complex in Lostwithiel created under the Earldom and now known as the 'Duchy palace'. This was described by the burgesses of Lostwithiel in 1315 as a 'large hall provided and built at great expense, to be used to hold the county court, and for the assemblies of people coming and repairing to the same town, and likewise another great building to store the tin coming from the mines in Cornwall, and to be weighed and coined in the said building there'. Stannary and admiralty courts also took place there and it was in addition the archive of official and probably some private muniments. As such, suggests Drake, the 'Duchy palace' was 'a repository of shared Cornish memory'.

The 'semi-fortified or at least defensive element' which the most recent edition of Pevsner's *Buildings of England: Cornwall* (2014, 38) identifies in the architecture of some of the surviving high-status buildings of the medieval period can be better understood in the context of what Drake calls the 'near constant fear of enemy activity' experienced in Cornwall during this period, primarily in terms of the sporadic raids carried out on Cornish coastal settlements by French and Castilian forces. Drake quotes a detailed description of a raid which took place in 1405 on 'Chita', not identified but evidently the medieval town of Shutta, upstream from East Looe.

More particularly, though, defensible domestic buildings away from the coast can be seen in the context of the frequent eruptions of lawlessness, vendettas and extreme violence which took place between members of the Cornish gentry during the period. In 1344, for instance, John Carminow and 16 others 'assembled a huge multitude of evildoers' who attacked numbers of the Black Prince's stannary officials, taking £1000 worth of tin. After acquiring a number of forfeited estates in Cornwall in 1388, the non-local Sir Humphrey Stafford was assaulted by a group of rival gentlemen 'with an engine called a gunne . . .' Half a century earlier, in 1332, a mob led by Sir John Treiaigu and more than 20 other members of the county gentry attacked the house of John Trevaignon at Great Gothers, St

Dennis. Treiaigu's gang broke down Trevaignon's doors, trampled his crops, intimidated his servants and abducted and imprisoned his wife.

Events such as these could suggest that Cornwall's location, described by Bishop Grandisson in 1327 as 'not only the ends of the earth, but the very ends of the ends thereof', removed it from the rule of law and from close integration with the judicial structures of the state. This was not the case: the attack on Trevaignon, incidentally the first Cornishman to be appointed to the legal post of king's serjeant, resulted from his appointment by Edward III to investigate 'oppressions' previously carried out by members of the local elite. Treiaigu was subsequently found guilty of the assault by a royal commission and imprisoned; Trevaignon had a measure of revenge by refusing to accept damages, thereby condemning Treiaigu to a long imprisonment.

Drake interprets piracy – in which many Cornish gentlemen were evidently closely involved – as an extension of this violent sub-culture. Mariners were licensed to attack enemy vessels during the wars with France, but it is clear that Cornish ships were preying on commercial shipping much more widely, a lack of scruple about robbing 'outsiders' which Drake compares with the raiding and reiving which took place across the Anglo-Scottish border at about the same time.

Although, as Grandisson's complaint emphasised, Cornwall was geographically distant from London, its gentry were closely engaged with the capital through networks of trade, credit and debt, public office, news, personal visits and family ties, as well as by patterns of consumption and emulation. William Treffry of Fowey, for example, requested in his will a tomb like one in the London church of the Crutched Friars, which presumably he had seen during a visit. In the 1460s the Arundell family purchased cloth in London to dress their liveried retainers; it seems probable that they and others were also acquiring other more archaeologically 'visible' items from the capital. ('Connectedness' with wider tastes is also evident in the clear parallels which John Allan has identified between architectural details incorporated in the decorative stonework of two of Cornwall's major medieval ecclesiastical buildings, Glasney College and Launceston Priory, and features in Exeter Cathedral, St Augustine's (Bristol Cathedral) and St Mary Redcliffe (*Cornish Archaeology* 55 (2016); this volume).)

There is reference throughout the study to the importance of tin in the Cornish economy, but surprisingly little relating to land and landholding, despite their obvious significance as the basis for the status of the individuals making up the gentry class and of agriculture as the principal economic activity of the mass of the population. The importance of farming and agricultural output is occasionally implicit, however. The cargo reported for a ship sailing from Fowey in 1344, for example, included 375 pieces of tin, representing approximately 60 per cent of the value, but also 17 'dickers' of hides, 1707 stone of cheese, 54 bacon hogs, 57 stone of butter, cloth and 6 sacks of feathers.

There are a few misprints – it was presumably 160 archers rather than arches which neighbouring parishes were expected to provide 'in time of war' for the defence of Fowey and Polruan – and the author occasionally adopts a somewhat irritating tabloid voice in characterising aspects of the period: Cornish seafarers are described as a 'skilled bunch'; violence and lawlessness among the Cornish gentry is labelled 'fur collar crime'; Cornish pirates were 'salt-water bandits'. Overall, however, this is an interesting and useful volume which offers a substantial amount of historical flesh to clothe the archaeological bones for this intriguing period of Cornwall's history.

Graeme Kirkham

Searching for Historic Environment Record reference numbers

Several papers in this volume cite Cornwall and Isles of Scilly Historic Environment Record (HER) reference numbers (for example, MCO15732). Details held on the HER about these sites can be obtained via the Historic Environment Record mapping provided on the Cornwall Council (CC) website. To find this, search online for 'Cornwall Historic Environment Record'. This will bring up the relevant page on the CC website. Then click on the underlined link to 'Cornwall Council's Historic Environment mapping page'.

Once the HER mapping is visible you can search for a particular HER reference number via the 'Layers' drop-down menu. Click on the small symbol appearing after 'Buildings, Sites and Monuments – points' on the list of layers. This will bring up a search option. In the 'Select the field to query' box, click on Reference. Enter the reference number you are looking for without spaces (for instance, MCO12345) and press 'Go'.

The site name, reference and other details for the site will appear below, together with a link to the full HER record on the Heritage Gateway website ('Link to further information'). Clicking on the small magnifying glass symbol at the left-hand end of the line should zoom the map to the location of the queried feature

