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The Roman brooches from Nornour, Isles of Scilly

SARNIA BUTCHER

with contributions by JUSTINE BAYLEY and SARAH PAYNTER

More than 300 Roman-period brooches have been recovered from a site on Nornour, Isles of Scilly, all probably votive offerings deposited at a maritime shrine. Recent work has assessed the collection in the context of what is known of Roman-period brooches in general, aided by important new scientific studies of the alloys and enamelling techniques employed in the manufacture of the Nornour brooches. These analyses indicate that the brooches came from a variety of sources and cover a wide date range. Most were of British origin, with a significant proportion made in the south west, but there were also a considerable number of Continental origin. The variety of places of origin supports the idea that the brooches, with other votive items, were deposited on Nornour from ships passing between Britain and the Continent.

More than 300 brooches dating from the later first to the later third century AD have been found on the small islet of Nornour, one of the Eastern Isles group within the archipelago of Scilly (Fig 1). They came from a site excavated in 1962–66 (Dudley 1968) and 1969–73 (Butcher 1978), which contained a series of stone buildings dating from the Bronze and Iron Ages with further occupation in the Roman period. All of the numerous Roman finds, which included coins, glass and various small copper-alloy objects, as well as the brooches, came from the upper layers of two of the prehistoric buildings, buildings 1 and 2 (Fig 2).

The nature of the Roman-period occupation on Nornour was discussed in Butcher (2000–1) and the brooches from the 1969–73 excavations were described in detail there. Those from the 1962–66 work were originally published by M R Hull (1968) in Dudley (1968). The collection has been the subject of further work since then: study of the alloys and enamelling techniques (reported below by Justine Bayley and Sarah Paynter) and as part of a comparative study of Roman brooches in general (Bayley and Butcher 2004).

The recent work was used in Butcher (2000–1) to put the case against Hull's view that brooches had been made on the site (Hull 1968) and in support of the suggestion that they are more likely to have been votive offerings (Butcher 1978, 65). Alloy analysis and the distribution of parallels seem to show that they came from a diversity of sources, both in Britain and on the Continent. If not made on the site they must have come by sea and the range of dates (later first century AD to later third, with coins from the site extending its use to the late fourth century) seems to rule out another suggestion, that they were the result of shipwreck (Fulford 1989). There are relatively few comparable finds from other sites of the Roman period on Scilly so it appears that the ships were not bringing them for trade with the inhabitants. Perhaps those aboard were paying respect to a local cult well-known at the time – *Sulis* was suggested by Thomas (1985) – in the hope of securing a successful voyage.

The evidence from the brooches both for the site context and for the interpretation of the collection itself is set out in detail here. They are described

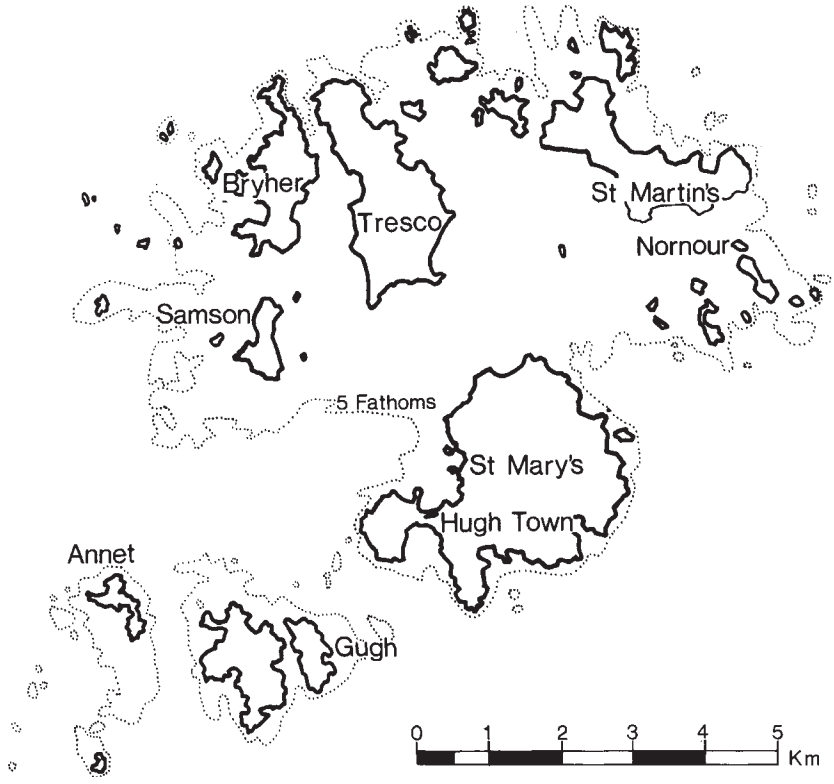

Fig 1 Nornour location map. (After Butcher 2000–1, fig 1.)

in a series of typological groups. This involves changing the order used in the original catalogue (Hull 1968) but the number given there to each brooch is retained, in the form NN 000, and the series has been continued for the brooches found in 1969–73, catalogued in detail in Butcher (2000–1, 20–9). Brooches not catalogued by either are given their Isles of Scilly Museum number; for example, RN 000. In some cases the same brooches acquired different numbers and these are shown as NN 000=000 while NN 000/000 is used when two numbered pieces have turned out to belong to the same brooch. Where an asterisk follows the brooch number* the metal has been analysed; see Appendix 1 for details.

Appendix 1 is subdivided by typological group, which can be used to locate individual brooches. Hull's numbered system of types has been referred to in the form T000; this is set out in his corpus of Roman brooches (Hull, forthcoming; summarised in Bayley and Butcher 2004, appendix 2).

The drawings of the brooches were produced for the original report by David Neal, then of the Ancient Monuments Inspectorate's Drawing Office. In some cases they record features which have since been lost, but a few differences in details of the enamel decoration have been noted following subsequent work in the Ancient Monuments Laboratory, now part of Historic England's archaeological science laboratory (Appendix 1).

The brooches are in the collections of the Isles of Scilly Museum on St Mary's.

Bow brooches

'Bow' brooches are those which derive from the La Tène 'safety-pin' shape: an arched rod with the pin sprung from one end (the 'head') and held by a catch at the other. During the Roman period the pin was attached by several different methods and the bow developed a great many variations of style and decoration which may be used to classify and date the finds.

Here they are grouped as follows: first, general types which give an indication of the date range, then the large number which have a distribution limited to south-western Britain, where they were

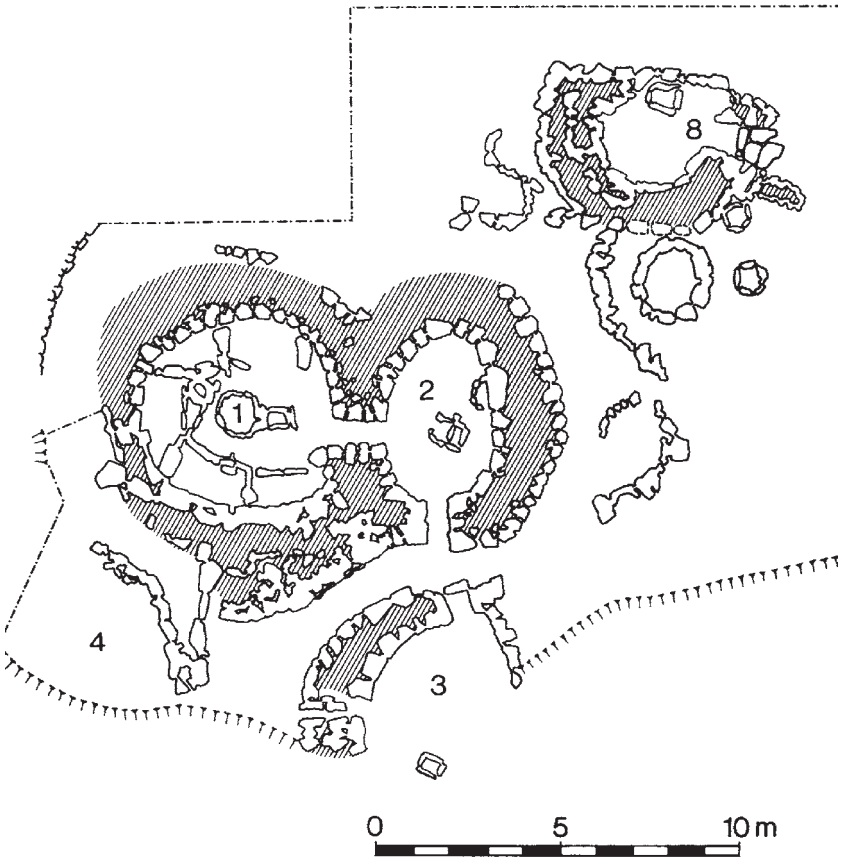

Fig 2 Building 1–2 at Nornour. (After Butcher 2000–1, fig 4.)

almost certainly made. (Some of the first group also seem likely to have been made in this area but they have more widely distributed parallels and can usually be related to datable examples.) Very few of either group have a Continental representation whereas many of the plate brooches (below) are more common there than in Britain.

There is no doubt that material of the first century AD occurs within the collection but it is not easy to establish the earliest date in that century. A clearly defined set of brooch types found elsewhere in southern Britain belongs to the years between the conquest in AD 43 and *c* AD 70, the main ones being the Hod Hill, Aucissa and Colchester types, with numerous related and minor types. The majority are made of brass, with bronze becoming more frequent through the period. None of the standard types of this period occur at Nornour, but they soon devolved into many local productions. In the south west these are nearly all made of leaded bronze, probably to be connected with the lead-silver mines of Mendip, already active by AD 49, and it is these which form the largest group from the site. The earliest coins found at Nornour are those of Vespasian (AD 69–79) (Penhallurick 2000–1, 33–4) and the first brooches listed below are probably of a generally similar date. (There are also some early plate brooches: see NN 183 and 226, below, and NN 325 (Butcher 2000–1, 29, fig 10).

General types of bow brooch

Simple one-piece brooch (Fig 3)

NN 1* T11C

This is the type often called ‘Nauheim Derivative’, but more recently ‘Simple one-piece British’. The sub-group to which it belongs – a rod bow with simple curve – occurs in pre-Conquest levels at Hod Hill, Dorset (Brailsford 1962, C18–19), but also later; for example, at Fishbourne, West Sussex,

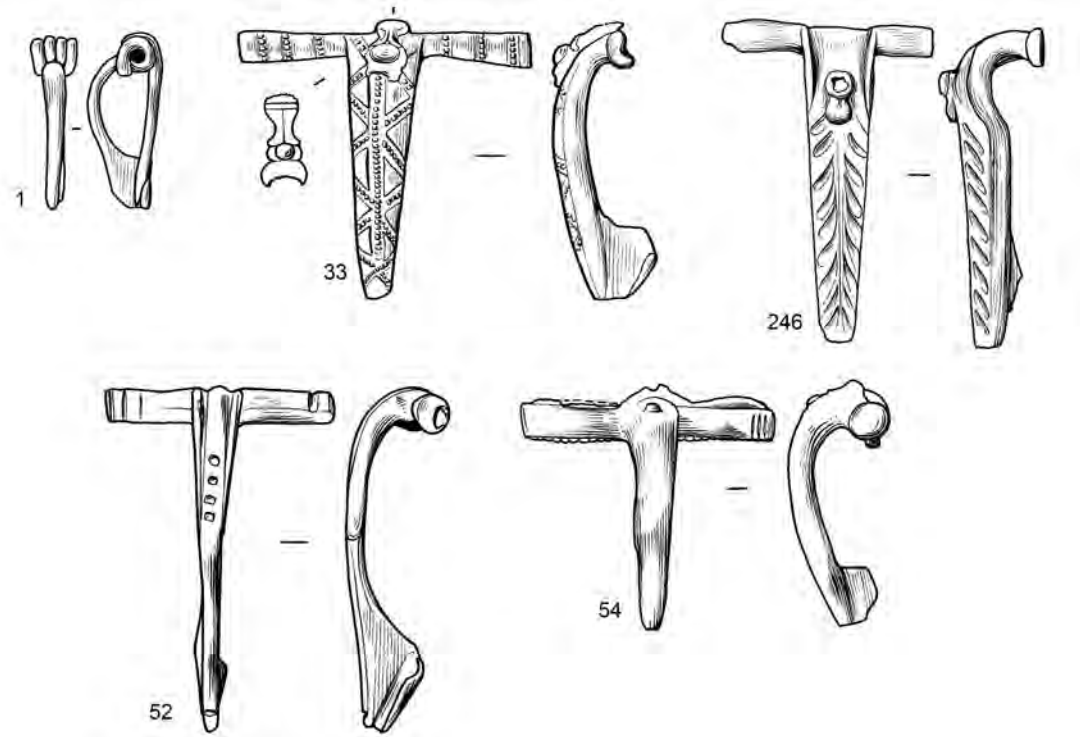

Fig 3 Simple one-piece brooch: NN 1. 'Applied Hook' variants: NN 33, 246, 52, 54. Scale 1:1. (Drawings: David Neal. © Historic England.)

where they occur in levels of *c* AD 75 (Cunliffe 1971, II, 100), while Stead and Rigby (1986, 123) suggest that this simple form continues to be made until the end of the century. NN 1 is in any case not a standard example. It is exceptionally small, while the catchplate is disproportionately large; further, the use of silver is unusual. The following brooches may be as early as NN I, or perhaps earlier.

Applied hook and derivatives (Fig 3)

NN 33*, NN 246, NN 52*, NN 54 T117 These are variants of the 'Applied Hook' type, which also occurred at Hod Hill (Brailsford 1962, C100–101), where it should not be later than *c* AD 50. In this type the spring (or a hinge with imitation spring) was held between the turned-back ends of a long thin crossbar and also by a plate riveted to the upper bow. NN 33 has these features and furthermore it is made of brass; but it is quite unusual in its decoration. NN 246 has the rivet and the remains of an applied plate but it is incomplete and again the decoration is unusual. NN 52 probably belongs to the hinged version of the type but it is also incomplete and the use of leaded bronze suggests that it is a slightly later development. NN 54 is fragmentary but still has a long spring and a hole for the rivet which would have held the plate in place.

'Colchester-derivative' and related brooches

A very general British brooch type developed from the 'one-piece Colchester' brooch which, during the second half of the first century, was replaced by brooches of similar appearance but with a separate spring, now usually called 'Colchester derivatives'. What seems to be the earliest form of this had already appeared at Hod Hill (Brailsford 1962, C13), in which the spring was only attached by a 'rearward-facing hook' cast on the top of the bow (T94); this was clearly a weak construction and further development supplied better fastenings: some had a crest cast on the head with holes for both the chord and the axial bar of the spring (T92); others combined the hook – or crest – on

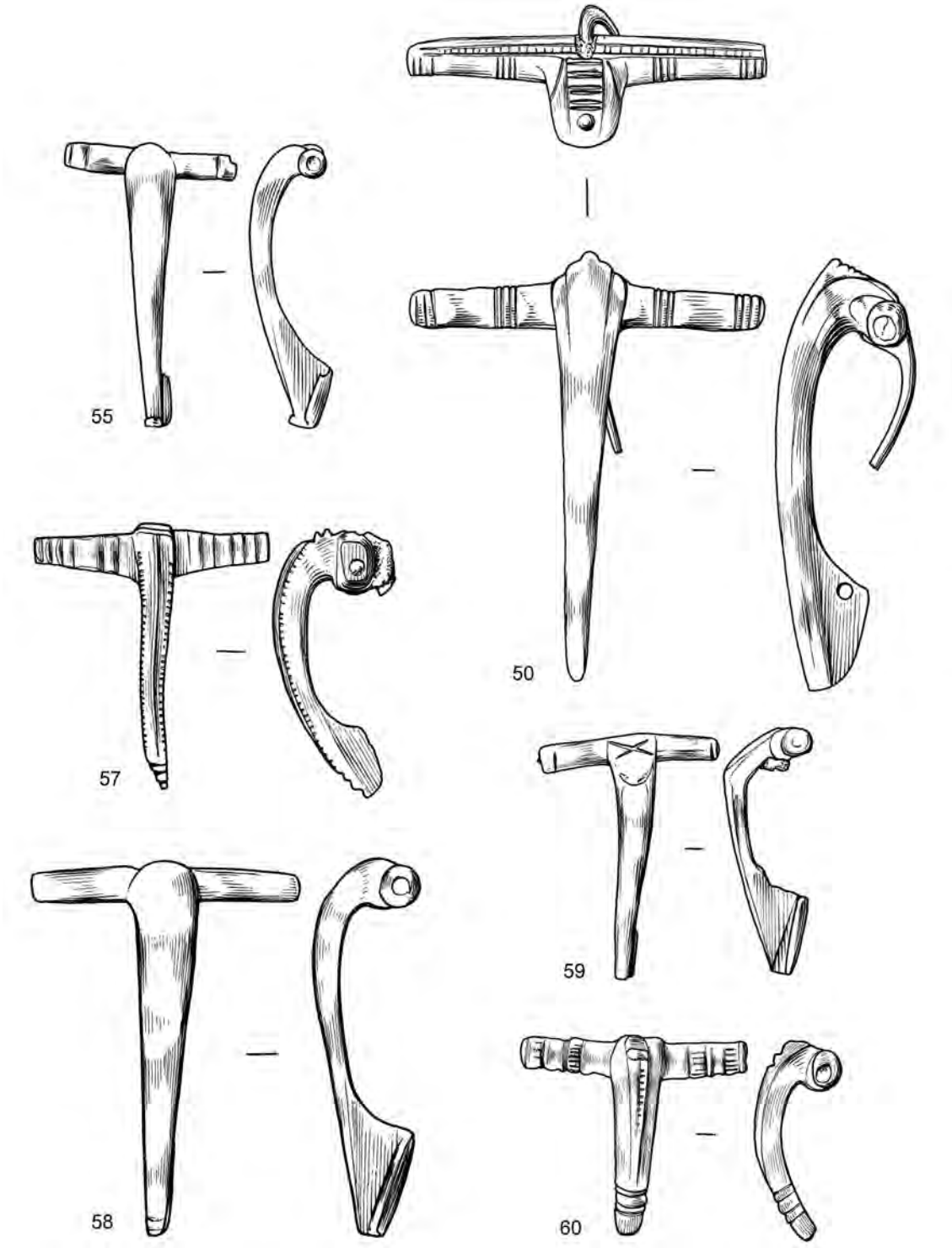

Fig 4 'Colchester-derivative' and related brooches: NN 55, 57, 50, 58, 59, 60. Scale 1:1. (Drawings: David Neal. © Historic England.)

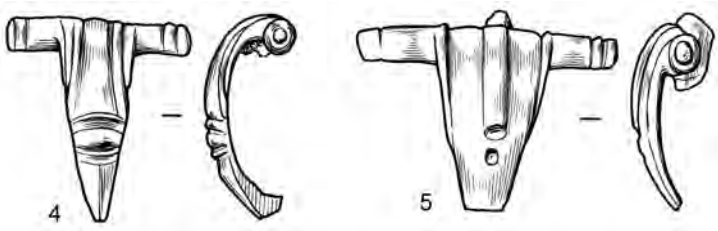

Fig 5 Brooches related to the 'Colchester-derivative' type: NN 4, 5. Scale 1:1. (Drawings: David Neal. © Historic England.)

the head with sockets for the axial bar in the ends of the crossbar: see the 'Polden Hill' type below. All these had a general 'T' shape which appeared in various forms; some were plain while various styles of decoration were developed on others. Many brooches of similar form were also fitted with hinged pins instead of springs yet still had the crest on the bow, or the type of crossbar, features which originally held a spring. These brooches are very numerous and individual examples are difficult to date; however the main development must take place within the second half of the first century.

NN 50*, NN55*, NN57*, NN58*, NN59*, NN60* (Fig 4)
All are hinged. The rather plain members of this group – NN 55, 58 and 59 – are hard to place although they perhaps belonged to an early stage, closer to the undecorated 'Colchester' originals. The diagonal cross on the head of NN 59 occurs on other brooches at Nornour including three headstuds: NN 99 and 101–2 (below). NN 57 has an unusual ribbed crossbar and knurled bow and NN 50 has a decorated crest on the head, possibly imitating a later stage in the development of the sprung type.

NN 311 (Butcher 2000–1, 23, fig 8)
Upper part only of a brooch which probably belongs to this type.

NN 4*, NN 5* (Fig 5) T104
Small T-shaped brooches with rather wide upper bows and a pin hinged in a narrow tube. They seem to belong to a western version of the 'Colchester derivative' as brooches of similar shape have been found at Camerton (Wedlake 1958, fig 50, no 9), Wookey Hole (Branigan and Dearne 1990, no 3.3) and Chew (Rahtz and Greenfield 1978, fig 114, no 3), all Somerset; also Usk (Manning 1995, no 47) and Caerleon (Wheeler 1928, fig 13, no 4),

Fig 6 Variant of the 'Beaked Bow' type: NN 49. Scale 1:1. (Drawing: David Neal. © Historic England.)

Monmouthshire. The last was in a layer dated 'not later than Flavian'. The very limited decoration on these brooches varies and it is not certain whether they really do form a sufficiently close group for this date to be valid for the rest.

Variant of the 'Beaked Bow' type (Fig 6)

NN 49* T88?
A highly decorated brooch which is unique in several details. It has a spring held on a central lug behind a 'trumpet'-shaped head and a highly arched bow with projecting loop above the centre, while the lower bow broadens to a flat plate. The decoration includes two 'eye' motifs on the head and bands of cross-hatching with curvilinear margins down the bow. Although unique this brooch seems to have some relation to the 'Birdlip' or 'Beaked Bow' type, itself related to the Continental 'Flügelfibel' type, which is Claudian. The general resemblance to the 'Beaked Bow' can be seen by comparison with three brooches from Dragonby, Lincs (Olivier 1996, 231–2; fig 11.1, nos 2, 3 and 4). It seems possible that NN 49 is a south-western version of the same unusual shape (it is of leaded bronze, unlike the eastern brooches).

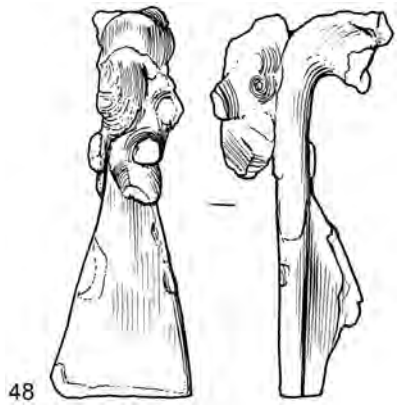

Fig 7 Fantail brooch: NN 48. Scale 1:1. (Drawing: David Neal. © Historic England.)

Fantail (Fig 7)

NN 48*
Badly corroded brooch whose only clear feature is a widening foot to the bow. Without definition of the head or other features it cannot be matched with any of the several types which share this shape, but the fantail foot is less expansive than that of the rosette brooch, a version of which was found at Halangy, St Mary's, Isles of Scilly (Ashbee 1996, fig 33, no 1). The lump shown on the upper bow may be only corrosion; there is no rivet such as that which attaches the crest on NN 229 (below).

Polden Hill types (Fig 8)

This group is chiefly distinguished by the method of attaching the spring: the chord passes through a crest on the head of the bow and the axial bar is held by the solid ends of the crossbar. Most bow brooches at Nornour are hinged rather than sprung but there are several with this 'Polden Hill' spring construction.

NN 262* T103
This version of the type, with decorative flanges beside the head and a ribbed crossbar, has several parallels. One from Camerton, Somerset (Wedlake 1958, fig 50, no 7), was in a context dated AD 65–85 and another from *Verulamium*, Herts, with less spread head but showing the appendages beside the head, was site-dated to AD 85–105 (Frere 1972, 14, fig 29.9). There are a number of generally similar brooches from the south west; for example, Uley, Glos (Woodward and Leach 1993, 151, no 9).

NN 243* T100C
NN 300* (Butcher 2000–1, 20, fig 8)
These belong to the standard developed Polden form with spring held in a substantial cast cylinder forming a short crossbar, discoid ends and flanges beside the bow, a small hook or crest on the head to hold the chord but otherwise a plain bow tapering to a simple knob finial. Parallels have a wide distribution but are most frequent in the west Midlands. At Wroxeter, Shropshire (Bushe-Fox 1914, 11), several examples were found, some in dated contexts within the range AD 80–120.

NN 2* T100A
In shape this is a developed Polden, not very different from the standard form (NN 243 and 300 above) but with very unusual decoration for this type: enamel cells forming an 'eye' pattern on either side of the head; it also has a pair of moulded 'leaves' on the mid bow.

NN 3* T100B
This has a substantial head casting rather like that of NN 243 and 300 above, but it also has moulded decoration on the bow: a knurled crest on the head continued down to the foot as a central rib, flanked by a pair of 'leaf' mouldings across the centre of the bow (at the opposite angle to those on NN 2 above); the foot may be damaged but it seems not to have had a finial. There are several parallels, showing that this design was widely distributed in Britain, including one from Kirkby Thore, Cumbria, similar except that it had a footknob (Hull, forthcoming, 4190); Shakenoak, Oxon (Brodribb *et al* 1971, fig 47, no 70). Most of the others are from the Midlands: Cirencester, Gloucester, Woodeaton, Coleshill, Penkridge; also Andoversford, Hants (Hull, forthcoming, 4621). None are from dated contexts but probably belong to the Wroxeter range of AD 80–120 (*cf* NN 243 above); Mr Hull favoured 'last quarter of the first century'.

Headstud

NN 235* T148C (Fig 9)
The pin is hinged in a moulded head which has a plain crest, probably to support a missing loose

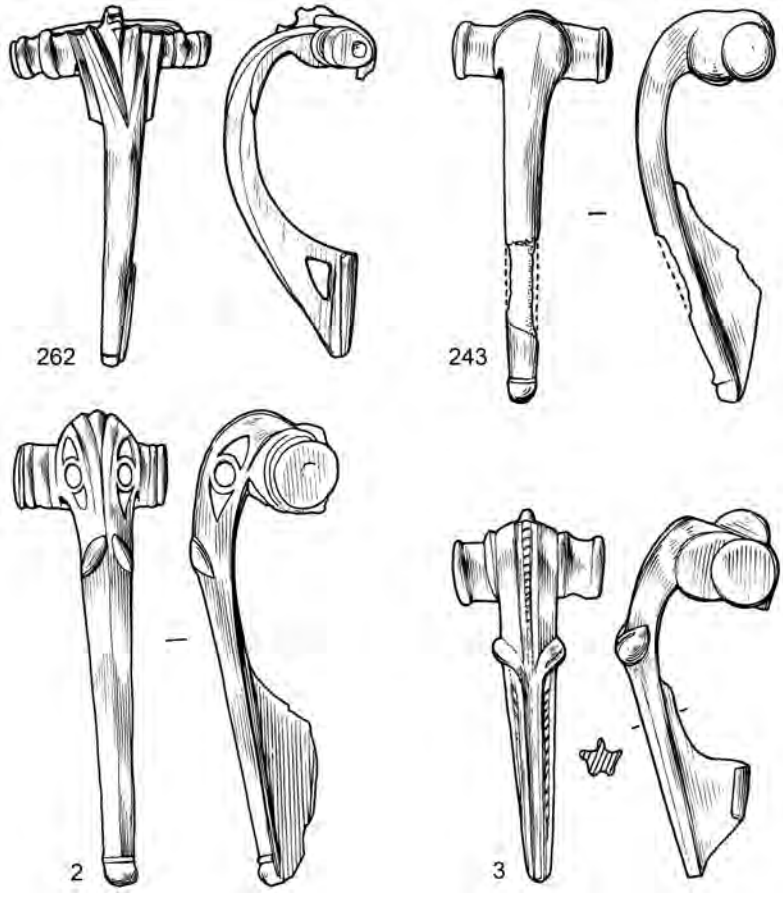

Fig 8 Polden Hill type brooches: NN 262, 243, 2, 3. Scale 1:1. (Drawings: David Neal. © Historic England.)

wire headloop. On each side of the short crossbar there is a panel of three triangular cells for red and blue enamel (not circular as shown in the drawing). The stout arched bow is not enamelled but has a strip of iron inlaid down the centre, flanked by deep grooves. There are two empty sockets with rivets for missing studs, one at the top of the bow and the other under the foot.

Apart from the iron inlay this is a standard type, more common in the north of Britain. Similar brooches (except for differently shaped enamel cells) came from Aldborough, Yorks (Bishop 1996, nos 314, 315, 316); Carlisle, Cumbria (McCarthy 1990, 108, no 6); Derby (Mackreth 1985, 289, no 24); Corbridge, Northumberland (Snape 1993, 37, fig 6, no 12). A brooch from Castleford, Yorks, which is similar but larger, and with knurled mouldings instead of enamel, was in a context dated AD 70–86 in the fort (Cool and Philo 1998, no 23). This date is confirmed by others of the same type elsewhere (although similar brooches also occurred in second century levels at Castleford). Dragonby, Lincs, had one

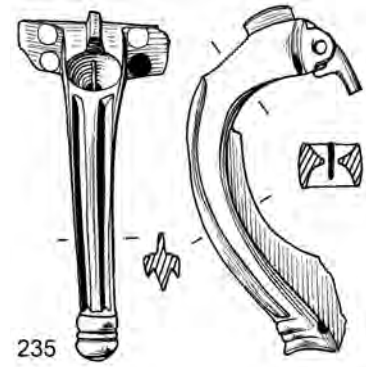

Fig 9 Headstud brooch: NN 235. Scale 1:1. (Drawing: David Neal. © Historic England.)

similar to the Castleford brooch (Olivier 1996, no 104) and another (no 105) which investigation in AM Laboratory showed to have a similar pattern of enamel cells to NN 235 (information from Justine Bayley).

NN 314 from the later excavations has some features of this type (Butcher 2000–1, 24, fig 9).

NN 103*, NN 104*, NN 105* T 149B (Fig 10)

These are standard examples of a very common type: the pin is hinged in a tube behind a short ribbed crossbar with a cast headloop; there is an enamelled stud at the head of the bow, a long panel of enamel in lattice-pattern cells down the bow

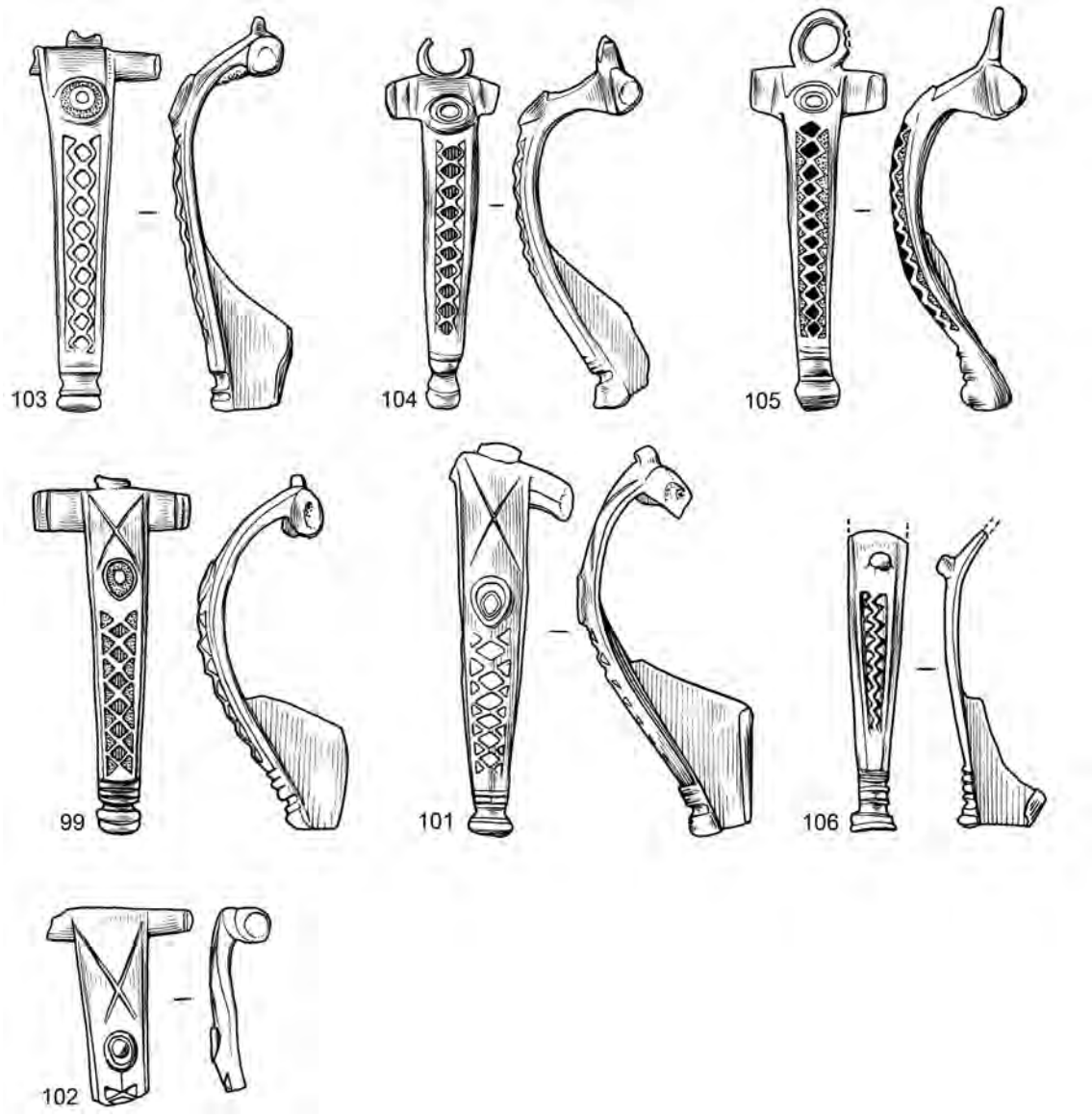

Fig 10 Headstud brooches: NN 103–105, NN 99, 101–102; NN 106. Scale 1:1. (Drawings: David Neal. © Historic England.)

and the foot is a moulded knob. It occurs in most parts of Roman-occupied Britain; for example, Castleford, Yorks (Cool and Philo 1998, no 35); Prestatyn, Flints (Blockley 1989, fig 38, no 16); London (Wheeler 1930, fig 28, no 26); St Mawgan, Cornwall (Threipland 1957, 71, no 15); Chelmsford, Essex (Wickenden 1992, no 24), context before AD 100 (but this was brass); Nettleton, Wilts (Wedlake 1982, 128, no 59), with coin of Nero.

NN 99*, NN 101*, NN 102 T149B (Fig 10), NN 100* (not illustrated)
Similar to the last group except that they have a diagonal cross on the head of the bow and the headstud is a pointed oval. This seems to be a south-western version of the standard type: a mould has been found at Compton Dando in the Mendips (Bayley 1985), while the only T149B brooches in the large collection in Bristol Museum from Charterhouse in the same area both have the cross on the head. The stud on these has a different shape, similar to another brooch of this type with the cross, from the temple site at Henley Wood, Somerset (Watts and Leach 1996, 79, no 13).

NN 106 (Fig 10)
NN 107 (not illustrated)
Fragments of two other headstud brooches, but with variant decoration.

This assemblage of headstud brooches from Nornour seems to exemplify traits within the whole collection from the site: standard types, widely distributed in Britain, do occur (NN 235, 103–5), together with distinctly south-western versions of the same (NN 99–102). The standard types represented at Nornour appear in the first century but production seems to have continued into the second century (*cf* brooches from later contexts in Cool and Philo 1998).

NN 266 (not illustrated)
Headloop from Headstud or Trumpet brooch. A loop of wire is held by a decorated metal clip, which was probably enamelled. This is typical of some first-century examples of both groups.

Trumpet brooch of 'Chester' type (Fig 11)

NN 108* T154B
The 'trumpet' head has become a small flat plate behind the slightly expanded head of the bow; behind this a spring on a single lug and a cast headtab, broken but not perforated; at the waist a series of cross-ribs with a pair of 'leaves' below, flat at the back; small moulding at foot.

This belongs to a type of plain trumpet brooch particularly common in western Britain but showing a good deal of variety in details. Some are hinged, others, as this one, sprung. The lobed moulding at the waist occurs on quite a number of them, including: Uley, Glos (Woodward and Leach 1993, fig 24, no 9); Camerton, Somerset (Wedlake 1958, fig 50, no 13), Wroxeter, Shropshire (Bushe-Fox 1914; fig 4, no 5); Alcester, Warwicks (Cracknell and Mahany 1994, no 54) and Whitton, Glamorgan (Jarrett and Wrathmell 1981, fig 70, no 24).

The type is regarded as a devolved version of the standard plain trumpet brooch (a product of northern Britain in the Flavian period; evidence for date summarised in Cool and Philo 1998, 31), which continued into the second century. At Wroxeter the Chester type was dated to the late first to early second century (Atkinson 1942, 206); a brooch from Usk found in a pre-Flavian context (Manning 1995, no 52) looks like an early version, since it did not have a cast head-loop and was of a fuller 'trumpet' shape at the head. Where the alloy has been identified brooches of the northern group are usually made of brass whereas the western ones are bronze or leaded bronze, suggesting manufacture in both areas (Bayley and Butcher 2004, 160–3).

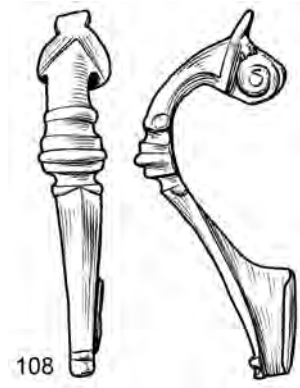

Fig 11 Trumpet brooch of 'Chester' type: NN 108. Scale 1:1. (Drawing: David Neal. © Historic England.)

Pseudo-trumpet (Fig 12)

NN 111* T166C

Trumpet head, behind which a spring is held in a recess between two lugs; a broken cast headloop; enamelled disc on centre of bow; plain lower bow ending in a (broken) open ring; traces of solder for applied silver decoration on the head and other parts.

The type was discussed by K M Richardson (1960) and enlarged by more recent finds which have confirmed that there is often decoration of applied silver foils.

The sub-types are mainly distinguished by the shape of the foot-moulding. Some, like the Hebridean brooch which prompted Richardson's article, have a cup containing a stone or enamel inset but NN 111 almost certainly had a ring finial. This feature occurs on the following brooches: Brough, Cumbria (Richardson 1960, no 9); *Verulamium*, Herts (Wheeler and Wheeler 1936, fig 44, no 30) (Richardson 1960, no 27); Scole, Norfolk (Rogerson 1977, 132, fig 54, no 8); Walbrook, London (Richardson 1960, no 31); Waasmunster, Belgium (Spitaels 1969, cat 613). Hull's *corpus* includes further examples from Caerwent, Monmouthshire, Bourton, Glos, and Ogof Y Esgern, Powys (Hull, forthcoming).

Richardson suggested that the *floruit* of the whole type was the Antonine period, on the basis of a number found in late second-century contexts, and since then one has been found at Strageath, Perthshire, in an Antonine demolition layer (Frere and Wilkes 1989, fig 76, no 56); the foot is missing but the shape of the leg suggests it may have been annular. The group as a whole is sufficiently distinct to suggest that all were in production at broadly the same date and possibly in more than one centre since they are so widely scattered in Britain. Very few have been found on the Continent (information from Paule Spitaels).

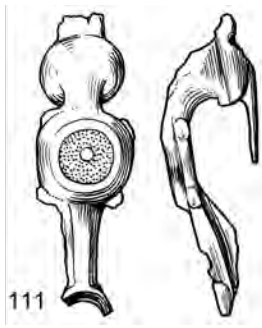

Fig 12 'Pseudo-trumpet' brooch: NN 111. Scale 1:1. (Drawing: David Neal. © Historic England.)

Plate-on-bow (Fig 13; also Fig 74)

NN 124*, NN 125*, NN126*, NN127*, NN128*, NN 129 T181 (NN 127 and 129 not illustrated)

The pin is hinged in a plain narrow crossbar without headloop; the upper bow has a wide rectangular plate with enamel in three fields, separated by zigzag metal ribs, and the lower bow has a series of astragaloid mouldings. Brooches NN 124–6 and 128 are almost identical; NN 127 and 129 are incomplete.

The general type seems to have originated on the Continent as a derivative of the Hod Hill. There are a few non-enamelled versions of the present shape such as brooches from Richborough, Kent (Bayley and Butcher 2004, 81, cat 158), and Geneva, Switzerland (Ettlinger 1973, taf 11, no 15), both with inscriptions on the plate. Several enamelled brooches very similar to NN 124–9 in shape and decoration but larger and with finer mouldings have been found on the Continent; for example, Saalburg, Germany (Böhme 1972, nos 324 and 325); Nijmegen, Netherlands (Spitaels 1969, cat 769–771). One like these was found at *Verulamium*, Herts (Frere 1984, fig 8, no 4), and another at Chesters, Northumberland (Hull, forthcoming, 7637). There is no context evidence for date but if the derivation from the first century Hod Hill brooches is accepted they should not be much later than AD 100 and the type of enamel field would fit this date. Since all those analysed were of leaded bronze, which is not typical for other Continental Hod Hill derivatives, and the pattern of enamel cells occurs on British head-stud brooches, it seems possible that these are a British product.

NN 291*

Upper part only, similar to NN 124–8 (not illustrated.)

This is possibly the same brooch as NN 129 of Hull's catalogue (Hull 1968), now missing.

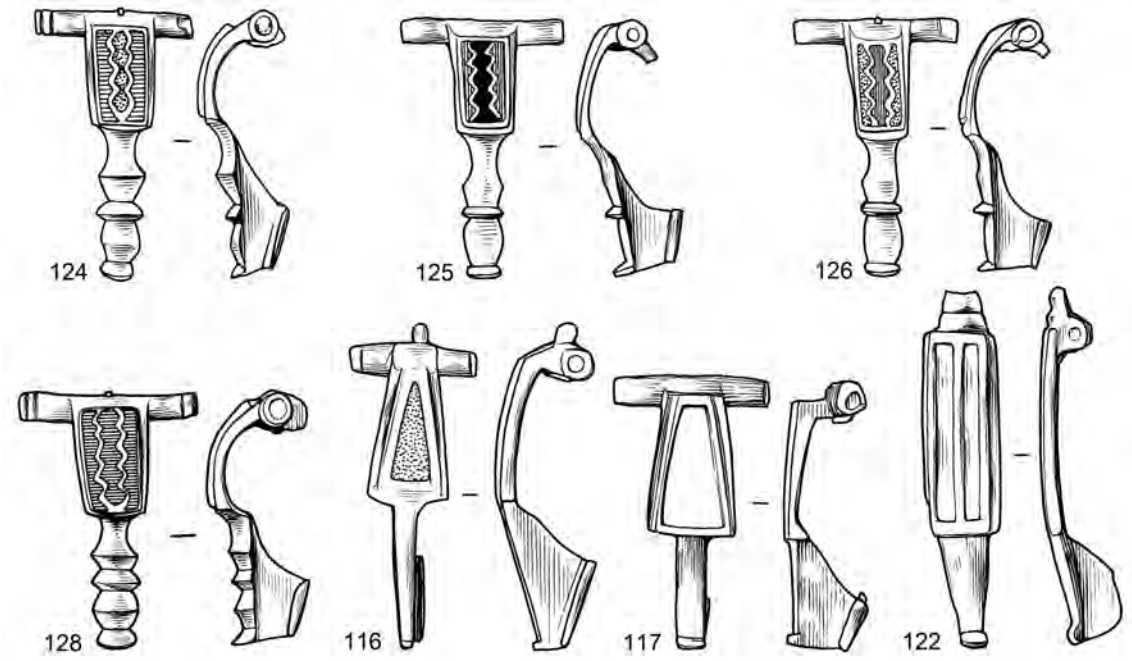

Fig 13 Plate-on-bow brooches: NN 124–126, 128; NN 116–117, NN 122. Scale 1:1. (Drawings: David Neal. © Historic England.)

NN 116*, NN 117* (Fig 13)
The main feature of both brooches is a large triangular enamelled panel on the upper bow; otherwise they have a narrow crossbar holding the axis of a hinged pin and a plain narrow lower bow. NN 116 has a very small headtab, NN 117 has none.

No close parallel has been found. They could be related to Hod Hill brooches by shape (only) – some of these have the same shaped panel on the upper bow (*cf* Brailsford 1962, C88) – or to other enamelled developments of the same type; for example, Straubing, Germany (Walke 1965, taf 94, no 22), but these all have a much more decorative lower bow with either zoomorphic or multiple mouldings. Presumably NN 116–7 are in the south-western tradition of simplified versions of standard brooch types.

NN 122 (Fig 13)
The pin was hinged between two lugs and there is no crossbar; above this there are indications of a broken moulding. A long rectangular panel on the bow contains two long fields for enamel but none remains. What remains of the head is more suggestive of a plate brooch, but the lower part and the slight curve may place it in the present group. Now in two pieces.

NN 315* (Butcher 2000–1, 24–5, fig 9)
An enamelled Hod Hill derivative, probably Continental.

Knee and P-profile (Fig 14)

NN 113, NN 114, NN 115*; also NN 316* (Butcher 2000–1, 25, fig 9) T175B
The pin is hinged between two lugs behind a nearly flat crossbar; the upper bow is split into two ribs of triangular section; the lower bow a broad plain plate with a transverse catchplate behind. In profile the brooches are S-shaped.

These four are very similar and perhaps from the same mould; the length of the bow is exactly the same for each. There is one close parallel: Uley, Glos (Woodward and Leach 1993, 153, fig 124, no 13). Although unusual they must belong to the general group of knee brooches discussed below.

NN 112, NN 239 (not illustrated) T 174
The pin is hinged between two lugs behind a flat semi-circular headplate; the broad undecorated bow has an S-profile and on the complete example, NN 112, there is a transverse catchplate.

These are clearly related to the last type and there are several parallels: Woodeaton, Oxon (Hull, forthcoming, 2749), very similar; also a distorted brooch from Lydney, Glos (Wheeler and Wheeler 1932, fig 12, no 21).

NN 259, NN 260 T171? (not illustrated)
Two very small semi-circular headplates with lug for spring attachment and the beginning of an arched bow. These may belong to T171, for which there are examples from Caerleon, Monmouthshire (Zienkiewicz 1986, nos 16 and 18, from drain filling of AD 160–230).

NN 258 Fragment; the lower bow of another T171 knee brooch (not illustrated).

NN 241 T187B (Fig 14)
Flat crossbar with spring of five turns between two lugs; divided upper bow, plain lower bow; P-profile. Broken across bow.

Similar brooches include Aldborough, Yorks (Bishop 1996, 56, no 333), with knurled ridges on divided ribs, and *Vindolanda*, Chesterholm, Northumberland (Bidwell 1985, fig 39, no 5), context date *c* AD 235.

This form is common in the Rhineland where it is usually described as having the spring within a half-cylindrical head, but from illustrations some appear to have the spring between lugs as in the Nornour example; for example, Böhme 1972, 25, nos 635–7 and 639. The group is dated late second and first half third century.

There is little doubt that these Nornour brooches belong to the general types of the late second and early third century which are often called 'soldiers' brooches' on the Continent as they are abundant in the forts of that period on the Rhine frontier. The same types, and variations of them, occur in Britain, again commonly on military sites in the north of the country, but they also occur in civil sites in the Midlands and south. Whatever their origin – and their simplified shapes and, where analysed, composition of leaded bronze suggest that they may be south-western products – the Nornour examples must

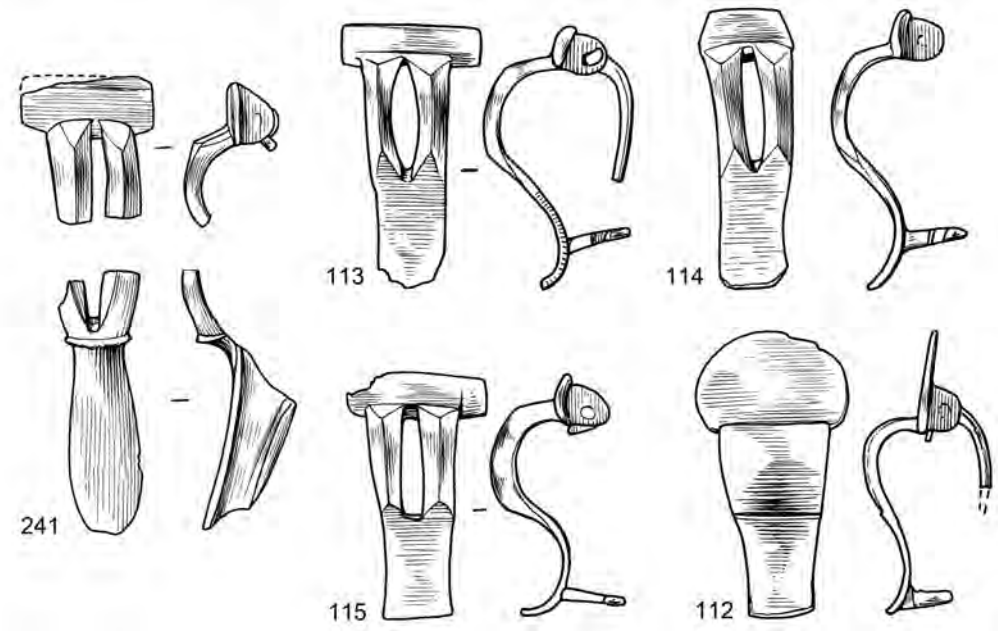

Fig 14 Knee brooches: NN 113–115, 112. P-profile brooch NN 241. Scale 1:1. (Drawings: David Neal. © Historic England.)

indicate that brooches were still reaching the site *c* AD 200 or later.

South-western bow brooch types

The largest group of bow brooches found at Nornour consists of those which are strongly associated with south-western Britain by the distribution of similar brooches in that area. They are generally rather simple and characteristics tend to be shared across the group, which makes type definition difficult. Most of them lack names so that it is necessary to use Hull's type numbers, although inconsistencies within these demonstrate the difficulty of classification.

The main characteristics of the group are as follows:

- Usually T-shaped.
- The pin is usually hinged on an axial bar in a narrow head-tube; if there is a spring it is attached in the 'Polden Hill' manner (*cf* NN 11 below).
- In the developed types there is often a tab cast in one with the head, sometimes, but not generally, pierced to form the more usual loop thought to be intended to hold a chain.
- Decoration is simple, either in relief or enamel.
- When analysed they are nearly always found to be made of leaded bronze.

Few examples come from closely dated contexts but the general period seems to be later first century and earlier second century AD. Some of the simpler ones come from Flavian contexts – for example, Camerton, Somerset (Wedlake 1958, fig 50, no 10, and fig 53, no 43) – but a more developed one from Caerleon, Monmouthshire, was in a context not later than AD 125 (Wheeler 1928, fig 13, no 4). It seems probable that they originated as western versions of the very common 'Colchester derivative' brooches of the later first century and some show influence, in both shape and decoration, from the headstud and trumpet types which are more widely spread in Britain; also from the 'Polden Hill' type which is commonest in the west Midlands.

The most significant piece of evidence for the 'south-western' group is the discovery of clay moulds at Compton Dando, Somerset, which is on the edge of the Mendip Hills and only a few miles from the site at Charterhouse which yielded large numbers of these brooches during re-working of the lead deposits in the nineteenth century. Not all of the moulds have been processed, and many of the fragments were unrecognisable, but the forms of two types of brooch have been distinguished: a headstud of type 149B with diagonal cross on the bow (*cf* Nornour nos 99–102 above) and a Type 122, the form which is so common at Nornour (*cf* NN 37–46, below). (See Bayley 1985.)

Simple T-shaped brooches without headtab or enamel (Fig 15)

Chevron-hatched brooches T 130

NN 72*, NN 73*, NN 74, NN 78
Simple T-shape with short crossbar in which the pin is hinged; only decorated with diagonal fine hatching each side of a line down the centre of the upper bow. Small plain foot-knob. No close parallels, although the hatched decoration occurs in combination with other features: see the Carvossa parallel to NN 51 below. The bow fragment NN 74 overlaps the head fragment, NN 78, so they must represent different brooches.

Variants

NN 75
Similar to NN 72–4 above but with sharply angled cut-off at the head of the bow on which is a diagonal cross, deeply cut (Justine Bayley suggests this may be secondary working). There is also a line across the 'waist', defining the end of the chevron decoration but perhaps also related to the more definite waist mouldings of NN 77 below.

NN 51*
More substantial, and with an angle at the head less acute than NN 75 above. This has a raised triangular moulding where NN 75 has an incised X, and they both have a rudimentary definition of the 'waist'. There is a parallel in a brooch from Carvossa, Cornwall (Carlyon 1987, fig 7, no 16; upper part only survives).

NN 77*
Similar to NN 72–4 above, including the flattish profile which distinguishes it from the last two, but this one has a more distinct waist moulding

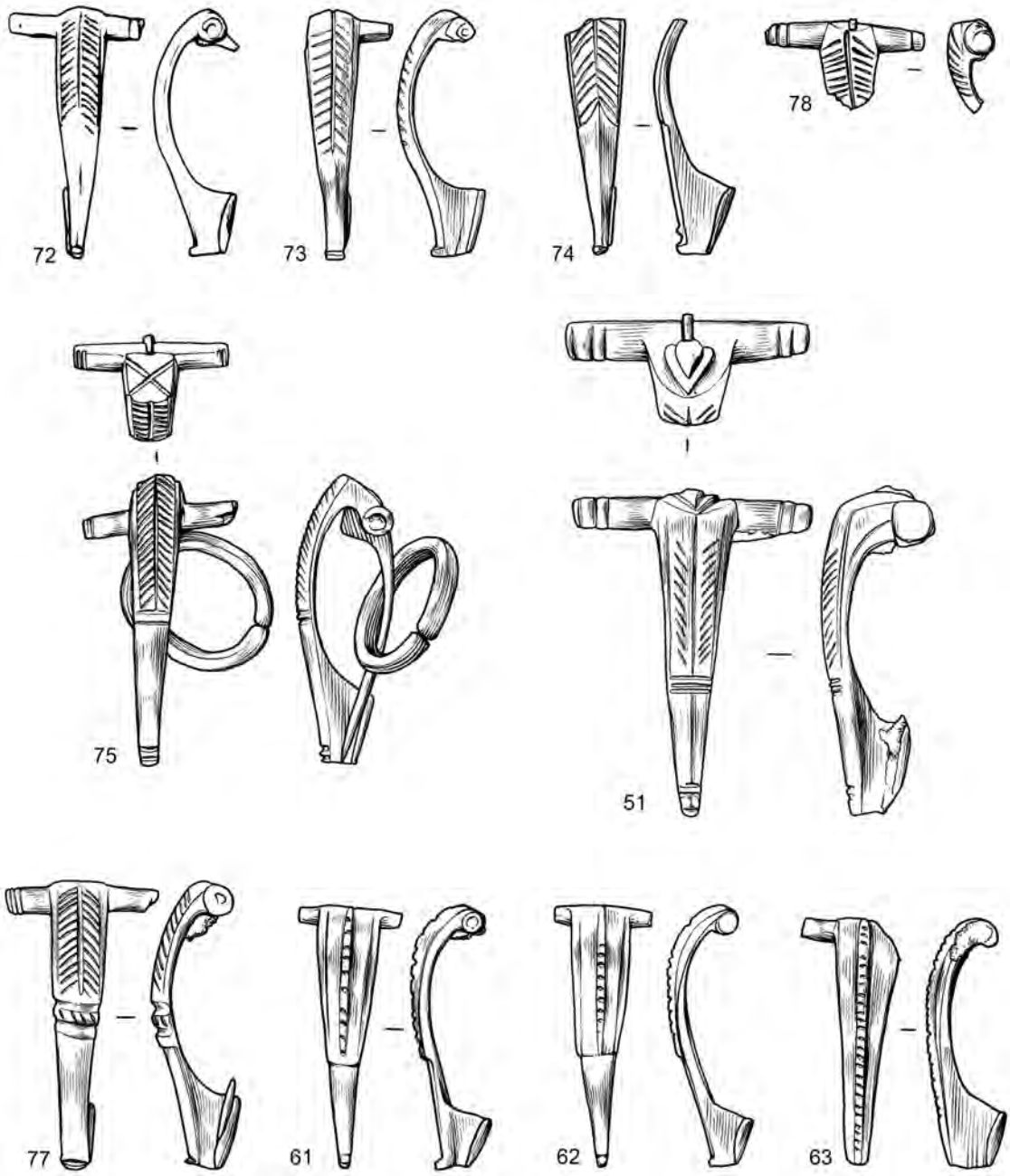

Fig 15 South-western T-shaped brooches: simple, without headtab or enamel, NN 72–74, 78, NN 75, 51, 77; NN 61–63. Scale 1:1. (Drawings: David Neal. © Historic England.)

which may relate it to many standard types, including the headstud. There is quite a close parallel from Charterhouse, Somerset (Hull, forthcoming, 1214).

Type 125

NN 61, NN 62; also NN 304 (Butcher 2000–1, 22**,** fig 8)
Small, un-enamelled brooches of simple T-shape. The pin is hinged in the short cross bar and there is no headloop. The upper bow has a central knurled rib and slight side grooves; the lower bow is plain, with a small footknob. Similar in shape to T 130 (NN 72–8, above), but the decoration of the upper bow is defined by a slight step at its lower end.

There are similar brooches from: Lowbury, Oxon (Atkinson 1916, pl ix, no 43); Catsgore, Somerset (Leech 1982, fig 78, no 25; head only, leaded bronze); Greyhound Yard, Dorchester (Woodward *et al* 1993, fig 61, no 29; head only); Wanborough, Wilts (Anderson *et al* 2001, fig 23, no 104, leaded bronze). None is from a dated context.

Variant

NN 63
Similar, but the knurled rib extends to the foot, where there is no finial.

NN 271, NN 294 (not illustrated)
The upper parts of two very plain brooches with crossbar and profile similar to the last group.

Simple T-shape with crest on upper bow (Fig 16)

NN 96*, NN 97
Upper halves of two brooches with pins hinged in a long narrow crossbar. Both have rivets (or rivet-holes) for some form of crest on the head, but little remains of either.

Simple T-shape with small cell on bow, usually enamelled (Fig 17)

Ribbed upper bow with triangular cell at mid-bow T120

NN 35, NN 36
Similar in size and shape to T130 and T125 above, and with the same narrow crossbar for the hinged pin. The upper bow has rather deeper diagonal grooves than T130, NN 72ff above. Justine Bayley confirms that the cell at mid-bow probably held enamel.

There is a similar brooch from Purbeck, Dorset, and another from Shapwick, Somerset, is similar except for a moulded footknob (Hull, forthcoming, 9092 and 6576).

Fine line decoration and a cell on the bow T 131

NN 80*, NN 81 (upper half only), NN 82*, NN 95, NN 234
The lines form triangles on the head and outline a cell on the upper bow; this is either triangular or lozenge-shaped and shows traces of enamel in most cases. Below this the lines usually flank a central strip of chevron hatching and there is a footknob with several cross grooves above.

There are a number of parallels from south and west Britain, including Seaton, Devon (Miles 1977, fig 16, 1), and Exeter, Devon (Holbrook and Bidwell 1991, 233, nos 6, 7, 8; no 8 was in a context dated AD 75–80). The line decoration also occurs on a number of other T-shaped brooches in Hull's *corpus* in combination with other features; all are from southern counties (Hull, forthcoming).

RN 16 Fragment (not the same brooch as NN 16 in Hull 1968)
Lower bow with central hatched line meeting the lower angle of a rhomboid cell, similar to NN 234 above. (Not illustrated.)

Fig 16 South-western T-shaped: simple, with crest on upper bow, NN 96–97. Scale 1:1. (Drawings: David Neal. © Historic England.)

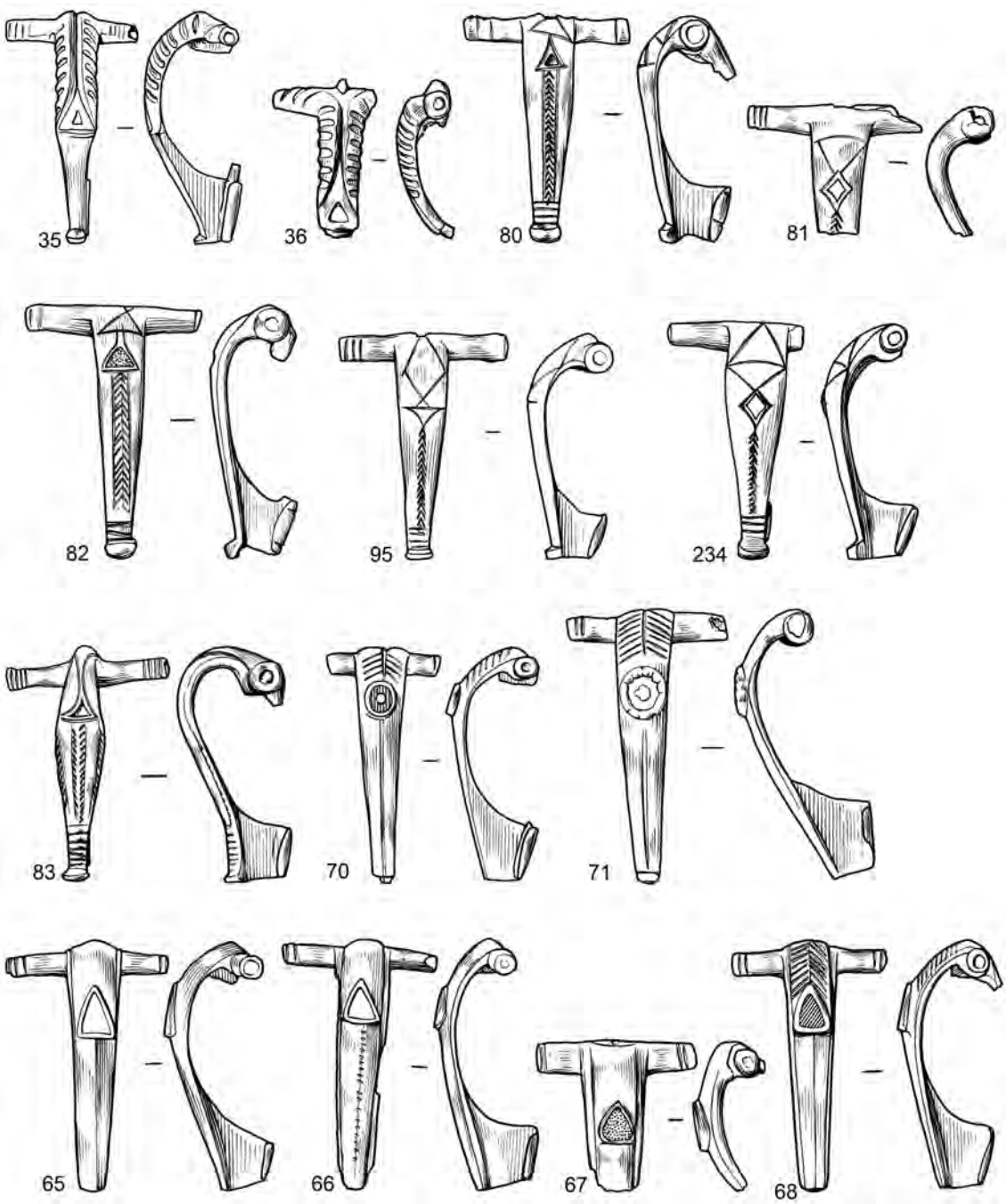

Fig 17 South-western T-shaped: simple, with small cell on bow, usually enamelled, NN 35–36; NN 80–82, 95, 234, 83; NN 70–71; NN 65–68. Scale 1:1. (Drawings: David Neal. © Historic England.)

NN 306* (Butcher 2000–1, 23, fig 8)
Lower bow of a brooch probably similar to NN 80 and 82.

Variant

NN 83*
Very similar to the preceding examples except that the bow is more curved in profile and its outline differs: narrow at the head, widest at the middle.

T 129

NN 70*, NN 71*
The pin is hinged in a narrow cross bar; no headloop. There is fine line hatching on the head (similar to NN 72–78 above) and below this a round stud; this seems not to have contained enamel (information from Justine Bayley).

T 126

NN 65, NN 66*, NN 67, NN 68*
Similar in shape to NN 70 and 71 above, but these have a raised triangular cell and only NN 68 has chevron hatching on the head. Enamel remains in the cells on NN 65, 67 and 68.

The nearest parallel to both these groups is from Catsgore, Somerset (Leech 1982, fig 76, no 3), which has a lozenge-shaped stud and a slightly more spreading head. Other brooches with these features also have additional decoration (for example, a second stud as NN 86 below). The type is surely based on the widespread headstud type (above).

T-shaped brooches with waist decoration (the Wilsford type) (Fig 18)

NN 94* T120
Small T-shaped brooch; pin hinged in wide narrow crossbar; knurled waist moulding with outline triangle below, not enamelled.

The general shape is quite common in the south west, often with enamel on the lower bow. The closest parallels to this one are from Catsgore, Somerset (Leech 1982, 105, no 5); Wilsford, Wilts (Cunnington and Goddard 1934, pl lxvi, no 6); Blacklands, Priddy, Somerset (seen by courtesy of Bristol City Museum).

NN 34*
Similar to NN 94 except that there is an enamelled triangular cell instead of a waist moulding and the footknob is knurled.

NN 307* (Butcher 2000–1, 23, fig 8); probably related to this type.

Related to trumpet and / or headstud brooches

T-shaped brooches related to Hull Types 143 and 145 (Fig 19 and Fig 75)

NN 231*, NN 261*; also NN 312* (Butcher 2000–1, 24, fig 9)
Three T-shaped brooches, with pin hinged in long narrow crossbar, no headloop and forward-facing footstud. NN 231 and NN 312 have serrated edges to the whole length of the bow and NN 261 and NN 312 have a distinctive form of enamel decoration (a long rectangular field on the bow with blocks of different colour juxtaposed rather than in separate cells). Both NN 231 and NN 261 have a diagonal cross on the head, as on related brooches NN 99 and 101–2 (it is very faint on NN 231 and is not shown in the drawing).

The general form of these three is similar to some first-century brooches regarded as the forerunners of the headstud type: these have the wide crossbar with no headloop and the forward-facing stud on the foot. Some also have the serrated

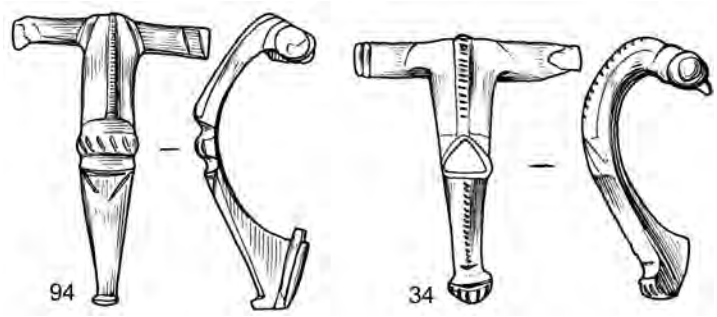

Fig 18 South-western T-shaped, Wilsford type: NN 94, 34. Scale 1:1. (Drawings: David Neal. © Historic England.)

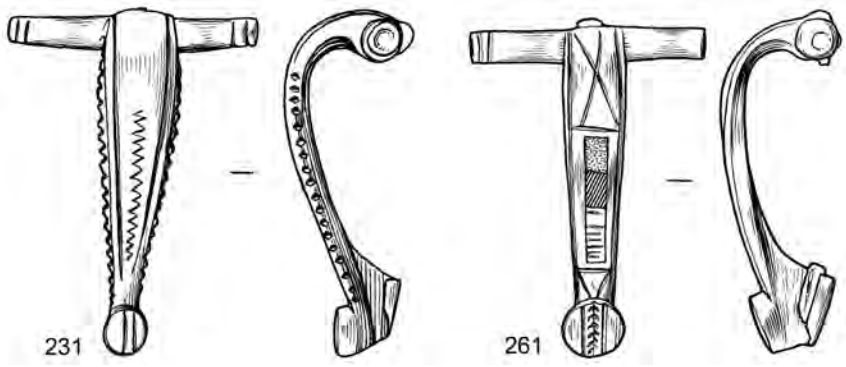

Fig 19 South-western T-shaped, related to headstud forerunner types: NN 231, 261. Scale 1:1. (Drawings: David Neal. © Historic England.)

edge to the bow and are related to similarly 'toothed' brooches which do have a headloop and a second stud near the head of the bow, the earliest headstud brooches. Some of these semi-parallels come from pre-Flavian and Flavian contexts; for example, Strutt's Park, Derby (Brassington 1970, fig 3, no 1), and another from Derby (Mackreth 1985, no 21). Enamelling in small cells (usually a pattern of lozenges and triangles) is common on these brooches; the juxtaposed blocks on NN 261 and 312 may indicate a different source.

There are a few related brooches from the south west; for example, Lydney, Glos (Wheeler and Wheeler 1932, fig 12, no 15), Hengistbury Head, Dorset (Cunliffe 1987, 148, no 18), and Exeter, Devon (Holbrook and Bidwell 1991, fig 100, nos 4 and 5). These are very variable and like the three Nornour brooches have as many differences as similarities. But perhaps the similarities are enough to suggest that all these brooches were made in the later first century.

Related to the trumpet type (Fig 20)

NN 109* T158F
The head is only slightly spread and covers a small tube holding the axis of the hinged pin, with cast headloop above. There is a knurled waist moulding flat at the back and a small foot knob.

NN 286
Fragment; the central part of a bow showing similar waist moulding to NN 109 above. (Not illustrated.)

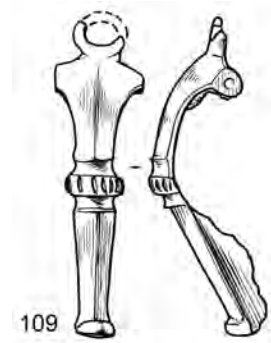

Fig 20 South-western, related to trumpet brooches: NN 109. Scale 1:1. (Drawing: David Neal. © Historic England.)

Similar brooches: Greyhound Yard, Dorchester (Woodward et al 1993, no 45); Ilchester, Somerset (Leach 1994, fig 38, no 2, 122); Exeter, Devon (Holbrook and Bidwell 1991, no 28, 237); Rotherley, Wilts (Pitt-Rivers 1888, pl 97, no 9). There is no well-dated context for these but they are probably a south-western version of the standard plain trumpet brooch, which was in general use from the Flavian period well into the second century (Cool and Philo 1998, 31).

Related to both trumpet and headstud brooches (Fig 21)

NN 110*
Slightly spread head, not completely covering the short tube holding the axis for a hinged pin. The head is damaged so that it is uncertain whether

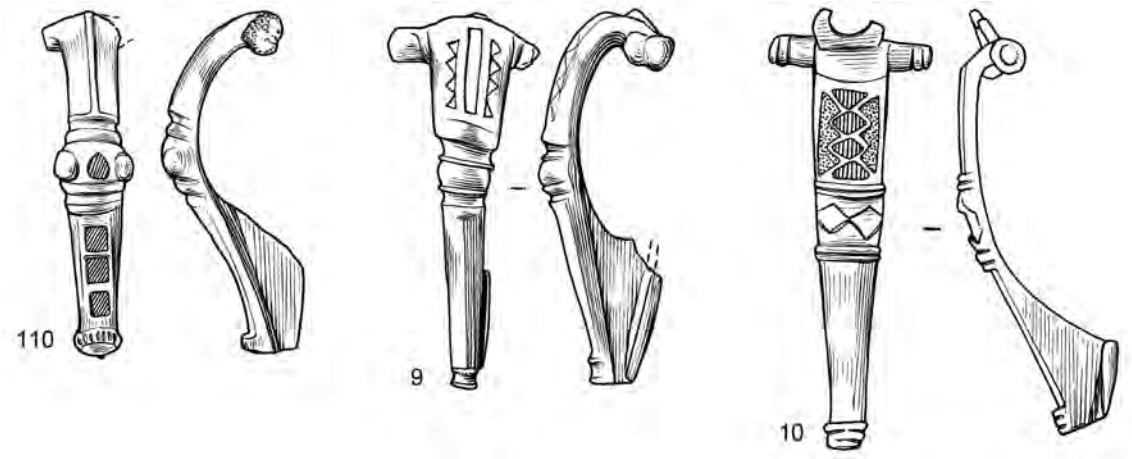

Fig 21 South-western, related to both headstud and trumpet brooches: NN 110, 9, 10. Scale 1:1. (Drawings: David Neal. © Historic England.)

there was a tab or loop. The waist moulding has two lobes flanking a central triangular enamel cell; the back is flat. There are three rectangular cells on the lower bow (the outer ones enamelled) and a knurled foot knob.

The lobed waist moulding is the only feature reminiscent of trumpet brooches as the head has almost lost any resemblance to those. The panel of square cells down the lower bow is more like those on headstud brooches such as Castleford no 22, which was in a Flavian context (Cool and Philo 1998, 40). A brooch which might be the model for this one comes from Baldock, Herts (Stead and Rigby 1986, fig 29, no 10). This has rather similar enamel cells on the lower bow and on the waist moulding (which is not lobed). The head is more substantial and has enamel cells on the centre, while there is a spring held on a central lug behind the head and threaded by a loose headloop (hence an earlier stage in the development of pin fixings). This brooch was in a cremation burial with South Gaulish samian, dated AD 50–70, and it seems possible that the maker of NN 110 might have seen something similar.

NN 9* T108
Pin hinged in short ribbed crossbar; remains of broken cast tab; broad upper bow with enamel decoration. A central plain bar flanked by panels forming a row of four small triangles; waist 'button' flanked by cross ribs; plain lower bow, foot broken.

NN 10* T109
Pin hinged in short ribbed crossbar; broken cast headloop; broad upper bow with enamel decoration. Central panel of small lozenge-shaped cells flanked by two panels forming a row of three triangles; waist moulding two rows of triangles flanked by marginal ribs and grooves; lower bow plain; moulded footknob.

A number of finer quality brooches are sufficiently similar to cite as parallels for NN 9 and 10; for example, Chew Valley, Somerset (Rahtz and Greenfield 1978, fig 114, no 10); Whitton, Glamorgan (Jarrett and Wrathmell 1981, fig 70, no 18) Caerwent, Monmouthshire (Nash-Williams 1930, 239–40, nos 2 and 3). These (and other) brooches have much finer mouldings and sharper profile: the Nornour examples are rather flat and fuzzily moulded (although this may be due to erosion of the metal surface). The main type shows elements of the T149 headstud brooch with fixed headloop and lattice-pattern enamelling, while the waist moulding seems to be based on that of some trumpet brooches; either 'acanthus' or plain (as first distinguished by Collingwood 1930). These suggested models were both in production before AD 100. Although the standard T109 is mostly found in the south west it did reach Chesters on Hadrian's Wall, leading to the suggestion that better quality south-western products went further afield (Bayley and Butcher 2004, 167).

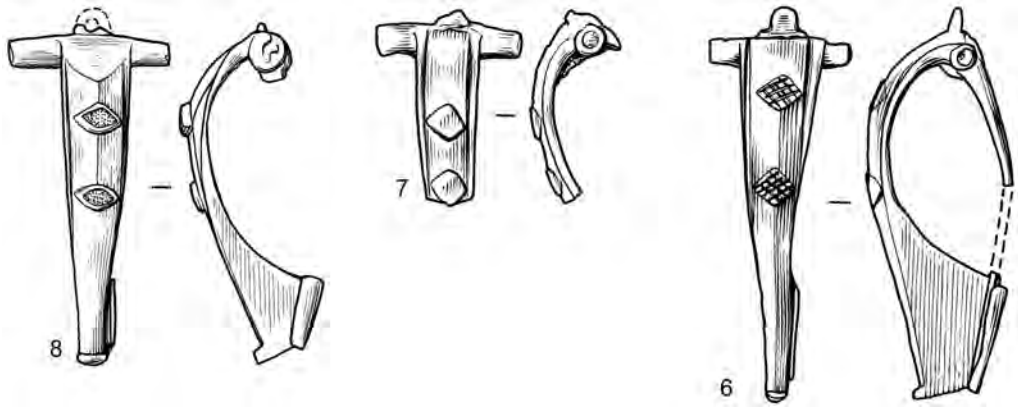

Fig 22 South-western 'developed' brooches: NN 6, 7, 8. Scale 1:1. (Drawings: David Neal. © Historic England.)

'Developed' group, usually with headtab and enamel T106 (Fig 22)

NN 6*, NN 7
T-shaped brooches with short crossbar, cast headtab or loop and two cross-hatched rhomboid studs on bow. Pin hinged in small tube.

NN 8
Similar in every way except that the two studs are enamelled, making it nearly a T105B, as NN 7A (below).

NN 93
Upper bow only. Rhomboid stud with enamel of uncertain colour. (Not illustrated.)

Parallels: Charterhouse, Somerset, two, including Hull, forthcoming, 1247; Caerleon, Monmouthshire (Zienkiewicz 1986, fig 54, no 6), from Hadrianic-Antonine context; Exeter (Holbrook and Bidwell 1991, 235, no 17); Sea Mills, Bristol (upper part only), seen by courtesy of Peter Ellis; Usk, Monmouthshire (Manning 1995, fig 26, no 59). Hull's corpus (forthcoming) also shows examples from Cirencester, Caerwent and Woodeaton, Oxon.

T105B (Fig 23)

NN 7A
Small T-shaped brooch; the pin hinged in a narrow crossbar, three rhomboid cells for enamel on the bow; the foot missing. The head is also broken; it probably had a cast loop.

There are numerous parallels for this brooch, which seems to be a standard type in the south and west: at least ten in Bristol City Museum from the Charterhouse area, Somerset; Carvossa, Cornwall (Carlyon 1987, fig 9, no 27); Caerleon, Monmouthshire (Wheeler 1928, 162, nos 10 and 11); Gadebridge, Herts (Neal 1974, fig 54, no 17). The latter is the furthest east noted and comes from a context of late second century or earlier. There are further examples in Hull (forthcoming) from Cirencester, Glos, Dorchester, Dorset, and Silchester, Hants.

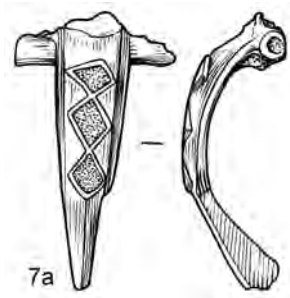

Fig 23 South-western 'developed' brooch: NN 7a. Scale 1:1. (Drawing: David Neal. © Historic England.)

Types T110 and T111 (Fig 24)

NN 11* T110A
The spring is secured in the 'Polden Hill' manner: the axial bar held in the closed ends of the cross bar and the chord passing through a crest on the head

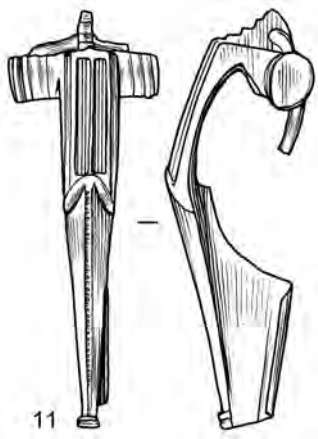

Fig 24 South-western 'developed' brooch: NN 11. Scale 1:1. (Drawing: David Neal. © Historic England.)

of the bow. There is a long rectangular field on the upper bow which is filled with juxtaposed blocks of enamel not shown in the drawing (three on each side). Below this is a 'pair of leaves' moulding and a narrow bow tapering to a small foot knob.

Close parallels include: Charterhouse, Somerset (Hull, forthcoming, 1160); Warwick (*ibid*, 6574); Farley Heath, Surrey (*ibid*, 6592); Croft Ambrey, Herefordshire (Stanford 1974, fig 67, no 4), from the 'sacred terrace', in use *c* AD 75–160. Others with the same shape and head design but with smaller enamel cells on the upper bow: Caerleon, Monmouthshire (Wheeler 1928, fig 13, no 9), in context *c* AD 125; Chew Valley, Somerset (Rahtz and Greenfield 1978, fig 114, no 8), context late first or second century. The type is, like T108/9 above, well represented in Wales and the west Midlands, and because of its 'Polden Hill' construction (another west Midlands feature) might be regarded as the model for the following group of brooches.

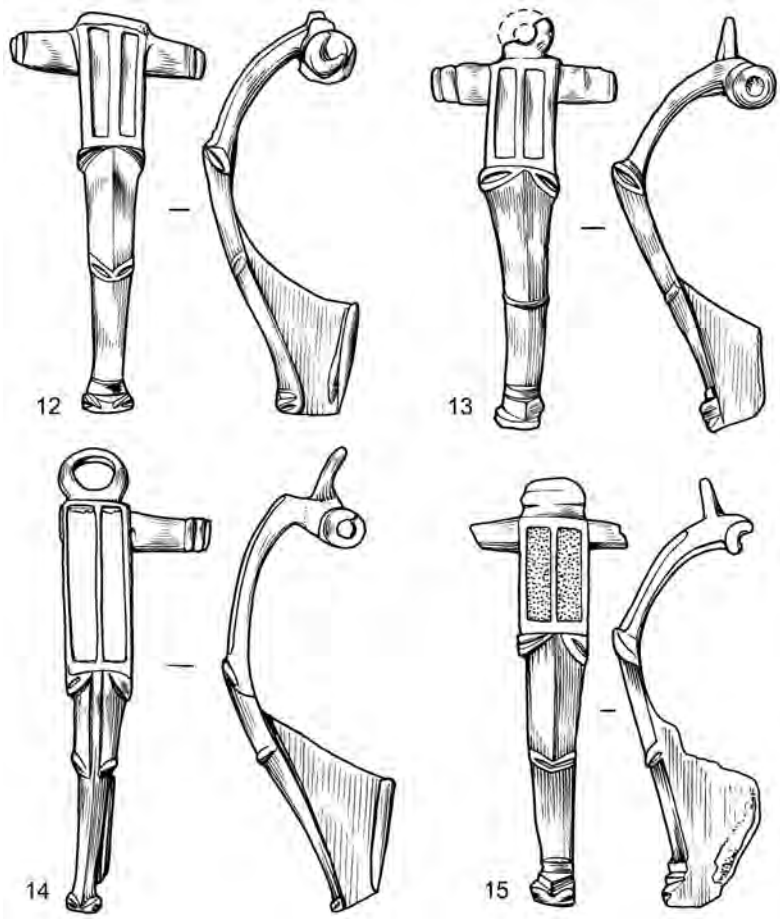

Fig 25 South-western 'developed' brooches: NN 12–15. Scale 1:1. (Drawings: David Neal. © Historic England.)

NN 12*, NN 13*, NN 14*, NN 15 (Fig 25), also NN 301* (Butcher 2000–1, 20, fig 8); T111A

Large brooches of similar design to NN 11 but with a hinged pin, held in a short crossbar surmounted by a cast loop; also there is a second leaf moulding partway down the lower bow (plain on NN 13) and the footknob is also divided into two leaf shapes. They all have long rectangular fields on the upper bow; no enamel remains but there are indications of juxtaposed blocks.

The following parallels only differ in minor ways: Charterhouse, Somerset (Bristol City Museum, not in Hull, forthcoming); Woodeaton, Oxon (Hull, forthcoming, 2388); Chichester, West Sussex (Down 1981, 254–6, fig 10.1, no 3); Whitton, Glamorgan (Jarrett and Wrathmell 1981, fig 70, no 19); *Verulamium*, Herts (Stead and Rigby 1989, fig 11, no 30, more angular profile; two pairs of leaves close together); Wanborough, Wilts (Anderson *et al* 2001, fig 24, no 106).

T 111B

All the following have the pin hinged in a short narrow tube, a fixed headloop or unpierced tab; enamel on upper bow, juxtaposed in several; moulding with 'pair of leaves' below; small plain footknob. They are clearly a smaller version of T111A above. Where analysed they are leaded bronze.

NN 17, NN 19*, NN 20, NN 21*, NN 24* (Fig 26)

Juxtaposed enamel remains in most of the long rectangular cells.

Parallels: Caerleon, Monmouthshire (Wheeler 1928, fig 13, no 13; with pottery of AD 130–160); Charterhouse, Somerset (Hull, forthcoming, 1160); Usk, Monmouthshire (Manning 1995, fig 27, no 61).

NN 263

Missing but said to resemble NN 19 (Hull 1968, 64). (Not illustrated.)

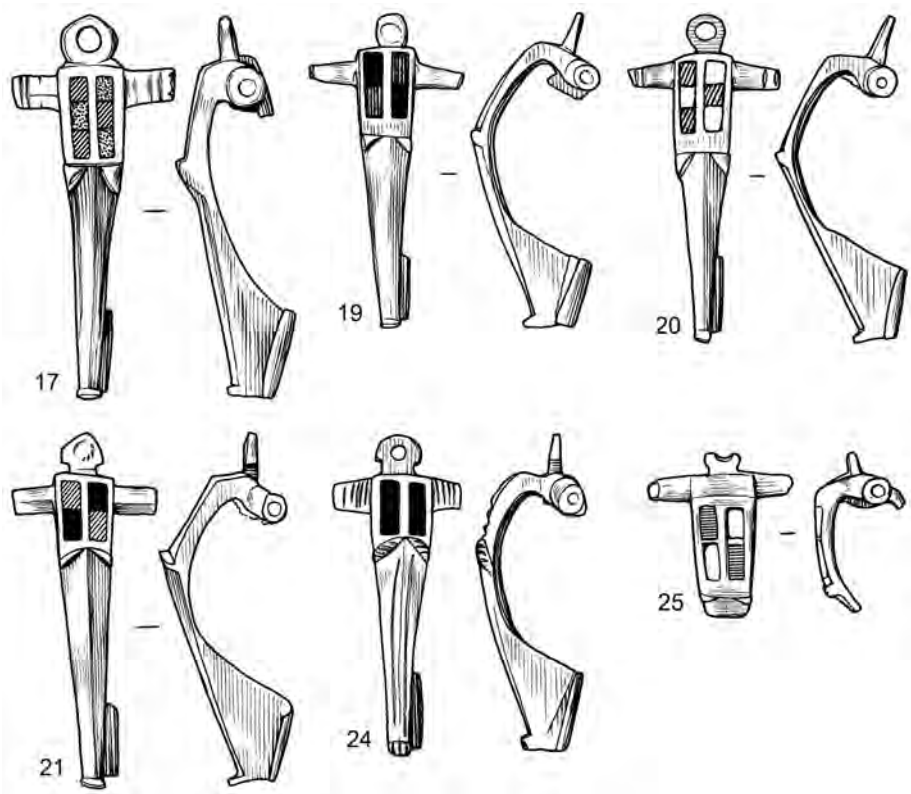

Fig 26 South-western 'developed' brooches: NN 17, 19–21, 24, 25. Scale 1:1. (Drawings: David Neal. © Historic England.)

NN 25 (Fig 26)
Upper part only, probably similar to the last group.

NN 273*
Fragment, probably similar to the last group. Leaded bronze. (Not illustrated.)

NN 29* (Fig 27)
This has the same features as the last group (NN 17ff) but the bow is broader at the top and narrower at bottom.

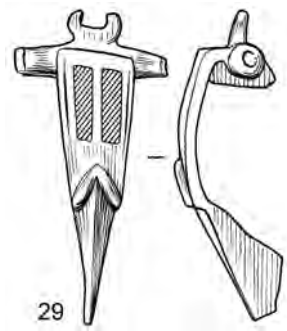

Fig 27 South-western 'developed' brooch: NN 29. Scale 1:1. (Drawing: David Neal. © Historic England.)

RN 2963
Similar except that it is longer and the leaf moulding is more pronounced. It has juxtaposed blocks of enamel in the square panel on the upper bow; only orange identifiable. (Not illustrated.)

NN 28* (Fig 28)
Similar to NN 17ff except for the enamel, which is in two cells divided by a toothed reserved metal strip, a version of the lattice design also found on headstud brooches.

NN 227 (Fig 28)
Fragment, showing enamel design similar to NN 28; headloop broken.

NN 27, NN 32* (Fig 29)
As the first group of T111B but the upper panel is longer and has three rhomboid cells for enamel.

There is a similar brooch from Charterhouse, Somerset, but longer and with four lozenge cells (Bristol City Museum F 1902).

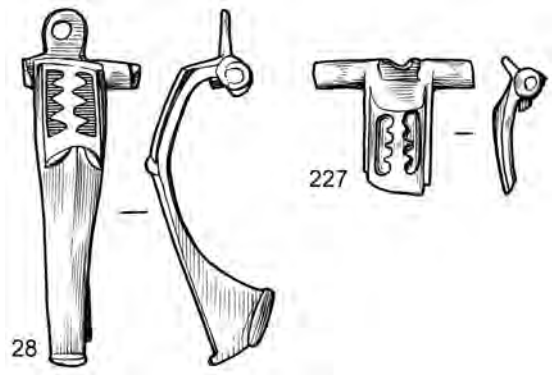

Fig 28 South-western 'developed' brooches: NN 28, 227. Scale 1:1. (Drawings: David Neal. © Historic England.)

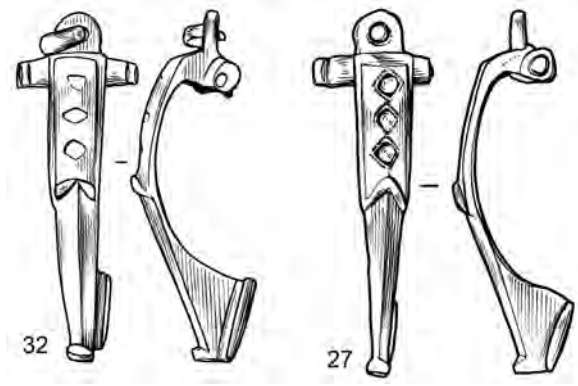

Fig 29 South-western 'developed' brooches: NN 27, 32. Scale 1:1. (Drawings: David Neal. © Historic England.)

NN 18*, NN 23 (Fig 30)
As the first group of T111B but the upper panel has two triangular enamel cells with pointed ends adjoining.

NN 31* (Fig 30)
Similar, but the triangular cells are joined to form one cell.

Parallels: Wanborough, Wilts (Anderson *et al* 2001, fig 24, no 105); Caerwent, Monmouthshire (Hull, forthcoming, 8819) but this also has a headstud.

The Nornour group of Type 111B is remarkably uniform; apart from the odd shape of NN 29 there are only minor variations in patterns of enamel decoration and size of headtab and whether or

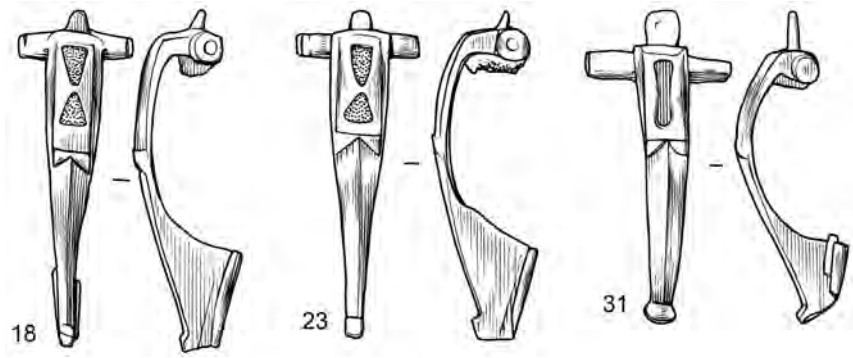

Fig 30 South-western 'developed' brooches: NN 18, 23, 31. Scale 1:1. (Drawings: David Neal. © Historic England.)

not this is pierced. The length of the bow varies slightly, between 36mm and 42 mm, with several at 38mm, so they are not all from one mould. This group consists of 12 brooches, not counting the uncertain ones; there are some close parallels (above) and several brooches more generally similar, mostly from the south and west of Britain.

Variants of T 111B (Fig 31)

NN 22*, NN 247
Pin hinged in narrow tube; cast headloop or tab; panel on upper bow enamelled in lattice pattern; below this a plain waist moulding flanked by ribs; plain tapering lower bow; small footknob on NN 22, foot of NN 247 missing.

Parallels: Charterhouse, Somerset (Hull, forthcoming, 8281); Barnwood, Glos (*ibid*, 1330).

NN 26*, NN 30
Upper fragments of two brooches which each have the hinged pin and cast headloop or tab of preceding brooches; panel of enamelled lattice decoration on upper bow; pair of 'leaf' mouldings below.

Parallel: the upper part of an exactly similar brooch came from Wanborough, Wilts (Anderson *et al* 2001, fig 24, no 107).

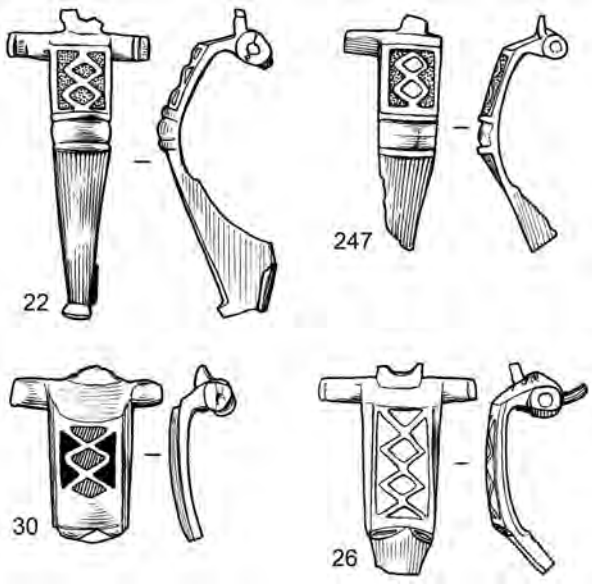

Fig 31 South-western 'developed' brooches: NN 22, 247, 26, 30. Scale 1:1. (Drawings: David Neal. © Historic England.)

The significance of these four lies in the combination of the T111 form with the decoration common on the standard headstud type.

T 122 – Hull's 'ugly' type (Fig 32)

NN 37*, NN 38*, NN 39*, NN 40*, NN 41, NN 42, NN 43*, NN 44, NN 45, NN 46; also NN 302 (Butcher 2000–1, fig 8)

Pin hinged in short narrow crossbar; cast headtab, some pierced; bow widest in centre where it is flattened and bears cells for enamel, either two triangles (sides adjoining) or similar with rectangular cell between; the foot a very small knob (missing on some).

There is a mould for a similar brooch from Compton Dando in the Mendip area of Somerset (Bayley 1985) and a number of parallels come from the same area: Charterhouse, nine

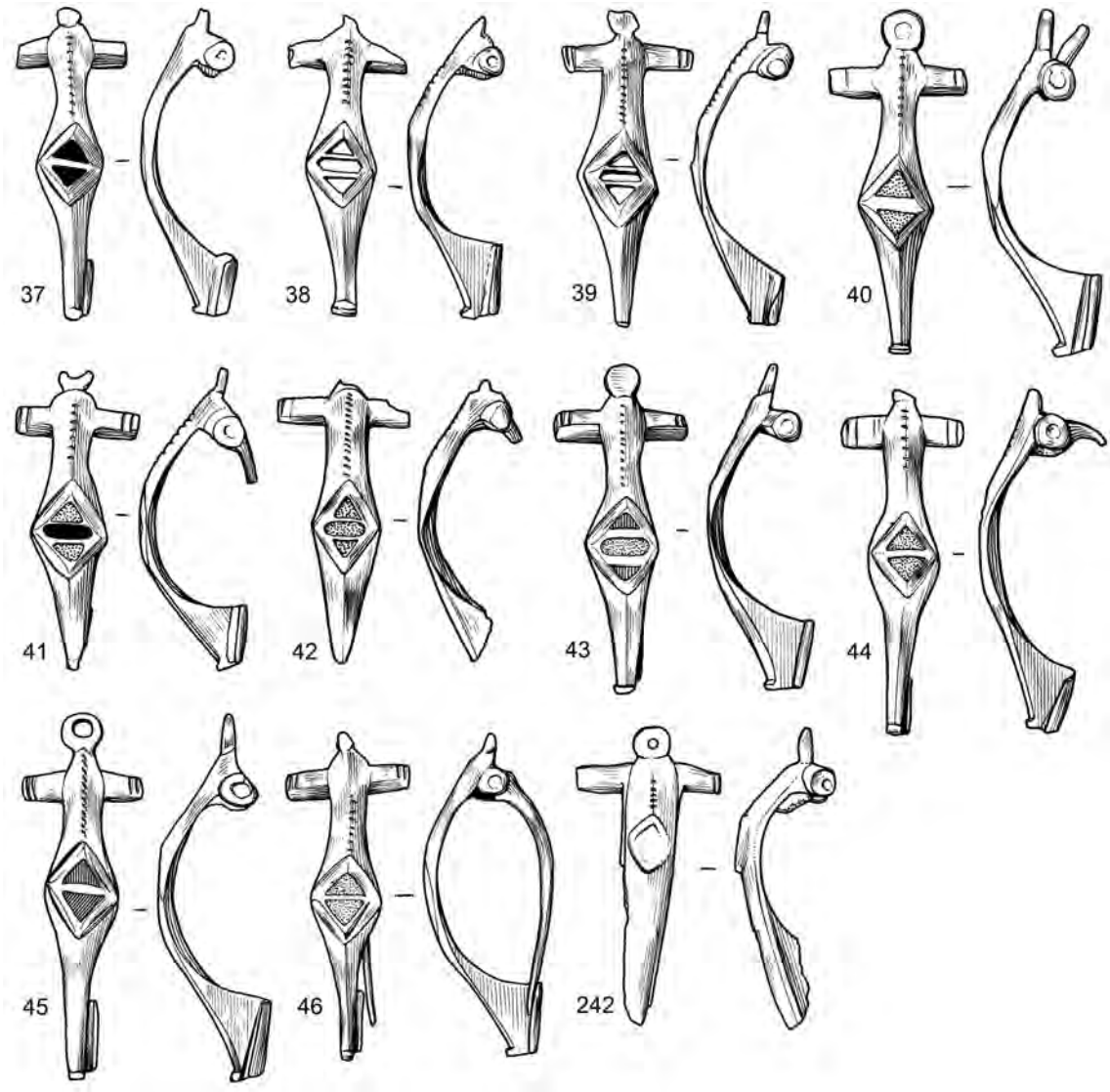

Fig 32 South-western 'developed' brooches: NN 37–46; NN 242. Scale 1:1. (Drawings: David Neal. © Historic England.)

examples similar to the Nornour brooches, seen in Bristol City Museum, also three variants; Chew Valley (Rahtz and Greenfield 1978, 293, no 4) from a second century context; Cheddar, seen in Wells Museum. From the same general area: Uley, Glos (Woodward and Leach 1993, fig 124, no 14), context *c* AD 200; Catsgore, Somerset (Leech 1982, 105, nos 7 and 8); Cattybrook, Somerset (Bennett 1980, 191, fig 14, no 4); Nettleton, Wilts (Wedlake 1982, fig 53, no 55).

Others: Gadebridge, Herts (Neal 1974 fig 54, no 18); Carvossa, Cornwall (Carlyon 1987, 124, no 24); Exeter, Devon (Holbrook and Bidwell 1991, 235, no 18); Whitton, Glamorgan (Jarrett and Wrathmell 1981, fig 70, no 20).

There is very little dating evidence for this type and in shape it is not closely related to any others, except that the cross bar and headtab appear on many of the south-western brooches of generally late first and earlier second century date. The simple enamel decoration would also fit in with these.

NN 297*
Fragment of brooch similar to the last group: centre of bow with standard enamel cells. (Not illustrated.)

NN 242* (Fig 32)
Similar to the last group except that the bow does not expand where it carries the central stud.

T132 – Hull's 'Nornour type'

All have two studs on the bow, usually enamelled; the lower one in place of the more usual foot-moulding. Otherwise they have the characteristics of most of the south-western group: pin hinged in short narrow crossbar, cast headtab or loop and where analysed they are of leaded bronze (five examples).

NN 85*, NN 86 (Fig 33)
The sides of the upper bow are ribbed or hatched and there is a corded central rib between the two studs. NN 86 does not have any headtab. Both are shorter than the other ribbed examples.

RN 1371
Fragment: upper bow similar to NN 86. (Not illustrated.)

NN 84*, NN 87*, NN 88* (Fig 34), NN 232*
Longer than the last two and lacking the relief decoration on the sides of the bow. All have the central rib joining the two studs (only faintly knurled on NN 84 and 88) and a headtab or loop.

NN 89, NN 90, NN 254, NN 92 (upper half only) (Fig 34); NN 91 (not illustrated)
Short, with no rib or other decoration, but with two studs where complete. All have headtab or loop.

Although they show differing features (enough to preclude a common mould), all these brooches have associations across the above sub-groups, suggesting that they are closely linked in origin. Mr Hull called them the 'Nornour' type (Hull, forthcoming) and there are more from Nornour than elsewhere. I can only cite two close parallels, both from Somerset: Catsgore (Leech 1982, fig 76, no 9); Ham Hill (Haverfield 1906, fig 63, no 5; Taunton Museum A 1158.1892). Presumably the forward-facing stud at the toe is based on more widely distributed types with the same feature, as

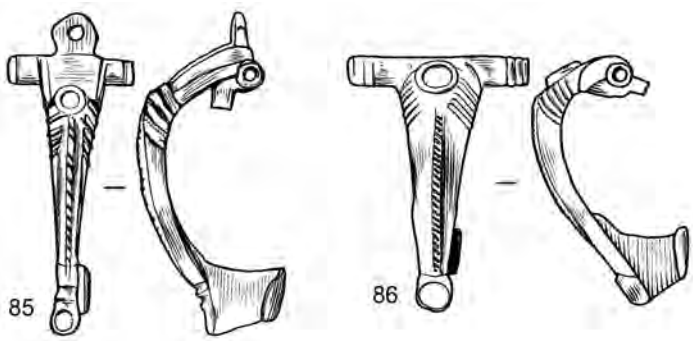

Fig 33 South-western 'developed' brooches: NN 85–86. Scale 1:1. (Drawings: David Neal. © Historic England.)

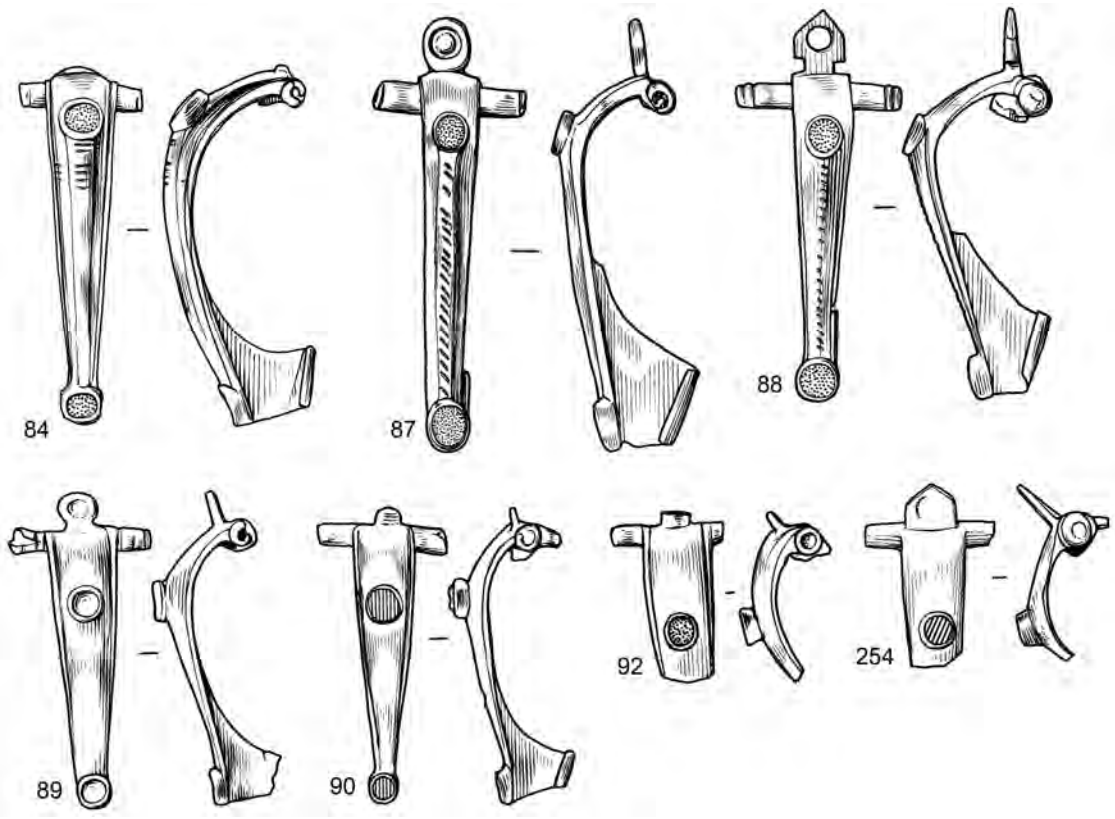

Fig 34 South-western 'developed' brooches: NN 84, 87–88, NN 89–90, 92, 254. Scale 1:1. (Drawings: David Neal. © Historic England.)

Hull Types 143, 145 and 147, which are related to the headstud group.

NN 270, NN 278, NN 281
Fragments showing enamel cells typical of the above group. (Not illustrated.)

Single or unparalleled brooches probably of south-western origin (Figs 35–36)

NN 47* ?T123
The pin is hinged in a plain narrow crossbar; the top of the bow is expanded and has knurled ribs while the narrower lower bow has a central zigzag and two side mouldings; the back is recessed behind the broad upper part.

Although there is no close parallel for this brooch the T-shape with volutes on the sides and moulded surface decoration does occur; for example, three brooches from Charterhouse, Somerset (Hull, forthcoming, 1228–30); also Camerton, Somerset (Wedlake 1958, fig 52, no 22). Hull compared it to some Wiltshire brooches with volutes down the sides and suggested calling it the Easterton type after one of these (Hull, forthcoming, 2840, 2858; also 6937 from Caerleon).

NN 238
Fragment: the upper part only of a brooch which has volutes similar to NN 47 above. The only decoration visible is a double knurled ridge down the centre. (Not illustrated.)

NN 53* T135
The pin is hinged in a long narrow crossbar and there is a crest cast in one with the head of the bow, which is otherwise plain.

A number of similar brooches, mainly from the south west, have this cast crest, which seems to derive from the decorative plate riveted on some of

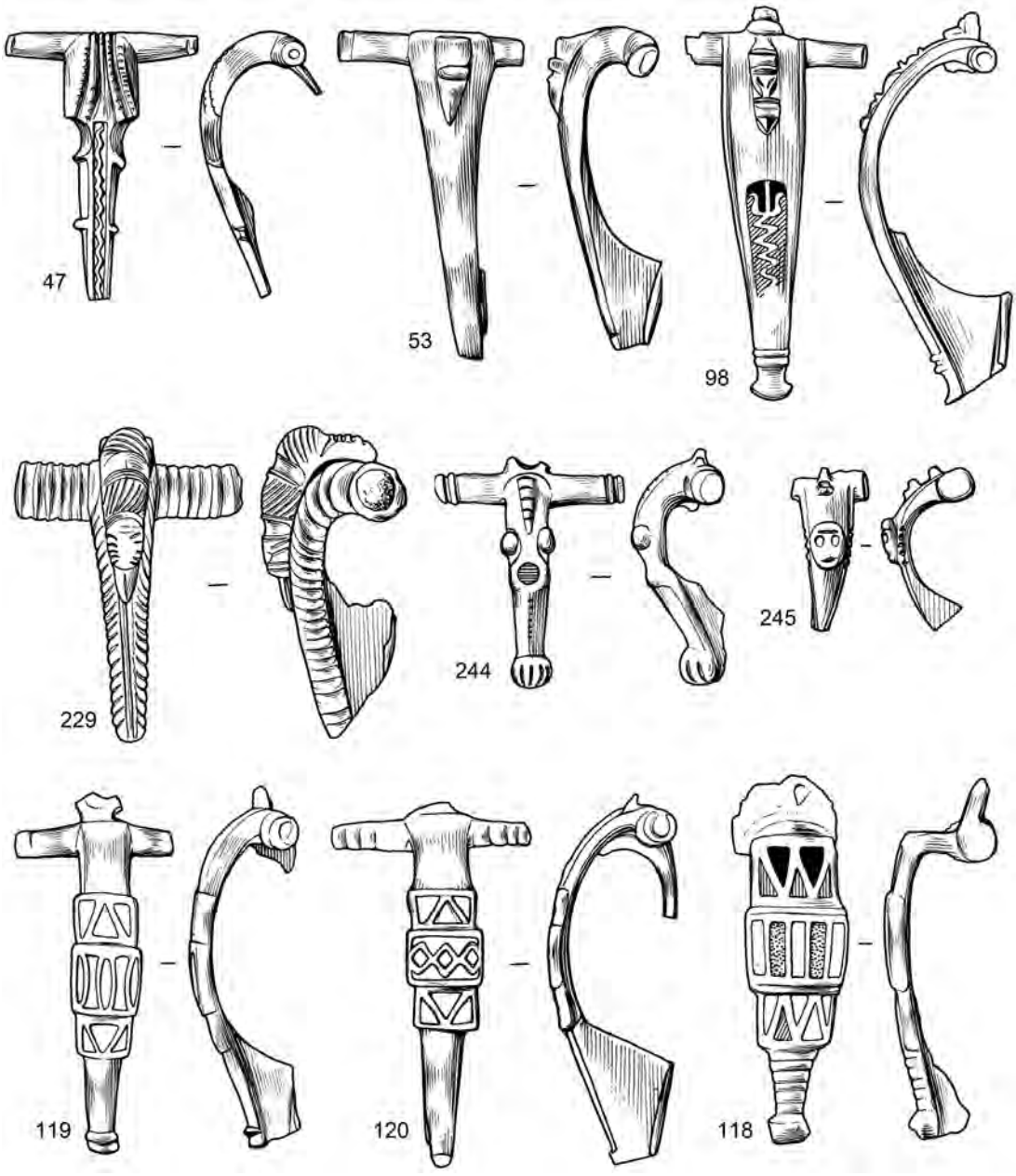

Fig 35 Single and unparalleled brooches, probably south-western: NN 47, 53, 98, 229, 244–245, 119–120, 118. Scale 1:1. (Drawings: David Neal. © Historic England.)

the 'Applied hook' type; this was present at Hod Hill, Dorset, in the mid first century and it seems probable that our type had developed before the end of that century (Mackreth 1991, 232). Examples occur at Mount Batten, Plymouth (Cunliffe 1988, 65, no 73); Wookey Hole, Somerset (Branigan and Dearne 1990, no 3.1); Ilchester, Somerset (Leach 1982, fig 115, no 1); Rock, Cornwall (Haverfield 1924, fig 5, no 12). Further examples in Hull (forthcoming) show that it was a common type in the south west.

NN 233
Upper half of a T-shaped brooch with crest; now missing. (Not illustrated.)

NN 98*
The pin is hinged in a narrow crossbar and an elaborate crest was cast on the upper bow. The large broad bow has a panel of enamel decoration, longer than shown in the drawing: two separate cells of blue at the top and bottom; traces of red in the main panel with central zigzag of reserved metal. There is a moulded footknob.

Hull (1968, 40) and Mackreth (1988, 66) relate the crest to the plate of the 'Applied hook' type (see NN 53, above). The enamel panel is similar to that on some headstud brooches.

NN 244
Size and shape similar to NN 94 and NN 34 in the 'simple' group (above) but this has a cast headloop and a small cell for enamel with two globular mouldings above it instead of a waist moulding. There is a crosshatched rib down the centre of the bow. The pin is hinged. No parallel found.

NN 245
Very small brooch with stud bearing a moulding in the shape of a stylised human face cast on the centre of the bow, the edges of which are serrated as in Hull's 'Sawfish' type. It has a spring mounted on a rod between the discoid ends of the short crossbar and a notched crest on the head of the bow which may have held the chord of the spring; another example of the Polden Hill construction. The foot is missing.

No parallel has been found; the spring construction would fit a late first-century date.

NN 229*
Another very unusual brooch. Its main feature is a massive moulded crest riveted to the head of the bow; the rest of the bow and the crossbar are ribbed and the pin is hinged. There are no parallels but it is suggested that it may be related to the 'proto-headstud' brooches which have a riveted crest in the shape of a dog; for example, one from Priddy, Somerset, in Bristol City Museum (Hull, forthcoming, 1223), and another from Wroxeter, Shropshire (Atkinson 1942, H160), which was in a Flavian deposit. Otherwise the only comparison I can make is with a very large brooch from Porth Godrevy, Cornwall, which has a bulky riveted crest thought to represent a crouching animal (Fowler 1962, fig 13).

NN 119*, NN 120
T-shaped brooches with square panels on mid-bow enamelled in three sections;

Within these the enamel cells are the common 'triangle-and-lozenge' on NN 120 and unusual triangle-with-central-curvilinear-band on NN 119. The pin was hinged in a narrow crossbar; NN 119 has a broken loop cast on the head; NN 120 has only a fragment.

NN 118
This has a similar set of enamelled panels on the bow to the last two, especially NN 119 – the outer panels of triangles flanking a central panel of rectangles – but instead of a crossbar this has a flat D-shaped plate at the head, with a tube behind it to hold the axis of the hinged pin. Another difference is the sharply rectangular profile at the head of the bow. No parallel has been found. The enamelled panel must relate it to the last two.

NN 228*
The pin is hinged in a tube behind the broad flattish crossbar; cast headloop. A large lozenge-shaped plate takes up most of bow; it has triangular fields for enamel (none remains) flanking a narrow central field and reserved metal points in the centre of each triangle. Small plain footknob.

Hull (1968, 58) described this as an entirely new type with no parallel. This is still the case.

NN 69*
The pin is hinged in a narrow crossbar; there is a broken headtab and a stud on the upper bow from which the enamel is missing; the bow has long central grooves and ribs. The edges of the bow are widened and strongly notched; small footknob.

The head is like several Nornour brooches but there is no parallel for the heavily ribbed projection down the edges of the bow.

NN 64*
Rather large brooch with pin hinged in long narrow tube, no headtab or loop; triangular enamelled stud on upper bow; below this a moulded zigzag rib down centre of bow; no footknob.

No parallel, although it has elements common to other south-western brooches.

Other single or unparalleled brooches not cited elsewhere: NN 303*, 305* and 313* (Butcher 2000–1, 22 and 24).

Bow brooch fragments, probably south-western

NN 121 (Fig 36)
Upper part only; pin hinged in narrow crossbar; square panel on bow with four square cells for enamel.

NN 295
Upper part only; pin hinged in narrow crossbar; triangular cell for enamel on bow; the beginning of a central zigzag moulding down lower bow. (Not illustrated.)

NN 123 (Fig 36)
Lower bow and catchplate of a large brooch with remains of a cast ring(?) projecting below the foot. The whole surviving area of the bow is occupied by a field for (missing) enamel.

NN 269
Lower bow and catchplate only; groove round the edge of bow but probably not deep enough to hold enamel as in NN 123. (Not illustrated.)

NN 272
Head only: narrow crossbar with hinged pin; narrow moulded projection from head; upper bow plain except for shallow moulding near edge. (Not illustrated.)

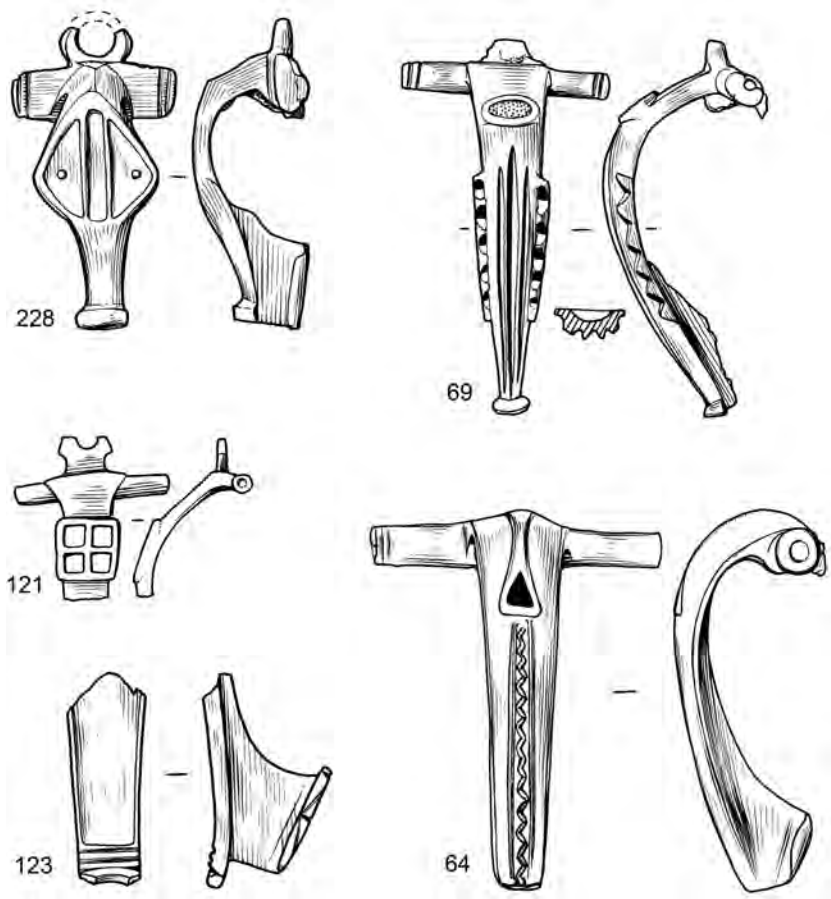

Fig 36 Single and unparalleled brooches, probably south-western: NN 228, 69, 64, 121, 123. Scale 1:1. (Drawings: David Neal. © Historic England.)

NN 274
Head only; narrow crossbar with hinged pin; top of bow broad, with central double groove and diagonal side grooves. (Not illustrated.)

NN 275
Lower bow; plain except for faint central moulding and the beginning of a cell, probably similar to NN 95 and 234, above; catchplate as those. (Not illustrated.)

NN 279
Lower bow, plain except for cross moulding; catchplate. (Not illustrated.)

NN 280
Head only; broken plain crossbar with hinged pin; plain upper bow. (Not illustrated.)

NN 283
Part of head and crossbar for hinged pin. (Not illustrated.)

NN 284
Head only; short crossbar with hinged pin; upper bow has central line of cross-hatching. (Not illustrated.)

NN 288
Lower bow only; plain, tapering to narrow foot with cross moulding; catchplate. (Not illustrated.)

NN 289
Head only; crossbar with end grooves and hinged pin; broken lug with circular sinking (?for enamel) projects and there is a lightly hatched line down the centre of the bow. (Not illustrated.)

NN 290
Two fragments: narrow foot with cross moulding and catchplate and part of a ?hinged crossbar. (Not illustrated.)

Plate brooches

'Plate brooches' are those whose main element is a decorative plate of various shapes; the attachment for the pin and its catchplate are always hidden at the back of this. They are much less common than bow brooches on most sites and consequently have not been studied to the same extent, but an unusually large number was found at Nornour; enough for some general interpretations to be suggested. It is difficult to find a clear order in which to describe them: parallels show a great variety in the combination of diverse features which have to be used in any purely typological scheme.

The shape of the main plate – usually round, rhomboid or rectangular – can appear in conjunction with different features:

- Lugs of various shapes are combined with each other and with different types of decoration; and otherwise similar brooches can appear with or without lugs, even to the extent of blurring what is sometimes used as a major distinction: that is, 'equal-ended' (with matching projections over the pin and catchplate ends) as opposed to 'plate' proper.
- Decoration of the plate can be similarly variable; the same types being found on different shapes and sizes of brooch.

The grouping of disc, rhomboid, and other plate shapes is therefore used here simply as a conveniently recognisable way of sorting the Nornour plate brooches.

It does appear, however, that methods of decoration can have a chronological significance. Enamel is the commonest form of decoration at Nornour (detailed study by Justine Bayley and Sarah Paynter, below), and it was general on Roman provincial brooches from the late first century to the first quarter of the third. It appears that there is a chronological progression from the simple *champlevé* in small cells used in the late first century, through larger fields with different colours juxtaposed or inset (that is, without metal divisions) in use by the mid second century, with its *floruit* in the Antonine period, down to the use of *millefiori* in the late second and early third century. (This scheme was first put forward by Paule Spitaels in her 1969 thesis for the University of Ghent, unfortunately not published.) Nornour has examples of all these styles, including the latest. *Niello* is another material that is inlaid into brooches and other metalwork. It consists of metal sulphides that have a lustrous black appearance and is burnished into small fields cut in the metal (Bayley and Butcher 2004, 46). It is typical of the early and mid first century and none is found here. The use of applied silver foils distinguishes some British types of the later second century but the

surfaces of most of the Nornour brooches are too eroded for these to survive, except for traces on NN 111 (above).

In the absence of a workable typology for plate brooches they are discussed under headings defined mainly by shape, but three of differing forms will be listed first as they are likely to be the earliest.

The earliest plate brooches from Nornour
(Fig 37)

NN 183
A fragment, now missing but described in detail by Hull (1968, 51–2); Figure 37, originally published there, was based on his tracing.

About one third of a large disc brooch with an applied decorative plate. It had a spring of four turns on a single lug. The main surviving feature is a large round setting, now empty but probably once holding a glass 'stone' like the smaller one to its right. The thin applied metal plate overlaps the setting so as to hold the glass in position and is itself decorated with fine beading and a thin line linking the settings.

Mr Hull cited a fragmentary brooch from Leicester (Hull, forthcoming, 7479), but there are still no other good parallels for the design of this brooch. However, it probably belongs to a well-known group, linked by the method of decoration: that is, the attachment of glass settings by the overlapping of the applied metal plate, although they are usually smaller and simpler than NN 183. A good example is the 'star-shaped' Type 224; one from Colchester is illustrated in Crummy (1983, fig 14, 77). Others come from Sheepen, Colchester (Niblett 1985, fig 76, 41); Richborough, Kent (Bayley and Butcher 2004, cat 340, see also p154); and Augst, Switzerland: Riha (1979: taf 59) shows several, of which no 1574 came from a Claudian context (Riha 1979, 185).

There is little doubt that these are Continental products of mid-first century date; but there is doubt as to whether the unusual design of NN 183 puts it outside the general production, which tends to be more regular in design. (There are some fairly complex disc brooches of this period with a ring of settings, but these are usually of bone, riveted in place.)

NN 226
Part of a small plate which bears trails of punched decoration and a transverse band of knurling; it narrows to a small moulded lug which covers the hinged pin. The plate is tinned.

This probably belongs to a group of rhomboid brooches like the Caistor example cited below. They are well-known on the Continent where they occur in Claudian and Flavian contexts (Spitaels 1969; Simpson 1979). The type of decoration is also found on other first-century brooches. Examples come from Caistor-by-Norwich (Simpson 1979, pl lviii, no 25); Titelsberg, Luxembourg (Thill 1969, abb 15, no 193); Bolards, France (Fauduet and Pommeret 1985, nos 199, 323, 324, with map of over 20 parallels, mainly in central and eastern France); one from Woodcock Hall, Norfolk (Brown 1986, no 176), has the same design but with *niello* decoration. One of the Bolards examples comes from the temple area and Fauduet discusses the probable use of brooches

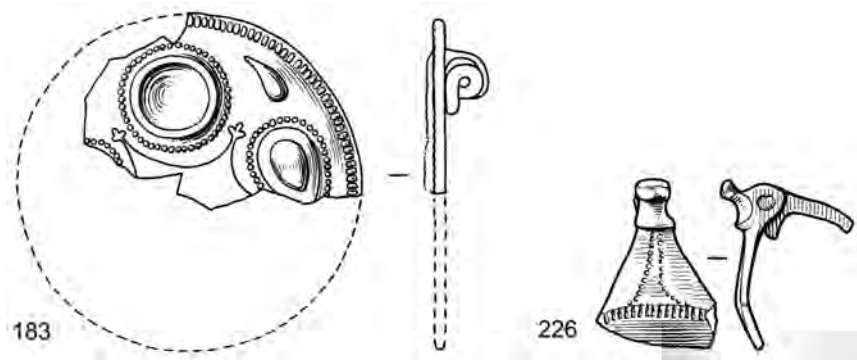

Fig 37 The earliest plate brooches from Nornour: NN 183, 226. Scale 1:1. (Drawings: David Neal. © Historic England.)

there as votives, some of them probably made on the site for sale to pilgrims.

NN 325* (Butcher 2000–1, fig 10)
Part of a shoe-sole plate similar to NN 216–223, below, but without enamel; instead, the nails are indicated by punch-marks. A similar brooch was found in the fort at Hüfingen, Germany (Rieckhof 1975, taf 9, no 146). In discussion, Rieckhof (*ibid*, 66) places this in a group of mid first-century plate brooches.

Rhomboid plate brooches (Figs 38, 39 and 80)

NN 139*, NN 253*
Both these have nine black beads in a field of white enamel (Fig 80) on top of a stepped rhomboid plate, the sides of which are knurled (at each step). There are no lugs or other projections from the sides. Two lugs at the back would have held a hinged pin (missing from both brooches). NN 139 is 35mm long and the damaged NN 253 was probably the same.

These two brooches belong to a standard type found all over Europe and beyond, although sometimes the enamel is a different colour. Parallels include Buzeins, Aveyron, France (Feugère 1985, pl 151, no 1898); Theux, Belgium (Spitaels 1969, cat 238, enamel turquoise); Dura Europos, Syria (Frisch and Toll 1949, pl 9, no 25); Colchester, Essex (Hull, forthcoming, 0587); Exeter, Devon (Holbrook and Bidwell 1991, fig 102, no 34).

NN 136*
Similar to NN 139 and 253 above but smaller and the enamel is red; there are only four inset black beads and the edges seem not to have been knurled.

NN 142
Stepped plate bearing two triangular fields which form a rhomb, but with knurled ridges across the centre. There is white enamel in each triangle, each inset with six black beads. The edges are broken but apparently plain. No pin attachment survives.

Parallels: Szentes-Kistoke, Hungary (Sellye 1939, taf 20, no 16); Colchester, Essex (Crummy 1983, fig 14, no 78).

NN 151*
Plate with stepped centre bearing a rhomboid field of enamel (colour uncertain) inset with spots. Over the pin hinge and the catchplate there are cross-moulded projections; the other two angles are damaged but could have had lugs, as on some parallels. The back has the usual cylindrical hollow behind the stepped plate.

Parallels: Nijmegen, Netherlands (Spitaels 1969, cat 778; lugs at each angle); Pannonia (site unknown) (Sellye 1939, taf 12, no 4; 16 inset spots, ends broken); London (Wheeler 1930, fig 24, no 9; lugs at each angle, enamel green; no spots survive); Carvossa, Cornwall (Carlyon 1987, fig 7, no 23), probably similar but the lugs are broken; the rhomboid field contains pieces of *millefiori* set in plain enamel.

NN 144
Very similar to NN 151 but the plate carries two triangular fields of turquoise enamel with inset spots (probably three in each). The back shows two lugs to hold a missing hinged pin and a cylindrical hollow behind the stepped plate.

NN 152*
Small stepped rhomboid plate; the centre a field of white enamel inset with nine black beads. There are the remains of two trefoil or stylised zoomorphic lugs over the pin hinge and the catchplate; the other two angles have remains of smaller lugs, probably round.

Parallels: the enamel is often decayed and lacking detail and most have broken lugs, but the following appear to have two or more trefoil or zoomorphic lugs, sometimes with two smaller ones: Wanborough, Surrey (O'Connell and Bird 1994, no 47), the enamel shows hollows for inset spots (information from Justine Bayley); Titelberg, Luxembourg (Thill 1969, no 197); Ellezelles, Belgium (Spitaels 1969, cat 69 and 70); Barentin, France (Dollfus 1975, no 511).

NN 153*
Very like NN 152 above, but no spots survive (although one was shown on an early photograph); it has the remains of four similar trefoil or zoomorphic lugs.

NN 147, NN 148*, NN 154
Three very similar brooches resembling NN 152 and 153 above except that within a narrow rhomboid outline there is a stepped plate of pointed oval shape carrying an enamel field of the same shape. Some of the edges are knurled. In NN 147 and 148 there were inset spots; in 154 no trace of

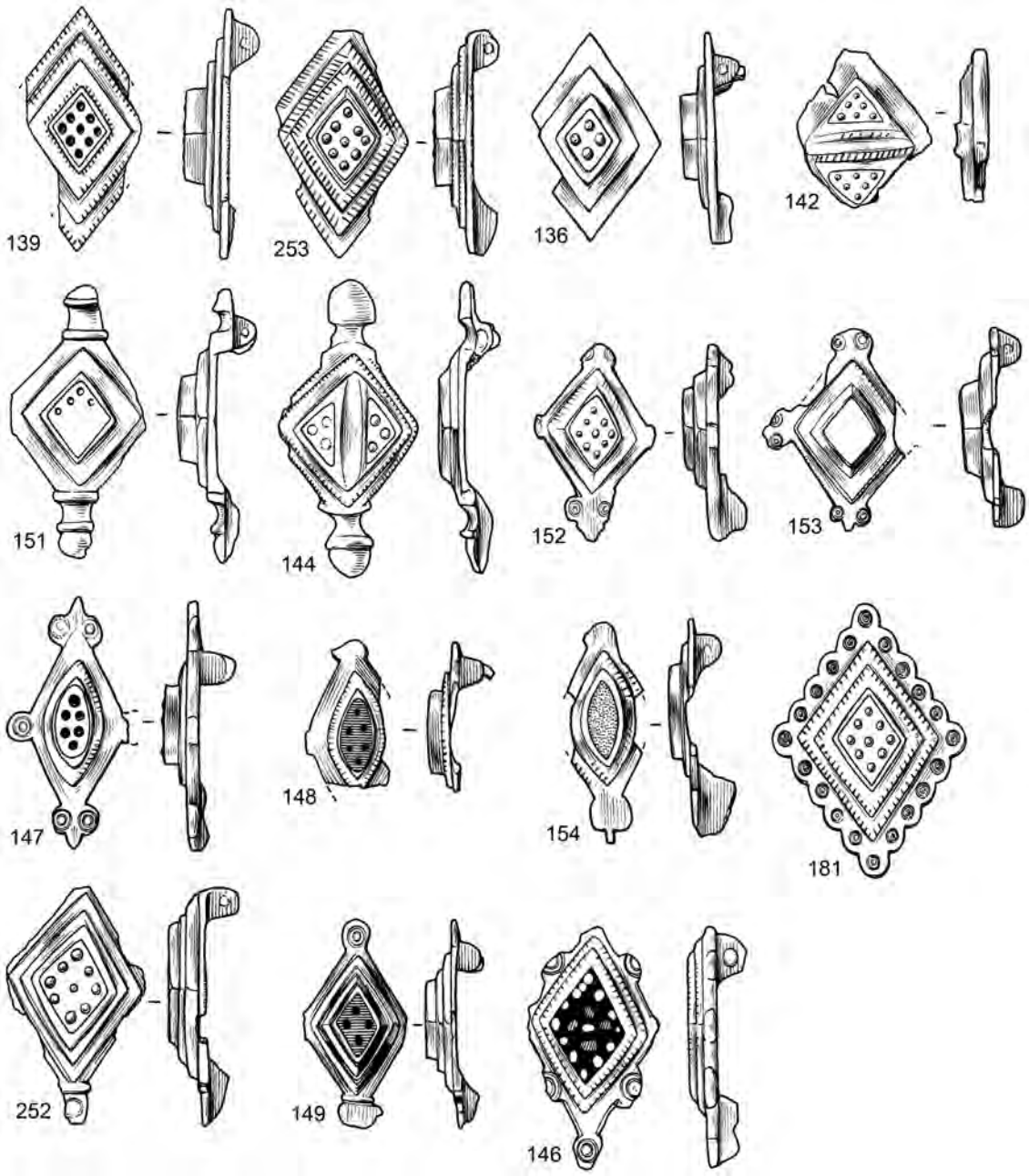

Fig 38 Rhomboid plate brooches: NN 139, 253, 136, 142; NN 151, 144; NN 152, 153; NN 147–148, 154; NN 181, NN 252, 149; NN 146. Scale 1:1. (Drawings: David Neal. © Historic England.)

spots remains. NN 147 has four lugs: two stylised zoomorphic ones on the long axis and two round ones with stamped circles on the side angles. The lugs of NN 148 are broken; NN 154 retains one zoomorphic lug over the catchplate but the others are broken. NN 148 and NN 154 retain the lugs for a hinged pin.

Parallel: *Verulamium*, Herts (Frere 1972, fig 31, no 23), enamel decayed, no spots visible; in site context AD 155–160.

NN 181

(The brooch is missing and is described from the drawing based on Mr Hull's tracing and description in Hull (1968).)

The broad outer flange had regular stamped circles corresponding to the scalloped edge. The stepped rhomboid plate had a central field of white enamel inset with nine 'black or blue' spots; its edges were knurled.

This is the only rhomboid plate brooch with 'frilled' edge at Nornour, although other shapes can have the same feature (*cf* NN 182, below).

Close parallels: Flavion, Belgium (Spitaels 1969, cat 465); Augst, Switzerland (Riha 1979, no 1596); Cirencester, Glos (Hull, forthcoming, 5822); Silchester, Hants (*ibid*, 4948). Others with less pronounced steps and with the edges pierced, but otherwise close: Neckarburken, Germany (Exner 1939, taf 12, no11); Heddernheim, Germany (Riese 1898, taf 3, no 32); Strée, Belgium (Spitaels 1969, cat 199), blue enamel, red / white spots; in burial dated after AD 160. Generally similar: Baldock, Herts (Stead and Rigby 1986, no 151), edges pierced; four spots set in blue; Chichester, West Sussex (Down and Rule 1971, fig 5,17, no 228K), central field circular, red enamel with hollows for spots; with late Antonine samian.

NN 252

Stepped plate, rhomboid field of enamel originally with nine inset spots; three of the angles are broken but there are remains of a zoomorphic or trefoil lug over the catchplate.

NN 149

Stepped plate with rhomboid field of turquoise enamel with four inset black (?) spots. There is a broken zoomorphic or trefoil lug over the catchplate and a round lug stamped with concentric circles over the hinge.

Parallels: the following have similar shaped plates and enamel fields and show one or more round stamped lugs: Titelberg, Luxembourg (Thill 1969, no 196); Mandeure, France (Lerat 1957, nos 139 and 140); Hucclecote, Glos (Hull, forthcoming, 1337); Farley Heath, Surrey (*ibid*, 4356); Richborough, Kent (Bayley and Butcher 2004, cat 364, 128).

NN 146*

Stepped plate, the edges knurled; large rhomboid field of dark blue enamel, inset irregular white spots round the edge and four red spots in the centre. The edge is broken but seems to have had eight projections, each with stamped concentric circles. The back has two lugs for a hinged pin and a cylindrical hollow behind the stepped plate.

Parallels: Lowbury Hill, Oxon (Atkinson 1916, pl ix, no 39); Augst, Switzerland (Riha 1979, no 1599); Javols, France (Feugère 1985, no 1897); Brigetio, Hungary (Sellye 1939, pl xii, no 17); Ellezelles, Belgium (Spitaels 1969, cat 64 and 87).

NN 255*

Stepped plate, some edges knurled; rhomboid field filled with mixed colours of enamel. Broken lugs over hinge and catchplate, the other two angles broken

NN138

Large raised rhomboid field containing dark blue enamel, inset with four spots which have red centres encased in white. Broad plain flange, slightly indented over hinge and catchplate.

Parallels: Straubing, Germany (Walke 1965, taf 95, no 25); Gadebridge, Herts (Neal 1974, fig 55, no 27).

NN 140*

Similar to NN 138 above in shape. The enamel is lighter blue and has more spots; these are irregular in outline and spacing and the surviving ones are white.

NN 134

The large raised rhomboid field is divided: the inner field has a central red spot but little other enamel remaining; the outer has blue and white *millefiori* chequers juxtaposed with blocks of plain blue. The edge a plain flange; the pin hinged; cylindrical hollow behind plate.

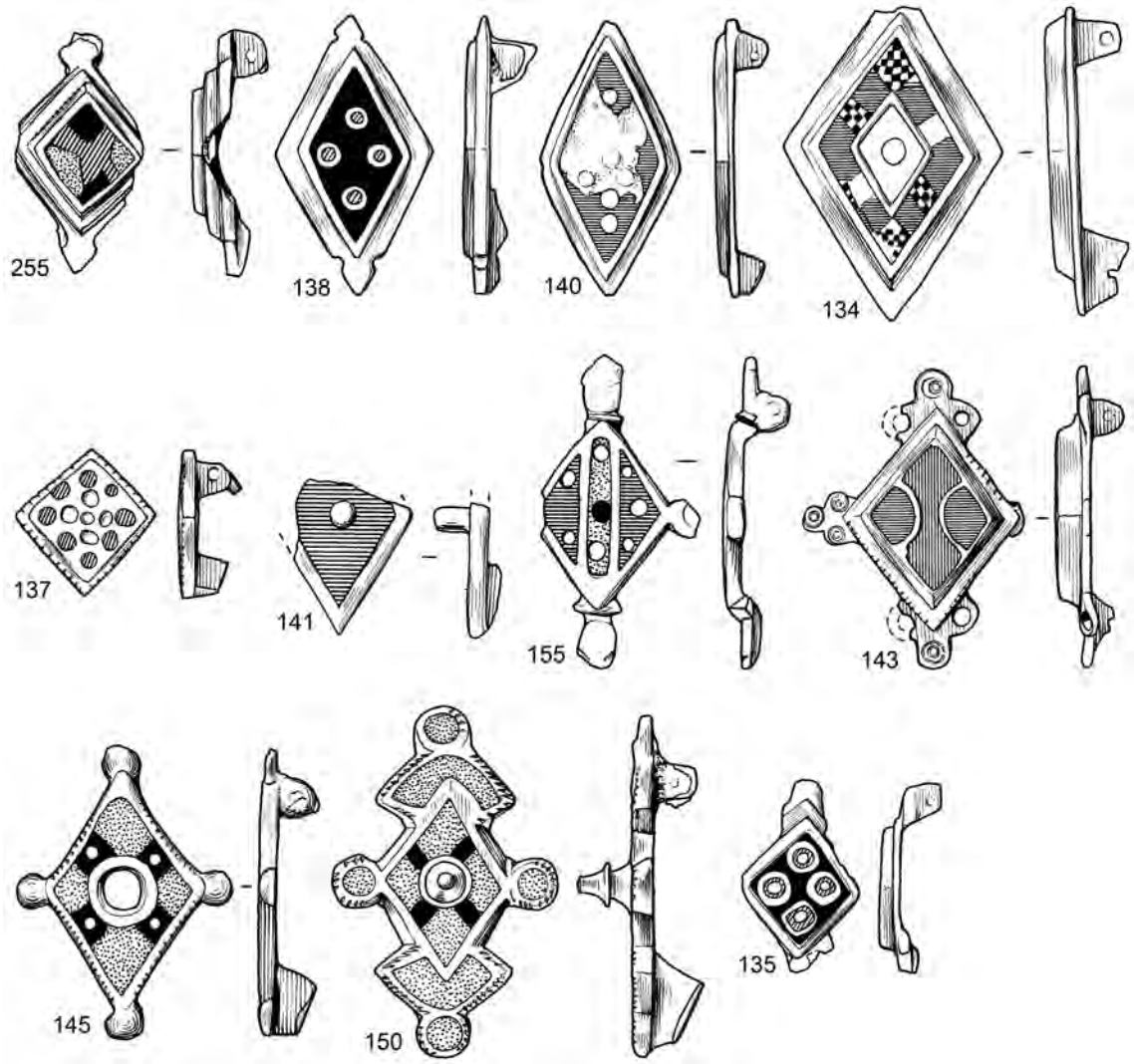

Fig 39 Rhomboid plate brooches: NN 255, 138, 140, NN 134, NN 137, NN 141, NN 155, NN 143, NN 145, NN 150, NN 135. Scale 1:1. (Drawings: David Neal. © Historic England.)

The closest parallels: Tongeren, Belgium (Spitaels 1969, cat 256); *millefiori* juxtaposed but the edges are lugged; from a burial of *c* AD 200; Vidy-Lausanne, Switzerland (Ettlinger 1973, taf 14, no 10), smaller, inset complex spots or juxtaposed blocks?

NN 137*
Small flat brooch with all-over white enamel field which had twelve spots inset: five (now hollows) form a quincunx in the centre, the rest are dark spots round the outer side. The edges of the plate are knurled and it has a hinged pin.

No parallels found.

NN 141*
Less than half of a flat rhomboid plate with a metal stud riveted through centre. The surviving enamel field is blue, with inset spots (not shown on drawing): white with centre of uncertain colour.

Parallels: Wincheringen, Germany (Exner 1939, taf 12, no 9); Saalburg, Germany (Böhme 1972, taf 25, no 976).

NN 155
The whole plate is divided into three fields: a central bar with orange enamel, flanked by two triangular fields with traces of turquoise enamel; there are some black spots inset in the centre, but it is not certain that the spots shown in the side panels ever existed. Over the hinge and catchplate there are broken lugs which show the scaly necks and the 'brow-ridge' of the zoomorphic form. Part of one smaller circular side lug remains; this had a stamped circle. At the back there are two lugs for a hinged pin; the catchplate is broken.

Parallels (some have different lugs): Madrano, Switzerland, in burial of *c* AD 150–175 (information from Paule Spitaels); Pannonia, site unknown (Sellye 1939, pl 12, no 4), moulded lugs; Titelberg, Luxembourg (Thill 1969, abb 15, no 192), plate similar design, lugs trefoil; Blicquy, Belgium (de Laet *et al* 1972, pl 61, nos 8 and 9), with enamelled lugs; pair from Hadrianic burial; Charterhouse, Somerset (Hull, forthcoming, 8273), very similar but the spots have metal outlines; Neatham, Hants (Millet and Graham 1986, fig 74, no 123).

NN 143*
The large rhomboid plate is divided into three fields by curved metal lines; only traces of turquoise enamel remain. There are trefoil lugs at the three surviving corners, larger over the hinge and catchplate. The pin is hinged.

Parallels: Nismes, Belgium (Spitaels 1969, cat 531), with *millefiori* and inset spots; Carnuntum, Hungary (Peskar 1972, taf 19, no 2), also with *millefiori*; 'about AD 200'.

NN 145*
Flat plate with small plain lugs at each corner. There is a central round opening, possibly for a missing stud, but apart from this the whole plate is one enamel field, in which a diagonal cross effect is produced by the juxtaposition of four squares of blue enamel within a field of uncertain colour. A white spot is inset in each blue square. The pin (missing) was hinged between two lugs.

Parallels: Augst, Switzerland (Riha 1979, no 1670), with similar enamel 'cross' but with central inset field and the lugs also enamelled; with pottery of *c* AD 100, perhaps residual; Neckarburken, Germany (Exner 1939, taf 12, no 10); similar except for an extra lug on each side, and the cross is light on a dark ground; Saalburg, Germany (Böhme 1972, no 941), plate with similar enamel cross but with zoomorphic lugs; Bolards, France (Fauduet and Pommeret 1985, fig 25, no 209), from the temple area; plate similar but 'equal-ended' – that is, only two lugs, on pin axis; Charterhouse, Somerset (Hull, forthcoming, 8268), similar plate and lugs with central stud but instead of the cross the whole field contains blue enamel which is inset with eight spots, regularly arranged; these each have a white centre encased in red.

(As the features of NN 145 are well preserved more details have been given of these parallels as they show the variety occurring within what must have been related production: brooches of the same shape and characteristics but with interchangeable decoration: particularly in enamel patterns and lugs.)

NN 150*
This might be classified as one of the 'complex' types (below) but the main plate is a rhomboid field resembling NN 145 above so is included here. It has the same diagonal cross formed of blocks of blue enamel juxtaposed with a red field (although they lack the white spots). Otherwise the alloy differs and the plate has a central stud and various appendages. Over the hinge and catchplate there are large extensions with a crescent-shaped enamel field, each with three blocks of uncertain colour juxtaposed and a round orange-enamelled finial. There are similar orange lugs at the two side angles.

No parallel can be cited, but the shape looks like a blurred version of NN 321 (Butcher 2000–1, fig 10). NN 178 (below) is another blurred complex shape.

NN 317* (Butcher 2000–1, 26, fig 10)
Flat rhomboid plate with enamelled stud at each angle: these are unusual amongst the Nornour plate brooches.

NN 135*
Fragment, but the rhomboid plate survives, with broken stepped mouldings at the hinge and catchplate ends. The plate has one large blue enamel field inset with four complex spots: white centres encased in red then white (Fig 81). On

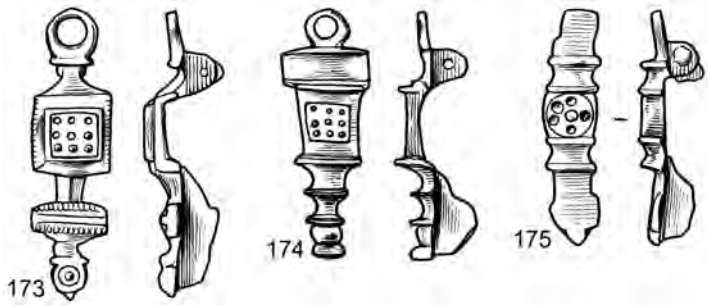

Fig 40 Small complex plate brooches: NN 173, 174, 175. Scale 1:1. (Drawings: David Neal. © Historic England.)

the back two lugs for a hinged pin and part of the catchplate survive.

This is too incomplete to find parallels for the shape, but the enamel is notable.

Small complex plate brooches (Fig 40)

These are sometimes called 'pseudo-bow' brooches because they have the general shape of a bow brooch, with something like its 'head' and 'foot', but the pin is hinged between two lugs at the back of a flat plate, the main element is flat, not bowed, and the decoration is similar to that on other plate brooches.

NN 173*
The small square plate has a ring above it, with two lugs to form a hinge for the pin behind the intervening neck. Below the square is a short narrow bar, then a rectangular cross-moulding and beyond this a small round lug. For its size the brooch bears a considerable amount of decoration: the main plate has a square field of white enamel, inset with nine shiny black beads; the edges are knurled, the crossbar has knurled ridges and the round finial bears a black spot inset in turquoise enamel.

NN 174*
This also has a square plate; above it there is a plain transverse bar which conceals the lugged hinge, with a ring beyond this. Below the plate there is a 'leg' with a series of cross mouldings, over the catchplate. Again the plate bears a square field of white enamel, with hollows for inset spots or beads, of which one shiny black one remains.

There are two close parallels for this brooch, both from burials in Belgium at Flavion and Bovigny (Spitaels 1969, cat nos 462 and 282 respectively).

NN 175*
Near the centre is a small round white enamel field with inset beads, of which some traces of black material remain. It is flanked by cross mouldings; at one end a damaged flat lug covers the hinge and at the other there is a broken lug with the beginning of the eyes of a '*tierkopf*' (zoomorphic lug).

RN 1076
Fragment of a very small brooch: the head is missing but the rest resembles NN 174 in shape, including the elaborate mouldings. The square panel of enamel is of uncertain colour and there is no surviving evidence for inset spots. (Not illustrated.)

The only close parallels found for these brooches are those for NN 174 noted above, but there are a few generally similar examples which employ the same features in different combinations. The small enamel field with inset spots is the most constant feature; quite often there is a ring with spikes, also the multiple mouldings seen on NN 174. Examples: Titelberg, Luxembourg (Thill 1969, no 186); Tongeren, Belgium (Spitaels 1969, cat 258 and 259), pair from a burial of *c* AD 200; Saalburg, Germany (Böhme 1972, nos 928 and 930); Heddernheim, Germany (Riese 1898, taf II, no 23); Sulz, Germany (Rieckhof-Pauli 1977, abb 6, no 118); Augst, Switzerland (Riha 1979, no 1683).

Small equal-ended plate brooches: A (Fig 41)

(Small central square, rhomboid or circular enamelled panel between two pronounced crossbars, with long narrow terminals on the pin axis.)

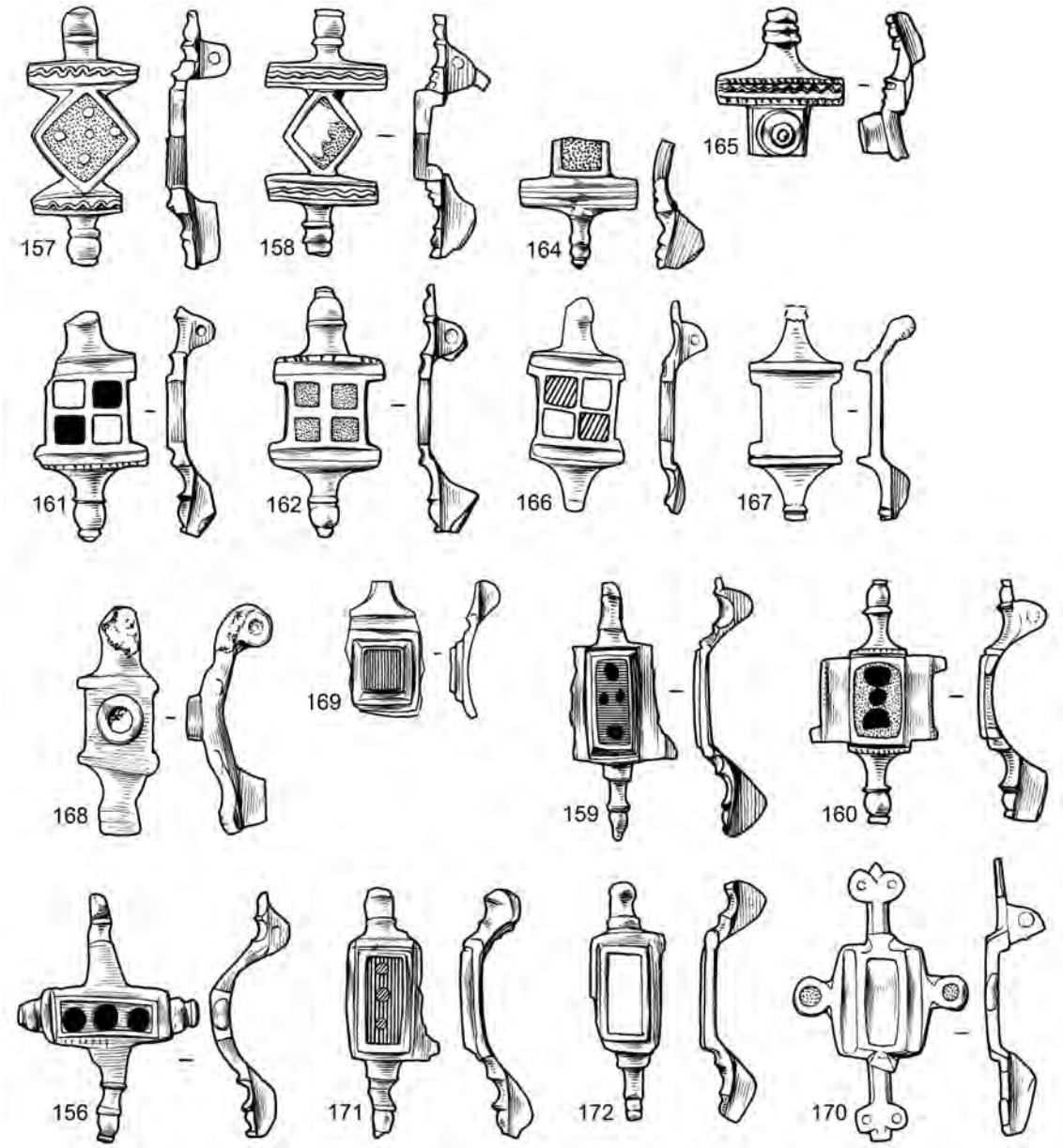

Fig 41 Small equal-ended plate brooches: NN 157–158, NN 164, 165, NN 161, 162, 166 (=163 in Hull 1968), NN 167 (=166 in Hull 1968), 168, 169, NN 159–160, 171–172, 156, NN 170. Scale 1:1. (Drawings: David Neal. © Historic England.)

NN 157*, NN158; also NN 319*, NN 320* (Butcher 2000–1, 26, fig 10)

Four very similar brooches, although the length varies between 31 and 35 mm. Each has a rhomboid central plate flanked by long cross-ribs with zigzag mouldings and small moulded terminals. The pin was hinged between two lugs. Each plate has the same shaped field for enamel although very little remains. NN 157 has decayed enamel with traces of a quincunx of inset spots.

NN 164/285

A fragment in the Isles of Scilly Museum store (ascribed the number NN 285 for the brooch catalogue) joins the larger piece, illustrated as NN 164 (Fig 41), to form a complete brooch with a central rectangular panel flanked by two long moulded crossbars and terminals as on the preceding examples. The central panel bears a rectangular field of enamel, now decayed.

Most of the parallels for NN 157ff above show a sub-circular or nearly oval central plate (described here as 'rounded') but they are otherwise so similar that it seems they must belong to the same group: *Verulamium*, Herts (Frere 1984, fig 8, no 48), rounded plate, site context AD 155–210; Kidlington, Oxfordshire (Hunter and Kirk 1954, fig 25, no 7 = no 8, p59), rounded plate, white enamel inset, seven black spots; Liberchies, Belgium (Spitaels 1969, cat 155f), rounded plate; Dalheim, Luxembourg (Spitaels 1969, cat 642), rounded plate; Rossum, Netherlands (Spitaels 1969, cat 844), rounded plate; Montmaurin, France (Feugère 1985, no 1893), rounded.

NN 165*

One end missing but the remaining moulded crossbar and terminal is similar to the preceding brooches (NN 157ff). There is a small rectangular plate which has a raised stud containing concentric rings of enamel: yellow in the centre, then white and a darker outer ring (Fig 82).

Parallels: Stonea, Cambs (Jackson and Potter 1996, fig 94, no 20), pit with material up to early third century; Monceau-sur-Sambre, Belgium (Spitaels 1969, cat 157), late second century burial; Ellezelles, Belgium (Spitaels 1969, cat 90); Amay, Belgium (Spitaels 1969, cat 224); Beausaint, Belgium (Spitaels 1969, cat 281b); Villers-deux-Eglises, Belgium (Spitaels 1969, cat 548).

NN 161*, NN 162*, NN 166*; NN 318* (Butcher 2000–1, fig 10)

(**NB.** NN 166 was numbered 163 in Hull 1968.)

Four very similar brooches: a flat central square panel is divided into four equal-sized cells for enamel and is flanked by two cross-ribs, some of which are knurled. Two moulded terminals project from these, covering the hinge and catchplate for the pin. Most of the enamel has decayed but it looks as if there were usually two colours, in alternating squares (Appendix 1).

There are still no exact parallels for these brooches. The general design – a rectangular enamelled plate between transverse mouldings – occurs quite frequently on the Continent but there is usually a single field of enamel, sometimes with inset spots; for example, Hüfingen, Germany (Rieckhoff 1975, taf 8, no 135). Others have circular plates, such as those cited under NN 157ff above.

NN 167*

Very similar to the four brooches above (NN 161ff) except that the central panel shows no sign of being divided into four squares; through the corrosion it looks more like a single square cell, as in the parallel from Hüfingen cited above. The enamel is turquoise, possibly with inset spots.

NN 168*

In general shape another small brooch with rectangular central panel flanked by transverse crossbars with projecting terminals. The centre bears a raised stud with traces of enamel and there are two lugs for a hinged pin.

It is badly corroded and encrusted but appears to be similar to one from Mandeure, France (Lerat 1957, no 135).

Fragments of probably similar brooches

NN 169*

Central square panel with white enamel in square cell. Part of one terminal attached.

NN 256

Another square central panel with field of turquoise enamel inset with four black beads. Lugs remain on adjoining sides; one over the broken catchplate. (Not illustrated.)

RN 1360*
One decorated crossbar remains, flanking a panel with part of a circle and dot, not enamelled. (Not illustrated.)

Small equal-ended plate brooches: B (Fig 41)

(Raised, rectangular enamelled panel flanked by flat side panels, with long narrow terminals on the pin axis.)

NN 159, NN 160*
Two very similar brooches although 160 is shorter, the undamaged central panel markedly so. The enamel field of both is turquoise, inset with shiny 'black' spots of irregular shape. The pins were hinged.

Close parallel: Flavion, Belgium (Spitaels 1969, cat 456), form, enamel colour and spots all similar. Other parallels, similar but the enamel uncertain: Mandeure, France (Lerat 1957, no 151); Vieil-Evreuz, France (Dollfus 1975, no 491); *Argentomagus*, Saint Marcel, France (Allain *et al* 1992, fig 74, no 12); Woodcock Hall, Norfolk (Brown 1986, fig 25, no 182); Richborough, Kent (Bayley and Butcher 2004, cat 360, 126); 'Dorset / Wilts border' (Hattatt 1985, no 554A).

NN 171*, NN 172*
Two brooches apparently similar to the last two but the enamel details are uncertain.

NN 156*
A rectangular panel with enamel decoration similar to that on NN 159–60 (above) is set transverse to the pin axis, which carries two long moulded projections, resembling those on the same two brooches. The enamel field is turquoise and there are three large 'black' glass spots inset. The (missing) pin was hinged between two lugs.

Parallels: *Verulamium*, Herts (Frere 1984, fig 8 no, 47), very similar but enamel decayed, from site context AD 155–60; Charterhouse, Somerset (Hull, forthcoming, 1163), orange enamel; Augst, Switzerland (Riha 1979, nos 1641 and 1642); Bolards, France (Fauduet and Pommeret 1985, no 327), from the domestic area; the spots are described as *niello* but as it is otherwise a very close parallel this seems unlikely; France, Vienne Museum, site unknown (Feugère 1985, no 1894); Amay, Belgium (Spitaels 1969, cat 221); Berzée, Belgium (Spitaels 1969, cat 353).

NN 170
Rectangular central panel with three separate cells for enamel (colour uncertain). Two long projections on the pin axis are faintly zoomorphic and there are two round lugs with enamel cells on the sides. The (missing) pin was hinged between two lugs.

Parallels: Luxembourg Museum, site unknown (Spitaels 1969, cat 703), exactly similar except that the snouts of the terminals are longer; the Nornour brooch may be abraded – it is otherwise the same size; Straubing, Germany (Walke 1965, taf 94, no 20), quite similar except for different projections from the sides of the panel.

Equal-ended brooches with large round plates (Fig 42)

NN 179
The main plate is a disc raised towards the centre where there is a stud with a central setting, now empty. Two lugs on the pin axis (one broken) are elongated trefoils with stamped concentric circles, possibly related to zoomorphic lugs such as NN 147, 153 and 170 above; two smaller round lugs on the sides of the disc, also with stamped circles. The pin was hinged between two lugs.

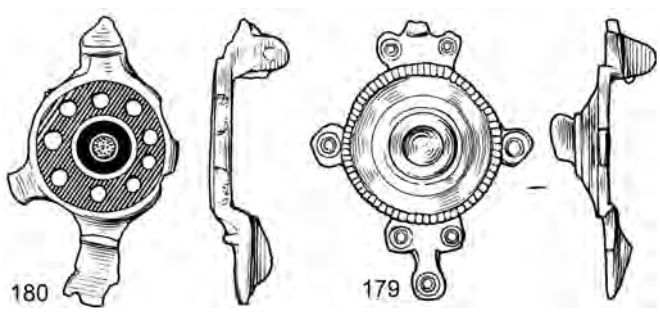

Fig 42 Equal-ended brooches with large round plates: NN 179, 180. Scale 1:1. (Drawings: David Neal. © Historic England.)

Parallels: Augst, Switzerland (Riha 1979, no 1603); Namur, Belgium (Spitaels 1969, cat 530), lacks central stud; Vienne, France (Feugère 1985, no 1890), disc contains *millefiori* enamel; London (Hull, forthcoming, 5385), centre open, lugs zoomorphic; Farley Heath, Surrey (*ibid*, 4367), as London, above. Less elongated trefoil lugs occur on some Nornour brooches with rhomboid plates: NN 143, 152–3. These and other examples seem to show that the features of these brooches are interchangeable, and therefore that the exact shape and the details of decoration are not significant, as the same industry presumably produced all of them.

NN 180
Central disc enamelled in two concentric rings with central enamelled spot; the outer ring contained eight inset spots. There are the broken remains of lugs round the edge: one of those on the pin axis is definitely zoomorphic, showing the usual scaly surface and stamped eye, and the other appears similar, while one of those on the side shows part of a concentric circle. The pin was hinged between two lugs.

Parallels: Luxembourg (Arlon Museum) (Spitaels 1969, cat 309), side lugs enamelled; Heddernheim, Germany (Exner 1939, taf 11, no 4), disc divided into four segments; Saalburg, Germany (Böhme 1972, taf 25, no 958), as Heddernheim. The reptilian lugs appear more frequently on brooches with rhomboid plates; for example, NN 155 above.

NN 321* (Butcher 2000–1, 27, fig 10)
Large disc with three rings of juxtaposed enamel and two complex projections, also enamelled. Nearly 80 Continental parallels are known for this brooch, but this is one of only four from Britain (*ibid*).

From the range of decorative features employed and the numerous parallels it appears that these brooches are products of the main Continental industry and probably date to the middle or late second century.

Wheel brooch (Figs 43, 77)

NN 205*
The brooch is 'wheel'-shaped but with enamelled lugs round the rim. Four knurled 'spokes' join the rim to the 'hub' which bears an enamelled stud. The rim is decorated with *millefiori* enamel in two patterns, set alternately: chequers of 25 blue and white rods cased in red, and florets of six blue petals set in white (Fig 77). The enamel in the outer lugs is turquoise and that in the centre blue; there is a red filling between the inner rim and the *millefiori*. The missing pin was hinged between two lugs.

Parallels: Köln, Germany (Exner 1939, taf 16, no 7); Blicquy, Belgium (de Laet *et al* 1972, pl 71, no 7), similar but with additional lugs in the centre; from burial dated to the end of the second or first half of the third century.

Wheel brooches are discussed by Green (1981) as possible amulets, from the association of the symbol with a Romano-Celtic sky god; see also Green (1986) on the 'solar wheel'.

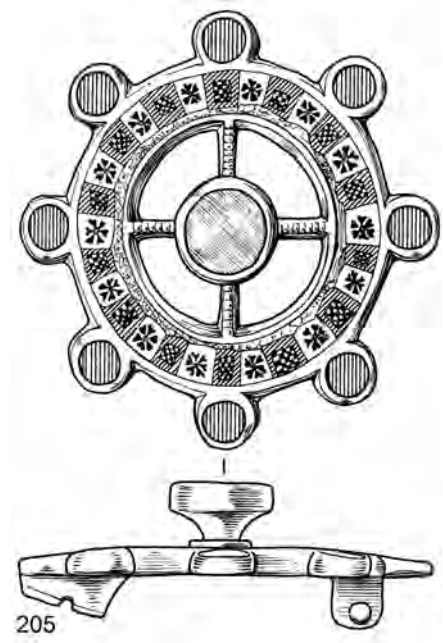

Fig 43 Wheel brooch: NN 205. Scale 1:1. (Drawing: David Neal. © Historic England.)

Disc brooches of standard Continental types

NN 194* (Fig 44)
The disc is flat apart from an enamelled stud which is riveted through the centre. There are three concentric rings of enamel decoration separated by reserved metal bands: the inner is empty; the middle ring has *millefiori* chequers (probably six by six

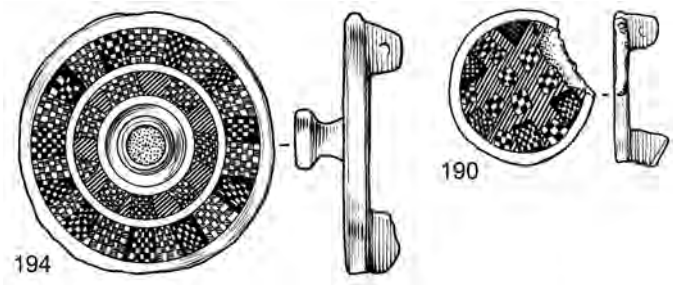

Fig 44 Disc brooches: NN 194, NN 190. Scale 1:1. (Drawings: David Neal. © Historic England.)

white and turquoise rods) alternating with blocks of red, and the outer has two types of chequer: black and yellow in a black border alternating with blue and white of seven by eight rods. The (missing) pin was hinged between two lugs.

Parallels (the *millefiori* patterns differ): Berzée, Belgium (Spitaels 1969, cat 403/4); Lavacherie, Belgium (Spitaels 1969, cat 285/6) (several others from the Low Countries are similar but have one loop on the rim; for example, Spitaels 1969, cat nos 301, 303/4, 502, 529, 301); Castleford, Yorks (Cool and Philo 1998, no 108), broader rim with stamped decoration; from Flavian context, which is surprisingly early for *millefiori* on brooches; Besançon, France (Lerat 1956, pl 16, no 291), one loop on rim; Trier, Germany (Exner 1939, taf 13, no 13), one loop on rim; *Verulamium*, Herts (Wheeler and Wheeler 1936, fig 45, no 36), one loop on rim; site context before *c* AD 130; Wroxeter, Shropshire (Bushe Fox 1916, pl xvi, no 11), one loop on rim; Wookey Hole, Somerset (Branigan and Dearne 1990, fig 4), open centre; Rushmore, Wilts (Pitt-Rivers 1887, pl 13, no 5), one loop on rim.

NN 202*, NN 203 (Fig 45)
Two very similar brooches: although the enamel decoration differs they could be from the same mould. They have a large raised central field of enamel: on NN 202 it is turquoise, inset with *millefiori* chequers (three by three blue and white canes: Figure 78) and on NN 203 it is blue, inset with *millefiori* florets. Outside this there is a broad plain metal band with a thin raised rim (on NN 202 this is knurled) on which there are six small plain lugs. The back of each shows a circular recess behind the central plate and two lugs for a hinged pin.

Parallels: Trier, Germany (Exner 1939, taf 17 no 2); Theux, Belgium (Spitaels 1969, cat 236); Dalheim, Luxembourg (Spitaels 1969, cat 657); Stonea, Cambs (Jackson and Potter 1996, fig 94, no 19), pin sprung on a single lug; Milton Keynes, Bucks (Mynard 1987, fig 41, no 17), pin sprung on a single lug; Chichester, West Sussex (Down 1978, fig 10.48, no 1), bigger and with an extra ring of inset enamel decoration; from a burial not earlier than AD 200 (*ibid*, 9).

NN 190 (Fig 44)
Very small flat disc brooch with plain rim. The whole plate is filled with two types of blue and white *millefiori* chequers bordered in red; there is no plain field as shown in the drawing. The pin is hinged between two lugs.

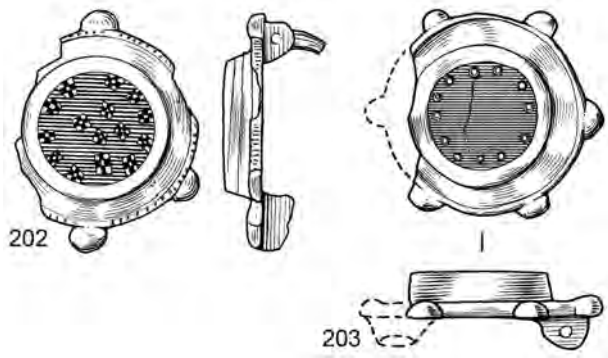

Fig 45 Disc brooches: NN 202–203. Scale 1:1. (Drawings: David Neal. © Historic England.)

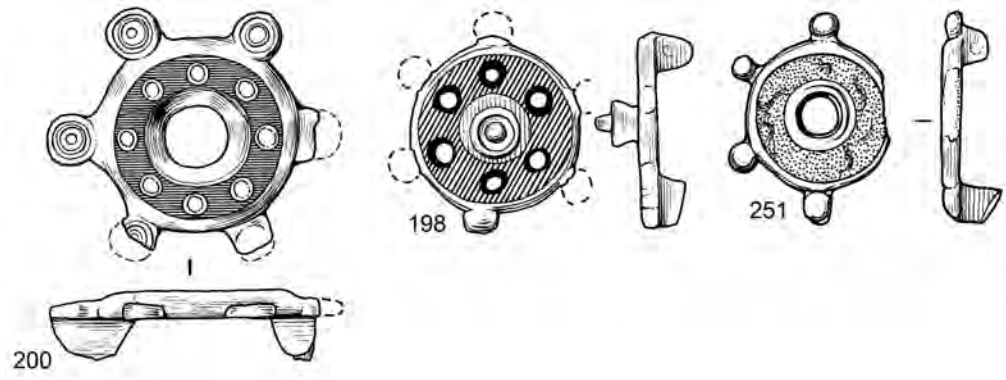

Fig 46 Disc brooches: NN 200, 198, 251. Scale 1:1. (Drawings: David Neal. © Historic England.)

Parallels (some *millefiori* patterns differ): Flavion, Belgium (Spitaels 1969, cat 511/12); Blicquy, Belgium (de Laet *et al* 1972, pl 77, no 2), from late second century burial; Saalburg, Germany (Böhme 1972, taf 26 no 1007); Stonea, Cambs (Jackson and Potter 1996, fig 99, no 74); Niederbieber, Germany (Gechter 1980, no 50), larger but the same design; the fort was occupied from AD 190–260.

NN 189=287*
The brooch identified as Nornour 189 from a drawing in Hull's *corpus* (Hull, forthcoming) seems to be that now numbered 287 in the Isles of Scilly Museum's store. It is a fragment very similar to NN 190 above, inset with alternating designs of *millefiori* chequers. (Not illustrated.)

NN 200* (Fig 46)
A stout circular plate with open centre and the remains of six round lugs with stamped decoration round the rim. The main ring contains one large field of blue enamel inset with eight spots: these have white centres encased in red. There are two lugs for the missing hinged pin.

Parallels: Berzée, Belgium (Spitaels 1969, cat 357); also Spitaels 1969, cat 356, very similar except that the enamel is juxtaposed. This is more common in otherwise similar brooches; for example, Wroxeter, Shropshire (Hull, forthcoming, 7331), red and white enamel juxtaposed in a ring.

NN 198 (Fig 46)
Disc brooch with central stud and traces of six lugs round the rim; the only remaining lug appears to be undecorated. There is one large field of red enamel filling the broad outer ring; it is inset with six spots, each with a white centre encased in black. The pin was hinged between two lugs.

Parallels: Arentsburg, Netherlands (Spitaels 1969, cat 892), the lugs enamelled; Thetford, Norfolk (Hattatt 1987, no 1050), larger, the lugs enamelled, field blue; Kenchester, Hereford (Hull, forthcoming, 3878), field blue.

NN 251 (Fig 46)
Similar design to NN 200 (above) but smaller and the main field contains 'marbled' enamel. Hinged pin.

NN 187* (Fig 47)
Flat, one ring on rim above the hinge. The whole surface was enamelled, only divided by one metal ring; within this there is decayed enamel and the main ring is blue, inset with four large spots which are white enclosing another colour. The rim is knurled and there are two lugs for a hinged pin at the back.

Parallels: Saalburg, Germany (Exner 1939, taf 13, no 2); Bonn, Germany (Exner 1939, taf 13, no 3).

NN 188* (Fig 47)
Generally similar to NN 187 (above) but smaller and with enamel field divided by two reserved metal rings, leaving a small central spot. The enamel in this is red and the other rings contain colourless glass marbled with red (Fig 84).

NN 324* (Butcher 2000–1, 27, fig 10)
Incomplete disc brooch with two concentric rings of enamel and an enamelled central stud.

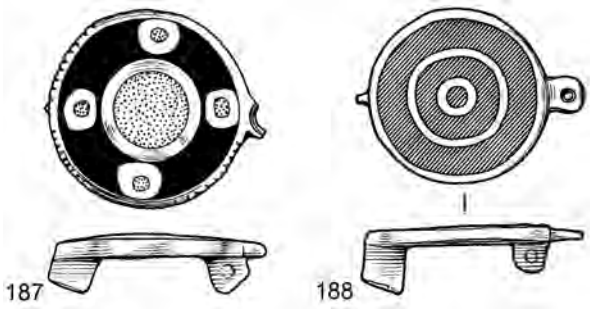

Fig 47 Disc brooches: NN 187–188. Scale 1:1. (Drawings: David Neal. © Historic England.)

NN 240
Fragment. Part of small flat disc and one lug carrying a hinge for the pin. The whole field was enamelled and some inset *millefiori* chequers remain. (Not illustrated.)

Other disc brooches, probably Continental

NN 201* (Fig 48)
Small umbonate plate with four large lugs. The plate has two raised stages and a small central knob but is undecorated. The lugs on the pin axis are almost oval and contain enamel of uncertain colour; the two round side ones are smaller and contain turquoise enamel. Hinged pin.

Parallels: Flavion, Belgium (Spitaels 1969, cat 516); Swindon Hill, Wiltshire Museums no 771823, with inset spots in lugs; Caerwent, Monmouthshire (Hull, forthcoming, 4102), only one lug, oval; Wanborough, Wilts (Anderson *et al* 2001, fig 25, no 126) has the same two shapes of lug but the plate has a stylised human face in the centre. Another like this was found at Tetbury, Glos (Hattatt 1989, no 1656).

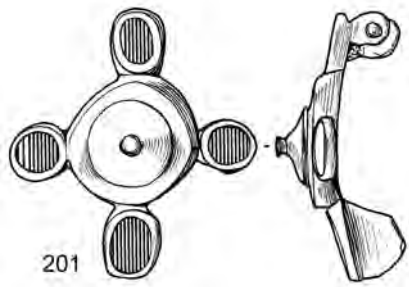

Fig 48 Disc brooch: NN 201. Scale 1:1. (Drawing: David Neal. © Historic England.)

Disc brooch with scalloped rim

NN 182 (Fig 49)
Central plate raised in two steps; broad flat rim, indented and with stamped concentric circles, giving a 'frilled' effect. The plate has a circular field of red enamel with inset yellow spot in the centre. There are two lugs to hold a hinged pin.

Parallel: 'Suffolk' (Hattatt 1985, no 516), very similar except that the middle step is knurled and the enamel is blue. Otherwise there are Continental disc brooches with pierced or enamelled rings on the frilled edge: Neuss, Germany (Exner 1939, taf 14, 4), with central stud; Haulchin and Dalheim, Belgium (Spitaels 1969, cat nos 147 and 671), both with more elaborate decoration of the central plate. The distinctive edge decoration is more common on rhomboid plate brooches: *cf* Nornour NN 181 (above) and parallels given there. It seems probable that the present brooch also belongs to the main Continental production.

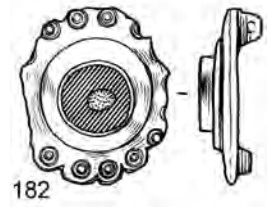

Fig 49 Disc brooch: NN 182. Scale 1:1. (Drawing: David Neal. © Historic England.)

Buckler brooches

NN 207, NN 249 (Fig 50)
Two examples (not identical) of a standard type in which the whole disc is raised towards the centre, which bears a cupped stud. There are usually

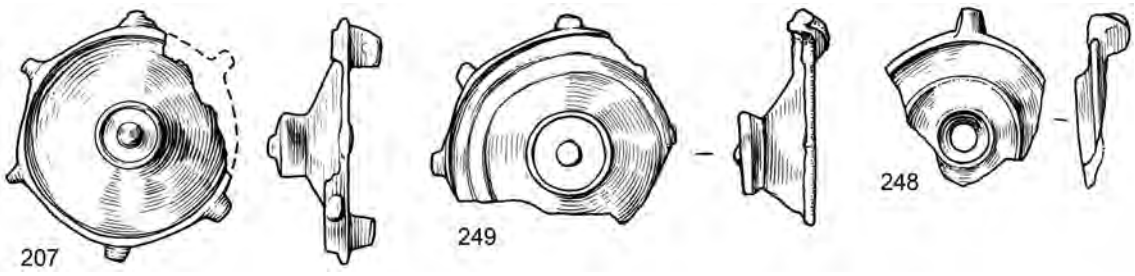

Fig 50 Disc brooches: NN 207, 249, 248. Scale 1:1. (Drawings: David Neal. © Historic England.)

six small metal lugs round the rim and the pin is hinged between two lugs, as in both the Nornour examples. No trace of enamel.

Parallels: Augst, Switzerland (Riha 1979, no 1586); Blicquy, Belgium (de Laet *et al* 1972, grave 279 no 5, pl 81); Straubing, Germany (Walke 1965, taf 95, no 33); Titelberg, Luxembourg (Thill 1969, no 205); St Rémy de Provence, France (Feugère 1985, pl 148, no1861); Dura Europos, Syria (Frisch and Toll 1949, pl ix, no 21); Charterhouse, Somerset (Hull, forthcoming, 8252); Kidlington, Oxon (Hunter and Kirk 1954, fig 25, no 2); Caerleon, Monmouthshire (Zinkiewicz 1986, fig 55, no 23); *Verulamium*, Herts (Stead and Rigby 1989, fig 12, no 35); Poole's Cavern, Derbys (Mackreth 1983, no 9); Corbridge, Northumberland (Bishop and Dore 1988, fig 77, no 24). Many more examples could be cited to show the very wide geographical range of the type. Context dates are usually second century but there are a few with Flavian associations; for example, Augst (above) and another from Blicquy (de Laet *et al* 1972, grave 184).

NN 248 (Fig 50)
Fragment of a disc with raised inner rim and open centre; one lug for a hinge projects. The outer ring was not enamelled but there are traces in the inner ring.

NN 267
Fragment: raised central ring and lug for hinge. A stud in the centre contains turquoise enamel with an inset black spot. (Not illustrated.)

Disc brooches probably of British origin

NN 204* (Fig 51)
Disc brooch with concentric rings, the centre slightly raised. Three of the lugs on the rim have concentric mouldings, unsuitable for enamel; the fourth is a loop over the hinge. The black enamelled outer band of the main plate has a ring of reserved metal spots and the centre contains decayed enamel. There are two lugs at the back for a hinged pin.

A brooch from 'Norfolk' in Hattatt (1985, no 545) seems to be the only close parallel. Most of the features of NN 204 resemble those listed above as nos NN 200, 198, 251, 187 and 188, which are clearly Continental in origin, but the use of reserved metal rather than inset enamel for the spots seems to occur most often on British enamelled brooches. There are several of these which resemble NN 204 except that they have a sprung pin and lack rim lugs; for example, Coventina's Well, Carrawburgh, Northumberland (Allason-Jones and Mackay 1985, no 3.42); Corbridge, Northumberland (Bishop and Dore 1988, fig 77, no 22); Stonea, Cambs (Jackson and Potter 1996, no 71); Poole's Cavern, Derbys (Mackreth 1983, fig 4, no11); Woodeaton, Oxon (Hull, forthcoming, 7010).

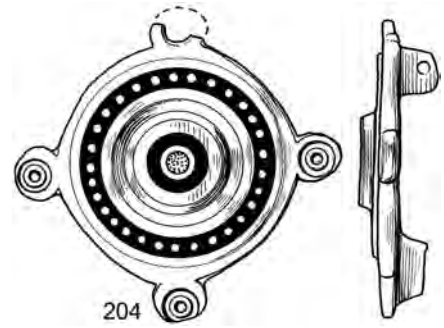

Fig 51 Disc brooch: NN 204. Scale 1:1. (Drawing: David Neal. © Historic England.)

NN 196* (Fig 52)
A flat oval plate divided into two zones by an oval septum. The central field is empty; the outer contains enamel in blocks of red and green juxtaposed. The spring is held on a single lug.

Parallels: very few of this type have been found on the Continent. A brooch of this shape from Tongeren (but with a hinged pin) seems to have plain enamel (Spitaels 1969, cat 253). They are numerous in Britain where some had an intaglio in the centre but many are empty, as NN 196, and may have had a plain glass inset. There is a full list in Bayley and Butcher (2004, App 3, 261), which shows a concentration in the Hants – Wilts – Berks area, but they occur in most parts. Examples: Silchester, Hants (Boon 1957, fig 17, no 3) with intaglio; Lowbury Hill, Oxon (Atkinson 1916, no 34); Nettleton, Wilts (Wedlake 1982, fig 54, no 64); Kidlington, Oxon (Hunter and Kirk 1954, fig 26, no 1); Brettenham, Norfolk (Clarke 1938, fig 2, no 2); Derby (Mackreth 1985, no 41); Chesterholm, Northumberland (Snape 1993, no 214); Housesteads, Northumberland, site museum (AML 79208643). Most significantly there is one from Halangy, Scilly (Ashbee 1996, fig 33, no 4). There is little dating evidence: the Nettleton brooch was found with a coin of Faustina, AD 141–150; Mackreth (1996, 320–1) suggests that the later second century would fit the general development.

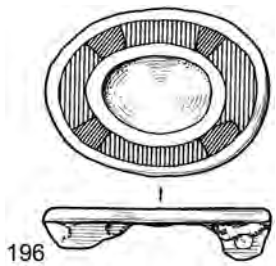

Fig 52 Disc brooch: NN 196. Scale 1:1. (Drawing: David Neal. © Historic England.)

NN 195 (Fig 53)
Flat disc brooch with two rings of plain enamel (the inner red and outer probably turquoise) surrounding an empty central field. Two lugs behind the plate probably held a spring; this is the main reason for suggesting a British origin, additionally the enamel contains no Continental-type insets.

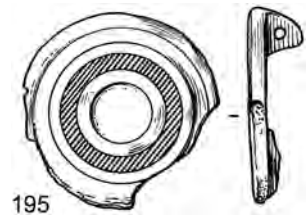

Fig 53 Disc brooch: NN 195. Scale 1:1. (Drawing: David Neal. © Historic England.)

NN 199*
Flat disc brooch with concentric rings of decoration; some enamel remains. There was a spring between two lugs. (Not illustrated.)

Gilded disc brooches with central glass setting (Fig 54)

NN 237*
An oval disc brooch with central conical setting of dark glass. The outer zone is gilded and shows two concentric bands of punched chevrons running in opposite directions. The spring is held on a single lug.

Parallels: Fishbourne, West Sussex (Cunliffe 1971, no 43); Nettleton, Wilts (Wedlake 1982, fig 63, no 5); Henley Wood, Somerset (Watts and Leach 1996, no 22); Stonea, Cambs (Jackson and Potter 1996, no 79); Augst, Switzerland (Riha 1979, no 309); Zugmantel, Germany, Böhme 1972, no 1132). These belong to a very well-known type which also occurs in a round version (see NN 296 below). Even counting only the oval ones well over 40 are known from Britain. They are particularly common in East Anglia and Wessex but also occur on Hadrian's Wall. A few are known from the Continent but there is little doubt that they are a British product. They are often found in late contexts, probably the earliest being the one listed from Zugmantel, which should pre-date the AD 260 abandonment. The Fishbourne brooch was from a robber trench of late third or early fourth century. Mackreth (1996, 321) thinks that the production should be dated to the mid to late third century.

NN 197
Described by Hull (1968, 54): 'pin hinged between two lugs; disc with central stud or boss, around which is a large disc of corroded enamel (?) [*sic*] mixed in which are many flakes of gold-dust; outer ring moulded'.

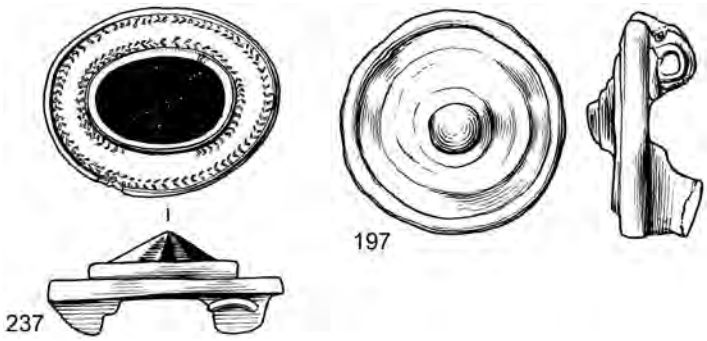

Fig 54 Disc brooches: NN 237, 197. Scale 1:1. (Drawings: David Neal. © Historic England.)

The brooch can no longer be found. Apart from the hinged pin (which is shown as a spring in the drawing made soon after discovery), the description matches that of NN 296 below which may be the same brooch.

NN 296* (not illustrated but probably NN 197, Fig 54)
This has a central boss of dark glass surrounded by a beaded moulding and the outer band is corroded but may have relief decoration. There are traces of mercury gilding (information from Justine Bayley). The spring is held on a single lug.

Although in poor condition this is probably the round version of NN 237 above; *cf* the Richborough example with list of parallels (Bayley and Butcher 2004, cat 388, 135, 178–9, 261–2). Over 20 examples are listed there, deriving from a similar area to the comparanda for NN 237 above.

Small flat disc brooches probably of British origin (Fig 55)

These are fully enamelled in plain colours, with simple patterns which are defined by reserved metal divisions.

NN 191, NN 192
Two very similar brooches with a zigzag metal ring dividing the main fields of enamel and a ring of reserved metal spots in the inner field. Both have a central metal ring but the centre of NN 191 is empty while NN 192 has a central metal spot. The next field of NN 192 is red and the outer black, while NN 191 has white enamel within the zigzags and red in the outer field. Both have a spring of three turns on a single lug.

Parallels: Uley, Glos (Woodward and Leach 1993, fig 125, no 3); Cold Kitchen Hill, Wilts (Hull, forthcoming, 3142); Richborough, Kent (Bayley and Butcher 2004, cat 385, 133–4); *Vindolanda*, Chesterholm, Northumberland (Bidwell 1985, fig 39, no 3); Newstead, Roxburghshire (Curle 1911, pl 89, no 10), called a stud but Hull (forthcoming) shows it as a brooch. About 20 of these brooches are known from Britain and none from the Continent. The Newstead example was from the later occupation but should not be later than AD 211. The only other dated contexts are *Vindolanda* (mid third century) and Uley (end of fourth century), presumably residual.

Fig 55 Disc brooches: NN 191–192, 193, 257. Scale 1:1. (Drawings: David Neal. © Historic England.)

NN 298* (not illustrated)
From the 1962–66 excavations but not seen by Mr Hull and so not published in Dudley (1968). Very similar to NN 191–2 but here the reserved spots are outside the zigzag ring and there are small metal lugs on the rim. The outer field is turquoise and the inner black. There is a spring of three turns between two lugs.

NN 193*, NN 257*
Two very similar brooches in the same style as the last three. Here the design outlined in reserved metal is a triskele with metal spots at the end of each 'leg' and one in the centre. There is turquoise enamel in the inner field of NN 193 and the outer field looks darker; NN 257 reverses the contrast and has red in the inner field with turquoise in the outer. The spring on NN 193 is an ancient repair but there are two lugs wide apart, which would have held a spring originally; NN 257 has a spring on a single lug.

Parallels: Wançennes, Belgium (Spitaels 1969, cat 556); Nettleton, Wilts (Wedlake 1982, fig 54, no 68); Lowbury Hill, Oxon (Atkinson 1916, pl ix, no 29); Old Penrith, Cumbria (Austen 1991, fig 91, no 629). Although there are a few Continental finds there are about a dozen from Britain. None are from closely datable contexts: that from Nettleton was associated with a coin of Vespasian but it was from the upper fill of a ditch and the type seems unlikely to be so early.

This group of brooches (NN 191–2, NN 298, NN 193, NN 257) belongs to a distinctive production which seems to originate in Britain, where its distribution is fairly general. Its characteristics are: plain flat disc, usually only about 20mm in diameter; decoration in plain enamel colours in large fields, in patterns defined by reserved metal divisions; the pin is sprung rather than hinged. Few examples come from closely datable contexts but the general indication is to the second century, perhaps the second half.

Umbonate disc brooch

NN 206* (Fig 56)
Humped disc with two concentric rings of small triangular cells for enamel: red and blue occur in both rows, roughly alternating. Some of the triangular fields cut right through the metal so that when the red enamel was melted, droplets squeezed through and can still be seen on the reverse

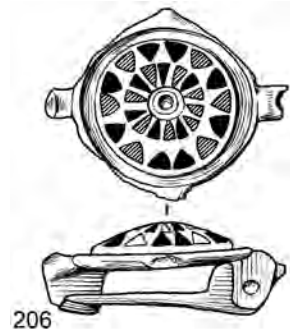

Fig 56 Disc brooch: NN 206. Scale 1:1. (Drawing: David Neal. © Historic England.)

(information from Justine Bayley). There was a projecting loop over the hinge and the remains of three plain metal lugs placed symmetrically round the rim.

Parallels: Nijmegen, Netherlands (Spitaels 1969, cat 737); Charterhouse, Somerset (Hull, forthcoming, 8255); Woodeaton, Oxon (Taylor 1917, no 65, 115); Winterton, Lincs (Stead 1976, fig 101, no 32); Usk, Monmouthshire (Manning 1995, fig 27, no 68); Alcester, Warwicks (Cracknell and Mahany 1994, fig 80, no 72); Wroxeter, Shropshire (Bushe-Fox 1913, fig 10, no 9); Corbridge, Northumberland (Bishop and Dore 1988, fig 77, no 20); Strageath, Perthshire (Frere and Wilkes 1989, fig 70, no 57). There are many more examples with a general distribution in Britain, while there are very few from the Continent. The Wroxeter brooch has the earliest context, AD 80–100; Strageath is from the first Antonine phase, AD 142. This is certainly a British product and the smallness of the enamel cells would support a date in the late first century for its origin.

Disc brooches with applied plates (Fig 57)

NN 184*
Little of the applied plate remains: it was attached to a plain disc which held the hinged pin and catchplate. The drawing showing the plate complete, with a stylised face *en repoussé*, was based on Miss Dudley's sketch made when it was excavated. Mr Hull pointed out that it was similar to others from Kidlington (below) and Salisbury. Later analyses showed that the main brooch was of leaded bronze and that the fragments of the applied(?) brass plate were held on by lead-tin solder (information from Justine Bayley).

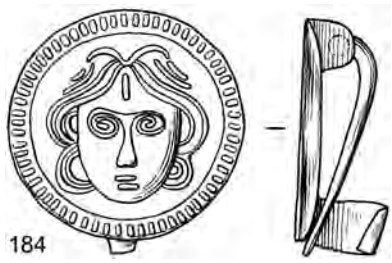

Fig 57 Disc brooch: NN 184. Scale 1:1. (Drawing: David Neal. © Historic England.)

Parallel: Kidlington, Oxon (Hunter and Kirk 1954, fig 25, no 1).

NN 185 (not illustrated)
(**NB.** Numbered 186 on drawing in Hull (1968, fig 21).)

Part of a round plate with fragments of an attachment. The pin was hinged between two lugs.

NN 186 (not illustrated)
Only part of the base plate with some solder remains. Hull's report (1968, 52) describes the pin as hinged and the catchplate as similar to Kidlington, and therefore to NN 184; both are now missing.

NN 186A (not illustrated)
Fragment of disc with solder and with transverse catchplate as NN 322 below.

NN 322*, NN 323* (Butcher 2000–1, 27, fig 10)

Comment

All the brooches in this sub-section are examples of a general type common in Britain in which a metal plate decorated *en repoussé* is attached to a plain base plate. Very often the decorated plate does not survive but there are 16 examples from other sites in Britain with a triskele design, and 11 of a group with soldiers, horses and eagle. The second design was thought to be based on a Hadrianic coin (Goodchild 1941) but Hattatt and Webster (1985) argue that it is more Celtic than Roman in character. A further 18 have no surviving design, and a few have heads (some different from those noted under NN 184 above). Although generally similar brooches are found on the Continent (for example, Böhme 1972, nos 1070–1116) they do not seem to include the above designs and these are probably British products.

A brooch from *Verulamium*, Herts, with a different head from NN 184, was in a context dated to the second half of the second century (Wheeler and Wheeler 1936, fig 46, no 55, 212). Otherwise there is little indication of date if the Hadrianic link is no longer accepted.

Plate brooches of unusual shape

NN 210* (Fig 58)
Flat, star-shaped plate with six points. The whole field is enamelled, following the same outline, with a separate circular cell in the centre; this is of uncertain colour. The main area is blue with six white spots inset. There are two lugs for a hinged pin.

Parallels: Farningham, Kent (Hull, forthcoming, 5905); enamel field white, inset six 'brown' spots; Cirencester, Glos (McWhirr 1986, fig 77, no 7); Besançon, France (Lerat 1956, pl xv, no 282).

NN 211 (Fig 58)
Fragment showing a six-pointed plate similar to that of NN 210 above, but smaller. The central spot is metal and the main field blue enamel, again with six inset white spots. The edge of the plate seems to be of the same shape as 210, but all the projections are broken off; part of one remains over the two-lugged hinge.

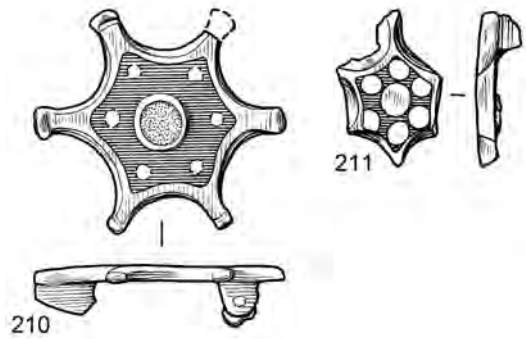

Fig 58 Plate brooches: NN 210–211. Scale 1:1. (Drawings: David Neal. © Historic England.)

RN 1072 (not illustrated)
Fragment: part of a plate with similar outline to NN 210 above. The central ring is slightly raised and contains 'black' enamel; the outer field is white and may have had inset spots. There is one lug on the back, possibly to hold a spring.

NN 176 (Fig 59)
Small complex brooch; a central square plate is flanked by four intricately detailed flanges. The square has a raised central stud which held inset glass. There are curved bands of enamel on each flange, not separate cells as shown in the drawing. Within the bands three blocks of colour are juxtaposed, the central block turquoise. The pin is hinged between two lugs and there is a cylindrical hollow behind the central plate.

Parallels: Vechten, Belgium (Spitaels 1969, cat 886); same size and shape; Flavion, Belgium (Spitaels 1969, cat 460–1), larger.

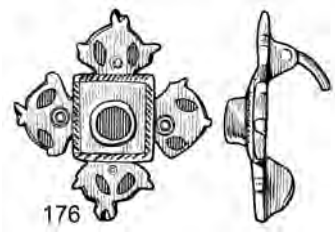

Fig 59 Plate brooch: NN 176. Scale 1:1. (Drawing: David Neal. © Historic England.)

NN 208 (Fig 60)
Four small discs joined; the space between forms a field for enamel. Each disc has a jumble of different colours of enamel (Fig 83). Pin hinged.

Parallels: Trier, Germany (Exner 1939, taf 15, no 6); 'Eastern Yorkshire' (Hattatt 1989, 156, no 1615, citing others from Norfolk and Sussex. The multi-coloured mixed enamel used makes it unlikely that these were a British product as he suggests).

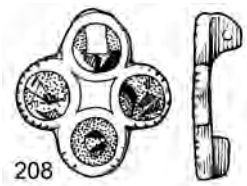

Fig 60 Plate brooch: NN 208. Scale 1:1. (Drawing: David Neal. © Historic England.)

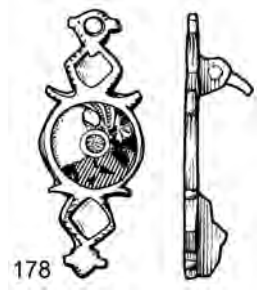

Fig 61 Plate brooch: NN 178. Scale 1:1. (Drawing: David Neal. © Historic England.)

NN 178 (Fig 61)
Complex plate brooch: a central enamelled disc with two symmetrical projections each containing a lozenge-shaped plate with enamel field and a terminal lugged disc; that over the hinge is perforated. The central field contains a jumble of different coloured enamels, apparently distorted *millefiori*. No enamel remains in the lozenge cells.

No parallel has been found for this brooch but the shape may be derived from the many 'complex' enamelled brooches of the main Continental industry of the second into the third century. Brooches such as NN 321 could well be the model (Butcher 2000–1, 27, fig 10).

NN 209* (Fig 62)
Pointed oval plate with six plain lugs round the edges. The whole plate was enamelled and there is a central metal ring. The enamel now appears as a jumble of different colours: see discussion of mixed polychrome enamels below. The pin was hinged between two lugs.

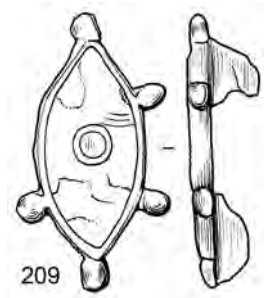

Fig 62 Plate brooch: NN 209. Scale 1:1. (Drawing: David Neal. © Historic England.)

Parallels (for shape, the enamel details vary): 'East Anglia' (Hattatt 1987, no 1434), traces of enamel, of at least two colours; Otford, Kent (Hull, forthcoming, 8435), stepped plate, lugs stamped; Vienna Kunsthistorisches Museum, unknown site (Sellye 1939, pl viii, no 25), empty pointed oval plate, only four lugs.

NN 177 (Fig 63)
Very unusual small plate brooch, in outline like a bow brooch but completely flat, with a small rectangular plate for the crossbar and a larger one at right angles for the bow. Both plates have fields for enamel: the smaller red and the larger turquoise. The pin was hinged between two lugs under the 'crossbar'.

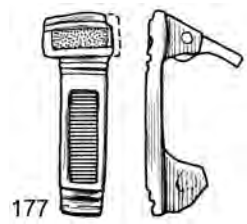

Fig 63 Plate brooch: NN 177. Scale 1:1. (Drawing: David Neal. © Historic England.)

Fusiform plate brooches (Fig 64)

NN 212, NN 213, NN 214, NN 250
Four very similar brooches, the plate slightly humped and with two central cross ribs, usually knurled; all are the same length, 33mm. They have a round lug at each end and beyond this a metal tab over the hinge, sometimes perforated, sometimes only pitted. The pin is hinged between two lugs. The lugs contain glassy settings with rounded tops (Fig 85); some with a central depression (see 'Styles of enamelling', below).

Parallels: Nettleton, Wilts (Wedlake 1982, no 75); Charterhouse, Somerset (Hull, forthcoming, 8243); Alveston, Glos (Fowler 1976, fig 13, no 5); Caerleon, Monmouthshire (Nash-Williams 1932, fig 31, no 9); Neatham, Hants (Millett and Graham 1986, fig 71, no 83), much larger. It is difficult to find any parallel in the usual sources for Continental material, the nearest being a brooch of unknown provenance in Rouen Museum (Dollfus 1975, no 459); this is of the same general shape, with the two enamelled lugs, but with a series of ribs across the humped plate either side of a plain centre. Earlier Continental plate brooches (*cf* NN 226) could perhaps be the model for the shape. The location of the parallels in the south and west

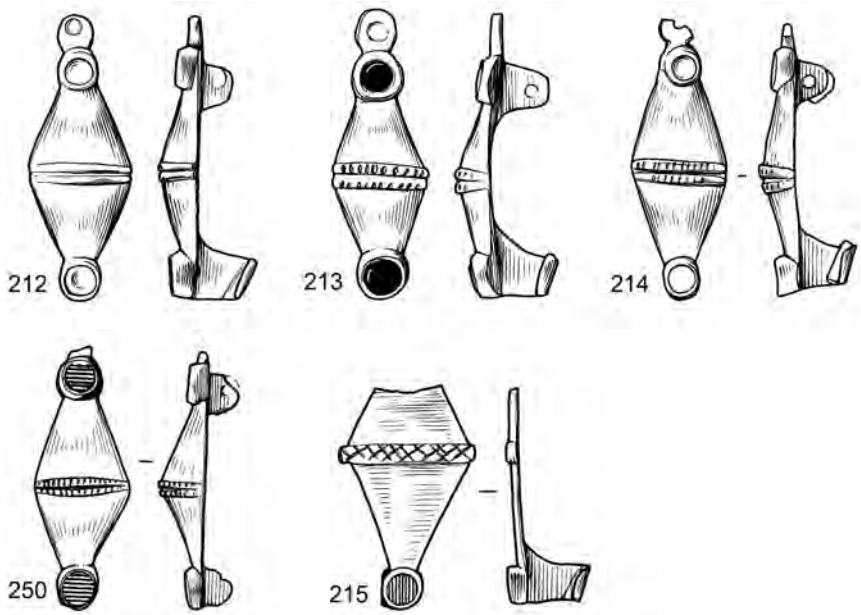

Fig 64 Fusiform plate brooches: NN 212–214, 250, NN 215. Scale 1:1. (Drawings: David Neal. © Historic England.)

of Britain suggests that these brooches may come from the same workshops (perhaps Mendip?) as most of the T-shaped brooches found at Nornour. Unfortunately no alloy analyses are available for comparison.

NN 215/282
Two joining pieces form a brooch of the same design as the above (NN 212ff), but it is larger, the plate is flat and there is a single cross-hatched rib across the centre. One lug contains a glassy setting.

Representational plate brooches

Brooches in the form of a shoe sole (Fig 65)

The common features are: outline of the plate in the shape of a right or left sole; the whole plate one enamel field; spots representing nails, either in enamel field or round the rim; a tab at the heel sometimes forming a ring but sometimes solid; the pin hinged between two lugs. The length of the main plate is given, in order to show the variation in these otherwise very similar brooches.

NN 216
Left foot; field contains some turquoise enamel and inset spots: one red in the centre, the others empty. Length 40mm.

NN 217*
Right foot; enamel field red; spots reserved metal. Length 33mm.

NN 218*
Left foot; enamel field orange, inset spots. Length 46mm.

NN 219*
Right foot; enamel field red, no spots; metal border punched 'nails'. Length 37mm.

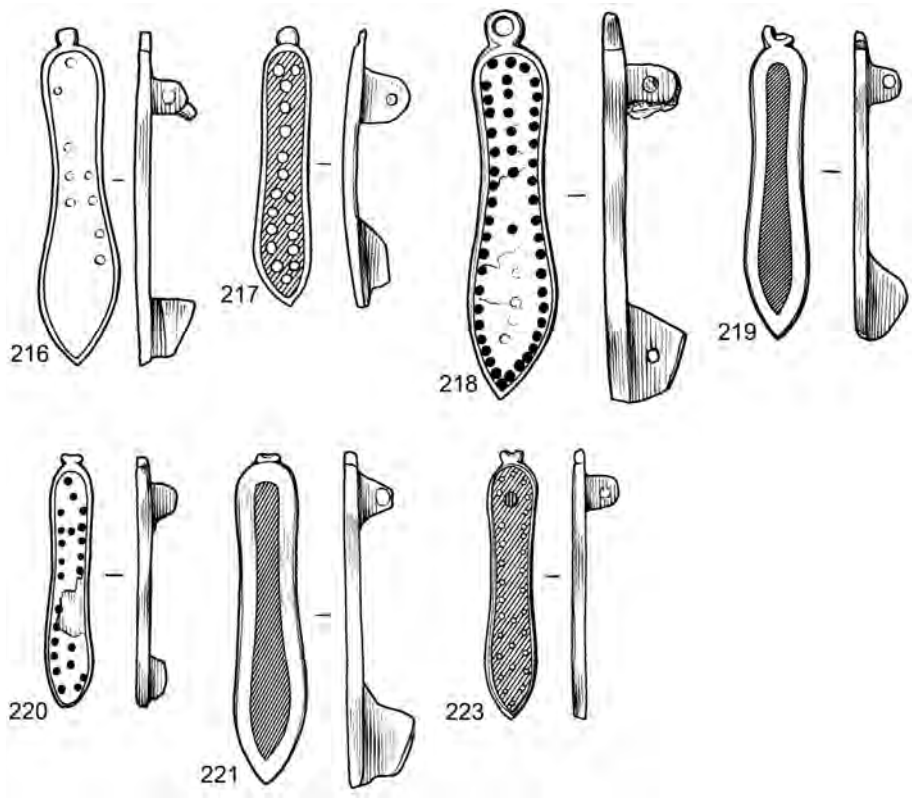

Fig 65 Shoe-sole plate brooches: NN 216–221, 223. Scale 1:1. (Drawings: David Neal. © Historic England.)

NN 220
Left (?) foot; uncertain colour enamel in field, inset black and white spots. Length 31mm.

NN 221
Left foot; enamel field red; no spots. Length 40mm.

NN 222 (not illustrated)
Incomplete. Left (?) foot; enamel colour uncertain, inset spots.

NN 223
Right (?) foot; enamel field red, inset with white spots round the edge; two turquoise spots in centre. Length 33mm.

See also NN 325* (Butcher 2000–1, 29, fig 10), a non-enamelled version of the same shape (above).

Parallels (within the range of variation shown by the Nornour brooches): Pannonia (Sellye 1939, pl vii, nos 29–30); Low Countries (Spitaels 1969, 14 examples in site catalogue); Augst, Switzerland (Riha 1979, taf 68 and 203), ten examples; *Verulamium*, Herts (Frere 1984, fig 9, no 50), site context AD 135–145; Chichester, West Sussex (Down 1989, fig 26.2, no 84); Caerleon, Monmouthshire (Zienkiewicz 1986, fig 55, no 14), site context AD 160–230; Shakenoak, Oxon (Brodribb *et al* 1973, fig 53, no 179); Stonea, Cambs (Jackson and Potter 1996, fig 99, no 82); Castleford, Yorks (Cool and Philo 1998, fig 15, no 117), site context AD 85–140; Wilderspool, Cheshire (Thompson 1965, fig 20, no 7); South Shields, Durham (Allason-Jones and Miket 1984, 3.128). Feugère (1985, pl 156, no 1961, 376–7) lists more than 100 examples throughout the Roman empire and beyond; some of those listed here are additional.

These examples have been selected to show the very wide range of sites where these brooches have been found but they usually occur singly and the Nornour total is unique for one context. From the minor but significant variations in size, form and decoration, it is clear that they are not just one batch from the workshop, but these variations do not seem to have any geographical significance as they occur within groups from other areas; for example, Augst and those from the Low Countries. This suggests that they are the product of a relatively large-scale industry, almost certainly the one which produced the main range of Continental enamelled brooches of the second into the third centuries, of which many other types occur at Nornour. Where datable the context is second century, Castleford being the earliest. In addition to those given above are some from burials: Blicquy, Belgium, a pair from grave 260, last third of second century (de Laet *et al* 1972); Cerfontaine, Belgium (Spitaels 1969, cat 436–7), a pair from a burial *c* AD 150. (These pairs both show one right and one left foot outline, suggesting that the brooches were intended to be worn as pairs).

The shape is distinctive and obviously had a well-known meaning or association. On other objects it can be part of a mark of ownership or identification, as on some potter's stamps (Oswald 1931). Tiles have been found with a legionary stamp in this form; for example, from a civilian baths building at Caerwent, a sole outline with lines of 'nails' and LEG II AUG (Nash-Williams 1930, fig 3). Henkel (1913) lists rings from the Rhineland which have a bezel in this form. Some uses certainly have a religious significance, such as small clay votives stamped with the words *in deo vivas* within the same outline. Nina Crummy (2007) has recently suggested that brooches in this form can be seen as a symbol of the god Mercury, and it was also used by Christians, for example on finger-rings, enclosing the chi-rho. The context of the numerous examples found is too varied to establish what significance was carried by the shape when used on a brooch. They occur on military, urban and rural sites; in rubbish and in burials.

Zoomorphic forms

NN 130* (Fig 66)
Outline of a mythical beast – a 'sea-leopard' – facing right; the legs and lower fins broken off. A large field for enamel extends over the whole body. This now looks whitish and contains juxtaposed yellow stripes ('Styles of enamelling', below), also reserved metal spots on the chest. The ears, mane and upper fin are marked in low relief and there are two lugs for a hinged pin at the back.

Parallels: from temple site at Hayling Island, Hants (Henig 1980, pl v, iv); unknown site, Winchester Museum (Hull, forthcoming, 8669); Augst, Switzerland (Riha 1979, no 1744); Mandeure, France (Lerat 1957, no 156); Titelberg, Luxembourg (Thill 1969, abb 16, no 21), faces left; Solre-Saint-Géry, Belgium (Spitaels 1969,

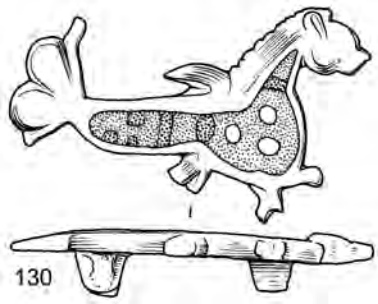

Fig 66 Sea-leopard plate brooch: NN 130. Scale 1:1. (Drawing: David Neal. © Historic England.)

cat 179), faces left; Flavion, Belgium (Spitaels 1969, cat 469), faces left; from burial with coin of Marcus Aurelius.

All the above are very similar, down to the patterns of the enamel, apart from the fact that some have their heads to the right and some to the left. There are a very few other brooches with the same subject but differing in outline and details. Leopards equipped with fins and a fishy tail appear in many classical scenes as part of Bacchus's marine *thiasos*. According to Toynbee (1962), this and other members of the rout (Tritons, Nereids, dolphins, hippocamps, *et al*) could be seen as benevolent escorts for the human soul on its journey to the Isles of the Blessed. A splendid representation of Bacchic sea-leopards can be seen on the Fishbourne mosaic (room N7: Cunliffe 1971, 163–4, pl xlix). This is dated by the Antonine samian used for some of its tesserae to the mid-second century (or later), which is about the time when brooches such as ours were being made. Although the numbers of examples found is not large (see parallels above), they are sufficient to show that the image was well-accepted at a humbler level than the owner of the palatial buildings of Fishbourne. Hutchinson (1986) argues that Bacchus and his feline were adopted into Celtic mythology after the Roman army brought them to Britain and other provinces. Whether it was represented on brooches for its religious significance or simply as a pleasing image is another matter.

NN 131 (not illustrated)
Not located; described by Hull (1968, 48): 'Horse; in two pieces; could not be drawn'; the AM Laboratory number was quoted as 620739. It is possibly the same as the fragments now numbered NN 265 and 293 (below).

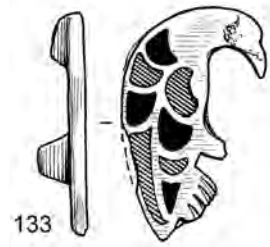

Fig 67 Eagle plate brooch: NN 133. Scale 1:1. (Drawing: David Neal. © Historic England.)

NN 265=293 (not illustrated)
The central part of an animal brooch showing the shoulder and part of the belly, with traces of enamel. It resembles a group of Continental animal brooches such as two from Richborough (Bayley and Butcher 2004, cat 351 and 352) with possible votive significance (*ibid*, 174).

NN 133* (Fig 67)
Flat plate in the shape of an eagle; the wings folded and the head bent forward as if tearing at prey. The wing is indicated by crescentic cells for enamel in red and turquoise. There is one lug, probably to hold a sprung pin.

Parallels: Henley Wood, Somerset (Watts and Leach 1996, fig 88, no 17); Woodeaton, Oxon (Kirk 1949, pl II, no 12); Old Blendworth, Hants: metal detector find seen by courtesy of the British Museum; 'Kent' (Hattatt 1987, no 1155); 'near Norwich' (Hattatt 1985, no 617); Colchester, Essex (Hull, forthcoming 0603); Aldborough, Yorks (*ibid*, 4047); York (RCHM 1962, pl 34); Castle Law, Midlothian (Childe 1933, fig 13, no 1).

The parallels are all very similar, only the shape of the enamel cells differing slightly. Henley Wood and Woodeaton are temple sites; Green (1978) illustrates the York brooch and comments that it 'may or may not possess ritual significance'. (If it did it is thought more likely to have been associated with Jupiter rather than the Imperial cult.)

There is no close dating evidence: although the temple at Henley Wood dates from the late third century there are several brooches of first and second century types amongst the finds. The distribution, the spring and the likeness to other bird brooches in the representation of the feathers

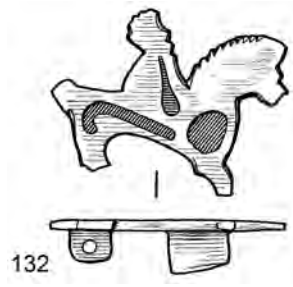

Fig 68 Horse-and-rider plate brooch: NN 132. Scale 1:1. (Drawing: David Neal. © Historic England.)

all suggest that it is a British product, probably of second century date, but the alloy shows that it is unlikely to be of south-western origin.

NN 132* (Fig 68)
Flat brooch with the crude outline of a horse and rider. The heads of both are disproportionately large and have rough notching to represent mane and hair respectively. The horse's hooves and tail are missing but its attitude suggests lively movement. The only other features are crude patches of enamel: a blob on the horse's chest, a scroll from its belly to its haunch and a streak down the front of the rider's body which may represent the short staff seen on better examples. Traces of red and another colour remain in some of these cells. The pin was sprung on a single lug.

Parallels: Hockwold-cum-Wilton, Norfolk (Gurney 1986, fig 41, nos 17–23); Lamyatt Beacon, Somerset (Leech 1986, fig 34, nos 7, 9 and 10; nos 6 and 8 are variants of the same figure); Cold Kitchen Hill, Wilts (Nan Kivell 1927, pl II); Woodeaton, Oxon (Kirk 1949, fig 3, no 6); Hayling Island, Hants (Downey *et al* 1980, 298; not illustrated). Several others are known, clustering notably in East Anglia and Wessex (Ferris 1984–5); those cited above are all from temple sites and it has been argued (Butcher 1986, 316–9, and by others) that a religious connection is likely. The figure is clearly very specific even though it does not accord with the usual mounted figure types: it is not armed. The numbers present on temple sites suggest that it was seen as a particularly appropriate votive offering. Brooches with a different (and clearer) representation of a similar figure are more widespread; for example, Corbridge, Northumberland (Haverfield 1911, fig 27); part of one was found at the temple site at Nettleton, Wilts (Wedlake 1982, fig 54, no 73). The date is also ambiguous: the temple on Hayling Island seems to have gone out of use in the early third century whereas that at Lamyatt was not built until late in the same century; the context of the seven Hockwold brooches is thought to be late second century (Gurney 1986, 88). Enamel is most often used on brooches in the second and early third centuries; these are quite unlike any others and for that reason could be of a different date, but perhaps are most likely to have originated in the later second century. They are probably a British product: a similar image appears on Continental brooches – for example, Besançon (Lerat 1956, no 298) – but details differ and the distribution of our type is entirely British so far.

NN 236* (Fig 69)
Flat brooch in the form of a dagger; the sheath represented by a field of enamel, with bands of red, blue and white juxtaposed (Fig 76). The handle is zoomorphic: a reptilian head with scales and eyes shown by light moulding. The pin was hinged between two lugs.

Parallel: Nettleton, Wilts (Wedlake 1982, fig 55, no 76), only differs in the enamel pattern and colours. No other parallel has been found. The zoomorphic head suggests that it is a Continental product as this is very similar to lugs commonly employed on disc and rhomboid plate brooches.

Fig 69 Dagger plate brooch: NN 236. Scale 1:1. (Drawing: David Neal. © Historic England.)

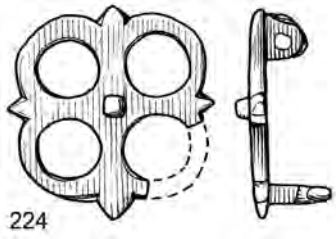

Fig 70 Openwork plate brooch: NN 224. Scale 1:1. (Drawing: David Neal. © Historic England.)

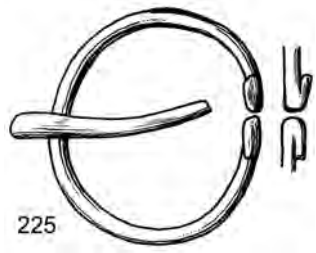

Fig 71 Penannular brooch: NN 225. Scale 1:1. (Drawing: David Neal. © Historic England.)

Openwork plate brooch

NN 224 (Fig 70)
Four equal circular openings with small projections on the rim between each; small metal stud in the centre, not riveted. The pin was hinged between two lugs; catchplate transverse.

Parallels: Winchester, Hants (Cunliffe 1964, fig 24, no 6), from level dated AD 140–200; Silchester, Hants (Hull, forthcoming, 4944); Thundersbarrow Hill, West Sussex (Curwen 1933, 128, fig 12); Langton Matravers, Dorset (Hull, forthcoming, 4370). No new examples have been noted since Hull cited these in Dudley (1968). They come from a relatively small area of southern Britain.

Penannular brooches

NN 225 (Fig 71)
Simple penannular brooch formed of round wire, the ends slightly flattened and turned back over the ring. According to Mr Hull they were indented across the top (as often occurs with this type), but this now looks unlikely. The pin was hooked over the ring.

Parallels: Hod Hill, Dorset (Brailsford 1962, fig 11, E16), site context probably first half first century AD; Camerton, Somerset (Wedlake 1958, no 64), from pit not earlier than AD 150; St Mary's, Isles of Scilly, from cist grave at Porthcressa (Ashbee 1955, fig 5, no 4); Castle Gotha, Cornwall (Saunders and Harris 1982, fig 18, no 3); Carvossa, Cornwall (Carlyon 1987, no 67, not illustrated), its terminals were less strongly moulded than those of the illustrated no 61; St Mawgan, Cornwall (Threipland 1957, fig 33, no 2). Many other parallels could be cited; these have been chosen because the first two show a wide date range and the others show local and nearby contexts. It is unusual to be able to cite a Cornish parallel for any brooch from the Nornour deposit, let alone one from Scilly.

NN 277 (not illustrated)
Part of another penannular brooch, with turned-back terminals similar to NN 225 above.

The alloys

Justine Bayley

Roman brooches were made of a wide range of copper alloys, containing variable amounts of zinc, tin and lead, so their composition can be used as a classification that is complementary to the typological one described above. The composition of a particular brooch can be precisely defined by quantitative chemical analysis which determines the percentage of each element present. Small metal samples were removed from the backs of 129 of the Nornour brooches and analysed by Averil Martin-Hoogewerf using atomic absorption spectroscopy. The results of these analyses are presented in Appendix 1. The other brooches were mostly either too corroded or too thin to sample. In 52 of these cases qualitative analysis of the corroded surface was made by X-ray fluorescence (XRF), identifying the elements present but not their exact amounts.

As with any other classification, the data provided by compositional analysis is only a first step, and in order that the information may be useful it is necessary to develop a terminology which identifies similar objects and groups them together, with each group given a name that uniquely identifies it. The names given to the alloys therefore have to reflect the amounts of

zinc, tin and lead present. These names are not important in themselves but provide a convenient shorthand when discussing metals of different compositions. Copper-tin alloys are called bronzes and copper-zinc alloys brasses. Gunmetal is the term used to describe all mixed alloys containing significant amounts of both zinc and tin. Leaded alloys are those which also contain more than a few percent of lead; for example, leaded bronze indicates bronze containing lead. Alloys described as '(leaded)' contain some lead, but less than in 'leaded' alloys.

The alloy names in Appendix 1 have been assigned using the criteria set out by Bayley and Butcher (2004, table 5). Where more than one name appears in the final column, the brooch has an intermediate composition or, in the case of XRF analyses, there is uncertainty about its composition. Some of the analytical totals are significantly less than 100 per cent. The most likely reason for this is that, despite the precautions taken, the analysed metal samples included some corrosion. This usually affects some elements more than others and can help to explain apparently atypical analyses: for example, NN 119 is described as leaded copper but as the analytical total is below 90 per cent it probably originally contained enough tin to reclassify it as a leaded bronze, the expected alloy for its type. Similarly, NN 206 was probably a low-tin bronze rather than impure copper. Two brooches

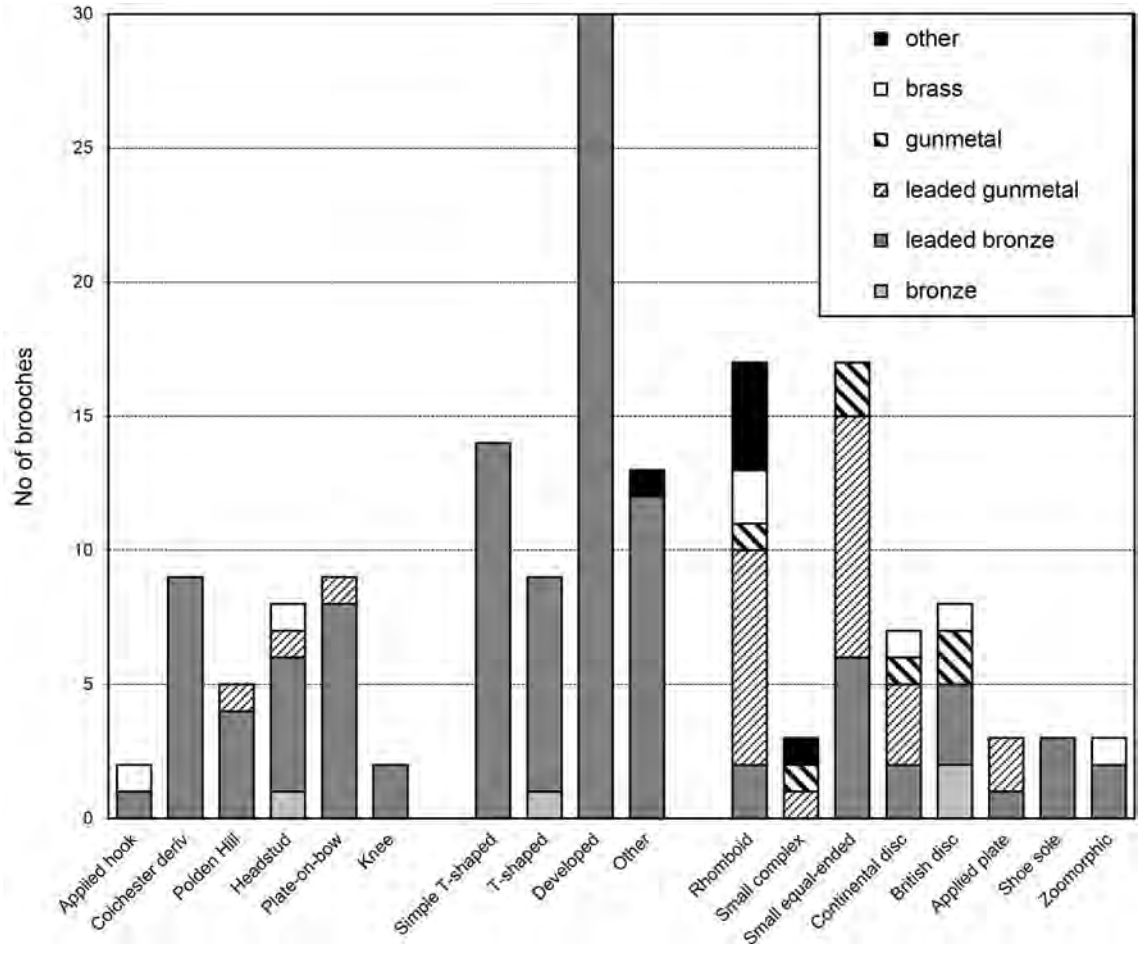

Fig 72 Summary of metal alloy analyses for British bow brooches, south-west bow brooches and plate brooches (data from Appendix 1).

(NN 229 and NN 150) had an attached crest or stud and so were sampled twice. The results in Appendix 1 are not identical, but the attachment is most likely to have been made from the same metal as the main part of the brooch; the differences are just due to lack of analytical precision.

In the discussion above, the Nornour brooches have been divided into three main groups: bow brooches of general types that were used throughout Britain, bow brooches made in the south west and only rarely found elsewhere, and plate brooches, some of which are thought to be British products, although the majority are most likely to be Continental in origin. The alloy identifications for those groups of brooches are summarised in Figure 72.

It is well known that most brooch types are made of a single preferred alloy or of a narrow range of alloys (Bayley and Butcher 2004, 145ff). For the general types (the left-hand part of Fig 72) comparison can be made with a large database of analyses (*ibid*, table 23), and all the Nornour brooches are of the expected compositions. Most of these (83 per cent) are leaded bronze, which is the commonest alloy used for making brooches in Roman Britain from the late first century onwards. The only two brasses are NN 33, which is an earlier first century type, and NN 235, which is a highly-decorated headstud variant, both types where brass is the expected alloy.

The south-western types (the central four bars in Fig 72) are almost exclusively leaded bronzes (97 per cent), as previous work has also shown (*ibid*, fig 141).

The plate brooches (the right-hand part of Fig 72) have far more varied compositions, with the majority being leaded gunmetals, gunmetals or other zinc-rich alloys. Figure 72 shows that there are still a fair number of leaded bronzes, but most of these contain more zinc than the leaded bronzes used to make the bow brooches (Appendix 1).

Enamel decoration

Justine Bayley and Sarah Paynter

Enamel is a glass, often opaque but sometimes translucent, which was fused *in situ* so that it adhered to the underlying metal. If it was not at least partly opaque the underlying metal would be visible through it, affecting the perceived colour. The enamel was normally applied as a moistened powder mixed with an organic binder, but sometimes a slab of glass appears to have been cut roughly to shape, softened and pressed into place. Once fused, the enamel was sometimes left with its 'fire-polished' surface, but the very flat surfaces of well-preserved enamels, and the parallel lines sometimes seen on them (Fig 79), suggest that the surface was normally ground and polished smooth.

More than 70 per cent of the Nornour brooches are enamelled or have applied glass studs or other shapes; this compares with an average for Roman brooches found in Britain of under 20 per cent. The difference is partly due to the unusually high proportion of plate brooches, but also to the frequent use of enamel on the south-western bow brooches. Because of the large number of enamels, it was decided to use the Nornour brooches as a test group to study the appearance and composition of Roman enamels. Samples of enamel were removed from a representative selection of them in the 1970s and a considerable amount of work was done, inspired by Leo Biek; the results were subsequently published (Biek *et al* 1980). This pioneering collaborative work was – by present standards – inadequate, as not all significant elements were sought in each sample analysed, but for its time it was a thorough investigation. It should be noted that re-examination of the Biek *et al* (1980) data has identified problems with the neutron activation analyses (NAA): the figures given for the glass-forming elements appear to have systematic differences when compared with more recent analyses of enamel using different techniques and so may not be accurate. The published data set is also incomplete as lead is not detectable by NAA, nor is soda by isoprobe (XRF), and some elements were detected but not reported (Biek *et al* 1980). Many of the uncertainties raised by Biek *et al* have subsequently been resolved, and by identifying the problem areas their work led to further research, some of which is reported here.

Colours of enamel

Enamels can be coloured in different ways. Small amounts of metal oxides can be dissolved in the enamel; for example, copper oxide and cobalt oxide produce transparent turquoise (usually described by Biek *et al* (1980) as pale blue) and dark blue colours respectively. The colour produced by a dissolved colorant is influenced by a

number of factors, among them the composition of the glass to which it is added and the concentration and oxidation state of the colouring compound. For example, dissolved iron oxide can be used to produce blue, green, amber or black. Dissolved manganese also acts as a colorant, giving a range of golden brown to pink and purple; it is probably the dominant colorant in those enamels coded as 'N' in Appendix 1. An alternative colouring mechanism is adding compounds that result in the formation of coloured crystals throughout the enamel. As the crystals are very small and numerous, they cause light travelling through the enamel to be scattered so the enamel also appears opaque rather than transparent. Examples of crystalline colorants / opacifiers are white calcium antimonate, yellow lead antimonate and red or orange cuprous oxide. A combination of dissolved and crystalline colourants can also be used, such as dissolved copper oxide (turquoise) combined with lead antimonate crystals (yellow) to produce an overall opaque green colour.

A major outcome of the work by Biek *et al* (1980) was the identification of the colorants and opacifiers in the enamel samples (Table 1); indeed, more recent work on Roman enamels from other sites has found the same range of colorants (for example, Henderson 1991). The original hope was that variations in the use of colorants would help identify different traditions of enamelling, but the consistency of these, and other, enamel analyses suggests that the materials used were relatively uniform across large parts of the Roman empire, possibly being made in a limited number of centres and then traded to the brooch manufacturers. The enamels appear to be standard Roman soda-lime-silica glasses, to which colorants and opacifiers (sometimes with added lead) have been added.

On most of the brooches the enamel has lost its original glassy appearance and bright colour. Examination at low magnification (×10 or ×20) can often identify small areas where the original colour survives, and it is these colours that are noted in Appendix 1. In some cases, the enamel is so decayed that it no longer looks at all glassy and it is impossible to identify its original colour. It usually appears a matt greenish colour, but can sometimes look buff, grey or nearly black; in Appendix 1 these enamel colours are coded as 'X'. By comparing these enamels with others where the decay has been less extensive, it is most likely that their original colours would have been red, orange or possibly green.

Not all enamel colours are equally common. This is partly because some colours survive better than others, but it also reflects a real difference in the frequency with which they were used. Figure 73 compares the proportions of each colour of enamel on the Nornour brooches with data from a group of nearly 600 brooches found in Britain (Bayley and Butcher 2004, fig 35). It shows that for some colours the frequency was similar, but that overall there were far more decayed enamels at Nornour, probably a reflection of the aggressive saline environment in which they were found. There were also far fewer reds and blues in brooches made both in Britain and on the Continent, although there is no obvious reason for this. The significantly higher proportions of 'blacks' (some of which are actually dark greens) and whites are due to

Table 1 Summary of the colorants and opacifiers in the enamels

Enamel colour	*Colourant and opacifier compounds*
Opaque white *	Calcium antimonate ($Ca_2Sb_2O_7$ and occasionally $CaSb_2O_6$)
Opaque turquoise (pale blue) *	Cupric oxide (CuO) and calcium antimonate ($Ca_2Sb_2O_7$ and occasionally $CaSb_2O_6$)
Dark blue *	Cobalt oxide (CoO)
Purple *	Lead antimonate ($Pb_2Sb_2O_7$) and copper oxide (CuO)
Black *	Iron oxide (FeO)
Opaque red *	Cuprous oxide (Cu_2O), copper (Cu) and calcium antimonate ($Ca_2Sb_2O_7$)
Opaque orange *	Cuprous oxide (Cu_2O)
Opaque yellow	Lead antimonate ($Pb_2Sb_2O_7$)
Golden brown	Manganese oxide (MnO) and / or iron oxide (Fe_2O_3)
Green	Iron oxide (FeO) and / or copper oxide (CuO)

Note: Those colorants and opacifiers identified by Biek *et al* (1980) are marked *. Although Biek *et al* (1980) detected lead antimonate and copper oxide in the one sample identified as purple enamel (which recent re-examination has suggested is a translucent golden-brown), it is likely that they are minor contaminants from adjacent colours, and the colour was actually due to low levels of manganese oxide.

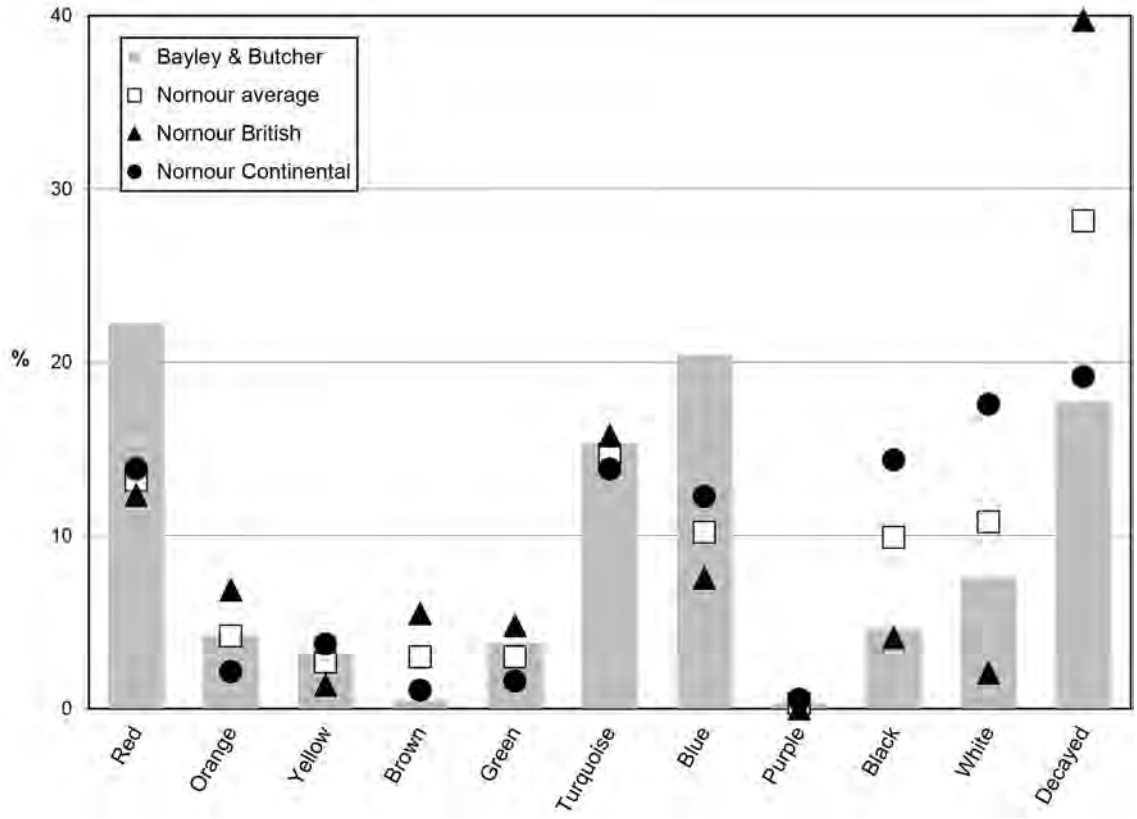

Fig 73 Proportions of enamels of different colours for the brooches of British and Continental manufacture from Nornour compared with national data from Bayley and Butcher (2004).

their frequent occurrence in complex enamels with inset spots of various sorts (below) which are found on Continental brooch types that are relatively common at Nornour. On the other hand, the almost colourless glasses, pale translucent golden hues classified as 'brown' and some pale greens and turquoises, are found predominantly on British-made brooches, especially the fusiform ones (NN 212–215/282, 250) which are discussed below. Of the other colours, orange enamels are more frequent on British-made brooches while the reverse is true of yellows (and purple). There are only relatively small numbers of these colours present, however, so the difference may not be statistically significant.

Styles of enamelling

All Roman enamelled objects were made using the *champlevé* technique, filling hollows cast or cut into the metal. The most frequent style is simple enamelling, with one colour in each small field, though several colours may be present in different fields on a single object (Fig 74). On brooches, this simple enamelling was sometimes combined with reserved copper-alloy spots (for example, NN 191–2), tinning of the surrounding metal (as with NN 133 and 219), or soldered-on silver wire or foils (for instance NN 111).

Larger enamel fields, particularly on plate brooches, could sometimes hold simple enamel (for example, NN 193) but often they contained more than one colour. These complex enamels show a variety of techniques, including juxtaposed blocks or areas of alternating colours, *millefiori*, inserted spots, either monochrome or with concentric circles of more than one colour, and mixed polychrome or marbled enamel.

Fig 74 Fields of opaque turquoise and orange enamel. NN 124. (Photograph: Eleanor Blakelock © Historic England.)

Fig 75 Juxtaposed blocks of two colours of enamel. NN 312. (Photograph: Eleanor Blakelock © Historic England.)

Romano-British craftsmen used only simple enamelling and, less commonly, juxtaposed blocks of enamel. These techniques were also used by Continental craftsmen who had an additional repertoire of enamelling styles that included all the other forms of complex enamelling.

Juxtaposed blocks of enamel of two (or sometimes more) alternating colours were used to fill a field. Usually it appears that blocks of glass were cut and fused into place, as the dividing lines between them are very straight and sharp (for example, NN 17 and 312 (Fig 75)). In other cases the divisions are still sharp, but are not so straight; for instance NN 130, 196 and 236 (Fig 76). This suggests that either the blocks became very soft and distorted or that adjacent areas of powdered enamel of different colours were applied. The rarely-found two-colour enamelling, where a single field is split between two colours (for example, NN 132), could be considered a simplified version of this latter variant of juxtaposed enamel, but the types of brooches on which it is found suggest it is best considered as a variant of simple enamelling.

Millefiori is the name now used to describe small polychrome patterns in glass. These are made by arranging glass rods of various colours side by side, heating them just enough to fuse them and then stretching the bundle of rods into a long thin cane. When cold, patterned slices can be cut from the cane and used as part of enamelled designs. These *millefiori* blocks could be used on their own (for example, NN 205: Fig 77), alternating with plain colours (such as NN 134), or set randomly into a field of a single colour of enamel (as with NN 202: Fig 78). In one case (NN 205) the blocks were too small to fill the width of the annular field so extra plain red enamel was added on the inner edge (Fig 77).

Some enamel fields have spots of a second colour in them. This effect was achieved in a number

Fig 76 Irregular juxtaposed areas of red, white and blue enamel. NN 236. (Photograph: Eleanor Blakelock © Historic England.)

of ways. Most commonly spheres or irregular droplets of glass were added to an enamelled field and were pressed or sank into the softened glass. When cold, the surface was ground flat, leaving hemispheres (showing as circles) embedded in the field (for example, NN 146: Fig 79). In a few cases larger, flat discs of dark green or black glass were floated on the surface of the enamel and then ground flat in the same way (for instance, NN 156 and 160). Sometimes glass spheres, again usually very dark green or black, were added to a field of softened enamel but, unusually, were not polished flat; the undulating, fire-polished surface of the enamel is still visible (for example, NN 136–7, 173–5 and 253: Fig 80). In a few cases the spots were cylinders of glass, cut from a rod, pressed into the enamel field and polished flat (for instance, NN 140 and 180), a technique that has parallels with *millefiori* blocks set randomly into an enamel field. In a few cases the spots were of one colour surrounded by a second (for example, NN 198) or even three concentric layers (as NN 135: Fig 81). In these cases the technique seems to have been similar to the first one described, but with a spot of a second colour added in the centre of the original one, as shows clearly on a three-colour stud that was not ground flat (NN 165: Fig 82). In NN 187 the outer part of the spot is a cylinder of glass.

Fig 77 Red-bordered 5×5 blue and white chequerboards alternate with red and blue florets on a white ground. The millefiori blocks are too small for the annular field so a brighter red enamel fills the gap. NN 205. (Photograph: Eleanor Blakelock © Historic England.)

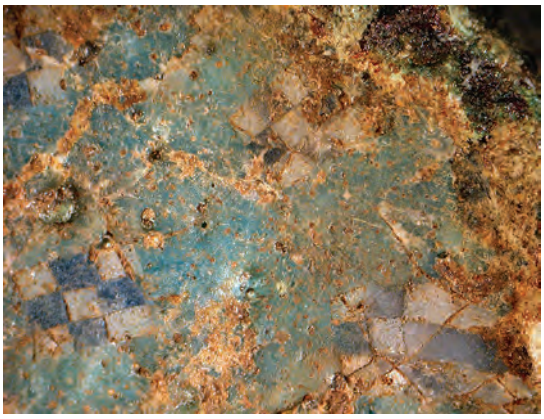

Fig 78 The turquoise field contains scattered 3×3 white and blue millefiori blocks. NN 202. (Photograph: Eleanor Blakelock © Historic England.)

Fig 79 Spots formed by hemispheres of red and white enamel set in a blue field. Note the parallel polishing marks. NN 146. (Photograph: Eleanor Blakelock © Historic England.)

On a few of the brooches the enamel is a mixture of different colours, with no regular pattern discernible (for example, NN 208–9: Fig 83). These mixed polychrome enamels sometimes show the same colour sequence repeating, so the enamel was probably made by fusing fragments of multi-coloured glass onto the metal, possibly the ends of *millefiori* rods that were too distorted to use, or even fragments of mosaic glass vessels. In one case (NN 178), a standard *millefiori* pattern is incorporated into the mixed enamel. In other cases there is some attempt at a pattern (as on

Fig 80 Spheres of black glass were pressed into white enamel that retains its fire-polished surface. NN 253. (Photograph: Eleanor Blakelock © Historic England.)

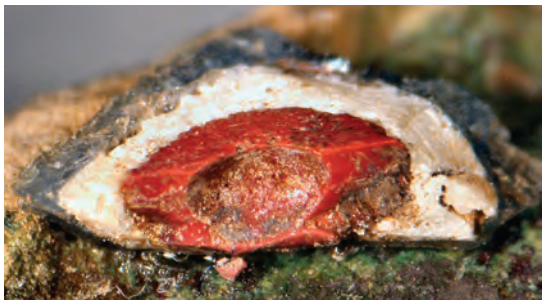

Fig 81 A cross-section of one of the white and red concentric spots in a blue field, showing how the enamel is distorted as each new colour is added. NN 135. (Photograph: Eleanor Blakelock © Historic England.)

Fig 82 A three-layer concentric spot of white, black(?) and yellow enamel that was not ground flat. NN 165. (Photograph: Eleanor Blakelock © Historic England.)

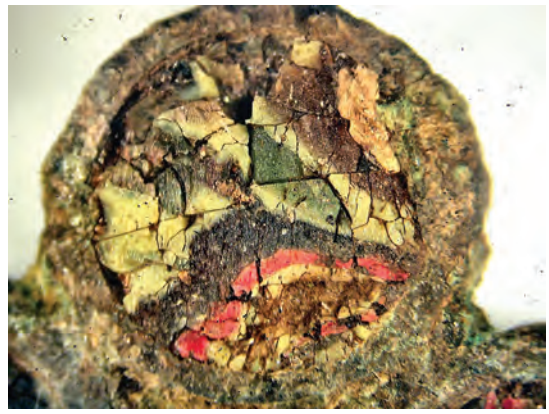

Fig 83 Mixed enamel with areas of opaque red and yellow and translucent purple and green. NN 208. (Photograph: Eleanor Blakelock © Historic England.)

Fig 84 Marbled opaque red and colourless enamel. NN 188. (Photograph: Eleanor Blakelock © Historic England.)

NN 255), and mixed enamels are also used as blocks in juxtaposed patterns (for instance, NN 315). Two of the enamels classified as mixed (NN 188 and 251) were probably meant to be a plain colour but there are inhomogeneities in the enamel that give a marbled appearance – swirls of 'black' mixed with the opaque red in NN 188 (Fig 84). Here these swirls are actually colourless glass, which looks black due to the opaque red glass beneath and around them which stops light shining through.

Some of the fusiform brooches (NN 212–15, 250: Fig 85) appear to have simple enamel in the circular fields at either end, but in others the glass has a convex upper surface and so looks more like an applied glass disc. Where only glass at the base of the field survives, it is not possible to assign them to one group or the other. A similar glass disc or stud is set in the centre of NN 176 and has been lost from NN 179.

Discussion

It has been necessary to go into considerable detail about individual types and their parallels

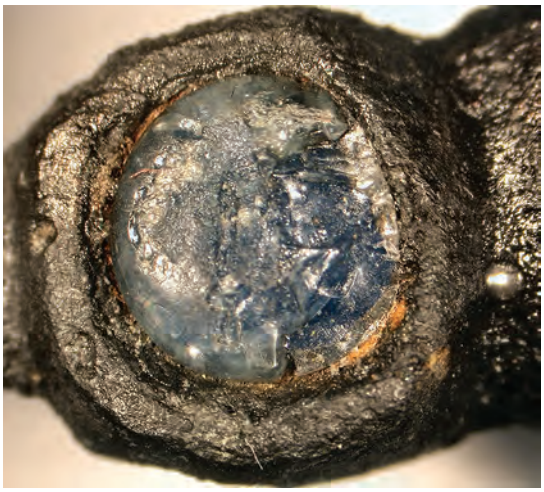

Fig 85 Glass stud or enamel with a convex upper surface. NN 213. (Photograph: Eleanor Blakelock © Historic England.)

to justify the proposition that, contrary to the original interpretation (Hull 1968), brooches were not made on the site but came from a number of different sources, and also to emphasise that, as Mr Hull's catalogue shows, they cover a wide range of dates.

Alloy analysis has strengthened the contrast between the group with a mainly south-western distribution, where only leaded bronze seems to have been used, and the other British types, where various alloys, including brass, occur (Bayley and Butcher 2004, ch 5). The south-western group consists of numerous T-shaped brooches with simple decoration (Figs 15–19). Similar forms of decoration occur frequently within this group, all rather simple compared with other groups: for instance, the single enamel cells on many types and the hatched chevron decoration on the upper bows of others. It seems likely that the industry was centred on the Mendip lead-mining area in Somerset where moulds for two of the types found at Nornour have been found: NN 99–102 and NN 37–46 (Bayley 1985).

Types which are unlikely to have been made in the south west include the early headstud NN 235, which is more likely to have originated in a northern workshop, especially as it is made of brass. The standard developed headstuds NN 103–105 have a very general distribution in Britain, as do the 'pseudo-trumpet' brooches like NN 111. It is possible that these general types were made in workshops in several areas, which could include the south-western workshops, although their known products were less sophisticated than these.

While nearly all the Nornour bow brooches were made somewhere in Britain, with few examples from other Roman provinces, the plate brooches show very different origins. The largest group is of enamelled brooches which are products of a Continental industry of the second and early third centuries (the main types appear in the sections above on rhomboid, complex, equal-ended and disc brooches). It is still not known where the industry was centred, although the patterns of distribution, and the presence of cognate industries, suggest the Rhineland as the most likely area. It was clearly on a large scale and produced a wide range of brooches strongly linked by the enamel techniques employed: the whole range of those described above. These brooches reached all parts of the Roman empire and occur sporadically on British sites, but the number found at Nornour is exceptional. However, there is also a significant number of plate brooches with different origins. The small enamelled disc brooches (NN 191–193, 257, 298: Fig 55) were made somewhere in Britain, as were the horse and rider (NN 132: Fig 68), the gilded oval (NN 237: Fig 54) and the eagle (NN 133: Fig 67). There is nothing to link these with the south-western industry and the distribution of each type suggests very diverse origins; the catalogue contains other types of which the same is probably true.

Since there is no dating evidence from the site context of the brooches found at Nornour it has been necessary to refer to similar brooches from dated contexts elsewhere. The resulting chronology begins with the bow brooches, for which a date in the third quarter of the first century AD is probable, although earlier is possible (above); three fragmentary Continental plate brooches (NN 226, 183 and 325: Fig 37) could well be as early. The *floruit* of the abundant south-western bow brooches and of some other types, such as the headstud, is in the late first and early second centuries, while there are other types well-dated to the later second century, such as NN 111 (Fig 12). The plate brooches provide many more examples from the mid or later second century, while the wheel brooch (NN 205: Fig 43), among others, probably dates no earlier than AD 200. The knee brooches NN 112 and 241 (Fig 14) are of types

which begin in the later second but continue into the third century, when the use of brooches was becoming less general, while there are one or two plate brooches which may well belong to the later third; for example, NN 237 (Fig 54).

The possible reasons for such a large number of brooches being found together with other Roman-provincial trinkets and coins in such an unlikely location have been discussed in Butcher (2000–1, 5–10), and the most probable interpretation seemed to be that they were offerings at a shrine. Only a few of the brooches themselves have apparently religious associations: the sea-leopard NN 130 (Fig 66), the horseman NN 132 (Fig 68); the eagle NN 133 (Fig 67) and the nine shoe-sole brooches NN 216–223 and NN 325 (Fig 65). The diagonal cross on the heads of several Nornour bow brooches may have some significance: it occurs on brooches and other objects in religious contexts elsewhere (summarised in Woodward and Leach 1993, 157). At Nornour it occurs on NN 59 (Fig 4), NN 99–102 (Fig 10), NN 231 and 261 (Fig 19) and NN 75 (Fig 15). For the majority of the brooch types, which have no obvious symbolism, the presence of considerable numbers at known temples (for example, Uley, Gloucestershire; Woodward and Leach 1993) and other sacred sites, is thought to support their votive use. It is argued that jewellery, even where of little intrinsic value, was seen as showing a personal devotion to the deity (Puttock 2002).

Another feature of the Nornour collection which must be pointed out, although it would be unsafe to draw any firm conclusions, is the presence of groups of very similar brooches in numbers above the pairs sometimes found in burials. This is most obvious amongst the large group of south-western T-shaped brooches: not only do the same features occur frequently but there are several very similar specimens of some types; for example, NN 12–15 (Fig 25), NN 37–46 (Fig 32), NN 65–68 (Fig 17) and NN 80–83 (Fig 17). Such groups still show very slight differences in size and decoration but were presumably part of the same phase of production of one workshop, obtained from one supplier.

Similar close likenesses are seen among other types, more generally distributed, such as the headstuds NN 103–105 (Fig 10) and divided bow NN 113–115 (Fig 14). The small enamelled discs NN 192–3, NN 298, and another pattern, NN 193 and NN 257 (Fig 55), are unlikely to be south-western but are almost identical except for the enamel colours.

The variety of places of production of the main groups is consistent with the suggestion of occasional visits by ships on passage between various Continental and British ports. The unusual number of Continental brooches compared with most British sites indicates that they are unlikely to have come by way of British suppliers, while the large numbers of ‘south-western’ brooches probably manufactured in the Mendip area may have come from a Bristol Channel port.

This seems to be as far as study of the brooches can take us at present. Much is to be hoped from further scientific study: so far only some British brooches and very little of the Continental material have been subject to study of alloys and decorative processes of the sort carried out here by Justine Bayley and Sarah Paynter. Discovery of manufacturing sites, and especially of moulds, may give a much clearer idea of the origins of the objects, and even traditional archaeological study of the distribution of comparative material still has much to contribute as new finds appear.

Appendix 1: Compositional data and summary of the enamel and other decoration for the brooches

General types of bow brooch

Cat no	*Decoration*	*Enamel*	*Cu (%)*	*Zn (%)*	*Sn (%)*	*Pb (%)*	*Alloy*
Simple one-piece							
1							silver
Applied hook							
33			81.9	15.5	2.2	0.7	brass
246*							
52			68.6	0.0	10.6	12.7	leaded bronze
54							
Colchester derivative and related types							
50			81.0	1.3	6.8	8.3	leaded bronze
55			70.3	0.3	10.2	15.7	leaded bronze
57			80.7	1.1	8.0	4.9	(leaded) bronze
58			77.8	0.4	10.2	9.9	leaded bronze
59			73.0	0.5	8.2	12.3	leaded bronze
60			68.1	0.1	6.9	21.8	leaded bronze
311							leaded bronze/gunmetal
4			44.7	0.1	5.3	13.4	leaded bronze
5			67.6	0.4	9.2	18.2	leaded bronze
Variant of Beaked Bow type							
49			94.1	0.2	7.0	9.7	leaded bronze
Fantail							
48			84.1	0.2	10.2	0.4	bronze
Polden Hill							
262			70.6	0.2	7.2	13.9	leaded bronze
243							(leaded) bronze/gunmetal
300			72.9	0.7	9.7	12.5	leaded bronze
2	Es	R[91]					leaded gunmetal
3			79.5	0.2	8.8	7.7	(leaded) bronze
Headstud							
235	Ii(R)Es	RB	80.1	12.5	1.4	0.9	brass
314			82.7	0.9	9.1	3.5	bronze
103	Es	T	64.5	0.0	9.2	11.8	leaded bronze
104	Es	T[94]X	72.4	1.3	5.9	6.6	(leaded) bronze
105	Es	BX					(leaded) gunmetal
99	Es	X	63.3	0.5	8.5	12.8	leaded bronze
100	Es	YX					leaded bronze
101	Es	W?XX	63.7	0.0	10.8	17.6	leaded bronze
102	Es	X					
106	(Es)		62.9	0.0	8.5	21.3	leaded bronze
107	Es	YX					
266	(Es)						
Trumpet of 'Chester' type							
108			78.5	0.5	4.5	10.0	leaded bronze
Pseudo-trumpet							
111	TMsEs	X					leaded bronze/gunmetal
Plate-on-bow							
124	Es	OB?[83]					leaded bronze
125	Es	XX					leaded bronze
126	Es	XX					leaded bronze
127	Es	R					leaded bronze
128	Es	T[42]X	64.4	0.3	8.9	20.1	leaded bronze

Cat no	*Decoration*	*Enamel*	*Cu (%)*	*Zn (%)*	*Sn (%)*	*Pb (%)*	*Alloy*
129*	Es						
291	Es	X					leaded bronze
116	(E)		68.5	0.1	7.7	16.1	leaded bronze
117	(E)		70.5	1.8	7.3	17.4	leaded bronze
122	(E)						
315	EchEj	WKGB	75.0	9.9	4.8	4.8	(leaded) gunmetal
Knee and P-profile							
113							
114							
115			70.5	0.3	11.5	13.5	leaded bronze
316			65.2	0.2	14.1	17.0	leaded bronze
112							
239							
259*							
260*							
258							
241							

South-western bow brooches

Cat no	*Decoration*	*Enamel*	*Cu (%)*	*Zn (%)*	*Sn (%)*	*Pb (%)*	*Alloy*
Simple T-shaped without head-tab or enamel							
72			65.6	0.1	11.3	15.6	leaded bronze
73			67.0	0.1	8.6	17.6	leaded bronze
74							
78							
75							
51			66.0	0.6	10.1	24.7	leaded bronze
77			76.8	0.5	10.9	21.8	leaded bronze
61							
62							
304							leaded bronze/gunmetal
63*							
271							
294							
Simple T-shaped with crest on bow							
96	(R)		68.2	0.3	10.2	13.1	leaded bronze
97*	(R)						
Simple T-shaped with small cell on upper bow							
35	(Es)						
36	(Es)						
80	(Es)		76.9	0.1	6.2	11.7	leaded bronze
81	Es	R					
82	(Es)		77.0	0.1	5.3	11.5	leaded bronze
95	Es	X					
234	Es	X					
RN 16	Es	T/G					
306	(Es)		73.9	0.1	11.3	13.4	leaded bronze
83	(Es)		71.7	0.1	8.7	14.6	leaded bronze
70			120.0	0.4	13.1	23.1	leaded bronze
71			75.0	0.1	9.6	19.1	leaded bronze
65	Es	O					
66	(Es)		61.9	0.3	6.7	14.0	leaded bronze
67	Es	X					

Cat no	*Decoration*	*Enamel*	*Cu (%)*	*Zn (%)*	*Sn (%)*	*Pb (%)*	*Alloy*
68	Es	O	72.9	0.2	6.8	19.0	leaded bronze
T-shaped with waist decoration							
94			72.8	0.2	11.0	14.0	leaded bronze
307			69.1	2.0	7.6	19.1	leaded bronze
34	Es	N?	80.2	0.0	9.4	3.6	bronze
T-shaped related to headstud or trumpet							
231			64.9	0.0	8.0	15.8	leaded bronze
261	Ej	RX	68.3	0.1	11.1	15.6	leaded bronze
312	Ej	KX	77.7	0.4	8.2	10.8	leaded bronze
109			76.5	0.0	8.8	8.0	leaded bronze
286							
110	Es	R	77.4	0.3	8.3	7.7	(leaded) bronze
9	(Es)		71.7	1.1	5.5	15.3	leaded bronze
10	Es	T/G	64.9	0.6	10.1	16.2	leaded bronze
Developed group							
6			75.0	0.3	8.9	17.9	leaded bronze
7*							
8	Es	T/G					
93	Es	T/G					
7A	Es	X					
11	Ej	XX	66.6	1.8	8.4	17.2	leaded bronze
12	(Ej?)		72.2	0.5	9.1	11.9	leaded bronze
13	(Ej?)		73.9	0.6	8.8	14.0	leaded bronze
14	(Ej?)		65.7	0.1	7.4	18.8	leaded bronze
15	(E)						
301	Ej	X	73.1	0.8	9.1	15.7	leaded bronze
17	Ej	OX					
19	Ej	BX	65.4	0.8	9.2	18.4	leaded bronze
20	Es or Ej	X					
21	Ej	TK	55.0	0.4	3.2	13.8	leaded bronze
24	Es or Ej	T	82.5	0.2	7.7	13.4	leaded bronze
263*	Es or Ej						
25	Ej	BX					
273	Ej	YX	63.8	0.3	10.8	16.4	leaded bronze
29	Es	OT/G?	68.4	0.1	9.9	15.4	leaded bronze
RN 2963	Ej	OX					
28	Es	T	114.0	0.4	15.1	16.2	leaded bronze
227	(E)						
27	(Es)						
32	Es	X	138.5	0.7	16.3	31.9	leaded bronze
18	Es	T/GX	93.7	0.1	10.9	23.9	leaded bronze
23	(Es)						
31	Es	R	38.9	0.5	6.5	6.7	(leaded) bronze
22	Es	XX	67.1	2.0	10.7	12.5	leaded bronze
247	Es	X					
26	(Es)		68.9	0.2	8.9	16.4	leaded bronze
30	Es	$R^{34}K^{35}$					
37	Es	R	63.9	0.5	7.5	20.5	leaded bronze
38	(Es)		70.0	0.5	7.8	15.0	leaded bronze
39	Es	W?	68.2	0.4	8.5	16.1	leaded bronze
40	Es	XX	79.5	0.7	11.6	17.1	leaded bronze
41	Es	XX					
42	(Es)						
43	Es	TX	105.7	0.2	15.6	18.4	leaded bronze
44	Es	BX					

Cat no	*Decoration*	*Enamel*	*Cu (%)*	*Zn (%)*	*Sn (%)*	*Pb (%)*	*Alloy*
45	Es	O[21]T					
46	Es	BX					
302	Es	O[129]T	61.4	0.1	7.2	30.0	leaded bronze
297	Es	TX					leaded bronze
242	Es	OT					leaded bronze
85	Es	X	68.5	0.2	9.9	15.1	leaded bronze
86	Es	B					
RN 1371	Es	T					
84	Es	X	72.7	0.1	8.1	13.4	leaded bronze
87	Es	X	67.5	0.6	8.0	17.2	leaded bronze
88	Es	X	70.1	0.2	9.3	16.1	leaded bronze
232	Es	N	65.4	1.1	8.8	6.5	(leaded) bronze
89	(Es)						
90	Es	T					
91*	Es						
254	Es	T					
92	Es	N					
270	Es	X					
278	Es	X					
281	Es	X					
Single or unparalled brooches, probably SW							
47			74.3	0.1	13.2	13.8	leaded bronze
238							
53			63.9	0.2	10.5	6.0	(leaded) bronze
233							
98	Es	RB	73.1	0.2	10.2	9.0	leaded bronze
244	Es	T					
245							
229 (bow)	R		85.6	0.1	4.2	3.8	bronze
229 (crest)			84.4	0.1	5.6	4.7	(leaded) bronze
119	Es	X	76.7	0.0	2.7	10.1	leaded copper
120	Es	O	71.9	0.7	10.3	13.8	leaded bronze
118*	Es	BX					
228	(Es)		73.3	0.7	5.7	16.7	leaded bronze
69	(Es)		30.4	0.1	4.5	11.3	leaded bronze
64	Es	X	34.3	0.0	4.0	7.4	(leaded) bronze
303	T		70.4	1.6	10.5	15.1	leaded bronze
305	RAs	B[131]	73.1	0.3	11.9	12.7	leaded bronze
313	Es	X	73.0	0.1	12.1	19.7	leaded bronze
Bow brooch fragments, probably SW							
121	Es	XX					
295	(Es)						
123	(E)						
269							
272							
274							
275	(Es)						
279							
280							
283*							
284*							
288							
289							
290							

Plate brooches

Cat no	*Decoration*	*Enamel*	*Cu (%)*	*Zn (%)*	*Sn (%)*	*Pb (%)*	*Alloy*
Earliest							
183*	McAc						
226	T						
325							leaded gunmetal
Rhomboid							
139	Ecs	$W^{4}K$					leaded gunmetal
253	Ecs	KW	76.4	9.7	3.3	4.4	(leaded) brass/gunmetal
136	Ecs	RK					leaded gunmetal?
142	Ecs	$W^{12}K^{13}$					
151	Ech	X	71.1	10.5	3.9	4.6	(leaded) brass/gunmetal
144	Ech	TXX					
152	Ecs	KW	48.0	7.8	2.0	1.2	brass
153	Ec?	WK?					(leaded) gunmetal
147*	Ec						
148	Ecs	TK					(leaded) gunmetal
154	Es	X					
181*	Ec						
252	Ech	TX					
149	Ech	TK?					
146	Ech	$R^{74}B^{72}W$	72.6	8.0	6.5	5.6	(leaded) gunmetal
255	Ex	.RBY					(leaded) brass/gunmetal?
138	Ech	RBW					
140	Ecc	BW	73.5	11.4	4.5	7.6	(leaded) brass/gunmetal
134	Em	$BR.B^{75}W$					
137	Ech	$W^{71}K$					leaded gunmetal
141	REce	BWX					(leaded) gunmetal?
155	Ec	OTK					
143	Es	T	69.5	3.9	6.3	7.0	(leaded) bronze/gunmetal
145	EjEch	X.BW	70.6	9.2	3.9	8.3	leaded gunmetal
150 (plate)	REsEj	$RB^{68}OXX$	69.6	13.4	2.7	3.6	brass
150 (stud)			74.3	12.2	2.7	2.7	brass
317	Es	TN?X					leaded bronze
135	Ece	$R^{82}B^{80}W$					gunmetal?
Small complex							
173	Ecs	TKW^{77}	72.3	8.0	2.7	4.3	(leaded) brass/gunmetal
174	Ecs	KW					(leaded) gunmetal
175	Ecs	$W^{14}K$					gunmetal
RN 1076	Es	X					
Small, equal-ended, A							
157	Ec	YK?					leaded gunmetal
158	(E)						
319	(E)		77.5	3.8	7.2	7.9	(leaded) bronze/gunmetal
320	Ech	KX					leaded gunmetal
164/285	Es or Ec	X					leaded bronze/gunmetal?
165	Ecs+e	WYK?					gunmetal
161	Es	TX					(leaded) gunmetal
162	Es	XX					leaded gunmetal
166	Es	XX					leaded gunmetal
318	Es	TX	76.4	6.1	7.3	8.2	leaded gunmetal
167	Es or Ec	T					gunmetal?
168	Es	X					leaded bronze
169	Es	W					(leaded) gunmetal?
256	Ech	TK					
RN 1360							(leaded) gunmetal

Cat no	*Decoration*	*Enamel*	*Cu (%)*	*Zn (%)*	*Sn (%)*	*Pb (%)*	*Alloy*
Small, equal-ended, B							
159	Ecd	TK					
160	Ecd	T?K					(leaded) bronze/gunmetal
171	Ec?	TR?K?					leaded gunmetal
172	Ec?	X					leaded bronze/gunmetal
156	Ecd	T?K	71.5	0.8	11.6	11.2	leaded bronze
170	Es	X					
Equal-ended with large round plate							
179	(A)						
180	EsEcc	K?X					?
321	(R)EsEj	$O^{122}K^{123}$TX	77.5	0.7	8.6	8.8	leaded bronze
Wheel							
205	EsEm	$BT.R^{53}BW^{54}$	72.5	9.3	4.8	0.5	gunmetal
Disc of standard Continental types							
194	EsEm	X.BWYKTR	69.6	4.8	7.7	2.4	gunmetal
202	Em	T.BW					(leaded) bronze/gunmetal
203	Em	R^{19}BW					
190	Em	.RBW					
189=287	Em	.RBW					(leaded) gunmetal
200	Ece	RBW^{24}	70.1	14.6	0.6	1.2	brass
198	Ece	RKW^{64}					
251	Ex	XX					
187	Ecc+e	$B^{61}W$	57.7	8.7	10.6	4.8	(leaded) gunmetal
188	Ex	.RN					(leaded) gunmetal
324	REsEj?	T^{126}RKY?G?	75.3	3.2	6.6	12.5	leaded bronze/gunmetal
240	Em	R.BW					
Disc, probably Continental							
201	Es	TX	67.9	0.7	8.6	12.9	leaded bronze
182	Ec	RY					
207							
249							
248	Es	X					
267	Ech	TK					
Disc, probably British							
204	Es	KX	75.6	0.6	5.8	11.0	leaded bronze
196	Ej	RT/G	71.0	0.0	7.3	11.3	leaded bronze
195	Es	RT?					
199	Es	TX					gunmetal
Gilded disc with central glass setting							
237	TGAc		87.5	9.2	2.6	0.1	brass/gunmetal
197=296	GmAc						bronze
Small flat disc, probably British							
191	Es	RW^{57}					
192	TEs	RK					
298	Es	TK					bronze
193	Es	TX					gunmetal
257	Es	RT	77.6	0.0	5.6	6.5	(leaded) bronze
Umbonate							
206	Es	$R^{48}B$	91.1	0.0	2.0	1.6	copper
Disc with applied plate							
184	TsMc						leaded bronze
185	Ts						
186	Ts						
186A	Ts						
322	Ts						leaded gunmetal
323	TsMc						leaded gunmetal

Cat no	*Decoration*	*Enamel*	*Cu (%)*	*Zn (%)*	*Sn (%)*	*Pb (%)*	*Alloy*
Unusual plates							
210	EsEch	BWX	74.3	8.1	4.4	2.2	gunmetal
211	EsEc	BWX					
RN 1072	EsEc?	KW					
176	EjAc	TX					
208	EsEx	X.RYPG					
178	(Es)Ex	.RBTW					
209	Ex	.RBWX					(leaded) gunmetal
177	Es	RT					
Fusiform							
212	Es?	N					
213	Ac or Es?	B					
214	Es?	N?					
250	Es	T					
215/282	Ac or Es?	N					
Representational: shoe sole							
216	Ecc	RT					
217	Es	R	67.6	0.4	7.4	16.4	leaded bronze
218	Ech	$O^{11}X$	74.1	0.8	4.5	6.7	(leaded) bronze
219	TEs	R^{26}	73.6	2.8	5.6	8.3	leaded bronze/gunmetal
220	Ech	$K^{2}WX^{3}$					
221	Es	R^{27}					
222*	Ec						
223	Ech	RTW					
Representational: zoomorphic							
130	Et or Ej	YXX	76.3	1.2	8.3	9.6	leaded bronze
131*							
265=293	Es	TX					
133	TEs	RT					brass/gunmetal
132	Et	$R^{30}N^{31}$					leaded bronze?
Representational: dagger							
236	Ej	RBW	77.3	5.8	5.2	5.2	(leaded) gunmetal
Openwork							
224							

Penannular brooches

Cat no	*Decoration*	*Enamel*	*Cu (%)*	*Zn (%)*	*Sn (%)*	*Pb (%)*	*Alloy*
225							
277							

Notes

* with Cat No = brooch not seen; described from published details.

Key to Decoration column:

Ac glass cabochon, cone, stud or intaglio attached
As glass sphere(s) attached
E type of enamel uncertain / unknown
Ec circles / spots of second colour in enamel field
Ecc spots are ends of cylinders
Ech spots are hemispheres
Ecd spots are cut discs floating on enamel field
Ece spots are 'eyes' with two concentric colours
Ecs spots are spheres standing proud of enamel surface
Ej field contains juxtaposed blocks of different colours of enamel
Em some or all of the juxtaposed blocks are *millefiori*
Es simple enamel: one colour per field
Et two-colour: some fields contain more than one colour
Ex multi-coloured mixed enamel
G gilding
Gm mercury gilding
Ii inlaid metal is iron
Mc sheet metal of copper or one of its alloys soldered to surface
Ms silver sheet metal and / or wire soldered to surface
R decoration riveted on
T tinning; surface coating meant to be visible
Ts tinning definitely / probably originally covered by solder
? following a code indicates uncertainty
( ) round a code indicates the decoration is now lost

Key to Enamel column:
R – red, O – orange, Y – yellow, N – golden brown and / or colourless, G – green, T – turquoise, B – blue, P – purple, K – black, W – white, X – now appears greenish, original colour uncertain, XX – originally two different colours, both now greenish.
Codes following a full stop are the colours in the *millefiori* rods or mixed enamel.
Biek *et al* (1980) sample numbers are shown in superscript (for example, B^{68}, W^{77}).
There is no significance in the order in which the enamel colours are listed.

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Boscawen-Un: stone circle and stone axes

PETER HERRING

A detailed survey was carried out in 1999 of Boscawen-Un stone circle, St Buryan, and adjacent rough ground. The work provided an opportunity to review earlier descriptions and investigations of the monument and alterations to its setting, to describe the components of the monument and to consider its relationship to natural and human elements in the wider 'designed landscape' of earlier prehistory. The opportunity was also taken to reflect on the significance of two carved axe-heads on the central stone (discovered more than a decade earlier by Ian McNeil Cooke). The study additionally considered the later history of the monument, including its changing meaning and importance for a variety of communities and interest groups across the ages, and that of the adjacent area of rough ground.

New survey; new stories

Boscawen-Un in St Buryan is one of Cornwall's most evocative archaeological sites: the slanting central stone protected by its ring of attendants and the whole enclosed by J T Blight's delicately ramped stone-faced bank, a form of ha-ha. Its location (SW 4121 2736), low on a gentle slope, allows few long views and adds to a sense of intimacy and closeness to a distant past, the later Neolithic period or the early Bronze Age, when stones seem to have been imbued with complex meanings.

The circle is, however, also a modern site, and a component of the modern landscape. The principal stone elements may indeed be Neolithic and early Bronze Age, as this paper attempts to demonstrate, and it may be a remarkably well-preserved survival, but as a physical entity it has only gained its current form in recent years. Some stones fell and have been re-erected and one may have been removed. They continue to be weathered and play host to changing patterns of lichens, and the vegetation cover around and between the stones, and the sense of open-ness or enclosure of the site changes daily and by the seasons. As this ground was the arena for the actions we suppose were key to the original design, we must consider the prehistoric forms of these spaces with care.

Of course sites, like landscape, being internal constructs built upon inevitably partial observation, have no inherent meaning or existence as a coherent complex beyond that imposed through recognition, recording and interpretation. We each construct our own particular and peculiar version of Boscawen-Un. The processes of recognition, definition, assimilation and interpretation of features are not confined to modern archaeologists. Our musings, contained and disciplined by our archaeological traditions, may be more grounded in rigorous and peer-reviewed systems of thought than others, and we may reasonably insist that our schemes are therefore privileged in relation to others, but we concede that they are often still perceptions, imaginings and assertions, rather than certainties. As such, more aspects of these sites reside in our heads, rather than in the rough ground of West Penwith, than we may care to admit.

As already noted, the circle complex at Boscawen-Un is not only earlier prehistoric but also later prehistoric, medieval and post-medieval. It would have been clearly distinguishable from natural patterns of stones as a created feature, a perceivable monument and a significant presence

in the seasonally grazed rough ground through which people and their herds and flocks passed. There is evidence in the way it was incorporated into later medieval and early post-medieval boundary systems that it served as a local landmark, at the very least, and it seems likely that successive generations of local inhabitants and visitors brought to the site a train of explanatory or celebratory interpretations, earlier sequences of stories, some of which may have informed the more local early modern ones.

The circle continues to be a significant and symbolic site for the neo-Celtic Cornish, having played a seminal role in the history of the modern Gorsedd. Pagans and others sensitive to earth mysteries also make active and respectful use of it and it features in most local guides, both general and specifically archaeological. Consequently, it, with the many other famous prehistoric sites in the final peninsula, contributes to many people's sense of the distinctiveness of the historic landscape of West Penwith.

With the foregoing in mind, it will always be a privilege to be enabled to undertake new archaeological work on and around Boscawen-Un (Fig 1). Cornwall Archaeological Unit (CAU) was commissioned by Penwith District Council in 1998 to prepare an archaeological and historical assessment of the rough ground part of Boscawen-Un farm in advance of an application for Countryside Stewardship (a late twentieth-century agri-environment scheme). This provided an opportunity to look more closely at the circle and its landscape (Herring 2000). Re-examination led to a new interpretation of the site's development, a new story that extends some inherited ones and revises or rejects others.

The stone circle was carefully planned and all stones were drawn and photographed to provide a baseline record against which any future changes could be compared to guide any necessary future repair. A full eclipse of the sun on 11 August 1999 was considered likely to attract large numbers of visitors to the circle, bringing attendant risks of disturbance. (As it happened, no damage was done to either Boscawen-Un or any other Cornish prehistoric monument during the gatherings of thousands of people to witness the eclipse.)

A 1:2500 sketch survey mapped, described and assessed all archaeological remains in the 17 ha (42 acre) study area in the north-west corner of Boscawen-Un tenement.

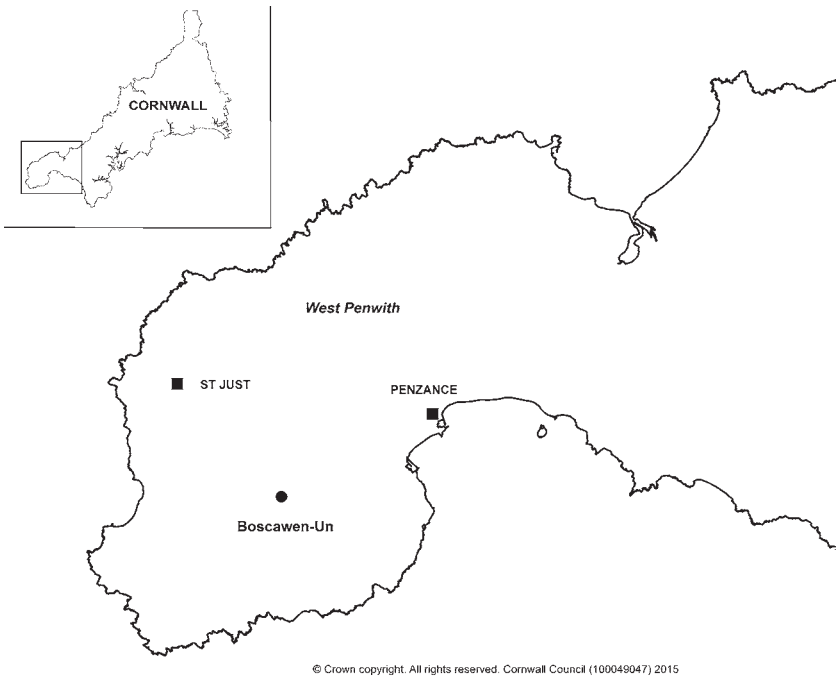

Fig 1 Boscawen-Un stone circle: location.

Location and topography

The study area is mostly on south- and west-facing slopes, the local topography determined partly by the stream which runs to the west of the site, rising 1.5km to the north west at St Euny's Well, and partly by a descending series of rounded ridges falling southwards from Caer Bran (195m) to Goldherring (160m) and then to Creeg Tol (135m), the most significant outcrop of granite in the study area, on the shoulder of the main valley.

The Creeg Tol outcrop (SW 4106 2757) looks most substantial and dramatic, being skylined, when viewed from the south-east, from the direction of the stone circle, and it seems likely that the circle was positioned partly in relation to the tor, so that those gathered there appreciated this view (below). The tor is only 3.5m high and its stones are mainly horizontal slabs. One has been partly split with plug-and-feathers, using the wider gauge hand drills of the first half of the nineteenth century, but the other top stones have small rock basins or other forms of weathering making it unlikely that any significant blocks of granite have been removed.

The Creeg Tol tor is, therefore, essentially unchanged from prehistoric times. Its name contains the Cornish *cruc*, 'hillock or barrow', and *toll*, 'hole, or hollow' (Padel 1985, 73, 219). There is no sign of a prehistoric barrow or cairn, despite the

Fig 2 Boscawen-Un from the west, showing the stone circle in its concentric Victorian enclosure, now on the boundary between improved farmland and unimproved crofts. The post-medieval lane leads to the crofts from Boscawen-Un settlement. The tors of Creeg Tol are visible, centre left. (Cornwall and Scilly Historic Environment Record, 5 May 1993; F40-112.)

suggestion otherwise of J O Halliwell (1861, 189), and it is unlikely that any would have been wholly removed since 1861 in this marginal, agriculturally unimproved area. The tor does, however, sit on a small hill, a hillock, the more likely source of its first name. Again, there is no obvious 'hole' in the rocks at Creeg Tol, but there are several rock basins or hollows in the tor itself. J T Blight noted these 'cavities', 'two of them resembling the impressions of human feet, but much larger; they are called "the Giant's footsteps" ' (Blight 1861, 73–4). Halliwell attributed them to a giant wearing heavy boots stopping here, 'perhaps for the sake of a good position for quoiting' (1861, 189), and John Michell wrote more recently that 'the farmer points out a large footprint, said to have been made by a giant who stopped there on his way up country from the Scilly Isles' (1974, 35). These basins are on the upper face of the topmost stone in the south-west part of the tor. Each footprint comprises two conjoined basins, up to 0.15m deep.

Blackthorn and furze stands make parts of the hillside crofts inaccessible, even in early spring, the best time of the year for archaeological fieldwork. Much of the ground, however, is relatively clear at this time and low banks and heaps of stone can then be detected in areas that in summer are lost beneath 1.5m high bracken, when visitors are increasingly confined to the permissive pathway to the stone circle established from an informal lay-by on the A30.

Moorstones, large surface boulders of granite, are scattered across moorland Boscawen-Un (Fig 2). There are no settlements or buildings here, and grazing, for millennia the primary use of the rough ground here and elsewhere in West Penwith (Dudley 2011, chs 3, 8; Kirkham 2011), is now either minimal or non-existent. Apart from visitors walking to the stone circle from either the A30 (via Creeg Tol) or Boscawen-Un farmstead, and occasional horse riders, there is no modern human activity.

Previous antiquarian and archaeological work

Boscawen-Un circle was first described in writing by William Camden, in 1586: 'in a place which they call Biscawe Woune, are to be seen nineteen stones arranged in a circle, every one about twelve feet from another, and in the centre rises one much larger than all the rest' (translation from the Latin by Tregelles 1906, 381). The site was no doubt already locally well-known. Camden, producing works on the antiquities of the whole of Britain (and attributing this circle to either the later Roman period or that of Athelstan), would not have found the site himself, and may never have even seen it.

Eighteenth- and nineteenth-century travellers often visited the circle, or at least referred to it. Until the early nineteenth century, the main road to Land's End from Penzance ran through St Buryan, not along the line of the present A30, and many travellers missed Boscawen-Un but did visit the Merry Maidens. As a result, the more mysterious Boscawen-Un developed something of a reputation as a grand site. It may be supposed that Daniel Defoe, writing in 1724, had probably not seen the 'circle of great stones' when he wrote that they were 'not unlike those at Stonehenge' (Chope 1918, 165). In 1794–6 W G Maton was disappointed with the Merry Maidens, 'very inferior in extent and grandeur to what we had been taught to expect', and only later in his journey was he informed 'that the stones which we ought to have seen were at Boscawen-Un' (*ibid*, 258).

Thomas Martyn plotted the circle, with its centre stone, on his 1748 map of Cornwall, and William Stukeley, in 1749, thought the centre stone, which he called *The Kibla* (the term for the direction of Mecca, towards which Muslims face when praying; presumably intended by Stukeley to mean the focus of veneration), had been disturbed by treasure-hunters, causing it to lean (cited in Borlase 1754, 193, and Tregelles 1894). Dr William Borlase prepared the first detailed drawing of the circle (1754, plate XV) (Fig 3). He showed the centre stone with an exaggerated lean (approximately 60° from vertical), 19 stones in the circle, with one fallen (stone 12 in the numbering adopted here; Fig 5), and with two other stones in the north-east sector (between stones 7 and 8) which he thought were 'part of a Cromlêh' (Borlase 1754, 209). He also argued that the 'Cromlêh' was secondary to the central stone as it would otherwise have been placed in the circle's centre (*ibid*, 223).

The relative obscurity of the Boscawen-Un circle in the early modern period is indicated by its omission from the Ordnance Survey 1-inch map of 1813, which did show the other West Penwith stone circles: the Merry Maidens (as Dawns Men), Tregeseal (as Ancient Circles) and Boskednan (as Nine Maidens). F W L Stockdale in 1824, however,

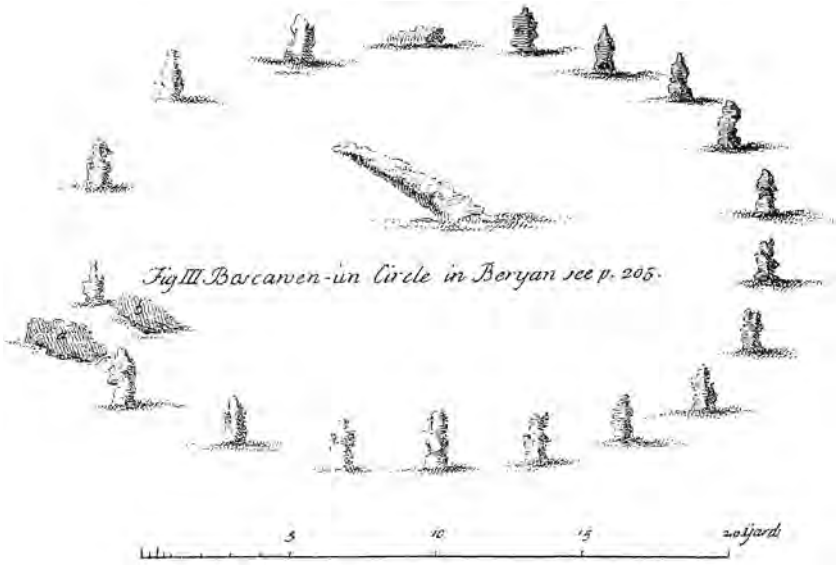

Fig 3 Engraving of the stone circle by William Borlase (1769, plate XIV, fig III); previously reproduced in Borlase (1754, plate XIII, fig. III). This was based on an earlier field drawing (Devon Record Office, Z19/16/1) which also showed the post-medieval hedge bisecting the circle. Borlase's 'cromlêh' is shown as recumbent stones a and b.

thought Boscawen-Un 'the most interesting Druidical remains in this neighbourhood' (1824, 80). William Cotton (1827) drew the circle in 1826, showing two more stones fallen. Unfortunately Cotton's plan is inaccurate and we cannot be certain which stones were then down. John Barnatt (1982, 160–1) considered from inspection of other drawings and the positions of the stones today that they were stones 5 and 9 (my numbers).

The 1840 St Buryan tithe map labelled the circle 'Dawns Men' and showed a croft boundary running through its centre. Analysis of the development of the pattern of crofts suggests that this boundary had been in place for some considerable time (below, Historic Boscawen-Un), and both Borlase and Cotton edited it out of their views, presumably for the sake of clarity. The boundary is shown on a sketch which formed the basis of Borlase's published engraving (Devon Record Office, Z19/16/1) and Cotton makes it clear that he found the hedge awkward when surveying the site but shows it on his plan (1827, 24). By the mid-nineteenth century commentators were concerned that the circle 'had been abandoned to the tender care of the farmer' (*Murray's* 1859, 203). J T Blight showed the boundary in a drawing of 1861 (Blight 1861, 71; Fig 4) shortly before he was himself probably instrumental in organising the removal of this 'disfigurement' and the re-erection of the three fallen stones (Blight 1865, 122–3). This work was attributed to the then owner, Miss Elizabeth Carne of Penzance, so that it could 'set an excellent example to Cornish landholders to preserve those antiquities for which the county is so justly celebrated, but which are in too many instances liable to destruction by thoughtless and ignorant tenants'. Blight was also involved, with W C Borlase, in the cutting of a trench in the circle in the autumn of 1864, 'but nothing of interest appears to have been discovered' (*ibid*, 123). Borlase notes more baldly that 'nothing was discovered' (1872, 130). Two Bronze Age barrows to the south east and south west were opened at the same time (*ibid*, 218–23; findings summarised below). However, when a group attending the thirty-third annual meeting of the British Archaeological Association visited the site in August 1876 they were told that 'About a dozen years since… another archaeological body, the Penzance Natural History and Antiquarian Society had a trench dug across the circle, but nothing was found. In reply to Mr J Jope Rogers, Mr Borlase said they had dug down to the pillar, and found that it was carefully placed in its leaning position' (Anon 1877, 199).

Boscawen-Un was, therefore, subjected to typical mid-Victorian antiquarian activities. These included berating tenant farmers for not caring for monuments (even though the hedge had been in place for at least a century, the fallen stones had been down since at least 1827, and the circle had not been damaged despite being at the busiest corner

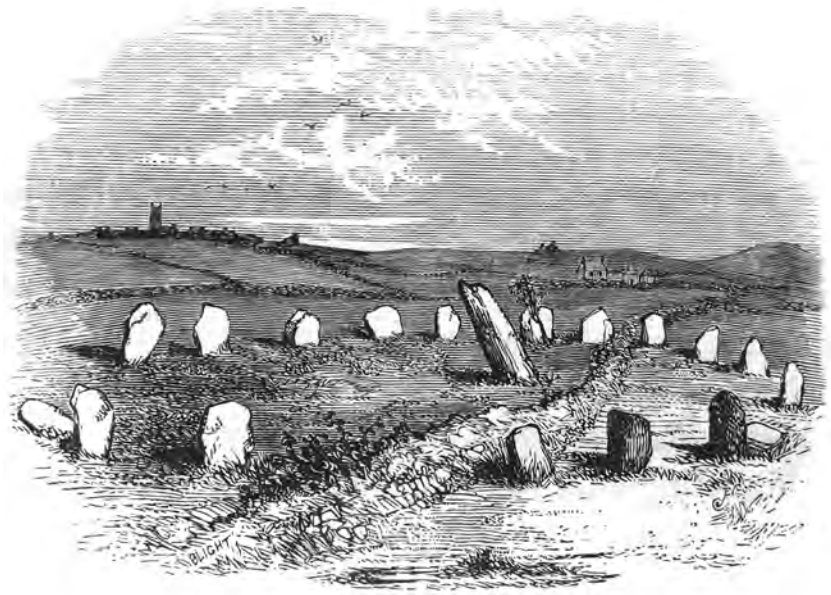

Fig 4 Engraving of the stone circle by J T Blight (1861, 72) showing the bisecting hedge. St Buryan church is skylined. It is possible that it was the stone shown immediately to the right of the hedge at the far side of the circle that was lost when the hedge was removed very shortly after this image was created.

of the crofts, where the lane from Boscawen-Un and Chyangwens opened into them); the relatively cavalier cutting of antiquarian trenches (leaving no records of positions, depths or other details); and equally poorly recorded restoration through the re-erection of fallen stones. In addition, Miss Carne was thanked for enclosing the Boscawen-Un circle 'within a strong fence' (Blight 1865, 190), the stone-faced bank or ha-ha that still surrounds it. This effectively excluded the grazing livestock which had previously kept under control the scrub vegetation that has subsequently been a recurrent management problem in and around the circle.

Lukis in 1885 and Tregelles in 1894 produced detailed descriptions of the circle, the former being the first to notice that one of the stones was a block of quartz (Lukis and Borlase 1885, 1).

In the 1960s Alexander Thom re-surveyed the site and prepared a model for its careful original design based on the use of a standard measure (the 'megalithic yard'), with applied geometry to establish the several centres of the arcs which he was convinced made up what he classified as a 'regularly flattened' circle (Thom 1967). Shortly after this John Michell revived ideas first raised at Boscawen-Un by A L Lewis in 1906 and Sir Norman Lockyer in 1909 (fig 59), that the site was the focus of several deliberately created alignments of megalithic sites, ley lines to Michell, most of which ran through the 'cromlêh' in the north-east quadrant (Michell 1974). The existence of ley lines was widely debated in the 1970s and 1980s, but they have not been generally accepted (for example, Barnatt 1982, 111–18). The idea that irregular or non-circular stone circles were carefully laid out using complex geometries, as Thom suggested, has also been generally rejected in recent years (for example, Barnatt and Herring 1986; Barnatt 1989).

John Barnatt has undertaken detailed work on Britain's stone circles (1989) and his 1982 survey and description formed the most comprehensive record of Boscawen-Un before that reported here. Recently an error has emerged in general accounts of the site; that the central stone is of quartz (for example, Burl 1976, 123; Pearce 1981, 75; Todd 1987, 100).

Ian Cooke in 1986 noticed two axe-heads carved in relief on the lower northern part of the north-east face of the centre stone. He noticed that the axe-heads were most clearly visible at midsummer sunrise, being then illuminated by the newly risen solstice sun. Cooke suggested that the axes, like the 'great phallic centre stone . . . are obvious masculine symbols [while] the feminine powers of the ring are highlighted by the great block of quartz

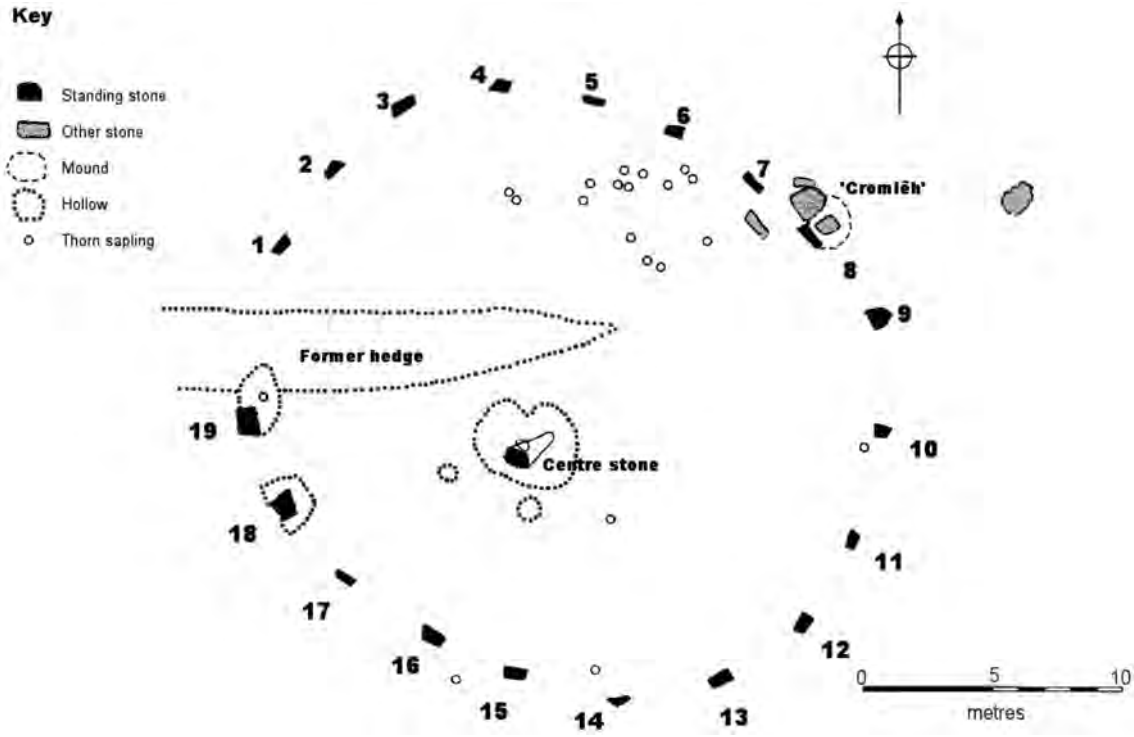

Fig 5 Simplified version of the plan prepared in 1999 by CAU showing features which would or might affect future management. (© Cornwall Archaeological Unit.)

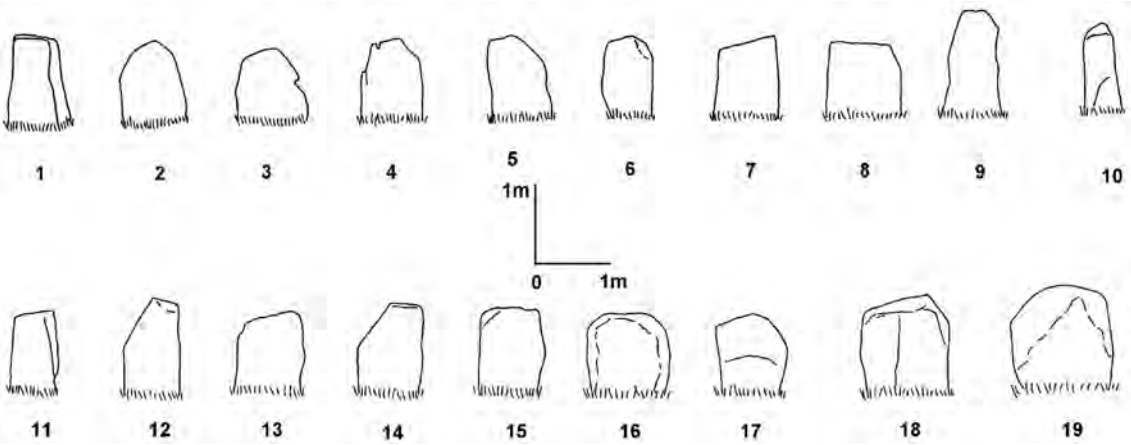

Fig 6 Internal elevations of the circle's stones drawn in 1999. (© Cornwall Archaeological Unit.)

placed on the south-west side of the Circle – the direction in which the full moon will set during mid-summer' (Cooke 1987, 128).

Cooke's discovery of the carved axe-heads was not properly registered by the wider archaeological community until the 1999 recording work reported on here was undertaken. Although the finder himself promptly published a description (*ibid*), the carvings had not been incorporated into the Historic Environment Record nor drawn into any

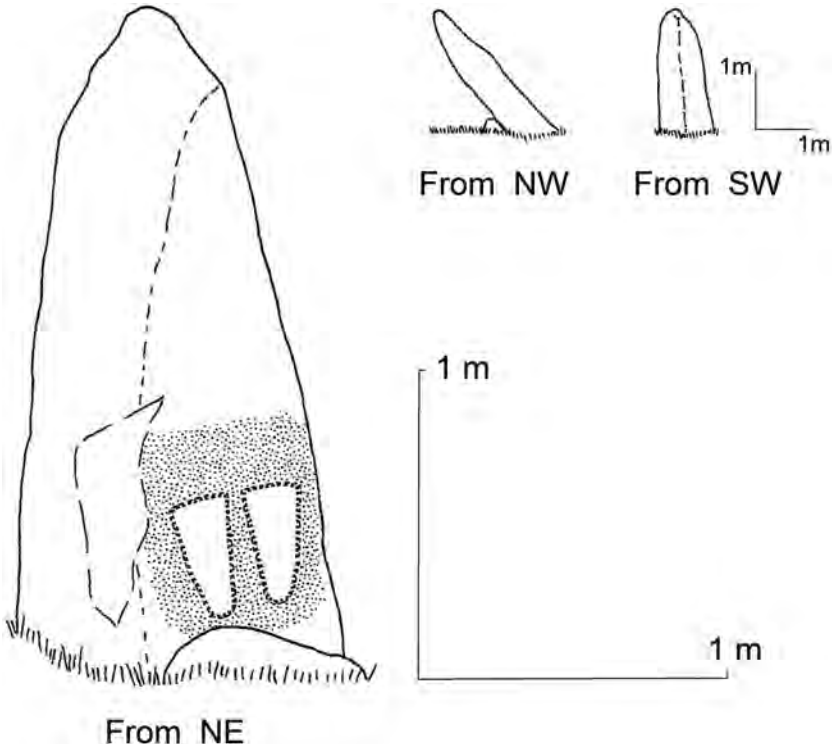

Fig 7 Central stone, elevations drawn in 1999; the eastern enlarged to show the two axe carvings. Stippling indicates the area that was reduced (pecked) to leave the axes in low relief. The drawing is in the same plane as the decorated face. (© Cornwall Archaeological Unit.)

debates about Neolithic or prehistoric Cornwall and Britain.

The stone circle was planned by the author and Bryn Tapper at 1:100, by plane-table survey using alidade and tape, in the summer of 1999 (Fig 5). Bases and tops of all stones were plotted, so capturing any lean. Internal faces of each stone were drawn at 1:50 by offsets from a vertical line (Fig 6). The north-east side of the central stone was drawn at 1:10 to record the shape and position of the two carved axe-heads (Fig 7). All stones were photographed showing their inner face and left side (when viewed from within the circle). These pictures recorded lichen growth, lean (if any), and erosion immediately around the stone. To guide management all modern pathways, eroded areas, including two small modern fire pits, and thorn bushes were also plotted, as were earlier, slighter depressions. These included a shallow pit around the central stone probably caused by cattle rubbing against it, presumably before grazing animals were excluded by the encircling Victorian ha-ha, and a very shallow trench in the north-west sector, created by removal of the post-medieval croft hedge (Fig 5).

The stone circle complex

The new interpretations presented here are built, in part, on the systematic recording and analysis of the site's architecture and components undertaken in 1999. Measurements are based on that survey; stone-numbering runs clockwise from the north-west gap (Fig 5).

The non-circular, or oval, arrangement of 19 stones has a longest internal diameter of 25m (on the axis 122.5° from north) and shortest of 21.9m, but the eccentrically positioned leaning central stone affects visual perception of the circle, breaking it into two halves, each of which seems like a good semi-circle, thus allowing the whole to seem like a reasonable circle. In fact, Boscawen-Un is the least circular of all Cornwall's larger circles; only the tiny ring at Duloe is more irregular (Barnatt 1982).

The individual stones are described below (Table 2). All are granite except number 18, which is quartz, with numerous crystals visible in its cavities. Stones 5, 9 and 12 appear to be the ones re-erected in the 1860s (Barnatt 1982, 160–1) and their heights are probably now approximately

0.2m higher than they originally were. They also appear, from consideration of the way the circle was otherwise carefully designed, to have been poorly repositioned. Stone 5 is probably too close to stone 6 and stones 9 and 12 are probably a little outside the original line. It is possible, judging from the way that their flattest sides do not face into the centre as those of all the other stones do, that stones 10 and 11 have also been re-erected, probably before Dr Borlase's time. If so, this might represent very early site restoration work and an early local sensitivity to the importance of these ancient stones and the stories they stimulated.

Spacing between stones

Stone spacing appears fairly even when approaching and moving around the circle, but measurement (between nearest parts of present bases) indicates significant differences, from 2.1m (between stones 7 and 8) to 3.75m (10 and 11) (Fig 8; Table 1). There is, however, some patterning, which places spacings of similar widths together, emphasising the apparent regularity of the circle. Stones are generally closer together in the north-western half of the circle, with the obvious exception of the 5.9m gap between stones 19 and 1. Such a gap

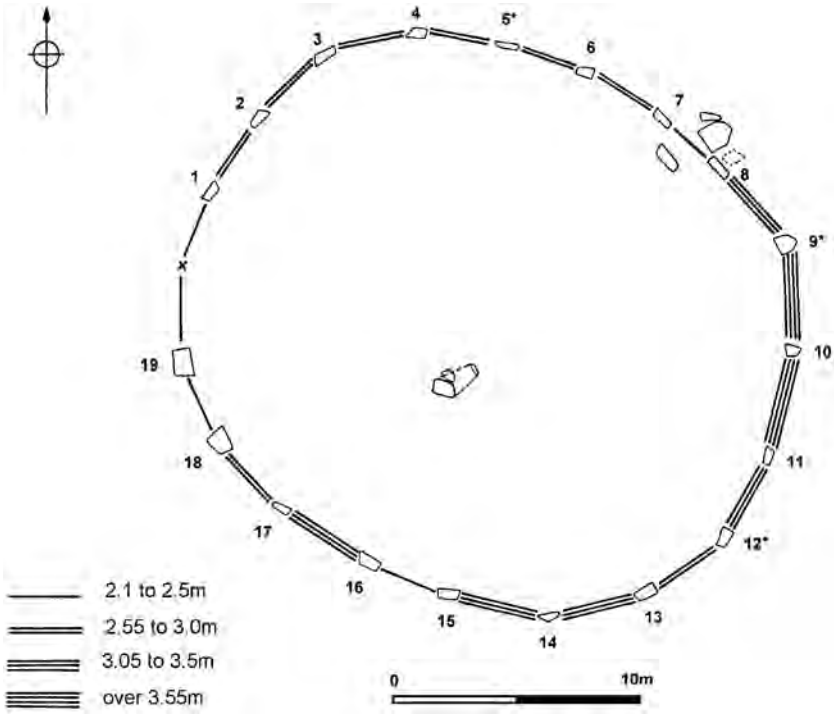

Fig 8 Boscawen-Un stone circle showing ranges of distances between stones. Spacing is generally wider in the eastern sector. (© Cornwall Archaeological Unit.)

Table 1 Spacing between stones

Stone numbers	*Distance between stones (m)*	*Stone numbers*	*Distance between stones (m)*	*Stone numbers*	*Distance between stones (m)*
1–2	2.7	7–8	2.1	13–14	3.1
2–3	2.6	8–9	3.05	14–15	3.3
3–4	2.9	9–10	3.6	15–16	2.5
4–5	2.8	10–11	3.75	16–17	3.2
5–6	2.55	11–12	3.1	17–18	2.7
6–7	2.9	12–13	3.0	18–19	2.3
				19–1	5.9

strongly suggests the removal of a stone rather than provision of an entrance. If such a stone had been of a typical width, roughly 0.8m, then spaces between it and stones 1 and 19 would have been about 2.55m, normal for the north-west sector. The narrowest gap, between stones 7 and 8, is 0.2m less than any other and may be more significant, being at the site of the so-called 'cromlêh' (below). It could help support a suggestion, expanded on below, that these two stones were elements of the 'cromlêh' and not originally erected as part of the circle.

Assessment of patterning in stone shape, size and weight

The stones in Boscawen-Un circle are less varied than in some other Cornish circles (for example, Stannon, Louden, Fernacre and Boskednan), but not as regular as the Merry Maidens and Leaze. The following analysis shows variety in height, width, weight, shape and even geology. Patterning within this variety is patchy and cannot be used with certainty to demonstrate that it was an important element in the circle's design.

Shape

The tops of the stones can be grouped into four main types of shape: rounded (ten examples), flat-topped (three), angled-topped (two), and irregular (four). Five consecutive stones in the south-west sector are rounded (nos 15 to 19) but the other five rounded stones are scattered apparently randomly around the rest of the circle (Figs 6 and 9). The two angled-topped stones may, however, be significantly positioned: they stand next to each other in the north-east part of the ring and their highest sides are also adjacent, creating symmetry in the pair. The two may also have been considered significant by prehistoric people as it is between them that Borlase's 'cromlêh' structure lies (below).

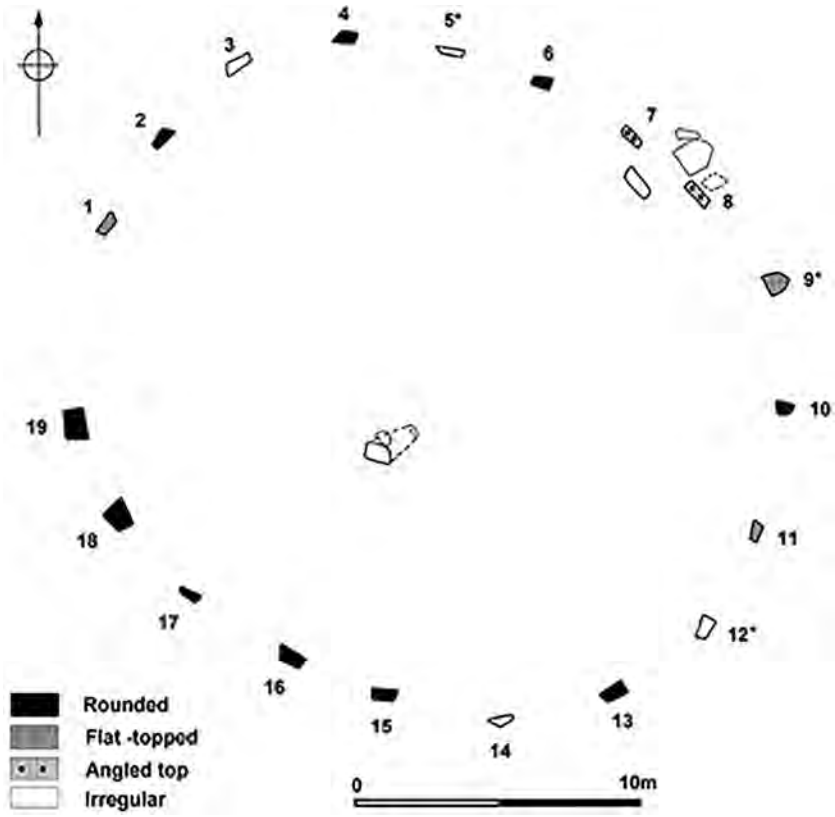

Fig 9 Stone circle showing shapes of tops of stones. Stones 7 and 8 are the only ones with angled tops. (© Cornwall Archaeological Unit.)

Table 2 The stones in Boscawen-Un stone circle: descriptions and notes

Stone no.	*Height (m)*	*Width (m)*	*Thickness (m)*	*Volume (m^3)*	*Shape of top*	*Height/width ratio*	*Laminations*	*Bulbous rear*	*Comments*
1	1.2	0.9	0.4	0.43	F	1.33	No	No	Leans in approximately 8°
2	1.05	0.9	0.4	0.38	R	1.16	No	Yes	Gently pointed top
3	0.9	1.1	0.4	0.40	I	0.81	Yes	Yes	Top and east side broken in antiquity?
4	1.05	0.9	0.4	0.38	R	1.16	Yes	Yes	Leans out approximately 5°
5*	1.15	0.9	0.25	0.26	I	1.27	No	No	Leans out approximately 5°
6	1.05	0.6	0.4	0.25	R	1.75	No	Yes	
7	1.05	0.9	0.25	0.24	A	1.16	No	No	Lost its top and a flake at top of rear?
8	1.0	1.0	0.35	0.35	A	1.0	No	No	Leans in approximately 4°
9*	1.3	0.8	0.85	0.88	F	1.62	No	Yes	Flake missing from top left?
10	1.15	0.5	0.6	0.35	R	2.3	Yes	No	Re-erected? Should N side (left from inside circle) have been the inner face?
11	1.1	0.7	0.3	0.23	F	1.57	Yes	No	Leans in approximately 4°. Re-erected? Possibly back to front as outer face is highest and flattest.
12*	1.3	0.8	0.4	0.42	I	1.62	No	Yes	Top possibly broken. Shown fallen by Borlase in 1754 (Plate XV)
13	1.05	0.85	0.45	0.40	R	1.23	No	Yes	Leans in approximately 5°
14	1.2	0.8	0.25	0.24	I	1.5	No	No	Top possibly broken
15	1.1	0.85	0.4	0.37	R	1.29	No	Yes	Leans in approximately 5°
16	1.0	1.0	0.45	0.45	R	1.0	No	Yes	
17	1.0	0.75	0.2	0.15	R	1.33	Yes	No	
18	1.25	1.05	0.8	1.05	R	1.19	Poss.	No	Leans in, approximately 2°. Block-shaped. Quartz. Crystals best on right side. Cracks in front to right. A few flakes have probably already come off.
19	1.35	1.15	0.7	1.09	R	1.17	No	Yes	Leans in approximately 5°. Possibly lost a flake at top

Notes: Stone numbers are my numbers (see Fig 5). * = those stones probably re-erected in the 1860s (Barnatt 1982, 161). Volumes above ground, in cubic metres, are derived from multiplying maximum heights, widths and thicknesses. At least another quarter of this figure should be allowed for the stone's volume beneath ground. Shape of top: F = flat, R = rounded, I = irregular, A = angled (all as judged by the author; see Figs 6 and 9). Laminations are deep weathered cracks in the granite. Bulbous rears are recorded to emphasise that internal faces are normally the stones' flattest; none has a bulbous inner face.

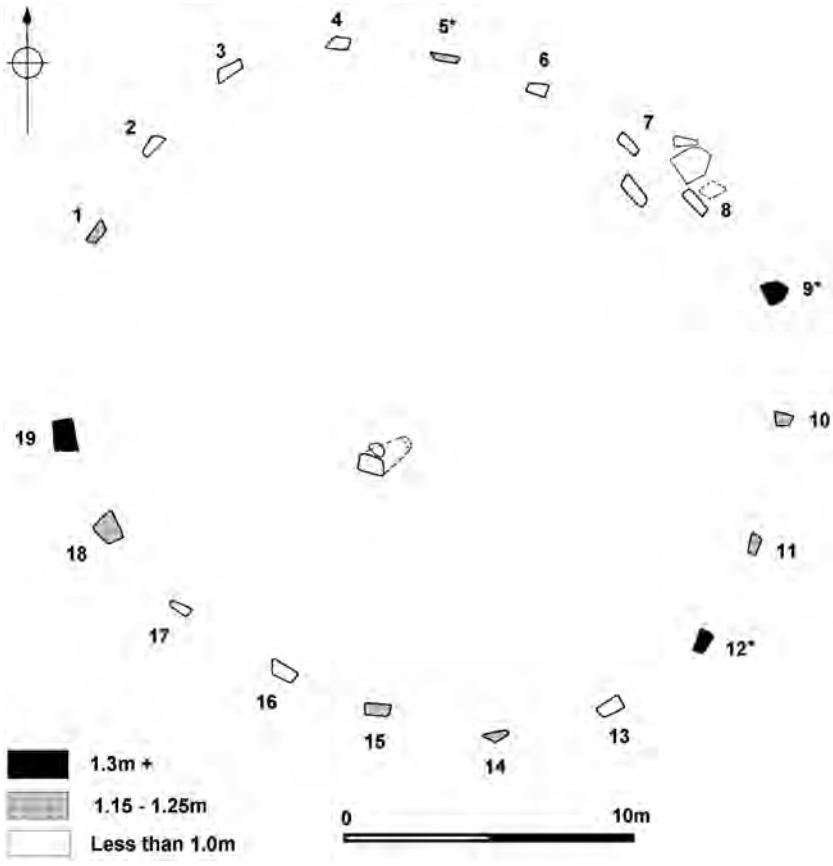

Fig 10 Stone circle plan showing relative heights of stones. Asterisked stones were re-erected in the 1860s. NB. The central stone is also over 1.3m high. (© Cornwall Archaeological Unit.)

By dividing height by width a measure of slenderness can be calculated. In general terms the most slender stones are in the south-east third of the circle, but again this is not a certain pattern.

The shape of the central stone is considered separately, below.

Height

Heights of stones above present ground level range from 0.9m (stone 3) to 1.35m (stone 19), with most (14 of the 19) grouped between 1m and 1.2m (Fig 10). John Barnatt noticed that there was a grading of stone heights, so that the highest tended to be in the western half (1982, 161). This is only broadly the case as the lowest stone is also in this half (stone 3) and there is not a gradual increase in height around the circle. It might also be noted that the stones in the northern half tend to be lower than most others.

Volume

Above-ground volumes range from 0.15 (stone 17) to 1.09 cubic metres (stone 19) (Table 2). It is likely that between a quarter and a third of each stone's volume is below-ground; they were set in the ground so well that only four, or perhaps six, had fallen by the nineteenth century (one removed; three, or five, now re-erected). If granite weighs approximately 2.65 tons per cubic metre then the volume figures are also a rough guide to the effort needed to transport, manipulate and erect the stones. Considerable effort was expended in constructing the Boscawen-Un stone circle: four stones weigh two tons or more and another nine weigh around a ton.

Apart from the centre stone, which is clearly the largest, three stones stand out from the others in terms of volume: stones 18 and 19, standing beside each other in the south-west sector, are the two largest and the third largest (stone 9) is directly

opposite these. Although this last is one of the three re-erected in the nineteenth century and its volume might be slightly exaggerated by being set a little too high, it is still relatively tall and elegant and is about twice the size of the next greatest in terms of volume.

Central stone with axe carvings

> 'A Monument of this kind I take the circle of Boscawen-ûn to be, as having a Middle Pillar erected near the centre of the Circle, probably at the election of some considerable Prince, or at the establishment of some new decree; each Elector, or Legislator, standing by his Pillar in the circumference, as the Prince did by that in the middle.'

Thus did Dr William Borlase, Cornwall's greatest antiquarian, interpret the beautiful slender and pointed central stone that still dominates the circle (Borlase 1754, 204–5); he drew it into his own intricately developed stories inspired by neo-Druidic thinking.

The stone is positioned around 2m south west from the circle's approximate centre and is set at an angle of about 42° from vertical, angled towards the east north east, roughly towards the centre of the circle, and also towards the 'cromlêh' (Figs 7, 11 and 12). A bulbous triangle in plan, the stone's curving north-east face is its widest and also most irregular side. Smoothest is the south-west face, which is also broader than the north west. In 1912 a patch of lichens grew on the very top of the stone, making the stone appear 'appropriately crowned with pale gold' (Folliot-Stokes 1912, 212); unfortunately the lichens have since been lost. It is not certain whether the small rounded stone jammed in at the angle of the pillar on its north-east side has been there very long, or whether it was put there to ensure that the stone did not fall; Cotton drew something like it in 1827, but Lukis and Borlase (1885) did not and early photographs are not clear enough to show it. Note again that Blight and Borlase when trenching beside it in 1864 appear to have been convinced that the stone was set up to lean as it still does (above).

The stone has the elongated tapering shape of a Neolithic ground or polished stone axe-head, its blade end buried in the ground and its pointed hafting end skyward, as if caught in the process of chopping into the earth (Fig 11). A number of Breton menhirs also resemble stone axes, most spectacularly Le Grand Menhir Brisé in Morbihan, which had been carefully dressed to enhance this effect. As a result 'it has the same profile, the same cross-section and even the same tapering butt as the finest axe-heads found in this region of France' (Bradley 1998a, 54–5, fig 10). The tall standing stone in Rudston churchyard in east Yorkshire may also have been shaped like a stone axe-head (Mark Edmonds, pers comm).

As mentioned, carvings of two stone axe-heads in relief have been created by pecking on the lower northern side of the north-east face of the Boscawen-Un centre stone (Figs 7 and 12 and below). If it is significant that these are only lit by the sun at midsummer sunrise (Cooke 1987, 128), and if the carvings are an original element of the standing stone, then they may support the

Fig 11 Central stone from the north-west with 2m scale. (Photograph: Peter Herring.)

Fig 12 Axe-heads carved on the north-east face of the central stone. Outlines temporarily enhanced with chalk. (Photograph: Peter Herring.)

suggestion that the stone was originally set at this angle.

The carved axe-heads are almost exactly the same size as each other (Table 3), are parallel and carved at the same level on the stone: 40mm apart at the top, their bases 200mm from present ground level. They are also exactly the same shape, with gently curving blades at the top, very slightly curving but tapering sides, and semi-circular butts, similar to the early axes found at Carn Brea (Smith 1981, fig 64). The axe-heads so nicely represented in these carvings seem ground or polished rather than flaked.

The ratios of axe-head length to maximum blade width (2.05 for the northern axe-head, 2.0 for the southern) are similar to that of the visible part of the broadest, north-eastern face of the stone itself (2.18m high, 1.08m wide, giving a ratio of 2.01), reinforcing the impression that the stone was itself meant to represent a ground or polished stone axe-head. The similarity of the central or axe stone and the axe-heads carved on it also suggests broad contemporaneity of the menhir and carvings. Such length-breadth ratios are also replicated among the Carn Brea axes (for example, S1 and S4 in Smith 1981, fig 64).

Table 3 Dimensions of the two axe heads carved in relief on the centre stone at Boscawen-Un

Carved axe	*Length (mm)*	*Width at top (blade) (mm)*	*Diameter of rounded base (mm)*
Northern	390	190	90
Southern	400	200	90

If these carvings are accepted as prehistoric they are the only examples of carvings of ground or polished stone axe-heads known in Britain. Several of the Stonehenge sarsens have carvings of axe-heads, incised rather than in relief but, like Boscawen-Un, with their blades uppermost. However, those carvings, and others at Ri Cruin, Nether Largie North and Nether Largie Mid in the Kilmartin valley, Argyll, are all of metal axeheads, most probably bronze flanged axes (Goskar *et al* 2003). Carvings of triangular bronze axe-heads were also recorded on a large sandstone slab found within a barrow at Badbury, Shapwick, Dorset (*ibid*; Grinsell 1959).

The closest parallels for the Boscawen-Un carved stone axe-heads are found in Brittany. Many Neolithic Breton passage graves, chambered tombs and menhirs have engravings of hafted or handled axes (Bender 1986, 81–152), often in close association with other designs, including crooks, U-shapes, pairs of breasts and other motifs (*ibid*; Patton 1993). These carved axes clearly have stone heads, again shown as long triangles. The representation on some stones of unhafted stone axe-heads, usually shown with their blades to the top of the stone, as at Boscawen-Un, 'emphasises that these objects were not just simple work tools',

axe-heads being considered valued objects in themselves (Bradley 1998a, 51).

Patton (1993, 92) records Neolithic carvings of unhafted stone axe-heads at the very impressive passage graves of Gavrinis, Mané-Lud and Grah Niaul in Morbihan and at Barnenez in north Finistère. Boscawen-Un's axe carvings might indicate that it too was an especially significant site among the various ceremonial monuments within west Cornwall. At Gavrinis there are many axe-heads shown blade-up, some with perforations, and often in close-spaced pairs, as at Boscawen-Un, on stones covered with complex swirling decorations, possibly inspired by the entoptic phenomena experienced during states of altered consciousness (Bradley 1998a, 53) and probably associated with ritual activities undertaken away from public view in the long gallery (Bender 1986, 144–7; Bradley 1998a, 53). Such interpretations of the Breton sites as places where select people consumed substances or performed acts that distorted or enhanced their perceptions of themselves and their world may be attractive, but it may not be wise to uncritically translate them across the Channel to Boscawen-Un. If we are interested in developing such stories here in Cornwall, we must search for other independent evidence.

Stone axe-heads will have accrued many layers of meaning from their difficult process of quarrying, manufacture, and transportation, through their high intrinsic value and association with what appears to be elite 'trade', through their dramatic and active chopping mode of use when hafted, and through their important functions in making significant changes in economy and society possible (see Edmonds 1995 for full discussions of each of these aspects). The likelihood that Neolithic Britain was covered not by closed canopy oak and hazel forest, but rather by relatively open ground, a sort of wood pasture (Vera 2000), suggests that the transformation of the inherited world through large-scale clearance of mature trees was probably not, after all, one of the main uses of polished stone axes. Instead, the lopping of branches for timber and fuel, both highly important uses for a developing society, is more likely.

The grinding and polishing of axe-heads was clearly a significant part of their process of manufacture, being a development from simple flaking. Polishing improved the performance of axes and probably made the heads less likely to fracture during use, but the process required considerable skill and judgement. It also seems that more of the stone's surface tended to be polished than was strictly necessary, reinforcing the impression gained from the carvings that the axe-head was itself an object of high intrinsic value (Bradley 1998a, 44). The shaping and polishing of the axe-heads also made them 'an ideal medium for the display of stylistic information' (*ibid*). Petrographic analysis of Neolithic axes either indicates or (if considered more cautiously) suggests that the greenstone used in the manufacture of many was obtained from at least three parts of West Penwith: Mount's Bay, the Kenidjack area near St Just and the St Ives area (Berridge 1994; Edmonds 1995).

If axes really were of considerable symbolic importance then their various meanings can be expected to have been referred to in the ceremonies and rituals of societies using, manufacturing and 'trading' stone axe-heads. Boscawen-Un's centre stone may have been erected for use in axe-related ritual, but whether this included actual dissemination of axes or axe-heads from the site itself, as suggested for some of the early Neolithic monuments of Brittany (Patton 1993, 18), is of course uncertain. Mark Patton considered that the Er Lannic pair of stone circles in the Gulf of Morbihan, perhaps the closest parallel in Brittany to our Cornish stone circles, 'seems . . . to have served as a production and distribution centre for fibrolite axes'; 27 complete fibrolite axe-heads and 47 fragments were found there along with 11 polished axe-heads made from other stone types and 152 fragments (*ibid*, 18, 24).

There is a need for further study of the Cornish axe-heads, building on the petrographic analyses that have been so important in persuading most archaeologists of the remarkably wide distributions of artefacts made from Cornish stone (summarised in Mercer 1986). It should be noted that Peter Berridge (1994) casts some doubt on the now long-established belief that there were several Neolithic axe 'factories' in west Cornwall.

Might any quarry sites have been in especially difficult and dramatic places like those in the Langdale Pikes of the Lake District (Edmonds 2004)? Most of the presumed greenstone sources of west Cornwall are in coastal locations, ringing the granite mass. Did early Neolithic people ease small blocks from the living rock on clifftops as crazily precarious as the crags of Pike O' Stickle in Langdale or Le Pinacle on Jersey (Edmonds 2004;

Patton 1991)? Was the process of procurement as meaningful, important and valuable as any use made of the axes themselves? And was the so-called 'trade' in axe-heads more a transmission across and between territories and communities of the 'meanings' of the places from which the stone was quarried as embodied and embedded in the axe-heads? Patton (1993), Edmonds (1995), Bradley (1998a) and then Edmonds and Bradley together (1993) have provided stimulating discussions of these issues. Patton, for example (1993, 18), notes that the Breton trade in axe-heads does not appear to have worked in a rational economic way in that many were imported into areas where they could more easily have been made locally. It does seem that the making of axe-heads from distinctive materials obtained from special places was often more important than the manufacture of the most efficient tools. However, recent analysis based on Graham Hill's finds from extensive fieldwalking in the Clodgy Moor area in Paul parish suggests that many Cornish greenstone axes were manufactured from greenstone cobbles, rather than material deliberately quarried from outcrops (Jones *et al* 2013).

We also need to review the contexts of stratified and dated finds to tighten chronologies of the quarrying and shaping of axe-heads, and to establish to what extent we can get a sight of the symbolic value of axes through observing whether and how they were deliberately placed within structures, including pits. Many axes in Brittany have been found in hoards and accompanying burials, and their widespread representation in carvings there nicely confirms their significance (Bradley 1998a, 46; Patton 1993, *passim*). Of course, the direct association of representations of polished stone axe-heads with the important ceremonial complex at Boscawen-Un itself appears to confirm their high symbolic value.

The form of the axe-heads represented at Boscawen-Un, both in the carvings and in the centre stone's own shape, suggest an early Neolithic date (that is, fourth or earlier third millennia BC) for the stone, significantly earlier than the later Neolithic – early Bronze Age period to which menhirs and stone circles are normally ascribed (Barnatt 1982; 1989). This might suggest that further research is therefore required on the chronology and function of Cornish menhirs. Are there other early examples that might have been involved in axe-related ritual? In Brittany some menhirs were closely associated with the deliberate deposition of axe-heads; excavations in 1923 at one near Carnac revealed 'a series of stone axe-heads, set in the ground with their blades uppermost' (Bradley 1998a, 51). Do other carvings of axe-heads survive on Cornish menhirs and other prehistoric monuments? And are there other menhirs whose shapes resemble axe-heads?

Dr Borlase's possible cromlech

Three prone stones close together immediately outside the circle and a fourth, 1.4m away but within the circle, may form a single feature (Fig 5). It has been suggested that the stones might be the product of agricultural clearance (Barnatt 1982, 162), but Borlase recorded them before 1752 and other evidence indicates that improvement in the Boscawen-Un crofts took place post-1800 (below). As it is more likely that these stones represent a prehistoric feature they are referred to in this report as the 'cromlêh', after the term used by Borlase.

The central and largest of the stones (1.2m maximum measurable dimension), lying outside the circle immediately north of stone 8, is roughly square and has a rounded upper surface. It is just 0.15m thick on its west side and may be either a fallen upright or, perhaps more likely, a capstone either *in situ* or displaced. A smaller stone to its north has a triangular section and the stone to the south (to the rear of stone 8 of the circle) protrudes from a low, apparently earthy mound, 2m across and about 0.3m high.

The three stones do not sit very comfortably within any known prehistoric monument type, but a cist within a small mound may be the most likely, the southern stone then being seen as part of its structure, the larger central stone a displaced capstone and the northern stone perhaps part of a kerb. Stones 7 and 8 are themselves unusual compared with the other 17 stones of the circle. They are the only ones with angled tops and their highest sides are also the closest together, giving a visual unity to the pair which is reminiscent of the symmetrically angle-topped façade stones at the Neolithic Zennor Quoit. The long axes of stones 7 and 8 also form a line which is slightly counter to the rest of the ring, creating a sort of indented concavity whose 'centre' is not within the circle, but instead to its north east. They could, therefore, have also originally been elements of the cromlêh feature. The function of the fourth stone, that within the circle, remains uncertain.

It is suggested here that the cromlêh feature does not post-date the circle (as Borlase thought: 1754, 223), but rather pre-dates it, while possibly post-dating the centre stone (see below for the architectural logic that supports this interpretation).

Prehistoric landscape design at Boscawen-Un

One of the reasons why people particularly like the Boscawen-Un stone circle is that it fits so snugly into the sheltered south-facing fold in the valley side, the 1860s ha-ha with its fringe of blackthorns baffling the wind and further closing off contact with the modern world. The site seems, however, to have been carefully positioned to function as a focal element in an example of the landscape design that is becoming increasingly apparent when studying Neolithic and Bronze Age monuments in Cornwall (for examples on Bodmin Moor, see Herring 2008).

Features in the wider world beyond were visually drawn into stone circles by the open or 'permeable' nature of the rings (Bradley 1998b, 116–31). Most stone circles in Cornwall were placed to the south of a dominant tor-topped hill. Tilley (1995) has discussed this for Bodmin Moor and in west Cornwall Boskednan, Tregeseal, Crowan and Boscawen-Un circles are south of Carn Galva, Carn Kenidjack, Crowan Beacon and Creeg Tol respectively (*cf* Dudley 2011, figs 27, 32, 78). Tors north of circles not only closed off more distant views in that direction – at Boscawen-Un Creeg Tol blocks views to West Penwith's great northern hills – but would also have had their rocks illuminated and thrown into relief by the sun when viewed from the circle.

The valley-side location of Boscawen-Un closed off long views in the 180° arc to the north of the line between west north west and east south east (Fig 13). Within the south-western arc the higher ground of Leah restricted long western views so that distant views are confined to those between Leah and Creeg Tol to the north west and those in the southern quadrant from west south west to east south east.

The north-west long view is dramatically terminated at a distance of 2.5km by Chapel Carn Brea, a high rounded hill with a large cairn possibly incorporating an entrance grave at its summit and an unusual long cairn attached to its southern tor. This hill fills the space left by the gentle-sided cleft between Leah and Creeg Tol so neatly (Fig 14) that it seems likely that the stone circle was carefully positioned partly to obtain this effect. The Chapel Carn Brea long cairn seems designed to increase the apparent bulk of the southern tor when viewed from west and east, as from Boscawen-Un (Graeme Kirkham, pers comm). It has been observed that long cairns resemble stone axe-heads in plan and profile (Edmonds 1995). If the long cairn is early Neolithic, it may already have been in place when the centre stone was erected, perhaps further emphasising associations with stone axe-head symbolism.

Long views between east south east and west south west take in gently rolling plateau land; the deep valleys to Penberth, St Loy and Lamorna are not immediately visible and Boscawen-Un stone circle is positioned so low on the valley side that there appear to be no views from it to the sea, the sea which virtually surrounds West Penwith. All one sees is land and, apart from Creeg Tol and Chapel Carn Brea, this is relatively featureless land. Closer examination, however, reveals one distant glimpse of the sea to the south south east, beyond the shallow valley that cuts a low notch in Boscawen Cliff (Fig 15).

While looking in that direction one could also see, pale grey against the vegetation, the two massive menhirs now called the Pipers, and, almost on the skyline, the Merry Maidens stone circle. If the Boscawen-Un complex had been set out just a few metres further south, the lie of the land would have closed off views of the sea, the Merry Maidens and the Pipers. Such a tiny splash of sea is visible from Boscawen-Un, and the Pipers and Merry Maidens are so distant and small, that the presence of both might have been shrewdly revealed to visitors or initiates by those who knew during ceremonies. Their cultural and territorial meaning to those gathered at Boscawen-Un might then have been elaborated on through stirring narratives: the distant sea might have illustrated the scale of West Penwith's peninsula, a day's walk to cross; the Pipers and Merry Maidens the gathering place for a community neighbouring that which used Boscawen-Un.

It seems possible, then, that Boscawen-Un's stone and circle were carefully positioned so that people gathered there could look out through the permeable ring of stones to key distant features, both natural (Creeg Tol, Chapel Carn Brea,


Tredinney
Brane
Tregonebris
The Blind Fiddler
Catchall
Higher Drift
Carn Brea
Chapel Carn Brea
Crows-an-wra
Cardinney
Bolankan
Chycandra
Trevorgans Cross
Crellas Farm
Lower Treave
Treave
Trevore
Boscarn
Creeg Tol
Boscawen-un
Higher Leah Farm
Leah
Boscawen-noon
Chyangwens
Trelew
Bojewan's Farm
Hendra
Bunker's Hill
No Man's Land
Boscarn Vean
Rissick
Rospannel
Bosanketh
Pridden
Higher Trevorian
Trevorian
Cattle Grid
Canopus
Toldavas
Trembothick
Bojewans Carn
Trevider Moor
Trevider
Lissadell
St Buryan
Santry
Wind Pump
Tregadjack
Penmenor
Trevorgans
Higher Alsia
Alsia
Lower Alsia
Bosfranken
Pendrea
ST BURYAN CP
Boskennal
Bosliven
Trewoofe
Trewoofe wartha
Moor Croft
Chyoone
Adam's Hill
Down's Barn
Boskenna Cross
Boleigh
The Pipers
Merry Maidens
New Town
Rosemodress
Crean
Westmoor
Tresidder Mills
Tresidder
Sparnon
Bottoms
Penberth Valley
Trethewey
Trendrennen
Treen
Boscean
Penberth
Le Scathe Cove
Gazelle
Cribba Head
Penberth Cove
Treen Cliff
Treryn Dinas
Porth Curno
Percella Point
Treverven House
Burnewhall
Treverven
Tresidder
Boskenna
St Loy's Cove
Paynter's Cove
Boscawen Rose
Tregiffian
Boscawen Point
Coffin Rock
Merthen Point
Merthen Rock
Trevedran Cliff
Porthguarnon
Cornwall North Coast Path

Fig 14 The stone circle from the south-east, photographed by Herbert Hughes in 1931; Chapel Carn Brea fills the skyline between the hills of Leha (left) and Creeg Tol. (© with permission of the Royal Institution of Cornwall (RIC).)

the sea) and cultural (Chapel Carn Brea long cairn, the Merry Maidens and the Pipers, and perhaps also to other now lost sites) (Fig 15). It was also located so that land to the north was *not* visible; this included the important hills of Bartinney, Caer Bran and Sancreed Beacon, and the valleys and land around and beyond them. The impression thus gained is that the circle 'belonged' with the land to its south and south west. Ideas of territoriality should, however, be advanced cautiously as the apparently carefully manipulated intervisibility of Boscawen-Un and the Merry Maidens could be seen to link rather than separate these two similar sites. The relationship or linkage between Boscawen-Un circle and Creeg Tol might also have encouraged people to move from the former to the latter, from which the northern views open up.

To reinforce this last point, attention can be drawn to two Bronze Age 'tumuli', partly excavated by W C Borlase in the autumn of 1864 (Borlase 1872, 218–23). These were located short

Fig 13 (opposite) Visual envelope of Boscawen-Un stone circle (shown as a small open circle), based on field recording in 1999. Shading shows those areas visible from the circle. Note how limited these are and how they include the prehistoric complexes on Chapel Carn Brea (to the north-west) and at the Merry Maidens (south-east). A glimpse of the sea to the east of Boscawen Point would have been had from the circle. (Reproduced from the Ordnance Survey mapping with the permission of the Controller of Her Majesty's Stationery Office. © Crown Copyright. Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Cornwall County Council LA076538, 2000.)

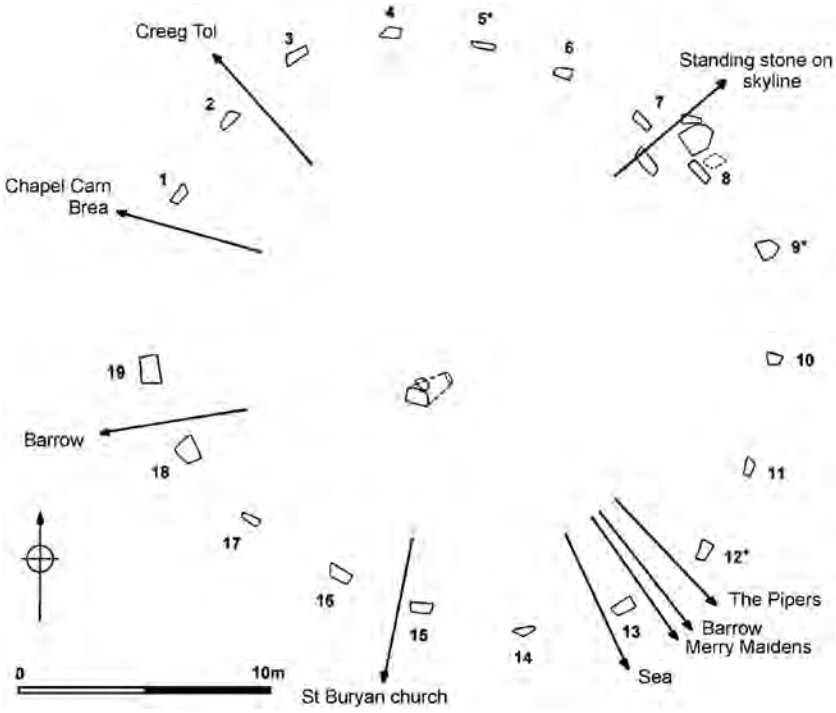

Fig 15 Boscawen-Un circle with directions of principal landscape features from the approximate centre of the circle. (© Cornwall Archaeological Unit.)

distances south east and south west of the circle, clearly respecting and referencing it. Neither cairn survives; that to the south west was removed between 1876 and 1906 (OS 25in: 1 mile map, first and second editions) when two small crofts containing furze and rough pasture were improved and their dividing boundary, which had run beside the cairn, was removed. The south-eastern cairn is still mapped, but appears to have been removed by more recent agricultural improvement. When rituals were taking place at these cairn sites witnesses would probably have looked across the circle towards the north, directly to Creeg Tol from the south-eastern cairn and in the general direction of a prominent standing stone over 300m to the north east of the circle from the south-western cairn (Fig 15). This menhir is now impossible to see from the circle because of vegetation growth, but the top was apparently 'just visible over intervening hedges' in the early twentieth century (Tregelles 1906, 380) and in 1920 (Henderson 1920).

According to its excavator, W C Borlase, the south-eastern tumulus was a barrow 'composed chiefly of earth, and was from six to seven feet high.' 'Ashes were frequently met with' when a broad trench was cut through its centre. Near the middle, in a pit 'hollowed out in the hard clay soil' and located beneath a flat stone, were discovered more ashes, 'minute chips of calcined bones, and one or two nodules of bronze, probably the rivets of a dagger. Two other pits were encountered further on; in one of which, a few more ashes and bones were found' (Borlase 1872, 218–19). J T Blight (1865, 123n) noted that a cist was also discovered on the north side of the barrow. Presumably other pits may survive in the areas unexcavated by Borlase.

On the same day the south-western mound was also explored and shown to be a form of 'ring barrow' defined by a 'circle of stones, on edge' set around a large boulder, called locally the 'Money' Rock, 'twelve feet by eleven, and 2 feet 10 inches thick. This rock is natural, and was never moved' (*ibid*, 219, 222; the information had previously been published by J T Blight (1865, 122–4n)). It seems to have been a particularly large moorstone and we would now see this site as a form of tor or boulder cairn. Into the Money Rock's smooth upper face, which also formed the summit of the barrow, 'has been sunk a cavity . . . 1 foot 6 inches long, by 1 foot 1 inch broad'. As this stone has

been removed it is not possible to establish whether this cavity was deliberately made (as Borlase's text might suggest; Blight (1865, 123n) simply noted that a cavity 'is sunk' in the upper surface) or whether it was a natural rock basin. Whichever, the Money Rock would have been a locally significant presence when the menhir and stone circle were erected around 50m uphill.

Digging in the space between the Money Rock and the cairn's kerb revealed, in the north-east sector, a broken saddle quern. The excavators considered that, 'as it had been broken, it was useless as a mill, and was therefore thrown in among the other stones to form the cairn' (Borlase 1872, 221). Modern archaeologists would tend to ponder whether it might have been deliberately broken, and then deposited here in a more meaningful way: the decommissioning through breakage of what appears to be a significant piece of domestic equipment, perhaps symbolic of the growing and processing of grain crops, and the placing of one part of it within a ritual or ceremonial site (Brück 2006). A little to the quern's south east, shown oriented due east on the site plan, was a stone 2 feet 6 inches long, set on edge, to the north of which were found 'many calcined human bones, fragments of a large urn, and a small one entire, mouth downwards, filled with soil' (Borlase 1872, 219–23). Again, was the larger urn deliberately broken, with selected fragments brought to the cairn site for careful deposition (a known Cornish practice: Jones 2005, 31–2)? And what might the soil within the smaller urn have developed from? Further fragments of pottery were found on the south-west side of the central moorstone (Blight 1865, 124n), suggesting the possibility of multiple acts of deposition at the site.

Should we assume that the fragments of calcined bones found in the other, south-eastern cairn were also human, and that activities at both cairns, of such contrasting architecture – one a simple mound of earth covering several pits and a cist, the other a nicely kerbed cairn of stones surrounding a large moorstone – included disposal of one or more dead people? And what was the relationship of the individuals whose bones were brought to the cairns with the builders and users of the stone circle? Was there direct linkage, or were new relations being forged through the act of association? Do these cairns reflect the coining of prehistoric stories intended to explain or rationalise an inherited monument?

The stone circle complex: discussion

Stone circles are remarkably satisfying architectural constructions. As suggested earlier, the curation of those circles, such as Boscawen-Un, that were not in remote and marginal land through later prehistoric, medieval and post-medieval periods, implies that successive communities responded positively to them, assimilating them into changing ideologies, developing schemes or stories that not only explained their presence, but also introduced new ways of valuing and protecting them (Herring 1999b; Dudley 2011, ch 10); relatively few appear to have suffered the depredations which occurred to many other prehistoric monuments (Kirkham 2012).

This process has continued into the modern period with its overlapping communities and its varied range of responses to stone circles, interpretations of them and associations with them. Modern people have sought evidence for the subtle and meaningful original design of stone circles. Has close examination of the circle at Boscawen-Un helped us establish whether there was any such design?

To summarise, Boscawen-Un is an irregular oval, not a circle, now containing 19 stones and probably 20 originally. One stone is quartz and the remainder are granite. Spacing between stones is variable, but they tend to be closer together in the north-west half of the circle. There is room for easy movement between all stones except stones 7 and 8, where the 'cromlêh' feature significantly impedes it. The longest sides of stones in the ring generally face inwards, as do those of most Cornish stone circles (Barnatt 1982). Stone shape is variable: flat-topped, rounded and angular, and there is little evidence of deliberate grouping of stones of similar shape, although some adjacent pairs in the ring are roughly similar. Stone height, width, thickness and weight are also quite variable (Table 2). The two largest circle stones (one of which is quartz) stand next to each other on the western side.

A centre stone, placed a little to the south west of the circle's centre, is significantly higher than those in the ring. It is shaped like an axe-head and has two ground or polished stone axe-heads of apparently early Neolithic type carved in relief on its north-east face. It is not vertical, but is likely to have been erected angled towards the north-east,

the stone appearing to chop into the earth as an axe would chop into wood. The centre stone leans towards the so-called 'cromlêh', an apparently prehistoric arrangement of large stones set both within and without the circle, between stones 7 and 8, in the north-east sector.

The circle's longest axis is 122.5º from north, or along the contour, the ground falling gently from north east to south west. Views are restricted to the north and east, but are clear to the north west, to Chapel Carn Brea and Creeg Tol. Apparently careful landscape design was focused on these significant hills and on the Merry Maidens, the Pipers and any now lost features around St Buryan churchtown. The circle may have also referenced the sea, distantly visible to the south. The circle is so irregular that it was probably never possible to establish a precise centre from which to determine alignments to either near or distant features. There might, however, have been meaningful alignments from, say, the base of the centre stone, or from some or all of the circle's stones, or through pairs of stones.

The shape of the 'circle' is unlikely to have been deliberately designed: no true circle, oval or ellipse can be drawn through all the unre-erected stones (*cf* Thom 1967). Instead, the intention seems to have been that the ring should appear circular to the eye of a person approaching and moving around it. All those who visited the site during surveying were asked what shape they thought the stones made: all considered it to be a good circle, even though one diameter is more than 3m longer than the other. A 1986 experiment appeared to support an hypothesis that 'complex' or irregular stone circles were created by their builders designing or laying out circles by eye to appear as circular as was required (Barnatt and Herring 1986). This is a useful starting point when considering other aspects of the circle's design: lack of precision in creating its shape was not a problem to builders who otherwise used considerable effort in moving the stones. Variables like spaces between the stones may also have been unimportant and the builders could have positioned stones simply to 'look right' in relation to neighbours. Even the number of stones in the circle may therefore not have been particularly important, although it may also be significant that all of the surviving and recorded West Penwith circles appear to have had between 18 and 23 stones, a fairly tight range (Barnatt 1982, 249).

Interpretation is made more problematic by poor relative and absolute chronologies. Stone circles are 'amongst the most poorly dated of the common prehistoric monument forms' (Barnatt 1989, 155). With no dating evidence found in the excavations undertaken by Blight and Borlase in the early 1860s, we can only place the circle in the Later Neolithic – Early Bronze Age period, a few hundred years either side of 2000 BC (*ibid*, 155–62). Standing stones can overlap with this date range, as can cist graves, which the 'cromlêh' feature between stones 7 and 8 may be (Williams 1988; Barnatt 1982), so there is also no generally accepted sequence for the various parts of the complex. The form of the axes carved on the centre stone may, however, suggest an earlier Neolithic date (fourth or third millennia BC) for this element.

William Borlase in 1754 (223) suggested a relative chronology that had the circle as the first phase, the centre stone second and the 'cromlêh' third. A plausible sequence, suggested here, places the centre stone first, the 'cromlêh' (perhaps including circle stones 7 and 8) second, and the stone circle itself third (Fig 16).

In support of this scheme is not only the apparently early Neolithic date of the axe carvings on the centre stone, but also the essentially oval shape of the ring, the north west to south east long axis of which is perpendicular to the north east to south west line between the centre stone and the 'cromlêh'. Observations of methods adopted in laying out over 100 experimental circles in Sheffield in 1986 (Barnatt and Herring 1986) provide some insights into the possible processes adopted at Boscawen-Un around 4000 years ago. Most of those who volunteered to create these circles (using either buckets or ranging poles instead of stones) first established a diameter by placing two buckets or poles at opposing sides of their proposed circle; they then filled in the two semi-circles on each side, and finally adjusted any perceived irregularities in the arcs. The remarkably similar proportions of numbers of mock circles with particular shapes (ellipses, ovals, eggs, flattened circles, etc.) to those in the population of real stone circles makes us reasonably confident that the latter were laid out using similar methods.

People laying out Boscawen-Un circle by eye so that it 'looked right' would have been much more likely to have perceived circularity in the joining of two similar semi-circular arcs on either side of the north-east to south-west axis if the centre stone

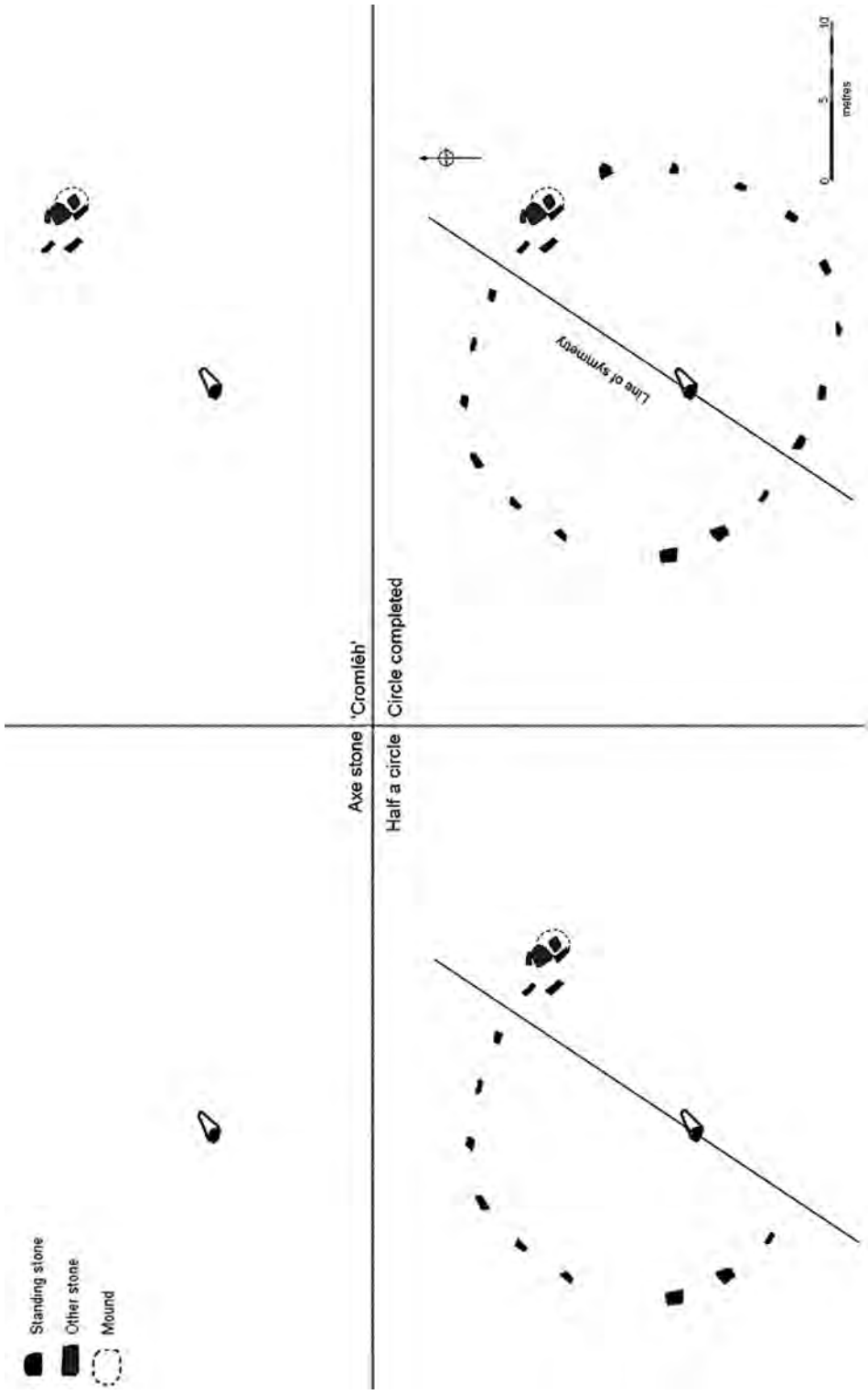

Fig 16 Postulated development of the Boscawen-Un complex. The leaning centre stone with carved axe heads is considered primary. Perhaps over a thousand years later, the 'cromlêh' complex was placed roughly on line with the centre stone's lean, and the circle, or ellipse, was laid out in a third phase, constructed of two semicircles arranged each side of a centre line that ran through the centre stone and more or less on line with the 'cromlêh'. (© Cornwall Archaeological Unit.)

and cromlêh which define this line were already in place. In this scheme the ring would also have taken its diameter on this side, and its line from the two standing stones (7 and 8) that might have been elements of the cromlêh. It should be noted again that visitors today consider the circle to be visually perfect. That it looks perfect, even with the two potentially distorting features of the centre stone and the cromlêh, suggests that these were indeed not secondary to the circle, but were already in place when the stone circle was built.

In terms of landscape design, we can also feel fairly sure that the monument's delicate positioning in the landscape relates it to Creeg Tol and to the Neolithic long cairn on Chapel Carn Brea. There may have been other now-lost Neolithic monuments in the neighbourhood – quoits, for example – so it would be foolish to attempt to fully re-create an early Neolithic landscape incorporating a Neolithic decorated stone at Boscawen-Un. It may, however, be significant that the axe-shaped and axe-decorated stone is located in a lower part of the landscape than Chapel Carn Brea, itself a hill decorated with an axe-shaped long cairn. This would probably have had a denser cover of trees, although it does seem increasingly probable that the Boreal woodlands of Britain were more like wood pasture than dense closed canopy forest. Here there would have been clumps or groves within a fairly open landscape (Vera 2000). At present we cannot extend interpretation further than making the suggestion that people gathered here to perform or witness rituals or ceremonies related to the manufacture, use, dissemination and the variously accrued cultural meanings of stone axe-heads.

The great leaning stone seems then to have become the focus of considerably later gatherings, as indicated by the development of a tight complex of ritual, burial and ceremonial monuments that are likely to belong to the late third or early second millennia BC. Such complexes are the norm in the prehistoric archaeology of Cornwall and Britain. Rarely is a certainly solitary monument found, and most monuments can themselves be shown to have developed in discrete stages (Edmonds 1999; Herring 2011, 164–5).

At Boscawen-Un the sequence seems to have started with the creation of a small and possibly chambered structure (the 'cromlêh'), possibly very late Neolithic or early Bronze Age, if it is cist-related, roughly on the line of the lean of the axe stone. Then, perhaps in the early Bronze Age, the stone circle was laid out, and then the two cairns to the south. Other sites could have then been created in relation to the Boscawen-Un complex, notably the Pipers, the Merry Maidens and the standing stone at the edge of the site's visual envelope to the north east. All of these monuments may have been built by communities establishing themselves in central West Penwith, adoption and adaptation of earlier monuments being, among other things, a means of legitimising themselves and their ways (Bradley 1998b; Edmonds 1999).

Boscawen-Un in later prehistory

Perhaps as early as the second millennium BC, but more probably in the succeeding millennium, the area to the north west of the circle was enclosed within a pattern of small rectilinear fields, which seem to depend from a north east to south west perimeter line, and so run on a shared north west to south east axis (Fig 17, site 4). One of these boundaries runs towards the stone circle but peters out about 80m short of it, presumably either robbed of its stone by later farmers, or lost in a build up of peat or soil. We cannot be certain, then, to what degree the circle complex was respected by those who laid out these fields. A number of small stone clearance heaps within the area of the fields may be associated with them and cultivation does seem to have taken place as there are low lynchets against downhill boundaries. The ground to the north, near Creeg Tol, does not appear to have been enclosed and may have been used for rough grazing by farmers practising a typically Cornish mixed economy, with animals turned out onto commons in the summer months (Herring 2008). No prehistoric settlement remains were found associated with these fields.

A second, more fragmentary field system, recorded north west of Creeg Tol (Fig 17, site 3), has stony banks with occasional granite slabs on edge, which tend to be less straight than in the field system mentioned above. These fields seem to have been cut through by the A30 and any associated settlement may lie to the north, on the more sheltered valley side north of Lower Leha. Short lengths of low bank were also recorded in the croft to the east of Creeg Tol (site 6). These may be fragments of a third prehistoric field system; several clearance cairns were also recorded in this area.

Fig 17 Locations of sites within the area surveyed at Boscawen-Un. Base map developed from 1876 Ordnance Survey 1st edition 25 in: 1 mile map with 1999 CAU sketch survey material added. Site numbers refer to the inventory in Herring 2000.

Historic Boscawen-Un

Early medieval period

It is not certain whether Boscawen-Un was ever associated with the settlement of Boscawen-Ros, less than four kilometres to the south east on the southern coast of St Buryan parish. Their lands are intervisible and lie on ridges on either side of the stream issuing into Lamorna Cove. A pre-Norman farming settlement at Boscawen-Ros may have had summer grazing and fuel grounds on Boscawen Cliff and also on detached upland ground at Boscawen-Un; the second element of the name derives from Cornish *gun*, 'downland' or 'moorland' (Padel 1985, 108–9; 2011, 81–2). Establishment of a secondary farming settlement with its own field system on Boscawen-Un's more marginal land may have been post-Norman but seems to pre-date 1319, when it was first recorded, obliquely, in a grant of a gift of land at nearby Leah which was described as '*Legha iuxta Boskawen*' (Cornwall Record Office SN/3).

The Boscawen place-name is probably pre-Norman, as its first element, *bod*, 'settlement',

appears to have mainly been used in the fifth to eleventh centuries (Padel 1985, 24). Observations of settlement distributions elsewhere in West Penwith suggest that *bos* settlements were often either secondary or marginal in relation to the farming estate settlements with names in *tre* (Herring 1999a). Boscawen's second element derives from *scawen*, 'elder tree' (Padel 1985, 205–6). Any aboriginal elders should perhaps be expected to have grown at Boscawen-Ros rather than at Boscawen-Un.

If the two Boscawens were linked, then the *gun* downlands that provided the Boscawen-Un's second word, via 'noon', may have first been used in common by the several tenants at Boscawen-Ros, and then by tenants at both Boscawen-Un and Boscawen-Ros farming hamlets. The Boscawen-Un field system would have gradually reduced the common, and much of the later history of the study area involves its gradual enclosure in crofts (below).

The prehistoric stone circle would have been a significant presence on the downs through the early medieval period, especially as summer grazing levels kept scrub vegetation at bay. We should imagine those who attended the animals on the downs, or those who cut furze and turf there for domestic fuel, or ferns (bracken) for animal bedding, to have seen the circle as something that was clearly the product of former communities, and a feature that had the potential, via interpretative stories, to link themselves to a remote past. That the circle was not thrown down, but instead apparently left undisturbed, suggests that the early medieval farmers constructed such relationships with the people of the past in a respectful or positive way.

Crossing the Boscawen-Un downlands, and defining their northern edge, is the parish boundary of St Buryan, which probably also bounded the land given by Athelstan to the church of St Buryan in or around AD 943 (Hooke 1994, 24). Its line follows the road, now the A30, linking fording places near Lower Leha and Tregonebris, a road that may therefore reasonably be considered at least early medieval in date.

Later medieval and early post-medieval crofts

The Boscawen-Un downlands, open common in the earlier medieval period, were gradually enclosed in the later medieval and post-medieval periods (sixteenth to eighteenth centuries) by crofts. These were areas of private rough ground bounded, held and used by individual farmers for summer grazing and for cutting furze and turf for domestic fuel (Herring 2000; Dudley 2011, 107–9). A series of large lobe-like enclosures emanate from Boscawen-Un and from the early post-medieval settlement Chyangwens that was cut out of the holdings of Boscawen-Un and Trelew, south east of the circle. The hedge built through the centre of the stone circle was one of this succession of enclosure boundaries, separating two holdings lying north and south of the circle (St Buryan tithe survey, 1840). The hedge appears to be of early post-medieval date, being in place when William Borlase recorded the site in the mid eighteenth century. Later seen as a blemish, this hedge indicates that the circle was regarded as a significant landscape feature, being re-used as an important property boundary.

Several other Cornish stone circles have boundaries which run either through or to them. Hedges which neatly bisected stone circles have been removed or reduced at Duloe and Leaze, but remain at Wendron Nine Maidens. Others run immediately beside circles at Stripple Stones, Goodaver, King Arthur's Downs and Crowan, each clearly using one side of the circle as a boundary marker. A line of bound stones marks the parish boundary between Altarnun and North Hill that runs through the Nine Stones circle while property boundstones run through the Trippet Stones. The boundary between St Cleer and Linkinhorne parishes passes close by the Hurlers and the manor boundary between Blisland and Hamatethy runs close to the pair of circles on King Arthur's Downs. There are, of course, numerous other prehistoric monuments that have been re-used as markers by later, historic period boundaries, notably cairns and barrows (Kirkham 2012, 11) but also quoits, like Chun (on the boundary between Morvah and St Just parishes), but it is striking how many of Cornwall's stone circles have been utilised in this way. Of all the inherited prehistoric monuments it is the stone circles that seem to have been the most visible, recognisable, and then the most often named (Dans Maen, Merry Maidens, Nine Maidens, Nine Stones, Trippet Stones, Stripple Stones, the Hurlers). Successive generations have seen the circles as arenas, dancing and performing places, therefore gathering places, and thus symbols of people either occupying or owning place. Their re-use as territorial or property boundaries can

therefore be used to hint at early interpretations of the circles.

Care was taken at each stage of the post-medieval croft extension at Boscawen-Un not to deprive commoners of access to the remaining downland; a new lane to the downs was established which opened immediately east of the stone circle. A series of narrow, stone and earth-hedged post-medieval enclosures in the western valley bottom were private meadows and moors that eventually denied common access to the stream. In consequence an elliptical lidden (pond) was dug a short way uphill from the circle to provide drinking water to livestock grazing on the rough ground (Fig 17). Croft and meadow boundaries, built from materials close to hand, are a mix of turf banks and Cornish hedges (stone-faced earth walls). An alluvial tin streamworks in the western valley bottom is earlier than the meadows whose boundaries cross its cutting. It could be the works recorded in Leha moor in 1504 (Buckley 2009, 58).

Considering its relatively low-lying position, off the more marginal high downs, the Boscawen-Un stone circle survives remarkably well. To some extent this was due to the non-intensive medieval and modern land use, but may also reflect respectful interactions between medieval and later people and a monument inherited from earlier communities.

The stone circle seems to have even been carefully maintained and occasionally repaired, with stones 10 and 11 apparently having been re-erected before Dr Borlase recorded the circle in the 1750s. The two cairns south of the circle were also respected. Each had a croft boundary run immediately to one side, indicating that early post-medieval Chyangwens farmers saw the cairns, but left them largely undisturbed, the boundaries passing each cairn tangentially. The fact that the cairns were not robbed for stone to build the boundaries also suggests a continuing regard for or superstitious awe of them. The western cairn's central stone was also given a name, the Money Rock, indicating that stories were also developed for these features.

Nineteenth and twentieth centuries

Richer documentation in this period allows us to introduce named people. In 1840 a pair of farmers, Thomas Roberts and Matthew Carthew, owned and occupied the northern part of 'Boscawen Woone', their roughly equal-sized holdings were intermixed and so probably developed from the original shared common. The crofts north of the stone circle were leased and occupied then by Richard Nicholas while the 'Ankervis' crofts to the south were also leased by Richard Nicholas, but sublet to Edward Hosking (St Buryan tithe map and apportionment schedule).

Land use descriptions in the tithe apportionment schedule indicate that most of the study area was used as crofts in 1840 (Fig 18). Two of the valley-bottom meadows were 'arable' (that is, cultivable) and the other two extant by 1840 were 'furze' (gorse) and 'morass'. Both had economic value, the furze as fuel and as horse fodder, and the morass as a source of rushes and withies and as a place for trapping or shooting wildfowl (Herring 2007; Dudley 2011).

The later nineteenth century saw minor additions to crofts and valley-bottom meadows and moors and attempts were made to agriculturally improve the northern crofts; many boulders were split and removed and mounds of earth and stones created, but the efforts appear to have been abandoned unfinished. Stone-splitting for gateposts and other items took place on and around Creeg Tol from before the nineteenth century. Some moorstones were split with the pre-1800 wedge-and-groove method, but most were split using plugs and feathers. A small quarry, identified by the survey as a rab pit, is shown on the northern edge of the study area on the 1840 tithe map (Figs 17 and 18), alongside what is now the A30, and fieldwork also identified a more substantial quarry cut into the mid-slopes of Lidden Croft, probably dating to some point in the nineteenth century (Fig 17).

The stones of Boscawen-Un circle, just 50m south of this quarry, must have been considered vulnerable to being robbed and split. That they survived may have been due to various early conservationist forces. The site had long been on the tourist trail. Stockdale in 1824 suggested that 'The most interesting Druidical remains in this neighbourhood, are a pile of stones, between St Burian's and Sancreed, consisting of nineteen in number, set upright in a circle twenty-five feet diameter, one large stone being in the centre' (Stockdale 1824, 80–1). It may be supposed that quarrymen working close to Boscawen-Un circle would have been warned off it. Tors were being actively protected from mid-nineteenth century stone-splitters on Bodmin Moor, and

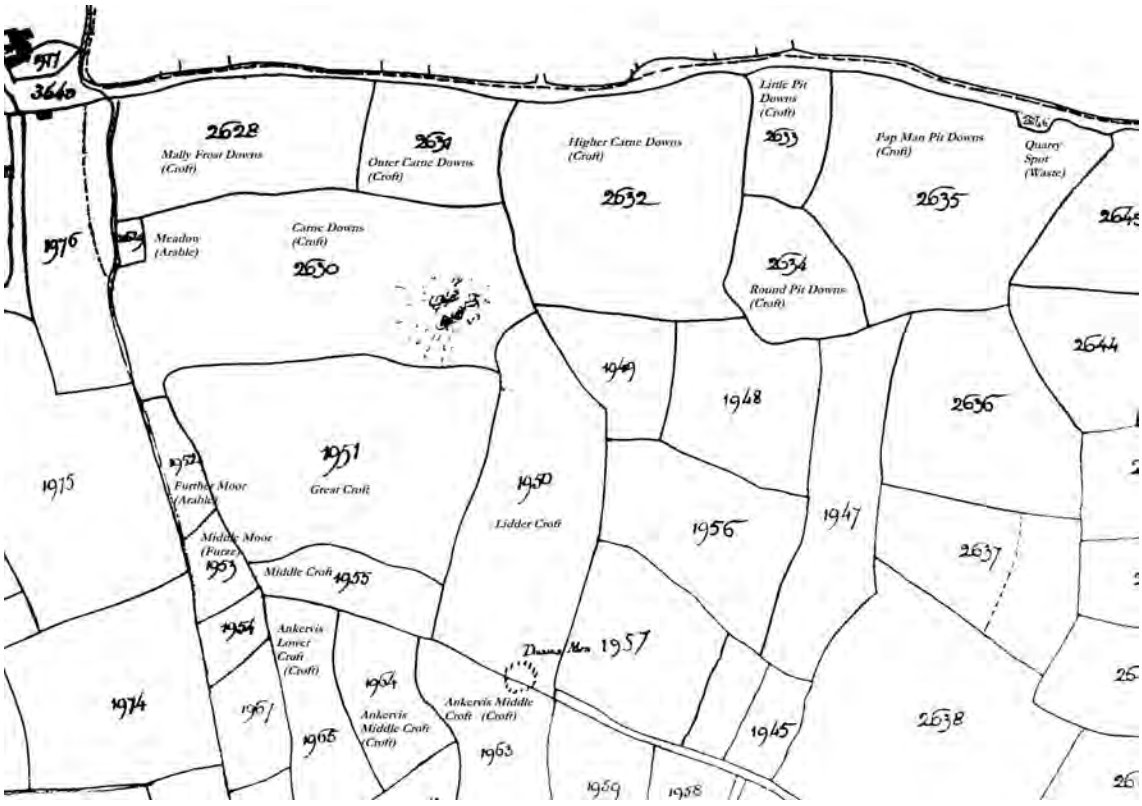

Fig 18 Extract from St Buryan tithe map of 1840 showing field numbers, selected field names, and land use (in brackets). Several crofts did not have their land use specified. (The top of the map is oriented north west.)

more locally at Trencrom and St Michael's Mount (Stanier 1996, 108; Herring 1993, 164; 1999b, 24). Another force for conservation at Boscawen-Un, as at many other West Penwith monuments, would probably have been local peoples' beliefs in their supernatural protection (Kirkham 2012, 13–14), especially through the work of spriggans, sometimes considered the spirits of giants (Hunt 1865, 90).

In the same period local folk stories relating to sites like Boscawen-Un were being recorded. Robert Hunt named Boscawen-Un as one of the circles created when maidens dancing on the Sabbath were turned to stone (1865, 178), but William Bottrell claimed that such stories were 'not native to the place . . . old folk only know [them] from having [them] repeated to them by visitors, who have seen [them] in books' (1873, 33). Bottrell's position on this is weakened by the circle being called 'Dawns Men' (dancing stones) on the 1840 tithe map.

'Boscawen in Damnonium' has been claimed as one of the three early 'Gorsedds of Poetry in the Island of Britain' mentioned in a medieval Welsh triad, along with Salisbury and Bryn Gwyddon (in Wales) (Blight 1861, 73). Rachel Bromwich (2006) does not include such a triad in her compilation of securely medieval ones, but modern attitudes to Boscawen-Un have been tempered by this possibility. J T Blight and William Bottrell located the alleged Boscawen-Un Gorsedd at the stone circle and saw it as a gathering of people for community-related performance, and also for ritual and ceremony (Blight 1861; Bottrell 1873). Bottrell hoped this knowledge would one day lead to the then poet laureate, Alfred Lord Tennyson, singing the *Idylls of the King* from a granite throne beside the circle's centre stone (Bottrell 1873, 34).

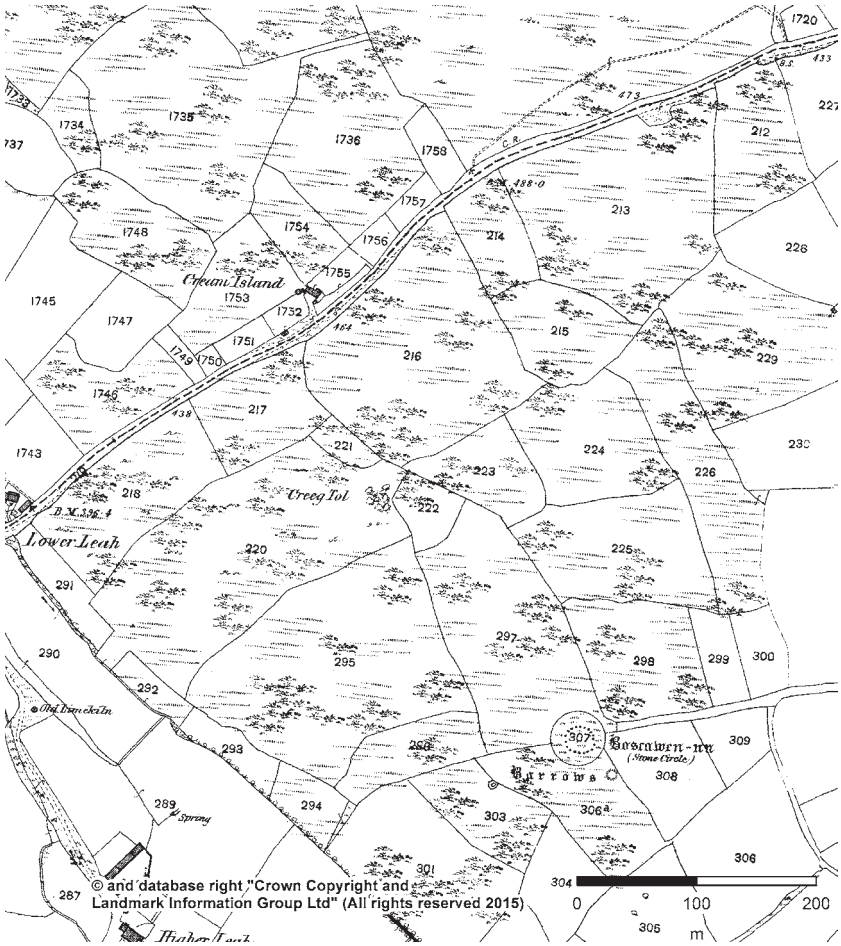

Fig 19 Ordnance Survey 25in: 1 mile map, 1st edition, 1876. Note the representation of land use, with virtually the whole study area under rough grass and furze. Only two western meadows (field nos 291 and 293) were improved.

This particular dream did not come true, but the stone circle has been the focus of much activity in the past century and a half. Antiquarians tidied it up in advance of a visit from the Cambrian Archaeological Society in 1862, removing the bisecting hedge and building the ha-ha-like bank with external ditch (and stiles for access) around it. They also undertook fruitless excavations and re-erected three fallen stones.

The circle's importance was recognised when it was statutorily protected by being added to the Schedule of Ancient Monuments in 1934 as Cornwall Monument No. 100. In 1928 it was the scene of great excitement as it was selected, presumably in consequence of the Victorian belief in the antiquity of the Welsh triad, as the venue for the first modern Gorsedd of Cornish Bards (Miners 1978). Several other Gorsedds have taken place there since then, including the fiftieth anniversary event in 1978. In the last few decades the stone circle has become the focus of much interest and activity in earth mystery and neo-pagan circles and many people make offerings at the centre and quartz stones. Most of this activity is respectful but occasionally fires are lit on the ground within the circle, damaging the turf and the earth immediately beneath it, and coins have been hammered into cracks in the quartz stone.

Nineteenth- and twentieth-century images and descriptions indicate how often the vegetation cover around the stones has changed. The 1840 tithe apportionment records the fields on either side of the bisecting wall as crofts, suggesting a similar mix of rough grasses and heather and furze as in Cotton's 1826 drawing, which shows coarse grass and small clumps of heather (Cotton 1827).

Fig 20 The stone circle from the east in the early 20th century, from a glass plate held by the Royal Institution of Cornwall (© Gibsons of Scilly; with permission of the Royal Institution of Cornwall (RIC)). Note how the site is enclosed by the encircling stone-faced bank, created in the 1860s, probably at the instigation of J T Blight. This bank and the way it closes out both wildness and modernity contributes greatly to the site's enclosed character. Access was only via stiles, so the more intensive grazing that has left the ground within the enclosure under rough grass was probably by tethered goats or sheep. The stack just visible at far right was that of china-clay dries at Lower Leha (the late Clive Carter, pers comm), beside what is now the A30, which served short-lived late nineteenth-century china-clay workings on Tredinney Common (Herring 1995).

In 1862 the site was 'overgrown by brambles and furze' that were 'cleared away' by 1865 (Blight 1865, 122), allowing the 1876 and 1906 OS 25in: 1 mile maps to show rough grassland in the circle's enclosure (Fig 19). Two undated Gibson photographs, probably of the early twentieth century, show rough grassland within the enclosing hedge (Figs 20 and 21). A photograph published in 1906, however, shows the ground south of the stones, within the circular bank, as tilled soil, right up to the outer edge of the circle; rough grass then grew within the circle itself (Tregelles 1906, facing page 380). Just six years later Folliot-Stokes saw the stones standing in a 'circular patch of primeval moorland' (1912, 211). By 1920 a Herbert Hughes' photograph (Fig 14) shows bracken and high heather and furze, and in 1926 J H Wade recorded that the site stood on 'a patch of furzy ground, and is almost entirely hidden by gorse and brambles.' Another episode of clearance is indicated by a photo published in 1932 showing vegetation low and grassy (Hencken 1932, plate V).

By the early 1970s the bank around the circle was 'overgrown with thorns' (Michell 1974, 35) and the

Fig 21 The stone circle from the south, early 20th century. Note the track to Creeg Tol and views considerably more open than at present. (© Gibsons of Scilly; with permission of the Royal Institution of Cornwall (RIC).)

site 'besieged by gorse' (Burl 1976, 124). Those furze bushes were cleared back *c* 1979 (Barnatt 1982, 159) and periodic clearances at the site by volunteers from county and local groups continue. The site is also now subject to regular condition monitoring by Historic England (formerly English Heritage), Cornwall Archaeological Society and the local volunteers of the Cornwall Ancient Sites Protection Network (CASPN), which regularly carries out vegetation clearance work on the site.

The repeated flowing-in towards the stone circle of waves of furze, heather and bracken, repulsed by active cutting when the precious place has been threatened with being overwhelmed, nicely captures the way the site has been responded to in the thousands of years since it was assembled by early prehistoric communities. It is neither timeless nor primeval, but a place that has been repeatedly actively maintained as a particularly valued part of the present, and given value by being assimilated into the consciousness and identity of a range of local and visiting communities.

Addendum

As this paper went to press a brief report of Thomas Goskar's photogrammetric 3D modelling of the carvings on the Boscawen-Un centre stone was published in the Cornwall Archaeological Society's *Newsletter* (Goskar 2015). He interprets the carvings as representations of feet rather than of axes and draws an intriguing parallel with a carving of a pair of feet (including clearly depicted toes) from the passage grave known as the Dolmen du Petit-Mont, at Arzon in the Morbihan region of Brittany; the stone bearing the carving

Fig 22 Boscawen-Un from the west in summer 2007, with the area around the stones under careful management. The oval arrangement of the stones is clearly apparent. (Cornwall and Scilly Historic Environment Record, 9 August 2007; F78-125.)

was regrettably either lost or destroyed during World War II (Lecornec 1985). Interestingly, the carvings of feet from the Dolmen du Petit-Mont were evidently in relief, as with the Boscawen-Un carvings. Rock art depicting feet or 'foot-shapes' in earlier prehistoric contexts is known in Britain from the probable ruined chambered tomb known as the Calderstones, near Liverpool, and on or associated with a small number of cists, including examples in Somerset, Northumberland and Angus (Romilly Allen 1883; Coles et al 2000). The cists are all likely to be of Early Bronze Age date although they may, of course, have incorporated stones which had been decorated before that time. However, none of these carvings bears even a faint resemblance to the Boscawen-Un 'axe-heads'. Images of feet also feature in Scandinavian rock art (for example, Skoglund 2013).

In the present instance there is evidently potential for more work to be done in analysing the Boscawen-Un carvings, and for new discoveries to be made, but the author would point out that while the paired feet from the Dolmen du Petit-Mont do generally resemble the shape of the Boscawen-Un carvings, they also hint at the characteristic 'rake' of the ends of the toes on a human foot, particularly the shorter little toe. This is not the case with the Boscawen-Un carvings, where the wider ends of the two shapes are shown rounded but more or less square (Fig 7). The suggestion of circular features – possible 'breasts' – on the Boscawen-Un centre stone (Goskar 2015), if confirmed by future analysis, would further emphasise the possible parallels with Breton megalithic monuments suggested above.

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Cornish Archaeology 53, 2014, 115–155

Hay Close, St Newlyn East: excavations by Cornwall Archaeological Society, 2007

ANDY M JONES

with contributions from ROWENA GALE, ANNA LAWSON-JONES, HENRIETTA QUINNELL, CLARE RANDALL, and CARL THORPE

Investigations at Hay Close, St Newlyn East, were carried out by Cornwall Archaeological Society over a two-week period in 2007. Aerial photography had identified a roughly circular cropmark enclosure with an external bank and the site was thought to be a probable later Neolithic henge. A partial geophysical survey of the northern part of the enclosure confirmed the site suggested by aerial photography but, apart from a circular stony spread, no internal features were revealed. Five trenches were opened within the enclosure and two beyond it over adjacent cropmark sites. The trenching revealed that the enclosure was not a Neolithic henge but was instead a henge-like enclosure of Iron Age origin, with further use in the post-Roman period. This dating was confirmed by two radiocarbon determinations. The results from the project have opened the possibility of a hitherto unsuspected class of non-domestic enclosures constructed in Cornwall during the first millennium cal BC and of non-Christian reuse of the site in the post-Roman period.

In September 2007, archaeological excavations at Hay Close, St Newlyn East (Fig 1), were undertaken by Cornwall Archaeological Society (CAS) over a two-week period. The site was chosen for excavation because aerial photography had revealed a previously unknown cropmark enclosure, with an internal ditch and an external bank and an overall diameter of around 60m (Fig 2). The entrance into the enclosure is unknown but it may lie on its eastern side where the photographic data are less clear. The location on the upper side of a valley was comparable to that of the three certain Cornish henge sites (for example, Thomas 1964). The evidence strongly suggested that the site would prove to be one of the very few Class I henges to be found in the county (Jones 2005, 11), which would reasonably be expected to date to the later Neolithic or earliest Bronze Age *c* 3300–2200 cal BC (Piggott and Piggott 1939; Harding 2003, 15).

A resistivity survey of the northern part of the enclosure confirmed the presence of a ditch and an outer bank, and field walking in advance of the excavations led to the recovery of flint tools and other artefacts, which suggested that the site had been occupied over several millennia.

The original objectives of the excavations were threefold. The first was to make a significant contribution to the study of Cornwall's past by investigating and recovering information from a henge monument. Although common in other regions, henges are uncommon in Cornwall (Jones 2005, chapter 3) and prior to 2007 only two had been investigated, the Stripple Stones (Blisland) in the early twentieth century (Gray 1908) and Castilly (Lanivet) in the 1960s (Thomas 1964). However, neither excavation had produced any closely dateable artefacts, or, in the latter case, material suitable for radiocarbon dating.

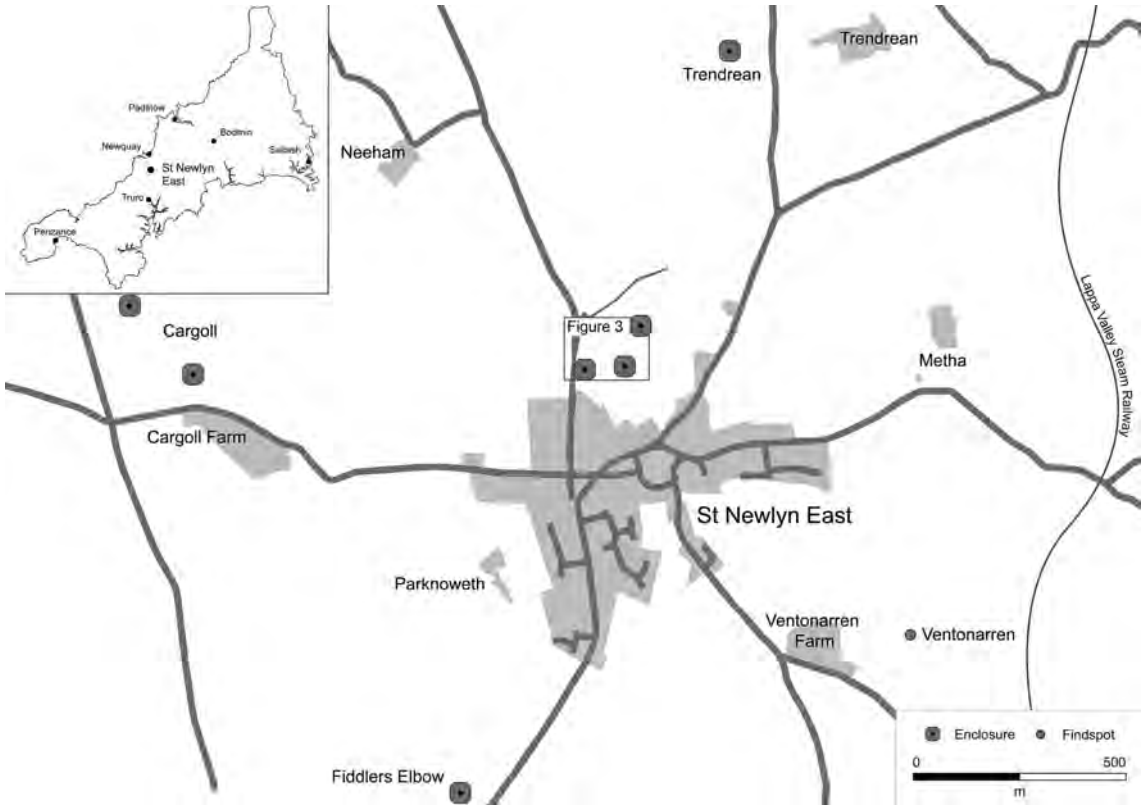

Fig 1 Hay Close, St Newlyn East: location. (Map created using Ordnance Survey OpenData.)

Secondly, there was a desire to establish whether the site was suitable as a long-term excavation project, for members of the Society to learn the techniques of archaeological excavation. The Society had not been able to carry out excavations for more than 20 years and rescue excavations do not always provide the right conditions for training. Hay Close could therefore provide experience of excavation for members of CAS.

Thirdly, the field in which the enclosure was sited also contained other cropmarks, so there was the potential to determine the relationship between these and the enclosure.

However, although the third and partly the second objectives were met, the results from the excavation of the main enclosure proved to be very different from what had been anticipated and a new series of research goals relating to the first millennia BC and AD emerged as the project developed.

Location and setting

The site is located in central Cornwall on the northern side of the village of St Newlyn East (SW 8270356503). It is situated at a height of approximately 85m OD on the north-eastern end of a spur, which drops away to the north and east. The enclosure does not occupy the highest part of the spur, which rises to the south. This means that the site has extensive views north towards the coastline around Newquay, the St Breock Downs and to the St Austell Granite in the east. However, the view to the south is restricted.

The underlying geology is comprised of the Meadfoot Beds, consisting of slates and sandstones of Lower Devonian age and the covering soils have been classed as Grade 2, which by Cornish standards are of good quality for agricultural purposes (Geological Survey of Great Britain,

1974 sheet 346; Cornwall and Scilly Historic Environment Record GIS layers 'Soils').

Prior to excavation the field was under cultivation and the site was just visible on the ground as a faint 'dish-like' depression in the level southern part of the field. Interestingly, the enclosure did not appear to have survived in local memory as a known site, and on the 1840 tithe map the field is simply recorded as 'Hay Close'. However, although this might simply refer to its use as a meadow, it is possible that the place-name 'Hay' might have derived from an Old English word meaning 'enclosure' (Padel 1985, 124–5). If this derivation were correct it might suggest that an earthwork was still visible in the early medieval period, although it is of interest that no earlier Cornish place-name exists.

The enclosure is sited within an area that has been characterised as Anciently Enclosed Land (Cornwall County Council 1996). This is comprised of a pattern of dispersed farm settlements and fields with origins at least as early as the early medieval period, and in the time of the Domesday Book the site lay in the manor of Cargoll, which appears to have been a large estate (Thorn and Thorn 1979), covering much of the parishes of St Allen, Crantock and St Newlyn East and running from the Gannel on the north coast to Bishops Wood near

Fig 2 The Hay Close enclosure from the air, looking west. (Photograph: Steve Hartgroves © Historic Environment Record, Cornwall Council.)

Truro (Henderson 1958, 364–71). The village is first recorded in 1259 (Padel 1988, 129), although evidence for early medieval settlement in the wider area has recently been supported by the finding of an amphora sherd to the south east of the village at Ventonarren Farm (Thorpe 2008a).

Evidence for prehistoric activity has been found in the surrounding area during fieldwork projects. Archaeological recording along a South West Water pipeline led to the discovery of a number of prehistoric and Romano-British sites, which included an Early Bronze Age pit containing sherds from a Food Vessel at Metha, a Middle Bronze Age roundhouse at Trevilson and an enclosure of Romano-British date at Pollamounter (Jones and Taylor 2004). The available evidence would therefore suggest that from at least the middle of the Bronze Age the area around St Newlyn East was settled and farmed.

Upstanding prehistoric monuments in the wider area are largely restricted to the round barrows on the surrounding downs and later prehistoric hilltop enclosures such as Castle-an-Dinas (St Columb Major), which is visible to the east. However, the vicinity is particularly rich in cropmark enclosures, which are likely to be associated with later prehistoric settlements (Jones and Taylor 2004, fig 2). Many of these have been plotted as part of the National Mapping Programme (NMP) (Young 2006). In fact, two cropmark enclosures are located to the north and east of the Hay Close enclosure (Fig 3).

The larger of these sites, which is possibly oval in plan (Historic Environment Record (HER) PRN 25078), lay to the north east, 140m away at the bottom of the slope (only partly shown on Fig 3). The western edge of this site appears to be extant, and has become fossilised in the hedge-bank. This site lies at the southern end of up to three cropmark sites, which may form a complex of conjoining valley-bottom enclosures, or represent a series of sequential sites. The second cropmark enclosure is sub-rectangular in plan and located mid-slope, 50m to the east (HER PRN 55556). However, none of these cropmarks had been investigated and their date and their relationship with the Hay Close enclosure were unknown.

The archaeological investigations

The fieldwork at St Newlyn East involved three aspects: fieldwalking, geophysical survey and excavation. The following section describes the results from each of these stages.

Fieldwalking

Prior to the excavations a site grid was laid out across the field. A series of 20m grid squares were subdivided into quarters, which were systematically fieldwalked. No prehistoric pottery was recovered, but finds included a number of flints, most of which are likely to be of Neolithic or Bronze Age date (Lawson-Jones, below), as well as later medieval pottery (Quinnell and Thorpe, below). The results confirmed that the field had seen human activity over several millennia, but as the finds were fairly evenly distributed there did not appear to be any direct correlation between surface finds and the enclosure site. Instead the picture is one of low density or periodic occupation over several millennia.

Geophysical survey

A resistivity survey was carried out in advance of the excavations by Peter Nicholas and the Saltash Heritage survey group. Although only five 20m grid squares were surveyed, which covered the northern half of the site, the technique worked and indicated the presence of a ditch and an external bank. The majority of the survey was inside the enclosure. Very little was detected within it, although a feature interpreted as a stony spread with a diameter of approximately 5m was found. As this was possibly a prehistoric cairn it was subsequently targeted for investigation (trench 7, below).

The excavations

During the course of the excavations, seven trenches were opened up with assistance from volunteer members of CAS. Their locations were guided by the cropmark evidence and in the case of trench 7 from the results of the geophysical survey. Five trenches were targeted upon the enclosure. Of these, two were entirely within the enclosure and three were excavated through the enclosure's bank and ditch. Two further trenches were located over cropmark ditches beyond the enclosure which had been identified from aerial photographs.

Six of the trenches were excavated by machine down to the top of the archaeology and subsequent

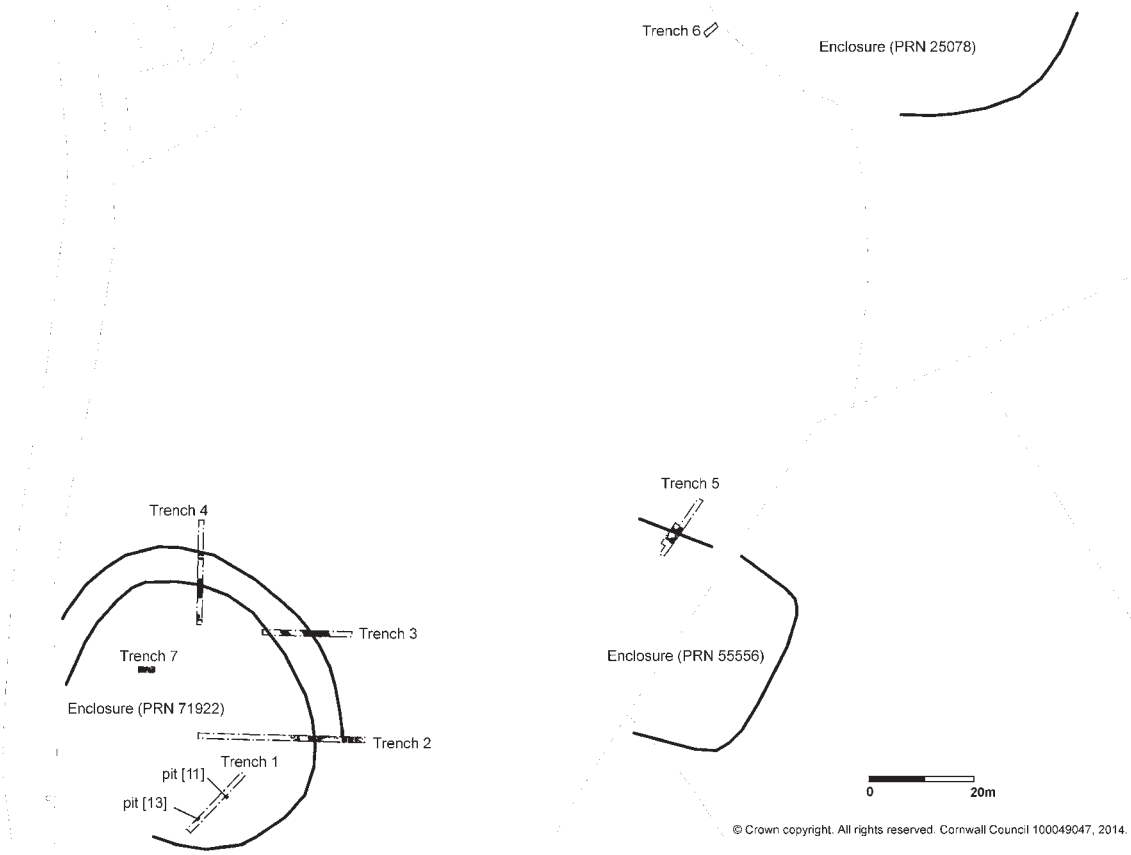

Fig 3 Location of the trenches and the surrounding enclosures; the enclosures are plotted from oblique aerial photographs. Further minor features plotted by the National Mapping Programme but not shown here include traces of possible medieval field boundaries (HER PRNs 177077 and 177080) and two possible very small rectangular enclosures (HER PRNs 177074 and 177075).

work was carried out by hand. Trench 7, which was located over the possible cairn, was entirely hand-dug.

Detailed records of all archaeological features were made, with each context being allocated a unique number. All cut features such as ditches and pits are presented within square brackets [ ], fills and layers within round ( ) brackets. Structures and groups of features are presented as unbracketed numbers.

Trench 1

Trench 1 (Figs 3 and 4) was located inside the south-east quadrant of the enclosure and was positioned to sample occupation-related activity. It was aligned approximately north east to south west and measured 15.2m by 1m. A 0.5m long by 0.4m wide extension was added to the side of the trench to allow for the complete excavation of pit [11]. The upper layers (1) and (2) which extended across the trench were 0.2–0.4m deep. Layer (1) was a dark brown clay loam topsoil and layer (2) a mid-yellowish-brown clay loam, which was stonier than (1) and likely to have been a mixture of ploughsoil and natural (3). Layer (1) contained a small quantity of modern artefacts.

Only two features, pits [11] and [13], were encountered in trench 1. Both were sealed beneath layer (2) and were cut into the natural, layer (3), a compact yellowish clay with a high shillet content. Pit [11] was exposed towards the north-eastern end

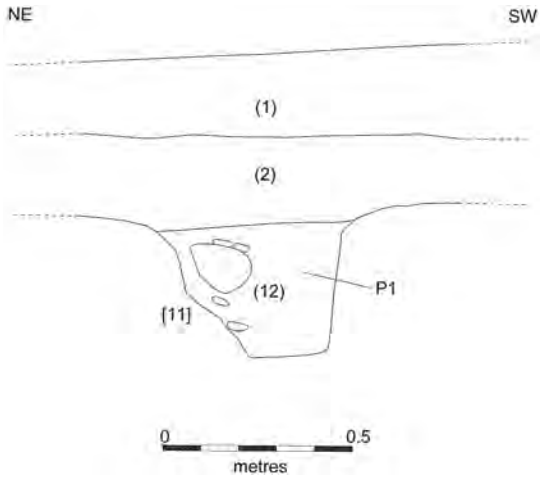

Fig 4 Trench 1, north west-facing section across pit [11].

of the trench. Initially most of the pit lay under the eastern section but this was cut back so that the pit could be fully excavated. The cut was revealed to be sub-oval in plan, measuring 0.5m long by 0.4m wide, and was up to 0.4m deep. It was steep-sided except on the northern side which was more stepped, and the base was flat. The pit contained fill (12), a mid-yellowish-brown silty clay deposit. This layer was found to contain a large number of artefacts, including a perforated stone weight, **S1**, and 24 sherds of post-Roman Gwithian Style pottery, including **P1** (Figs 12 and 13) (Quinnell and Thorpe, below).

Pit [13] was located toward the south-western end of the trench and was fully exposed within it. This pit was sub-rectangular in plan, and measured 0.6m long by 0.3m wide and up to 0.2m deep. It had steep, concave sides and the base was slightly rounded. The pit contained a single fill, layer (14), a mid-yellowish-brown silty clay. It did not contain any artefacts.

The excavation of trench 1 revealed little in the way of occupation activity and there were very few finds except for those within pit [11], which appears to have been a selected deposit, the significance of which is discussed below.

Trench 2

This trench was oriented east–west and measured 32m by 1m (Figs 3 and 5). It was positioned on the south-eastern side of the enclosure to investigate the area of the potential entrance and to look for occupation activity. The upper layers (1) and (2) which sealed the archaeology within the trench were 0.2–0.4m deep. A few sherds of early medieval Grass-marked pottery and one or two sherds which may be post-Roman imported wares, as well as flints and modern artefacts, were recovered from these layers. From the west end of the trench the first 18m were devoid of any archaeological features.

At this point two features, postholes [25] and [30], were revealed (Fig 5). Both were sealed beneath layer (2) and were cut into the natural, layer (3). Posthole [25] was almost completely exposed within the trench. Initially most of the pit lay under the northern section but this was cut back so that the pit could be fully excavated. The cut was revealed to be sub-oval, measuring 0.8m long by 0.5m wide and up to 0.25m deep. It had steep, irregular sides and the base was flat. The pit contained a single fill (26), a mid-yellowish-brown silty clay deposit, which was devoid of artefacts.

Posthole [30] was partially located under the southern baulk. This feature was circular, and measured 0.6m in diameter and up to 0.24m deep. It had shallow, sloping sides and the base was rounded. The cut contained a single fill, layer (31), a mid-yellowish-brown silty clay loam. It did not contain any artefacts.

Two metres to the east of the postholes was a broad, shallow ditch [32]. This was 2.2m wide but had a maximum depth of just 0.3m. The single fill (33), a dark yellowish-brown, loamy clay, was devoid of finds The date of the ditch is uncertain but it is possible that it was the main enclosure ditch which was becoming shallower towards the entrance.

To the immediate east of ditch [33] was a spread bank (36). This was comprised of a compact band of redeposited yellow clay and shillet, which was up to 4.4m wide and 0.23m thick. There was no old land surface; the bank was directly above the natural (3) and it did not seal any features. The eastern side of the bank was cut away by ditch [37].

At the eastern end of the trench were three intercutting ditches. The earliest of these was ditch [37]. This was later than bank (36) and was a large cut measuring 2.5m wide and at least 1.1m deep; at this depth the archaeological excavation was curtailed because of health and safety considerations. The ditch cut appeared to

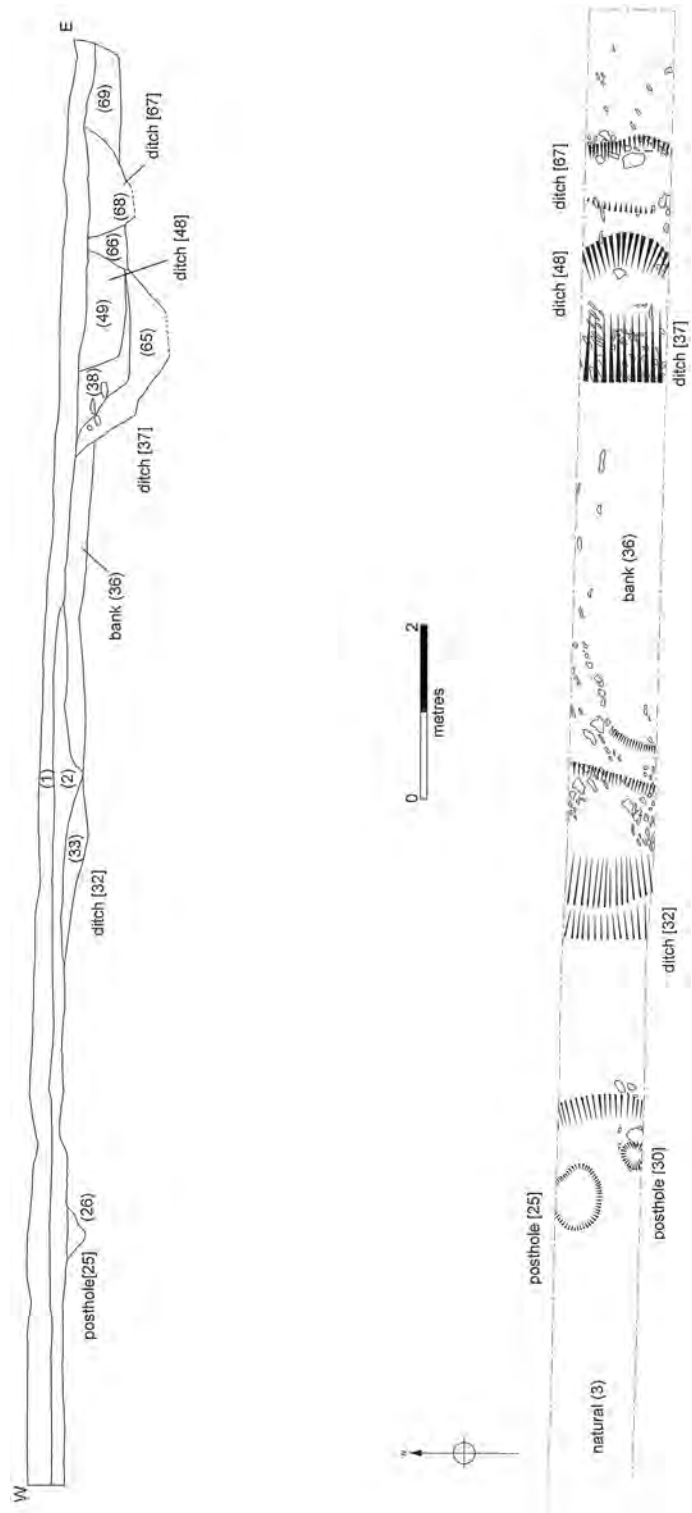

Fig 5 Trench 2, eastern half; south-facing section (top) and plan (bottom).

be roughly 'U'-shaped in section, with a marked step in the western side. However, the eastern side of the ditch had been cut away by ditches [48] and [67], so its original profile is uncertain. It is even possible that layer (66) was actually part of a further recut of the ditch. The lowest fill was layer (65), a dark yellowish-brown silty clay with a high stone content. Above this was layer (38), which was of a similar colour but much less stony. Layer (66) was located against the eastern side of the cut. It was a compact, pinkish-brown clay silt, which contained a high percentage of small stones. Few artefacts were recovered from ditch [37]. A single sherd of prehistoric, possibly Early Iron Age, pottery was recovered from layer (38) (Quinnell and Thorpe, below).

Ditch [48] cut the centre of [37] and was entirely contained within it. It measured 1.4m across and was up to 0.45 deep, with steep sides and a flat base. The cut was filled by layer (49), a compact deposit of mid-yellowish-brown clay loam, not dissimilar from layer (38) but more compacted. Ten sherds of prehistoric pottery, probably Early Iron Age, including a large basal sherd, were recovered from layer (49) (Quinnell and Thorpe, below).

At the end of the trench was ditch [67]. This feature had been cut through the eastern side of ditch [37]. The western side of the cut was steep; however, it was not fully exposed as it extended beyond the eastern end of the trench and excavations stopped at a depth of 0.6m. It was filled by (68), a mid-pinkish-brown clay loam, and possibly (69), although this was not fully exposed and may have been part of ditch [48]. No artefacts were recovered.

As in trench 1, there was little evidence for activity within the enclosure. Towards the edge of the enclosure there was more evidence, firstly in the form of postholes, which could have been associated with a structure, or possibly with the demarcation of an entrance. The shallow ditch [32] and bank (36) could also have been associated with an entrance, which could have been subsequently removed or redefined by the multiple ditch cuts [37], [48] and [67].

Trench 3

Trench 3 was positioned across a wide section of the bank and ditch on the eastern side of the enclosure to the north of trench 2 (Figs 3 and 6). The aim was to investigate the bank and ditch in an area where the cropmark suggested that the preservation would be good. The trench was 17.6m long by 1m wide and was aligned east–west.

Layers (1) and (2) covered all the archaeological features within the trench, where they reached a depth of up to 0.45m. One animal burrow [52] was identified within layer (2). Only two features were uncovered within the trench, bank (4) and the main enclosure ditch [5]. No archaeological features were identified within the enclosure.

Bank (4) survived as a low spread layer in the central part of the trench, approximately 4m wide and up to 0.10m thick. Bank (4) was similar to bank (36) in trench 2, but was stonier and less compact. It did not seal any features or produce any artefacts.

To the west of the bank was ditch [5]. The ditch was approximately 4.6m wide and was excavated to a depth of 0.9m. The ditch sides were steeply sloping (Fig 6); however, most of the excavated portion of the ditch was related to a later recut into it. Only two deposits survived from the original ditch cut [5]. These were located on the eastern and western sides of the cut. Layer (15), on the east, was a firm yellowish-brown, silty clay loam. The only artefacts recovered from it comprised white quartz pebbles. Layer (47) on the western side of the ditch was very similar and was again found to contain a water-rounded quartz pebble.

Cut [16] may have been associated with a pit or a more substantial recutting of the ditch. It measured up to 3.8m wide and extended to the base of the trench. It was filled by four layers: (6), (50), (53) and (46). A fifth layer (51) is likely to have been associated with an animal burrow.

Layer (6), the upper fill of the recut, was a soft, sticky, 'organic' feeling dark grey-brown clay loam. Within this deposit were four very large apparently water-worn blocks of quartz, measuring up to 0.5m across. These blocks appeared to have been arranged in a setting 1.6m by 0.8m (Fig 7). A cattle skull which largely survived as an articulated jawbone was recovered from the northern edge of the setting. In addition to the cattle skull, a large number of artefacts were recovered from the layer, including sherds of imported post-Roman pottery (Phocean Red Slip Ware **P2** and **P3**, E ware **P4** and **P5**, and Bii and Bi amphorae sherds), locally made Gwithian Style pottery (**P6**–**P11**), a sherd from a glass Cone Beaker **SF6**, an iron bolt **SF18**, an iron punch **SF64**, a copper-alloy object, a pebble rubbing stone **S2**, fragments

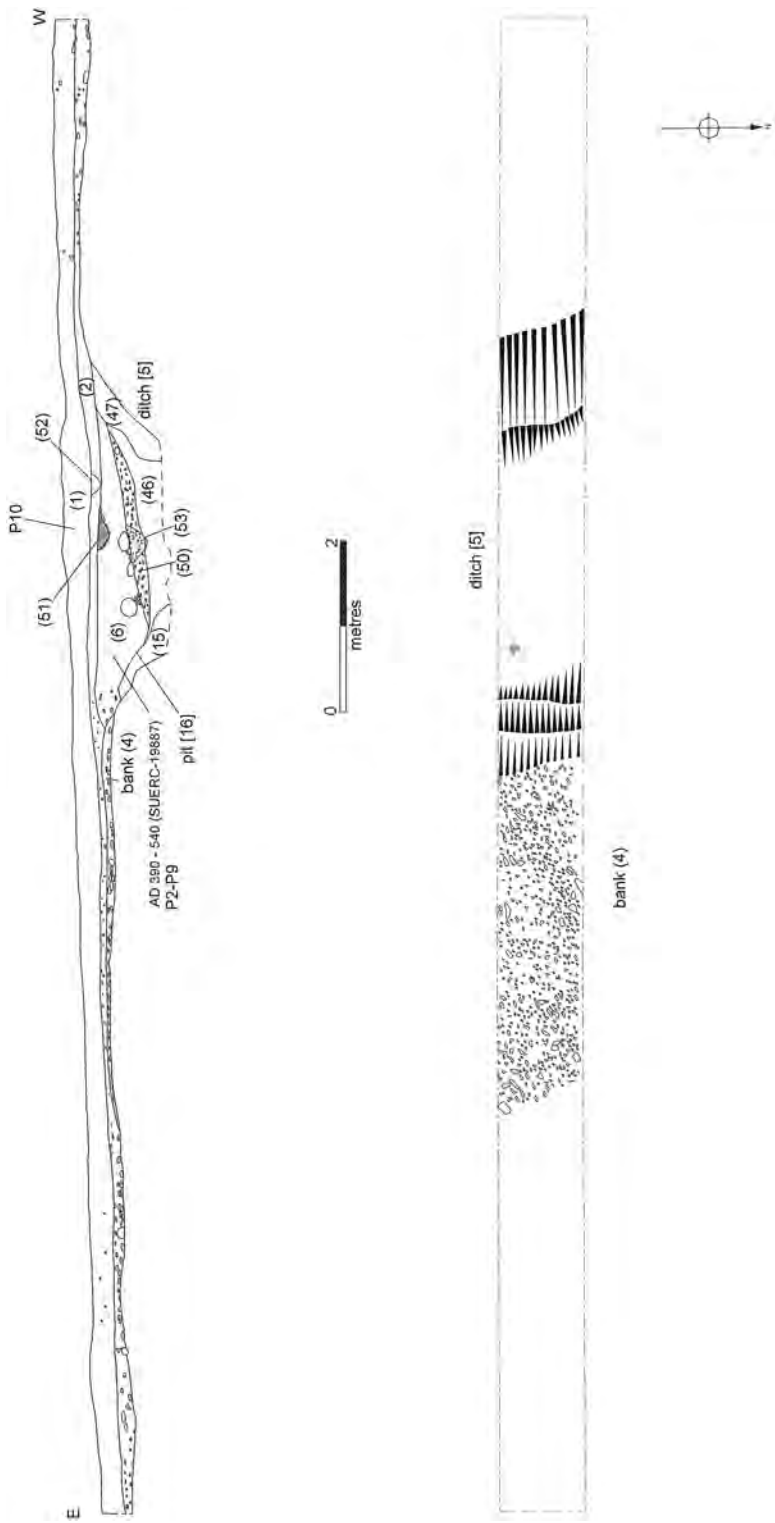

Fig 6 Trench 3, north-facing section (top) and plan (bottom). Note quartz blocks showing in layer (6).

Fig 7 Trench 3, quartz blocks in recut ditch/pit [16].

of bone and quartz pebbles (Figs 11, 12, 13 and 14). Residual flint-work was also found (Lawson-Jones, below). In fact most of the artefacts from the site were recovered from this layer (Quinnell and Thorpe, below). This constitutes one of the most remarkable assemblages of locally-made and exotic objects to be found in the south-west region. A radiocarbon determination of 1610 ±30BP, cal AD 390–540 (SUERC-19887), was obtained from the cattle jawbone. Below layer (6) were (50) and (53). Layer (50) was very similar to (6) but had a higher stone content. Layer (53) was a pocket of even stonier material, within (50). Neither layer produced any finds. The lowest layer within the recut was (46), a stony, grey-brown silty clay.

Although the results from trench 3 confirmed the arrangement of an external bank and internal ditch, it did not produce any evidence of internal features on the inside of the ditch. However, unexpectedly the trench did reveal evidence for a major recut in the post-Roman period. This activity is possibly paralleled in trench 2, although in the latter the recutting could not be securely dated. It is of interest that no definite recut was visible in trench 4 (below) on the northern side of the enclosure. This could imply that recutting occurred on the eastern side, which was probably closest to the entrance. The organic content of layer (6) within the recut of the ditch might imply that it was obtained from a midden or that some kind of formal ritualised deposition activity had taken place. This is also implied by the arrangement of large quartz blocks, which are likely to have been brought to the site from a stream, the burial

of the cattle skull and of fragmented high-status ceramics.

Trench 4

Trench 4 was opened on the northern side of the site in order to examine the enclosure ditch and bank and seek evidence for internal and external activity. The trench was 19m long by 1m wide, and was orientated north–south (Figs 3 and 8).

Layers (1) and (2) covered and sealed all the archaeological features within the trench, where they reached a depth of up to 0.45m. Two or just possibly three features were recorded at the southern end of the trench, within the enclosure. Feature [7], fill (8), was a shallow charcoal-rich feature (not illustrated) or, much more probably, a layer in the top of gully [20]. A single body sherd of probable Iron Age pottery was recovered. Gully [20] was a steep-sided, flat-bottomed feature measuring 0.8m wide and up to 0.25m deep. It was filled by layer (21), a dark grey-brown silty loam. Artefacts included a sherd of Middle to Late Iron Age pottery from fill (21), as well as residual flint-work and a quartz pebble (Quinnell and Thorpe, below).

The second internal feature was posthole [9]. It was 0.6m in diameter and 0.10m deep, and had steep sides and a flat base. The cut was filled by (10), a dark brown clay loam. The posthole did not contain any artefacts.

To the north of these features was the main enclosure ditch, [17]. It had a 'V'-shaped profile, a width of 3.3m and reached a depth of 1.9m. There was no sign of a recut and, where tip lines are evident, most of the fill seems to have come from the northern, external side, where the bank was located (layers (39) (41) and (54)). The ditch was filled by a series of mid-brown clay loam layers (fills (18) (19) (24) (28) (34) (35) (39) (41) (42) (54) and (55)) which contained variable quantities of stone and became progressively stickier and siltier with depth. The bottom of layer (55) at the base of the ditch contained a large amount of charcoal. Several sherds of plain, probably residual Iron Age pottery, quartz pebbles, flint and a small quantity of animal bone were recovered from the upper layers of the ditch (Quinnell and Thorpe, below; Lawson-Jones, below) and sherds of Gwithian Style pottery were recovered from layer (41). A radiocarbon determination on a charcoal-rich deposit (55) at the base of ditch [17] fell at 2465 ±35 BP, 770–410 cal BC (SUERC-17652), which supports an earlier first millennium date for the earliest stratified plain pottery.

Bank (45) on the northern external side of ditch [17] was 3.7m wide and survived to a height of 0.10m. It was similar to bank (4) in trench 2, but was much more compact, and comprised a light yellowish-brown clay. It did not seal any features or produce any artefacts.

The northern edge of bank (45) was cut by ditch [23]. This feature was oriented east–west and measured 1.2m by 0.6m deep. The cut was 'U' shaped and was filled by two layers (22) and (27). The upper fill (22) was a dark yellowish-brown clay loam which contained a large number of stones. The lower fill (27) was similar but siltier and contained a larger number of very small stones. A quartz pebble was recovered from layer (22) and a flint was found in (27). The date and function of the ditch are uncertain.

The excavation of trench 4 confirmed the arrangement of ditch and bank found in trench 3. There was little evidence of a recut and the dating evidence suggested that the ditch had been excavated in the first millennium cal BC. The ditch section appears to have silted up with material coming from the outside of the enclosure, which suggests that the outer bank (45) was once more substantial than the low, spread feature which survives today. Sherds of post-Roman pottery were recovered from the upper fill of the ditch, but unlike trench 3 this was not associated with a major phase of activity. There were some indications of internal features but the character of this activity is uncertain. Likewise, the external ditch [23] is of indeterminate function and date.

Trench 5 (enclosure, HER PRN 55556)

Trench 5 (Figs 3 and 9) was targeted over the northern side of the rectilinear enclosure. Initially the trench was to be 20m long; however it was scaled down, and a machine-cut trench aligned north east to south west was opened up, 4.7m long and 1m wide. This trench only encountered 'filled' material, and so was widened by hand to 2m to find the edges of the ditch.

Below 0.3m of topsoil and subsoil, the upper fills of two intercutting ditches were encountered. The earliest feature appeared to be ditch [74], running north west to south east across the trench, and corresponding to the northern element of the

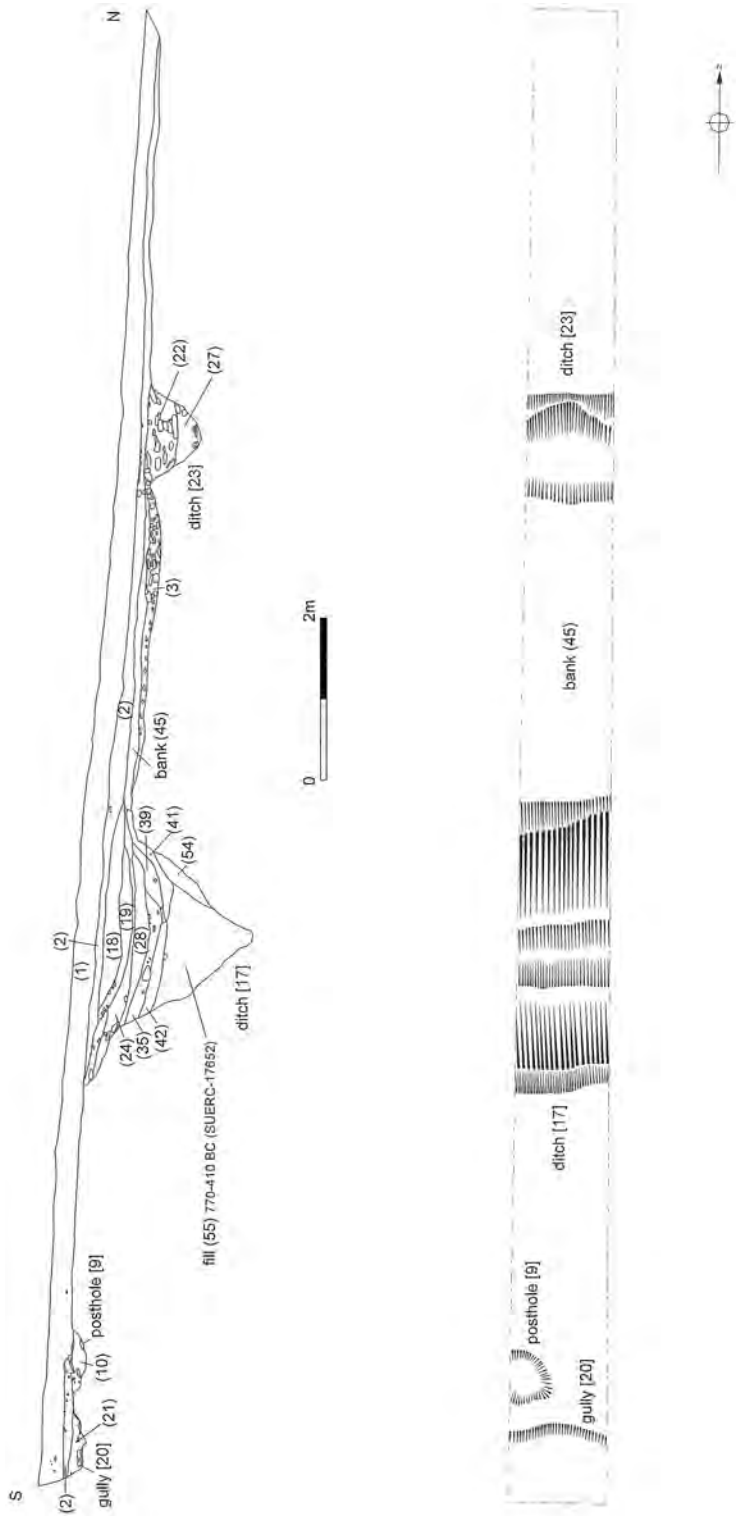

Fig 8 Trench 4, east-facing section (top) and plan (bottom).

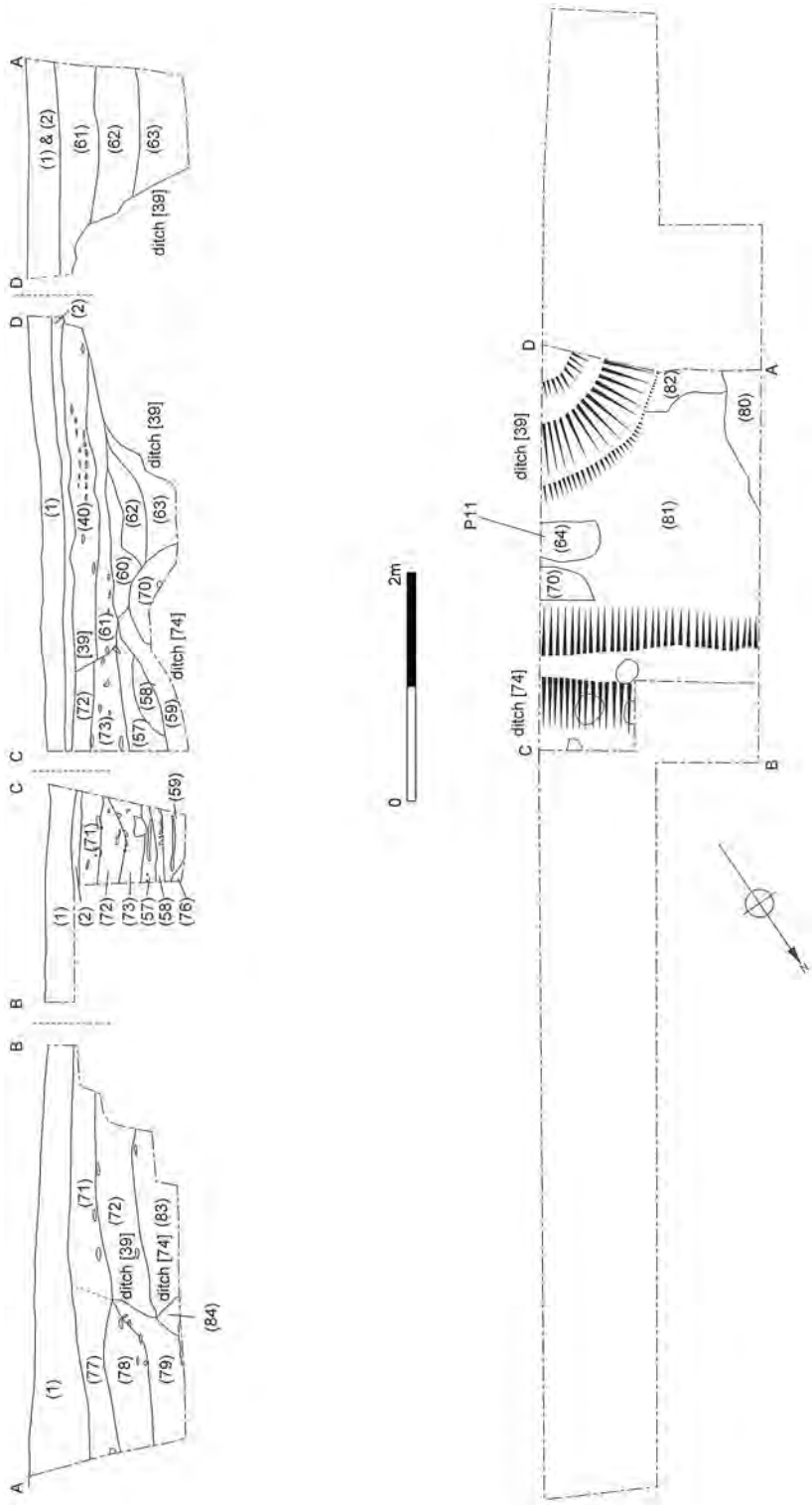

Fig 9 Trench 5, sections (top) and plan (bottom).

cropmark enclosure identified by the NMP (HER PRN 55556). The ditch was excavated to a depth of 1m and was not bottomed. The full width of the feature could not be determined due to the limited extent of the trench. It cut a natural shillety clay and material excavated from this material appeared to have been flung up in a low bank to the south east of the ditch, within the enclosure, represented by redeposited material (70). This survived to a height of 0.4m with a width at its base of 0.8m. The ditch was excavated to the base of layer (59), a charcoal-rich deposit. This contained a single body sherd of Cordoned ware. Five fills lay above this deposit, in order of deposition (58), (57), (73), (72) and (71). Deposit (57) was similar to (59) in that it was charcoal-rich, but also contained a darker lens within it (not numbered). The upper fills of the ditch were devoid of finds and similar to one another.

Cutting all of the fills of ditch [74] was another linear feature to the south west, ditch [39]. This was also not bottomed but excavated to a depth of 0.9m. The full width of the feature could not be determined due to the limited extent of the trench, and its orientation and relationship to the cropmark enclosure plotted by the NMP are not understood. It contained seven deposits, the earliest being (64) and (80), which were only partially excavated but from which significant finds were recovered. Deposit (64) was confined to the south-eastern edge of the trench and contained a small amount of pottery, including a cordoned sherd (**P11**) which could range in date from later Iron Age to post-Roman (Quinnell and Thorpe, below). The other five fills excavated were, in stratigraphic order, (63), (62), (60), (61), (40) and (82). Deposit (60) was confined to the western edge of the trench and contained substantial quantities of iron tap slag derived from smelting (Fig 15). Only deposit (60) was observed to contain any significant amounts of charcoal and this was only visible in the north-west facing section, which might indicate that it was the fill of a discrete feature rather than filling the entire ditch. A single cordoned body sherd was recovered from the upper fill (40).

Due to the limitations in the size of the trench, the complexity of the features and the poor definition between fills, the character of the archaeology in trench 5 is not well understood. The stratigraphy suggests that the ditched enclosure recorded by the NMP, represented by [74], contained an internal bank. Several burning episodes are represented by the charcoal-rich deposits (59) and (57), perhaps relating to the sweeping out of furnace debris associated with iron smelting. Following the silting up of this ditch another ditch [39] was cut, for reasons unknown. A further episode of burning was represented by fill (60).

However, it is apparent that there is an enclosure associated with several deeply-cut ditches and that this is likely to date from the Roman period. The evidence for iron working may suggest that specialised activity took place within the enclosure. The proximity of this site to the main Hay Close enclosure is of interest and will be discussed below.

Trench 6 (enclosure, HER PRN 25078)

Trench 6 was opened to the immediate south west of a large oval cropmark enclosure, the western side of which appears to be partially preserved in the hedge-bank (Fig 3). The initial expectation was that remains associated with the enclosure would extend into the field. The trench was aligned north east to south west and was 1.9m long by 1m wide.

Following removal of 0.3m depth ploughsoil (1), a short length of ditch [43] cut into the natural was revealed at the northern end of the trench. It was aligned north west to south east and ran along the line of the upstanding hedge-bank. It was approximately 1.3m wide and up to 0.2m deep with a shallow gently sloping southern edge. It was cut into the natural (3) and no earlier features were found beneath it. It contained a single fill (44) of firm mid-brown silty clay loam containing occasional small pieces of stone. The ditch fill did not contain any prehistoric artefacts and the only diagnostic finds were three sherds of modern pottery.

The trench did not reveal any features which were associated with the cropmark enclosure and the upstanding hedge-bank must overlie any associated remains. The shallow ditch [43] must relate to post-medieval episodes of ‘casting up’ along the length of the hedge.

Trench 7

Trench 7 was a small hand-dug, east–west trench measuring 1m wide by 3m long (Figs 3 and 10). It was positioned to establish the character and date of the stony circular anomaly 5m in diameter identified by the geophysical survey.

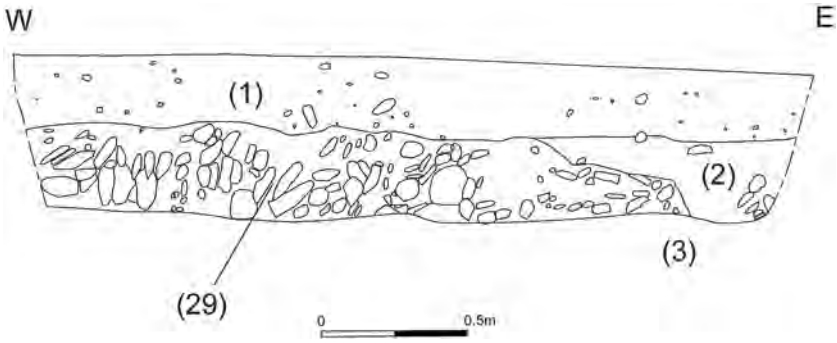

Fig 10 Trench 7, south-facing section.

The topsoil (1) was found to be up to 0.2m deep. At the eastern end of the trench was the lower ploughsoil layer (2). One sherd of residual Romano-British Trethurgy Type 22 flanged bowl pottery was recovered from this layer (Quinnell and Thorpe, below). Beneath these layers was a layer of stones and compact yellow clay (29), which corresponded with the position of the anomaly on the geophysical survey. The stony deposit was up to 0.3m thick. It ended approximately 0.5m short of the eastern end of the trench, where it was replaced by the lower ploughsoil, layer (2) (Fig 10). Layer (29) was found to overlie the natural subsoil (3) and no old land surface or features were identified beneath it.

Layer (29) was certainly of anthropogenic origin as the stones within it appear to have been laid vertically, except for the last 0.5m at the eastern end, where they were flat. It was observed that these stones might have been arranged in this way to create a kerb. The only artefact recovered from the layer was a piece of burnt clay.

The paucity of artefactual or dateable features from layer (29) means that its function and relationship to the main enclosure remain uncertain. It could be an Early Bronze Age cairn comparable with the barrows and cairns found within enclosures such as Bartinney and Castle-an-Dinas (see discussion below and Jones 2010). Alternatively, it could perhaps represent a raised platform or dais contemporary with the enclosure. In either scenario, it may have been a focal point within the enclosure.

The finds

Henrietta Quinnell and Carl Thorpe

Pottery

The assemblage from the 2007 excavations comprises around 159 sherds weighing 1428g. The majority, 133 sherds weighing 1200g, is of prehistoric to early medieval date. This consists of a possible Middle Bronze Age sherd, Early to Middle Iron Age sherds from the enclosure ditch, and possible late Iron Age or Romano-British material from ditches within trench 5 outside the main enclosure. The largest group is of sixth-century AD date from a pit within, or a re-cut of, the main enclosure ditch. The mixture of ceramic types, both imported and native, within this pit group provides crucial evidence for the understanding of the development of native wares in Cornwall. Some evidence for later activity is provided by a few sherds of a late variety of Grass-marked ware, Sandy Lane style 1, dating from the eleventh century AD. A small collection of 26 medieval to modern sherds (weighing 243g) is not included here.

Abrasion

Recording of abrasion on sherds is based on the system devised by Sørensen (1996) for Bronze Age midden material at Runnymede with some modifications. The following descriptors and numeration are used in the report:

Very fresh	1; Sørensen Grade 1, hardly ever applicable

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

Fabrics

The native wares are all in gabbroic fabrics. Some, broadly prehistoric, are generally soft and poorly finished. The fifth- to sixth-century AD version of gabbroic fabric is well-made and hard fired, with a smoothed or slightly burnished surface; these belong to the Gwithian Style discussed below. However, these distinctive features cannot be securely identified in small or abraded sherds. Any special features of gabbroic wares are dealt with under relevant vessels. Imported fabrics cover a wide range of post-Roman imports and again are described under relevant vessels.

Table 1 Summary of pottery by sherd numbers and weight (grams)

	Gabbroic	*Imports*	*Totals*
Trench 1	26/293	0	26/293
Trench 2	22/101	2/15	24/116
Trench 3	32/483	17/124	49/607
Trench 4	24/113	0	24/113
Trench 5	6/67	0	6/67
Trench 7	4/4	0	4/4
Totals	**114/1061**	**19/139**	**133/1200**

Trench 1

Comment on trench 1 pottery

While there is a slight range of variation, in general the sherds have the well-made composition and well-fired attributes of the Gwithian Style. Three sherds with high abrasion tend to be softer and may be redeposited.

P1 (Fig 12) Rim from a large, 180mm, Trethurgy Type 4 or Type 6 jar (Quinnell 2004, 113–17). The

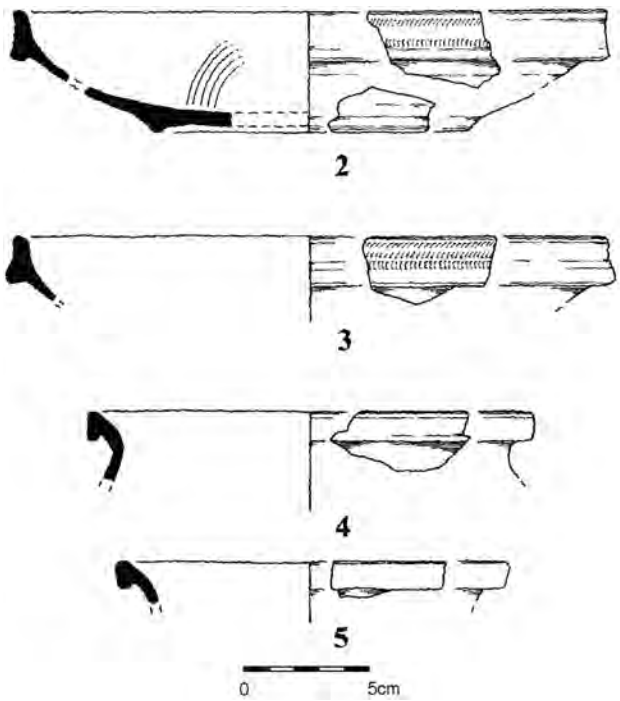

*Fig 11 Imported ceramics from ditch recut [16], layer (6): **P2–3**, Phocean Red Slip Ware; **P4–5**, E ware. Scale 1:3. (Drawings: Carl Thorpe.)*

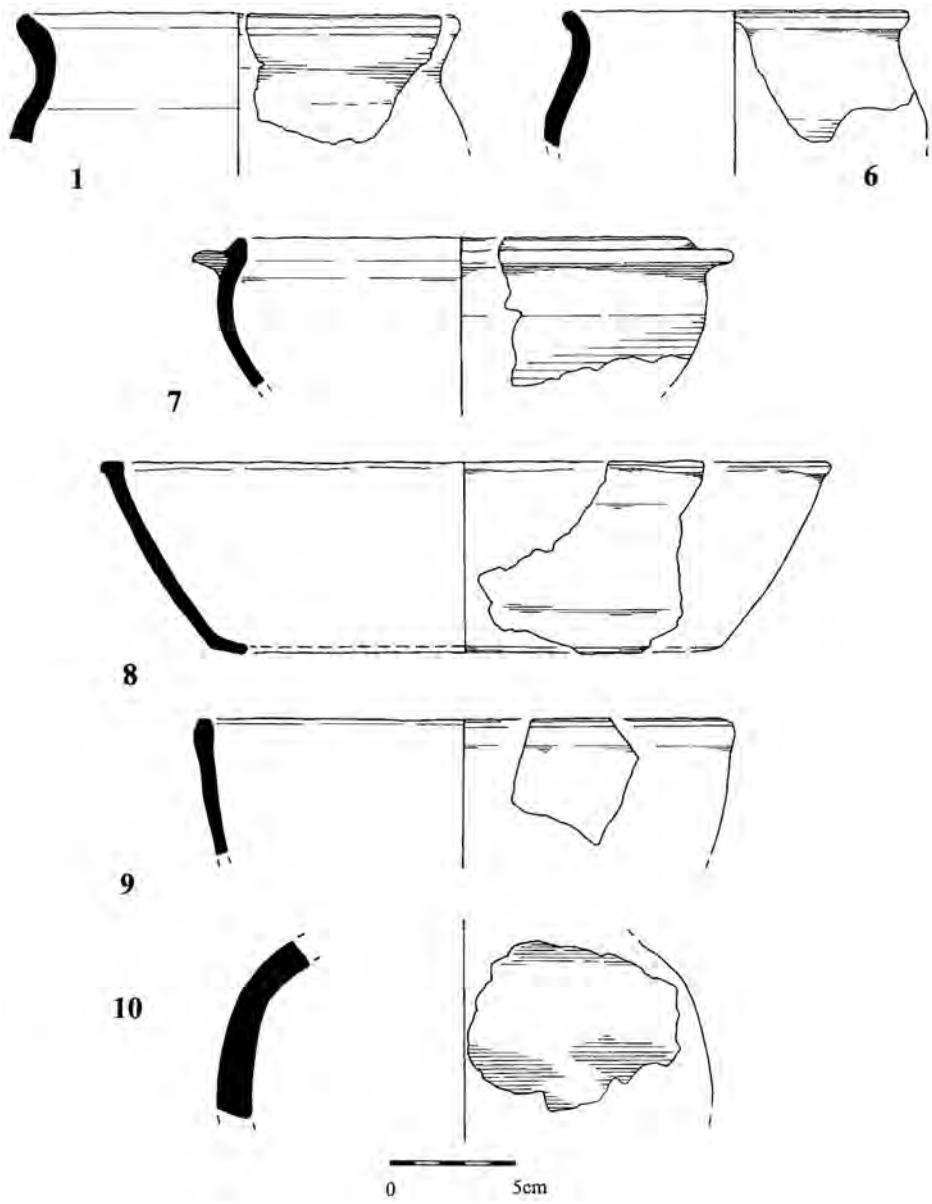

Fig 12 Native ceramics. ***P1****, possible Gwithian Style from ditch recut (11);* ***P6–9****, Gwithian Style from ditch recut (6);* ***P10****, Gwithian Style from topsoil above ditch recut (6). Scale 1:3. (Drawings: Carl Thorpe.)*

vessel has a slack profiled, everted rim with the hint of an internal bevel or rim groove. Type 4 and Type 6 vessels date from the mid-second to the fifth centuries AD. The hard, well-made fabric suggests a possible post-Roman continuation. Two similar shaped vessels (Barrowman *et al* 2007, fig 36) came from the Lower Terrace, Site C, Tintagel, from Phase U2 with radiocarbon dates ranging from cal AD 395–445 (UB-3795) to cal AD 420–550 (UB-3797). **P1** may well relate to the Gwithian Style.

Table 2 Pottery from trench 1: number of sherds, weight (g), abrasion

Context	*Location*	*Gabbroic*			*Imports*			*Comment*
(2)	Subsoil	2	3	3				Body sherds
(12)	In pit [11]	24	290	2				Includes **P1**
Totals		**26**	**293**		**Not present**			

Table 3 Pottery from trench 2: number of sherds, weight (g), abrasion

Context	*Location*	*Gabbroic*			*Imports*			*Comment*
(49)	Fill of ditch [48]	10	62	2/3				
(38)	Fill of ditch [37]	1	24	2/3				
(2)	Subsoil	7	7	2/3	1	5	3	Import ? Smooth matrix and quartz grains.
(2)	Subsoil	4	8	2/3				Grass-marked sherds separated
(1)	Topsoil				1	10	3	Dressel or Bv amphora?
Totals		**22**	**101**		**2**	**15**		

Trench 2

Comment on trench 2 pottery

Context (49) contained one substantial basal sherd. This, like the remainder of the sherds from the context, is in soft 'standard' gabbroic fabric. The base sherd has two curved intersecting lines on its underside made with a very sharp point. An Early Iron Age date would be appropriate for this group. Context (38) contained a basal angle similar to that in (49). Context (2) contained four Grass-marked sherds. The thin walls with a basal angle showing an upward 'kick' to the bottom of the vessel are typical features of Sandy Lane Style 1 pottery. Though dating is still debated, this ware is considered to be broadly eleventh-century (Thorpe 2008b). The remaining gabbroic sherds from other contexts are non-distinctive. The 'import' sherd with quartz grains is not a currently recognized fabric. Context (1) had an abraded amphora sherd that could possibly be of either Dressel type or Bv.

Trench 3

Comment on trench 3 pottery

Context (6) produced both native and imported wares in association with a radiocarbon determination of 1610 ±30 BP, cal AD 410–540 (SUERC-19887).

Phocean Red Slip Ware (Hayes Late Roman C)

Ten sherds from at least two separate vessels. Abrasion on these sherds differs noticeably. Phocean Red Slip Ware (PRSW) from western Turkey is wheel thrown. It consists of a fine well sorted medium to hard fabric, often with a sandy texture. Pale pink to buff in colour, it contains abundant minute limestone inclusions. No quartz is visible. The slip is bright orange-red in colour, often finely burnished (Hayes 1972; Fulford and Peacock 1984; Campbell 2007; Thorpe 2008b).

P2 (Fig 11) Rim, 250mm diameter, and base of a Form 3 C/D bowl with two lines of rouletted decoration. Generally given a date from the fifth to the seventh centuries AD, Forms C/D occur *c* AD 450–550 (Hayes 1972; 1980; Campbell 2007).

P3 (Fig 11) Rim, 250mm, of a Form 3 C/D bowl with three lines of rouletted decoration.

Bii amphora (Late Roman 1 amphora, LR1)

Two conjoining neck sherds (not illus). Bii (LR1) amphorae are known to come from various locations on the coastal plain of Cilicia in south-east Turkey and were wheel thrown. They are of a medium hard sandy fabric varying in colour from buff, pinkish-cream to a reddish orange-brown. The make-up of the fabric is very variable but often contains well-rounded quartz grains, limestone, and mafic (magnesium/iron-rich) minerals. The tegulated ribs seen on the exterior are characteristic

Table 4 Pottery from trench 3: number of sherds, weight (g), abrasion

Context	*Location*	*Gabbroic*			*Imports*			*Comment*
(6)	Recut of ditch/pit [16]	3	3	3	10	75	1/2 – 2/3	At least two separate Phocean Red Slip Ware vessels **P2**, **P3**
(6)	Recut of ditch/pit [16]				2	21	2/3	Bii
(6)	Recut of ditch/pit [16]				1	1	2/3	Bi ?
(6)	Recut of ditch/pit [16]				2	3	3	Conjoining but unidentifiable
(6)	Recut of ditch/pit [16]				2	24	1/2	Two E ware rim sherds from different vessels **P4**, **P5**
(6)	Recut of ditch/pit [16]	1	36	1/2				S-profile rim **P6**
(6)	Recut of ditch/pit [16]	1	69	1/2				Flanged bowl **P7**
(6)	Recut of ditch/pit [16]	3	57	1/2				Plain-rimmed dish profile **P8**
(6)	Recut of ditch/pit [16]	1	24	1/2				Rim sherd from vessel **P9**
(6)	Recut of ditch/pit [16]	4	46	1/2				Minimum two plain rimmed vessels
(6)	Recut of ditch/pit [16]	1	109	1/2				Thick shoulder sherd **P10**
(6)	Recut of ditch/pit [16]	14	107	1/2 – 3				Body & base sherds
(1)	Topsoil	4	32	2/3				Gwithian Style includes a thick sherd as **P10**
Totals		**32**	**483**		**17**	**124**		

of this vessel type. The form of Bii dates from *c* AD 450 to 600 (Peacock and Williams 1986; Fulford and Peacock 1984; Dark 2001; Campbell, 2007; Thorpe 2008b).

Bi amphora (Late Roman 2 amphora)

One possible small sherd of this amphora was identified. Bi amphorae had a widespread region of manufacture centred on the Greek islands, the mainland and Crete. These are wheel-thrown vessels in a medium hard, fine-grained fabric that varied in colour from pink-buff to orange-brown. The fabric contains large angular limestone fragments that are often eroded out to form cavities, sometimes with reaction rims. The shoulders have distinctive combed decoration. These amphorae are a long-lived form, current from the fifth to late sixth centuries AD; the peak of the use and distribution was *c* AD 450 to 550 (Peacock and Williams 1986; Fulford and Peacock, 1984; Dark 2001; Campbell 2007; Thorpe 2008b).

Unidentifiable

Two conjoining sherds of unidentifiable amphora.

E ware

Two sherds, both rims, coming from separate vessels were present. No kilns for this pottery have been found. The source is hotly debated, but generally thought to be somewhere accessible by sea around the Loire or Gironde estuaries in western France. These are wheel-thrown vessels, with a hard-fired fabric tending towards a stoneware, thin-walled, often roughly laminated with air spaces between laminations. The fabric contains iron ore fragments and abundant prominent quartz inclusions. Colour is variable from dirty cream or white, through yellow or beige to dark red or grey; a pinkish tinge is common. The date range for this material is generally considered to be from the late sixth to early eighth centuries AD (Campbell 2007; Thorpe 2008b).

P4 (Fig 11) Rim, 180mm diameter, from a Form E1 jar (Campbell 2007, fig 21).

P5 (Fig 11) Rim, 160mm diameter, from a Form E1 jar.

Gwithian Style

Context (6) contained a minimum of 15 sherds. This is a handmade, fine, well-fired, compacted gabbroic fabric. The hardness of the fabric is to some extent reflected in the lack of abrasion seen on these sherds. There are sparse (around 5 per cent) and generally fine-grained inclusions. Surfaces are well-finished, sometimes wiped or slightly burnished. The bases often show evidence of being sanded, or sat on sand prior to firing. The date range for this material is now generally considered to be from the sixth to

late seventh centuries AD (Nowakowski *et al* 2007; Thorpe 2008b).

The material not illustrated includes a small shoulder with burnish and three basal sherds but no rims. A few of the more abraded and soft sherds among these may be of earlier date than the Gwithian Style and be redeposited, but it is not possible to make any further comment on their dating.

P6 (Fig 12) Jar with everted rim, 140mm diameter, broadly similar to **P1**, with external sooting.

P7 (Fig 12) Upper part of flanged bowl, rim 180mm diameter, the exterior slightly burnished. Upward pointing flange made from a separate piece of clay. Exterior sooted. Very well-fired, very hard fabric. The form of this vessel appears to be a variation continuing the Trethurgy Type 22 flanged bowl tradition.

P8 (Fig 12) Complete profile of a rounded shallow bowl with slightly everted, flattened rim, 300mm in diameter and 75mm deep. Three conjoining sherds. The exterior has been slightly burnished. There is external sooting and internal residue.

P9 (Fig 12) Rim sherd of a straight sided, upright, plain rimmed bowl, 220mm in diameter. The exterior has been slightly burnished. There is external sooting.

Four sherds represent a minimum of two other similar vessels, with external sooting. The type represents a continuation of Trethurgy Type 23 bowls/dishes.

P10 (Fig 12) Thick shoulder sherd (12mm thick) or carination from a vessel of indeterminate form with a maximum diameter of approximately 200mm. This vessel has a cruder appearance than the others from this context and is certainly less well-finished with rough hand moulding marks. The fabric contains many coarse inclusions and has been very well-fired, a similarity to the other Gwithian Style wares. There is internal residue and external sooting.

Trench 4

Comment on trench 4 pottery

Context (55) at the bottom of the enclosure ditch produced radiocarbon determination 2465 ±35 BP, 770–410 cal BC (SUERC-17652); this context produced no finds.

All the gabbroic sherds in this trench appear to be of 'standard' soft fabric, as used in the Iron Age bases in Trench 2, except for the five sherds of Gwithian Style detailed in the Table.

The sherd from context (21) appears similar to material of Middle to Late Iron Age date, with well-made fabric, slightly reduced, and a distinct exterior dark burnished surface. The gabbroic admixture sherd from (19) appears to be redeposited from an Early or Middle Bronze Age context. It contains large inclusions which are only known from sites of these dates.

Trench 5

Comment on pottery from trench 5

P11 (not illus) Body sherd with slight horizontal cordon 9mm wide. Could either be Late Iron Age

Table 5 Pottery from trench 4: number of sherds, weight (g), abrasion

Context	*Location*	*Gabbroic*			*Imports*	*Comment*
(41)	Fill of ditch [17]	16	67	2/3 – 3		Approx 5 sherds appear to be of Gwithian Style fabric including base
(34)	Fill of ditch [17]	1	3	3		Body sherd
(28)	Fill of ditch [17]	2	14	3		Body sherds
(21)	Fill of ditch [20]	1	6	1/2		Body sherd of well-made gabbroic fabric with external black burnish
(19)	Fill of ditch [17]	1	10	3		Gabbroic admixture
(18)	Fill of ditch [17]	1	3	3		Body sherd
(8)	Fill of pit/post [7]	1	7	3		Body sherd
(5)		1	3	3		Body sherd
Totals		**24**	**113**		**Not present**	

Table 6 Pottery from trench 5: number of sherds, weight (g), abrasion

Context	*Location*	*Gabbroic*			*Imports*	*Comment*
(64)	Fill of ditch [39]	1	46	2		Body sherd with flat cordon **P11**
(64)	Fill of ditch [39]	3	13	3		Body sherds not Gwithian style
(40)	Fill of ditch [39]	1	4	2/3		Body sherd
(59)	Fill of ditch [74]	1	4	2		Body sherd
Totals		**6**	**67**		**Not present**	

Table 7 Pottery from trench 7: sherds, weight, abrasion

Context	*Location*	*Gabbroic*			*Imports*	*Comment*
(2)	Subsoil	4	4	3	Not present	Includes fragment from Type 22 flanged rim

Cordoned ware or belong to Cordoned ware phase 2 or 3, the latter dating throughout the Roman period and possibly later (Quinnell 2004, 110). A Roman or immediately post-Roman date is perhaps most likely.

There is no evidence for the Gwithian Style from this trench: the other sherds have the same broad date range as **P11**.

Trench 7

Comment on trench 7 pottery

There is no evidence for the Gwithian Style from this trench. However, the Type 22 flanged bowl rim is of a late third- or fourth-century type (Quinnell 2004, 124) but it is not known how late this form continued.

Stone artefacts

with petrological identifications by *Roger Taylor*

S1 (Fig 13). A large perforated stone weight (1174g) from (12), the fill of a posthole or pit in trench 1. This is a roughly triangular beach cobble that has been partly dressed to shape. The hour-glass shaped perforation has a diameter of 15mm. There is a clear groove caused by wear at the top of the weight suggesting suspension by a rope. This is an unusual example of the range of stone weights made in Cornwall during the Roman and post-Roman period. It is the only example on record with its width greater than its height. These carefully carved objects are considered most likely to have been mensuration weights (Quinnell 1993). The associated sherd **P1** may relate to the Gwithian Style.

Geological description (Roger Taylor)
Porphyritic elvan, with leached-out feldspar phenocrysts, quartz phenocrysts up to 20mm in size, and small flakes of white mica., but likely to be worked from a river or beach cobble which had originated in a dyke.

S2 (Fig 13). A broken oval pebble, maximum length 77mm, 60mm wide, 25mm thick. Trench 3, context (6). There are distinct wear facets visible on the two flat surfaces and on the edges, suggesting use as a rubbing stone. Striations also indicate some use as a whetstone. **S2** is associated with material of post-Roman date.

Geological description (Roger Taylor)
Quartzitic sandstone well-rounded beach pebble; contains some white muscovite flakes. Some use for rubbing.

S3 (Fig 13). A carefully shaped disc, diameter 40mm, 20mm thick. From fieldwalking square 11 NW. There is a small conical depression 2mm deep at the centre of each flat face. These two depressions could result from a compass point used to mark out the circle of the disc, or are possibly mounting points from a lathe. Edges of disc carefully smoothed, and show possible tooling marks. Rough-out for spindle whorl.

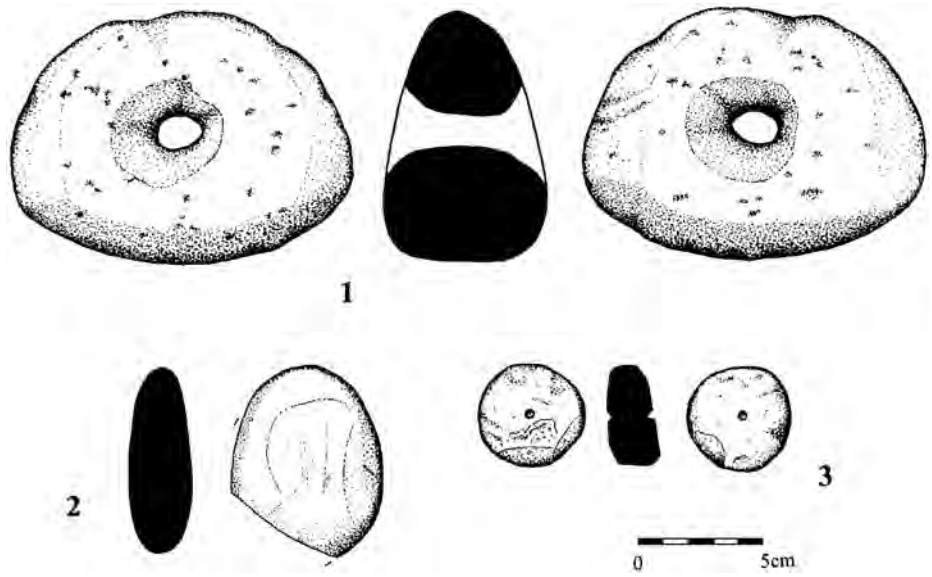

Fig 13 Stonework. ***S1*** *mensuration weight from (11) trench 1;* ***S2*** *rubbing stone from (6) trench 3;* ***S3*** *roughout spindle whorl from field walking. Scale 1:3. (Drawings: Carl Thorpe.)*

Geological description (Roger Taylor).
All original surface of block removed. Fine-grained pink granite most probably originating at St Agnes, less probably from St Austell or Bodmin Moor granites.

Nine white quartz pebbles, waterworn and probably beach-derived, were recovered from a variety of contexts: (2) (6) (15), 21) and (47).

Glass

A single piece of post-Roman glass was recovered from trench 3, context (6).

SF61 (Fig 14) A Cone Beaker rim, 120mm diameter, of light blue-green glass. This has a simple fire rounded and thickened rim, and is decorated with mavered opaque white trails in horizontal bands. This belongs in the Campbell group Ca 'Atlantic' tradition. The stratigraphic evidence from excavations at Whithorn (Hill 1998) suggested to Campbell that vessels with horizontal bands of decoration were to be mostly found in deposits dating from the mid sixth century AD (Campbell 2007). Some evidence points to this glass having been produced in Bordeaux, in western France (Campbell 2000; 2007). Its significance is discussed below.

Ironwork

Two significant pieces of ironwork were recovered from trench 3 context (6).

SF18 (Fig 14) A large, square, dome-headed bolt or holdfast with square-sectioned shank. The square head measures 20m × 20mm, the dome reaching a maximum thickness of 6mm. The shaft, 50mm long, has a square section throughout its length which averages 9mm × 9mm. Such bolts are relatively common in Roman contexts: a comparable example comes from Frocester (Price 2000, fig 3.6).

SF64 (Fig 14) A square sectioned punch, 100mm long. The shaft has a square section throughout its length: at the head end this is 10mm × 10mm tapering to 8mm × 8mm before the point. The point is also square, 5mm × 5mm. Punches are common tools in Roman contexts, but are also known from post-Roman contexts from sites such as at Trethurgy, St Austell (Quinnell 2004, 79), and Dunadd (Lane and Campbell 2000).

These two items are important in demonstrating the continuation of the Roman metalworking tradition into the post-Roman period, and are a significant addition to the small number of known post-Roman metalwork finds, especially as these come from a securely dated context.

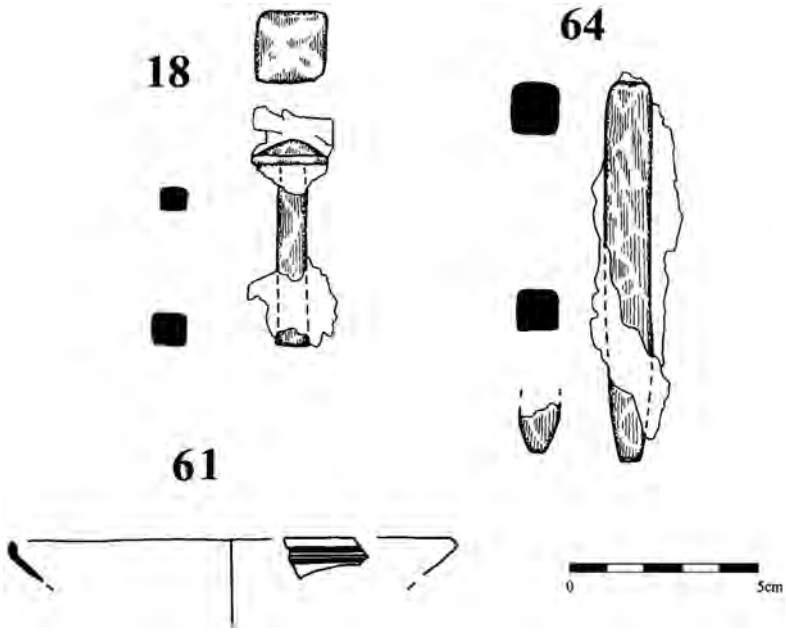

Fig 14 Metalwork and glass. ***SF18*** *iron bolt;* ***SF64*** *iron punch.* ***SF61*** *glass cone beaker. All from (6), trench 3. Scale 1:2. (Drawings: Carl Thorpe.)*

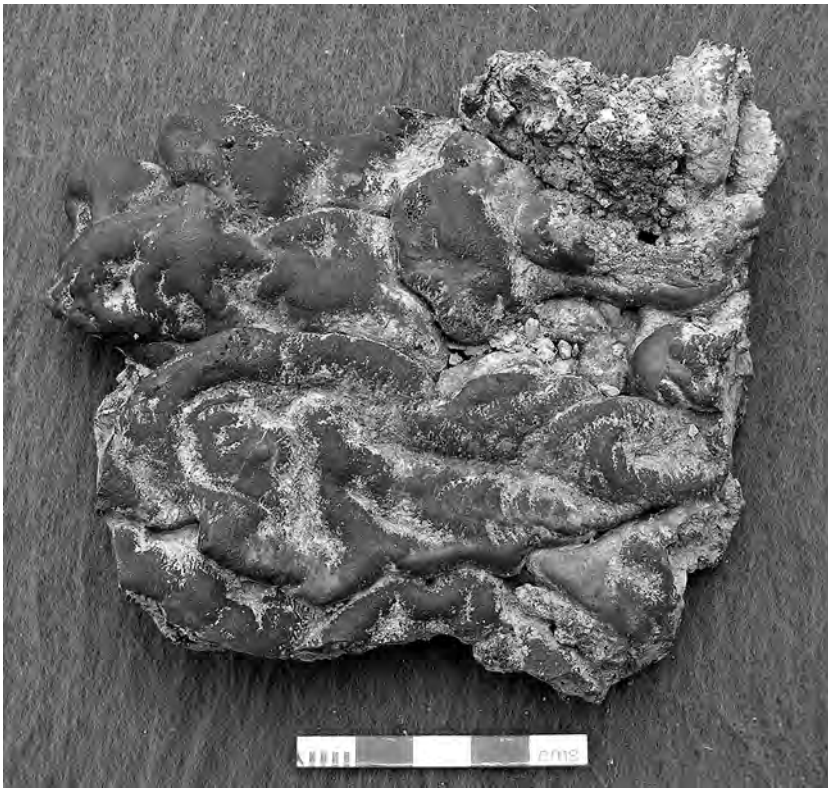

Fig 15 Iron tap slag from ditch [39], layer (80).

Industrial material

A significant collection of iron slag was found in trench 5, from contexts (63), the fill of ditch [39], and (80) and (81), the fills of ditch [74] (Fig 15). A total of 123 fragments of iron slag weighing 7048g was recovered. Many of the pieces were tap slag which indicates that it derived from iron smelting, and was not merely the detritus of smithing. Unfortunately the furnace itself was not encountered. Ditch [39] produced a sherd with a cordon which may date anywhere in the Roman or early post-Roman centuries.

Discussion of Iron Age and post-Roman finds

The prehistoric and Roman periods

A single sherd of probable Bronze Age pottery was recovered from (19) in trench 4. The gabbroic admixture fabric of which it was made is only known from the second millennium BC. The sherd was very abraded and clearly redeposited. It only provides broad information about activity in the area at this date, before the construction of the earthwork. The bottom of the earthwork ditch produced the radiocarbon determination 2465 ±35 BP, 770–410 cal BC (SUERC-17652), which indicates that this was cut in the Early Iron Age. It is difficult to date featureless gabbroic sherds with any certainty but those from (38) and (49) in trench 2 and (21) in trench 4 appear to be of this broad date. The sherd with a cordon from (64) in trench 5 is almost certainly later, and Roman or immediately post-Roman, as is the Type 22 rim from trench 7 topsoil. The collection of iron-working debris from (63) and (80) appears to be associated with sherds which have a very broad date range; on balance they probably belong to the Roman period.

Post-Roman and early medieval

The post-Roman and early medieval sherds comprise the majority of the ceramic assemblage. The material comes from trench 1, fill (12) in pit [11] associated with weight **S1**; from trench 2, topsoil and subsoil (1) and (2); most importantly, from trench 3 in (6), fill of the recut ditch; and from trench 4, from (41), fill of ditch [17].

Within the earlier phase the ceramics present are of both native and imported origins. The imported ceramics can be divided into two groups. The first group is of imported wheel made wares of Mediterranean origin comprising fine red slip tableware and amphorae. All the material comes from context (6) except the two pieces of uncertain origin from trench 2. The tableware is Phocean Red Slip Ware from western Turkey. Produced over a long period of time from the fourth to the seventh centuries AD, the forms changed rapidly, most likely in response to fashion, which makes them very useful for dating. British imports are restricted to Form 3 bowls dating from *c* AD 450–550. The amphorae are Class Bi from Greece and Class Bii from Cilicia in south-east Turkey. These have a long range of use from the fifth to the seventh centuries AD, but the peak period of importation and distribution within Britain appears to have been from the late fifth to the mid-sixth centuries AD (Thomas 1981a; Fulford and Peacock 1984; Peacock and Williams 1986; Dark 2001).

The second group is of imported wheel-made wares, E ware, which originated in France (Gaul). These are a range of 'kitchen' wares, the form found at Hay Close being Form E1 jars (two separate vessels). Its date range is considered to be sixth to the early eighth centuries AD (Campbell 2007).

The early phase native pottery is Gwithian Style ware, a continuation of Cornish late Roman forms. These include jars and bowls with curved and everted rims, often with concave internal rim bevels, and low walled platters, sometimes just flat plates without a wall at all, although the latter do not occur at Hay Close. This ware was manufactured in a fine, highly fired gabbroic fabric; the bases are often sanded, or have been sat on sand prior to firing. The re-examination of material from the excavations at Gwithian and several new radiocarbon determinations from both Gwithian (Nowakowski *et al* 2007) and Boden (Gossip 2013) place Gwithian Style ware within the sixth to the late seventh centuries AD (Thorpe 2011, 151–4).

The later phase of early medieval activity on the site is represented by the sherds of Grass-marked ware from trench 2, context (2). Grass-marked ware marked the introduction of a new ceramic production technique, the use of chopped grass to prevent adherence to surfaces prior to firing, leaving clear vegetation marks on the bases and

sides of vessels. There were only two forms, cooking pots, which were squat flat-based vessels with vertical or slightly incurving sides, and platters. This ware also introduces the innovation of opposed internal suspension bars (or lugs) into the rims of the medium- and large-sized cooking vessels so that they may be hung over a fire to function as cauldrons. It is manufactured in a variable, often poorly fired gabbroic fabric. The re-examination of the material from Gwithian suggests a date somewhere in the seventh century for the introduction of Grass-marked Wares, with use continuing into the eleventh century AD. The material recovered in this project is a very late variant of this ware, from Sandy Lane Style 1 vessels which have been broadly dated to the eleventh century (Thorpe 2008b).

The contents of context (6) are remarkable and critical in the understanding of the development of ceramics in the post-Roman period. Here is a sealed context, dated scientifically to 1610 ±30 BP, cal AD 410–540 (SUERC-19887), in which E ware (sixth to early eighth centuries AD) coincides with Bi (fifth to late sixth centuries AD), Bii amphora (fifth to seventh centuries AD), Phocean Red Slip Ware (fifth to late sixth centuries AD) and native manufactured Gwithian Style ware (sixth to late seventh centuries AD).

The lack of platters in Gwithian Style is noticeable. The radiocarbon determinations associated with Gwithian Style from Gwithian and Boden are both from residues on platters, and both are later than the date from Hay Close: respectively cal AD 550–650 (OxA 14528) and cal AD 590–670 (SUERC-19887) (Nowakowski *et al* 2007; Gossip 2013). This suggests that the Hay Close material was deposited very early in the developmental stages of this ware, when Roman-style dining traditions were still predominant and prior to social/economic changes that resulted in a change in eating habits and the adoption of platters, probably in the late sixth or early seventh centuries. However, layer (6) is only a single context, possibly deposited under defined conditions, and too much should not be made of the absence of platters. It is also significant that Grass-marked ware is absent from this context. This has crucial implications for refining the dating of this ware, as it appears that this context was dated prior to its debut into Cornwall, now put most likely within the seventh century. In summary the relationship of the various ceramics within context (6) reinforces observations made elsewhere on sites such as Boden fogou (Gossip 2013), Goldherring (Guthrie 1969) and Carngoon Bank (McAvoy 1980), that Gwithian Style ware was in use a good while prior to the introduction of Grass-marked ware.

The nature of the site from which this material is derived should be considered. Most of the material found was fresh and unabraded, suggesting its deposition soon after breakage. The occurrence of imported Mediterranean wares, especially the fine table wares, and the use of exotic food materials such as olive oil and wine implied by the presence of amphorae, along with E ware from France and the Cone Beaker of Campbell group Ca 'Atlantic' tradition, suggest a site with wide-ranging economic and political contacts, which are indicative of a site with high status.

Flint

Anna Lawson-Jones

The flint assemblage consists of 16 pieces of worked flint. Seven pieces were recovered from unstratified or residual contexts within the excavated trenches, while nine were collected during fieldwalking of the field where the excavation trenches were located.

The excavated flint

All the excavated flint is residual.

Two small, probably utilised blade pieces (trenches 3 and 4) are typical of Late Mesolithic material. Both are finely made and soft hammered, and have come from specialised blade-producing cores. Dorsal scarring shows the pieces to have come from an opposed platform core and from a single platform core, while the dorsal scarring around the bulb indicates bulbar preparation prior to removal from the core, all typical characteristics of Mesolithic material. The slicing use suggested from macroscopic observation and their obvious small size would suggest that as with many elements of the Mesolithic tool kit the pieces were used as part of a composite cutting tool, with the pieces laterally hafted to form a long, straight cutting edge consisting of a run of small blades.

The remaining five flakes, from trenches 3, 4 and 5, are mid- to Late Neolithic. This material is later, larger, bulkier and flake-based, but still displays great care and control in the production of given

Table 8 Flint from excavation

Trench, context	*Prim, Sec, Tert.*	*Peb, Nod, Unkn.*	*Burnt, Retouch*	*Use-wear, Abraded*	*Form, tool*	*Comment (size, colour, description, probable date)*
Tr 2 / (1)	T	U	R	–	Backed knife	28 × 18 × 5mm. Speckled very dark grey. Distal end of a broken/snapped in use possible knife, which has a partially retouched cutting edge and backing retouch associated with lateral hafting. Made on a near-uniformly thick long flake. Probably Neolithic.
Tr 3 / (6) <35>	T	U	–	U?	Small used blade	26 × 13 × 4mm. Mottled grey. Distal tip missing, tiny bilateral and bifacial removals suggest fine slicing use-wear. Late Mesolithic.
Tr 3 / (6) <80>	P	P	R?	U A	Pebble (core?) chopper	35 × 25 × 15mm. Smoky, mottled grey tan. Whole surface appears slightly abraded or polished through handling. Concave working edge with potential regular retouch is crushed due to chopping-like use. Prehistoric (Neolithic?).
Tr 4 / (21) <73>	T	U	B R?	?	Broken knife?	22 × 18 × 5mm. Pale smoky grey. Distal end of former blade missing (broken during burning?) Bulbar end notched for hafting. Probable hafted knife. Dorsal platform preparation. Neolithic.
Tr 4 / (24)	T	U	R	U	Small used blade	29 × 10 × 4mm. Mottled grey. Blade with fine/ nibbled dorsal platform preparation. Use wear on one (poss. both) sides. Late Mesolithic.
Tr 4 / (27) <36>	S	N	–	U	Utilised flake	41 × 20 × 4mm. Speckled very dark grey. Thin, curved probable cutting flake with light (slicing?) use-wear along usable straight edge. Neolithic.
Tr 5 / (1)	P	N?	–	U	Utilised flake	26 × 20 × 6mm. Very dark grey. Rounded triangular in plan, with regular thickness. Tiny removals on one part of edge implies light use. Prehistoric (Neolithic).

pieces. The use of soft hammers and platform control are evident. The pieces include a chopping tool, possibly made on a former core, with crushing along its working edge and an all-over light polish or sheen probably indicative of abrasion associated with use. None of the other pieces have the same appearance. In addition the broken, hafted end of a probable knife, the distal end of a backed knife with retouch along its working edge, a thin 'cutting' flake and a miscellaneous triangular shaped piece were found. The cutting flake comes from a nodular source, perhaps from Beer Head in Devon (Tingle 1998) or from a closer Devonian source (Newberry 2002), or potentially even a west Cornish coast where nodular flint periodically washes up from sources out to sea (Dave Weddle, pers comm). The use of imported nodular flint in Cornwall, where there are no inland flint sources, is a recognised Neolithic trait (Healy 1985; Edmonds 1995).

Note concerning tables 8 and 9:

- P/S/T P = Primary – 50 to 100 per cent cortex remaining
  S = Secondary – 2 to 49 per cent cortex remaining
  T = Tertiary – 0 to 1 per cent remaining cortex
- N/P/C N = Nodular flint (Probable import via trade and/or exchange)
  P = Pebble flint (Probable local beach origin)
  U = Unknown source

Use-wear comments based on macroscopic-only identification and interpretation.

Flint from fieldwalking

Seven of the nine pieces appear to be Neolithic, potentially Early/Middle Neolithic. Pieces include

Table 9 Flint from fieldwalking

Field location	*Prim, Sec, Tert.*	*Peb, Nod, Unkn.*	*Burnt, Retouch*	*Use-wear, Abraded*	*Form, tool*	*Comment (size, colour, description, probable date)*
US	P	P	R?	U	Core tool	30 × 25 × 19mm. Smoky cream. A chunky cube-like former flake and blade, multi-platform core with crush-like retouch possibly to facilitate handling during use as a chopper/piercer. Soft hammer removals. Neolithic.
2 NW	S	P	–	U	Core tool	38 × 28 × 15mm. Mottled creamy greys. Soft hammered long flake producing core with crushed use wear along working edge. Neolithic.
3 SE	S	P	–	U/A?	Broken flake	20 × 19 × 5mm. Smoky grey. The broken/ snapped bulbar end of a soft hammered possible long flake. Sharp (working? edge) feels abraded through use. Neolithic.
6 NE	P	P	B R	U	Ovate, dual function knife / scraper	34 × 33 × 16mm. Mottled grey/tan – partially result of heating. Slightly nosed, convex working edge with dual function steep scraper retouch and shallower cutting retouch. Mix of hard and soft hammering, plus slightly abraded use-wear on dorsal and ventral surface. Comfortable to hold. Neolithic.
9 NE	S	P	B? R	U	Miscel. (?), unclass. projectile	27 × 20 × 4mm. Pale mottled brown. A soft hammered, uniformly thick, slightly kite-shaped flake with wear/retouch around all edges and dorsal removals at bulbar end showing platform preparation. Possibly an unclassified projectile. Neolithic.
10 SE	P	P?	B	–	Burnt narrow flake / blade core	42 × 35 × 23mm. Severely burnt and calcified, with some blistering and intense crazing across whole surface. Remnant narrow flake and blade scars still visible. Appears to have been soft hammered. Not exhausted. Probable heat treatment accident. Neolithic.
10 NE	T	U	R	U	Cutting former core tool	40 × 25 × 15mm. Mottled pale creams. Elongate, triangular thick butted piece with soft and hard removals and a hinged flake scar indicative of faulted raw material. Tiny nibbled retouch all around platform – probably to facilitate handling. Bulb at pointed end. Near straight cutting edge has use wear and notch like damage. Probably Neolithic?
12 SW	P	P	R	–	Opposed platform blade core	49 × 21 × 10mm. Mottled grey. A fine, long, opposed platform blade and bladelet core with nibbled retouch indicative of platform preparation and suggestive of it not being exhausted. Up to 12 soft hammered removals visible, half of which could have produced microlithic tools. Late Mesolithic.
12 NE	P	P	B	A	Waste flake	20 × 16 × 7mm. Dark grey. An unused waste flake – probably the first removal from a pebble. Appears abraded through exposure/surface wear and tear. Prehistoric.

a range of reused core or core-based tools and cutting tools or knives (as was seen within the excavated material). Many of the pieces show soft or hard and soft hammer removals, alongside platform preparation and display a high level of control. Retouch tends to be fairly minimal, but where present is controlled and frequently very delicate. Much of the retouch is associated with the actual making of the tool, rather than post-production modification. The use of heating as a means of altering or manipulating both the quality (and possibly unintentionally) the colour of flint has been reported by Lee (2001) during experimental work. A single piece of waste, probably associated with core preparation, was also identified. This has been ascribed a general, prehistoric date, although this piece too is likely to be Neolithic, given the rest of the assemblage.

The combined excavation and fieldwalking total of only twelve pieces dated to the Neolithic period is small, but it does constitute by far the largest part of the flint assemblage for this site. The pieces are, despite long-term cultivation across the site, in surprisingly good condition, with very little in the way of obvious later, post-depositional damage. The range of pieces appears to suggest a domestic setting, but with a distinct lack of unused waste, suggesting that knapping was carried out elsewhere (although presumably within the vicinity). It is unfortunate, but not unusual, that this flint scatter does not have any associated, contemporary features and has no associated more diagnostic finds. However, on a more positive note the flint assemblage does appear to be essentially of one period, and not mixed with subsequent, later flintwork.

In addition to the Neolithic material there is a fine opposed platform blade and bladelet producing core. It is a piece typical of the Mesolithic period and still retains the fine nibbled retouch associated with platform preparation and the need to control blade width and length. The control and precision needed for the production of blades and bladelets which typify the most diagnostic elements of the Mesolithic tool kit is further enhanced by the use of soft hammers (bone or wood) to remove pieces from a prepared and maintained core. This core is entirely in keeping with the two small, utilised blades recorded from the excavated trenches, and indeed all three are of a near identical mottled grey flint. With the positive identification of only three Mesolithic pieces it is not possible to characterise the type of Mesolithic activity that took place at this location. It is likely to have been fleeting and potentially seasonal.

The cattle bone

Clare Randall

The animal bone recovered from ditch recut/pit [16], layer (6), consists of the poorly preserved remains of two cattle mandibles. Most of the bone itself has decayed completely with very fragmentary remnants clinging to some teeth. From the photographs it appears that some of the very badly decayed material formed the ascending ramus of one of these mandibles. It would appear that they were lying in close proximity. Staining may indicate additional parts of the skull were originally present. However, this probably did not include the maxilla, as the teeth might have been expected to survive but are not present.

The right mandible is represented by the second and third molars, both of which are in poor condition, with loss of the dentine. Both teeth were however worn.

The left mandible is represented by the fourth Premolar and first, second and third molars. This enabled the assessment of the age of the animal. This mandible had a Mandible Wear Stage of 46 (after Grant 1982). This indicates an animal well in excess of 40 months, falling in the 'old adult' stage, the oldest category available.

Whilst any inference that can be drawn is limited by such a small sample, it can be observed that in most cattle populations, meat animals will tend to be killed at the point that they reach maximum meat-bearing weight, but before they consume unnecessary amounts of feed. Animals that are kept long into maturity are likely to have been utilised for breeding purposes and/or been used in dairying.

Charcoal

Rowena Gale

Two samples of charcoal from the base of the enclosure ditch were identified to species to enable radiocarbon dating to be undertaken on appropriate samples.

Methods

The samples contained small fragments of friable charcoal. These were prepared using standard methods (Gale and Cutler 2000). Anatomical structures were examined using incident light on a Nikon Labophot-2 compound microscope at magnifications up to x400 and matched to prepared reference slides of modern wood. When possible, the maturity of the wood was assessed (that is, heartwood / sapwood).

Results

Layer (55) 1 × blackthorn (*Prunus spinosa*), weight <1g – AMS
5 × oak (*Quercus* sp.), heartwood and undetermined maturity

Layer (55) 1 × gorse (*Ulex* sp.) / broom (*Cytisus scoparius*), weight <1g – AMS
1 × hazel (*Corylus avellana*), weight <1g – AMS
4 × oak (*Quercus* sp.), heartwood and undetermined maturity

Radiocarbon dating

Two samples were submitted for accelerator mass spectrometry dating (AMS), a method which gives high precision dates on small amounts of material, at the Scottish Universities Environmental Research Centre (SUERC). One sample was taken from a charcoal-rich deposit which was located at the base of the enclosure ditch. The sample was hazel charcoal, identified by Rowena Gale, and is suitable for dating because it is a rapidly grown species. The second sample was obtained on bone from the cattle skull from ditch recut/pit [16], which had been cut into the main enclosure ditch. The determinations in Table 10 and throughout this report have been calibrated using the programme OxCal v3.10 and are given at 95 per cent confidence level.

Discussion

The radiocarbon determinations from Hay Close support the evidence from the artefactual analyses, which suggest that the site was of first millennium cal BC date with a substantial period of reuse in the post-Roman period (Fig 16).

Initially it was thought that the site could be of later Neolithic origin and would therefore date to the third or early second millennium cal BC (Harding 2003). However, although the date fell within a less precise part of the calibration curve, the determination from layer (55) at the base of the ditch demonstrates that the site was not a Neolithic henge.

Table 10 Results from material submitted for radiocarbon dating

Feature	*Lab no*	*Age BP*	*Material*	*Calendrical years 68%*	*Calendrical years 95%*
Enclosure ditch [17] fill (55)	SUERC-17652	2465 ±35 BP	*Corylus* Charcoal	760–510 BC	770–410 BC
Recut ditch/pit [16] fill (6)	SUERC–19887	1610 ±30BP	Cattle jawbone	AD 410–540	AD 390–540

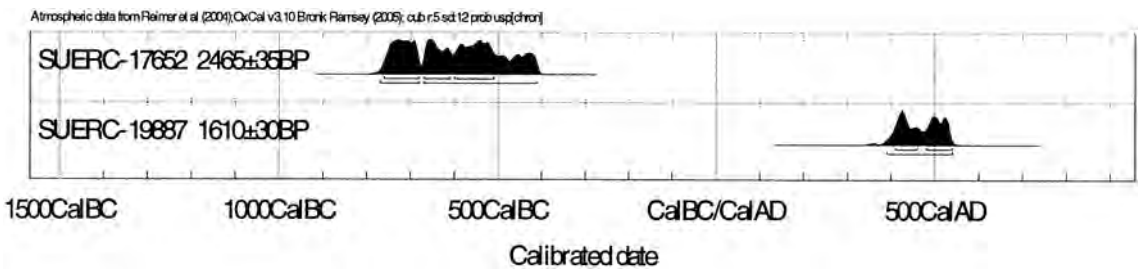

Fig 16 Radiocarbon dates from Hay Close.

The second determination, from pit [6], which had been cut into the top of the enclosure ditch, closely corresponds with the date of the imported ceramics and glass. The extended date range is of interest as it suggests that the Hay Close enclosure was used over a period of at least 800 years. However, given the lack of Romano-British pottery it is also possible that the determinations were associated with two distinct phases of activity and that the site was not in continuous use.

The results from the dating are simultaneously interesting but potentially problematic. There are two reasons for this: firstly because the first millennium cal BC is not a period when we would traditionally expect henge-like enclosures to be constructed, and secondly because it suggests that what is likely to have been seen as a 'pagan' site was in use in the early Christian era. The implications from the dating will be discussed below.

Discussion

The archaeological investigations at Hay Close produced valuable if unexpected results. The artefacts from the fieldwalking demonstrated that the area had been visited since the Mesolithic period but there was little evidence for an intensification of occupation during the Neolithic period, and there was no evidence for there being a concentration of flints in the area of the enclosure. The ensuing excavations did not uncover a henge monument, but they did confirm the presence of an enclosure with a henge-like form. They also appeared to indicate that there was comparatively little activity within the enclosure, but that there were two major phases of usage. Pottery and radiocarbon determinations from the fill of the main enclosure ditch indicated that the site began in the earlier Iron Age, with a second period of use in the post-Roman period. The sherds of pottery from vessels which originated in the Mediterranean also provide evidence for contact with wider European trading networks.

Beyond the main enclosure, the tap slag from trench 5 suggested that iron smelting was taking place in an adjacent enclosure (HER PRN 55556), probably in the Roman period. This is significant, as it is probable that iron may have been worked under controlled, ritualised conditions during this period (Hingley 1997). Trench 6 was probably located just beyond the western side of the large cropmark enclosure HER PRN 25078; although the results were negative, it is still probable that a sizeable enclosed settlement is located in this area. It seems likely that the three enclosures were at least broadly contemporary and they might have formed a significant complex of earthworks.

However, by demonstrating that the Hay Close enclosure was not a later Neolithic henge, but instead had its first phase in the Iron Age, the results have raised a number of interesting problems about the function of the enclosure and whether there are other comparable sites. A similar problem is posed by the post-Roman phase and in fact, this period is even more difficult, given the paucity of settlement evidence and the uncertain impact made by the arrival of Christianity. The long gap between the first and second phases also raises the issue of the longevity and significance of the site, was it continuously used, or were the two phases quite separate from one another?

The Iron Age enclosure

The excavations at Hay Close revealed that the site was a complex enclosure with a long history. The earliest phase was not, however, later Neolithic but Early Iron Age. This enclosure had a diameter of around 60m, with an internal ditch and an external bank. The external bank was not well-preserved: nowhere did it survive above about 0.2m in height and it was consistently spread to around 4m beyond the enclosure. It is possible that the bank had been levelled by subsequent ploughing or that it was never very substantial. The enclosure ditch was more substantial. In trench 4, where it had not been recut, it was nearly 4m wide and at least 1.9m deep. The enclosure ditch in trench 2 and 3 had seen major episodes of recutting in the post-Roman period and it was not bottomed in either case. The entrance into the enclosure is unknown but it may lie on its eastern side.

The enclosure was elaborated with an outer ditch. This was found in trenches 2 and 4 but not in trench 3, and so appears to be discontinuous. It was slighter than the inner ditch but still quite substantial, being 2.5m wide and at least 1.1m deep in trench 2. Here there were also two recuts of the ditch. The date of this outer ditch is uncertain, though it appears to cut the enclosure bank, and the only datable finds are probable Early Iron Age sherds from trench 2.

Few internal features were uncovered. The stone platform in trench 7 may represent a focal point for activities within the enclosure, or could have been a much earlier feature, such as an Early Bronze Age cairn that had been encircled by the enclosure. However, it was not dated which means that its chronological relationship with the enclosure is uncertain.

The Early Iron Age enclosure at Hay Close is unusual as it does not fit in with the main groups of enclosures known in Iron Age Cornwall, namely the more strongly defended enclosures such as hillforts and cliff castles, or the enclosed farming settlements known as rounds. The small size of the site and the external bank rules it out of the hillfort or strongly defended class of enclosure, comparable with sites such as Castle Pencaire (Breage), Castle Dore (St Sampson) or Chun Castle (Morvah) (Henderson 2007, 235; Radford 1951: Leeds 1926). Early Iron Age evidence has come from cliff castles, namely Trevelgue (St Columb Minor), Maen Castle (Sennen) and Gurnard's Head (Zennor) (Quinnell 2011, 233–5), which makes them broadly contemporary with Hay Close even if they are different in form. Presumably some hillforts also have an Early Iron Age phase, although evidence for this has not yet been found.

At Hay Close the lack of internal features, internal bank or general occupation debris contrasts with both more fully and partially excavated rounds across Cornwall, which are associated with a range of features such as dwellings and other structures as well as with occupation and industrial activity (Saunders and Harris 1982; Appleton-Fox 1992; Quinnell 2004). Moreover, it appears that rounds are different from the Hay Close enclosure not only in character, but in date, probably only starting, on the basis of present evidence, in the third century BC. Two round-like enclosures, at Halligye (Mawgan-in-Meneage) and Boden (St Anthony-in-Meneage), are more closely contemporary with Hay Close, but each is associated with a fogou and, like Hay Close, their character and function is uncertain (Startin 2009–10; Gossip 2013).

The lack of occupation evidence and the non-defensive arrangement of the bank and ditch therefore raises a problem with interpretation; namely, what kind of site was it? One possibility is that the enclosure was not inhabited and might have been used for communal gatherings and ceremonial purposes. Although the Iron Age finds were comparatively sparse, those from the succeeding post-Roman period certainly had the appearance of selected, ritualised deposits (see below). Unlike other parts of Britain, where shrines or cult buildings have been identified (Woodward 1992, 31–3; Woodward and Leach 1993, 305–10; Barrett *et al* 2000, 173; Cunliffe 2005, 561–6), places for formal ritual in Iron Age Cornwall have proved difficult to locate and comparable shrines are entirely absent (Quinnell 1986, 236; Jones 2010). This means that we do not really know very much about the character of organised ritual in Iron Age Cornwall, beyond the suggestions that ceremonial activity may have taken place at liminal locations close to the sea within cliff castles or underground within subterranean fogous (Sharpe 1992; Cooke 1993; Henderson 2007, 137).

However, the excavation at Hay Close has raised the possibility that in addition to the rounds and hillforts there were other forms of enclosure which were used for communal ceremonial purposes. At the time of the excavation in 2007, there did not appear to be any immediate comparanda; however, during the following months two sites were excavated in Cornwall which were broadly similar to Hay Close. At Camelford an Iron Age settlement was identified (Jones and Taylor 2008), to the north of which were two non-domestic enclosures. The most significant of these for Hay Close was a penannular enclosure 20m in diameter, defined by a ditch up to 1m deep. Excavation of the ditch revealed that it had become infilled from the exterior and must have had an outer bank. The enclosure did not contain any structures, although nearly all the interior was excavated, and the only feature within it was a single central pit, which had been sealed by two holed slates. A deposit of burnt bone, charcoal and broken pottery was found in the terminal of the ditch, which may well have been generated by feasting. The external bank is of interest as it was clearly not intended to be defensible. The pottery from the upper fill of the ditch is of Late Iron Age date. This date is supported by an initial radiocarbon determination derived from residue on one of the sherds of pottery, which was 2015 ±35 BP, 110 cal BC–AD 70 (SUERC-20414).

The second comparable site was located at Tremough, near Penryn, not far from an area which was associated with later prehistoric and Romano-British settlement-related activity (Gossip and Jones 2007). Here an evaluation trench confirmed that a 50m diameter enclosure, identified by

geophysical survey, consisted of three concentric ditches and a gully (Jones *et al* 2015). At least one of the ditches appears to have had a stone-revetted bank on its outer face. Artefacts from the upper part of the ditch comprised sherds of Late Iron Age or Romano-British pottery. However, the most significant feature was an oval pit, 1.45m across and nearly 1m deep. This feature was very large and its function is uncertain; however, it is possible that it had held a substantial post, like a totem pole.

Both sites are later than Hay Close but their primary phases are undated and their construction could stretch back into the earlier part of the Iron Age. Furthermore, they reveal the potential for non-domestic activity to occur in close proximity to areas of contemporary settlement activity. In light of the discoveries at Hay Close, Camelford and Tremough, it seems possible that other ceremonial enclosures of this date have gone unrecognised (Jones 2010). In fact, recent work by the National Mapping Programme (NMP) has identified a small number of cropmark enclosures, including those at Manuels, St Columb Minor (HER PRN4604), and Whitecross, St Enoder, which may not have been used as occupation sites (Young 2012). There are also other known enclosures which have been difficult to categorise, such as Bartinney (St Just), Godolphin (Breage) and the primary phases of Caer Bran (Sancreed) and Castle-an-Dinas (St Columb Major), which have points of similarity with Hay Close. In common with Hay Close, these sites are sited near to areas of settlement but are found in elevated positions. With the exception of Castle-an-Dinas, they are of similar diameter and are also of interest because they enclose cairns and barrows. It is also the case that they were not strongly defended. At the hilltop enclosures at Bartinney, Caer Bran and Godolphin the banks are very slight and the first phase of Castle-an-Dinas may have had at least six entrances (Wailes 1965; but see Soutar 2013), which does not suggest that it served a defensive role. These sites have been suggested to be of potentially Early Bronze Age date (for example, Herring 2011), but they are undated and could equally be of Late Bronze Age / Early Iron Age date (Jones 2010). Taken together it seems that there were a number of non-domestic enclosures found across Cornwall during the first millennium cal BC (*ibid*). If this were the case, it could mean that large-scale ceremonial activity in first millennium cal BC Cornwall took place within hengiform or circular hilltop enclosures which encircled older monuments.

One outstanding question relates to the origins of these enclosures. It is clear that they are not related to the types of cult site which are found to the east in southern England. One possibility is that they represent a borrowing from earlier monument forms. In particular, it could be argued that long deserted henges could have been seen as ancestral constructions or the work of supernatural beings, such as giants or gods. Likewise, the inclusion of barrows within several sites could represent a drawing upon the past and John Barrett (1999) has suggested that Bronze Age barrows would have had significance in the cultural landscape of Iron Age communities in southern Britain. He has argued that their monumental forms would have provided physical evidence to support a connection with a mythological past. Likewise, Richard Hingley (2009) has noted the presence of Bronze Age artefacts on Iron Age sites and conversely the evidence for Iron Age activity in older enclosures, which he has suggested could at certain times have been connected with a desire to establish genealogies.

However, although it seems very probable that the cairns inside sites such as Bartinney and possibly Hay Close could represent a manipulation of the past, it is less likely that the henge provided the role model for the enclosure. This is because there are very few henge monuments in the south-west region from which inspiration could be taken (Jones 2005, 11). It is, however, possible that the source of inspiration for these enclosures lies across the Irish Sea.

In Ireland, there are a number of monuments that were long thought to be related to the Late Neolithic British henges. Recent advances in dating have revealed that these sites are of a much later date. They include ring-barrows and embanked stone circles, which are now known to be of Bronze Age date (Roche 2004; O'Brien 2004). Comparable small henge-like sites dating to the Bronze Age have also been identified in northern Scotland and there is evidence that there were close links between the two regions (Bradley 2011).

However, it is the group of enclosures known as 'royal' sites, which perhaps provides the closest parallels with the Hay Close enclosure. These sites are predominantly found on the eastern side of Ireland. The majority have been found to have major phases of activity dating from the latter part of the Iron Age, and into the post-Roman period (Newman 2007; Waddell 1998, chapter 9). This

long span means that there is a broad overlap with the dating from Hay Close.

The Irish enclosures come in a variety of forms. However, they often include multiple-ditched enclosures with external banks, found both as single enclosures and in groups, such as the Rath of the Synods at Tara, close to the eastern seaboard of Ireland (Roche 2002). Many of the 'royal' sites contain other elements or are associated with other features such as embanked avenues, standing stones, and barrows (Newman 2007). Some of these features were contemporary with the enclosures but others, such as the Neolithic passage grave known as the Mound of the Hostages at Tara, are far older and their incorporation may again represent an attempt to manipulate an ancestral past. In mythology these sites are referred to as the residences and inaugural places for Irish rulers in the post-Roman period (Gantz 1981) and they do appear to have been used for ceremonial purposes, as well for high-status activities such as the working of iron, bronze and glass (Roche 2002, 73; Newman 2007). Most of the major Irish examples, such as Tara and Navan (Roche 2002; Lynn 2003) are far larger and more complex than any of the Cornish enclosures which have been discussed above. However, some of the smaller Irish sites, such as the Raffin (Raftery 1997, 80–1), are of a comparable size to Hay Close.

There is good evidence for contacts around the Atlantic façade during the first millennium cal BC (Cunliffe 2001, 308–10; Henderson 2007, 25), and early written records made by travellers from the Mediterranean attest to seaborne contacts in the latter half (Cunliffe 2002, chapter 4; Pliny the Elder 2004, 52–3). In the south-west region, coastal sites such as Mount Batten (Cunliffe 1988, 103–4) and perhaps St Michael's Mount (Maxwell 1972; Herring 2000, 116–18) provide evidence for exchange at certain points in time throughout the period. Irish goldwork and Breton socketed axes dating to the early centuries of the first millennium cal BC have been found in Cornwall (Henderson 2007, figs 3.15 and 3.20). Likewise, a Gundlingen-type sword found in the sea near Sennen Cove (Needham *et al* 2013, 115–16), is of a form widely found around the Atlantic coastal zone and reflects contacts between Britain, northern France and Ireland in the Late Bronze Age (Cunliffe 2009).

It is therefore possible that the desire to create ceremonial enclosures such as Hay Close may have arisen through external contacts with the eastern seaboard of Ireland during the Iron Age and could be the result of the wish to display links with distant places and perhaps with new esoteric knowledge which was bound up with them (Helms 1988, chapter 2). Indeed, given that the Atlantic is a dangerous ocean, likely to have been mythologized and of strong cosmological importance to adjacent communities (Henderson 2007, 299), this may have encouraged travellers to cross it to obtain social standing. Hay Close and the other enclosures can therefore be argued to have arisen through seaborne contacts with communities along the Irish coast. In this way, the diversity in the enclosures under discussion and the lack of precise Irish parallels could suggest that a number of different 'exotic' forms of enclosure were borrowed and adapted to suit the tastes of local Cornish communities.

The surrounding enclosures

The relationship between Hay Close and the two nearby enclosures was not established, although both may well be later than the first, Early Iron Age, phase of the Hay Close enclosure. The large oval enclosure HER PRN 25078 is entirely undated, although an Iron Age or Romano-British date seems likely, while the rectilinear enclosure PRN 55556, associated with metalworking, has some evidence for a Roman date. Although further excavation at Hay Close might change the picture, it seems likely, given the near absence of any diagnostic later Iron Age pottery such as South Western Decorated ware, or of Romano-British artefacts, that there was a gap in the use of the site, or at least in major activity, between the Early Iron Age and the post-Roman period.

However, this does not mean that the enclosure ceased to be important. It is plausible that, as the site became part of the social memory, events associated with it would have contributed to local myth and folklore. Indeed it may have been this body of myth which contributed to the site being reused later, during the post-Roman period. Even if Hay Close had become a grass-covered earthwork before the end of the Iron Age, it is possible that the builders of the nearby enclosures HER PRN 55556 and PRN 25078 wanted to locate their sites close to an important place in the landscape, leading to the development of an impressive complex of earthworks which were intended to structure the experience of the space, much in the way that similar, albeit much larger complexes developed

in Ireland at places such as Tara (for example, Newman 2007). The wider area is particularly rich in enclosures (Jones and Taylor 2004, fig 2) and it is possible that the Hay Close enclosure could have been a significant focal point, or a component of an important monument complex, to the people who inhabited these sites, and could therefore have served a variety of surrounding communities. The character of this location is further emphasised by the evidence for specialist activity at rectilinear enclosure HER PRN 55556, in the form of the smelting of iron, the production of which may have been considered a semi-magical process.

Metalworking in enclosure HER PRN 55556

Later prehistoric and Roman-period metalworking in Cornwall has recently been discussed by Lawson-Jones and Kirkham (2009–10, 205–6, 218–23). Evidence for smithing is not uncommon on rounds, although generally only on a small, domestic, scale (for example, Reawla, Gwinear: Appleton-Fox 1992). However, some enclosures appear to be specialised industrial sites, rather than farming settlements, notably Killigrew round, St Erme, where there was evidence for iron working (Cole and Nowakowski, forthcoming), and Little Quoit Farm, St Columb Major, a Romano-British smithing site (Lawson-Jones and Kirkham 2009–10). Duckpool, Morwenstow, is an unenclosed site but, with its valley bottom coastal location, appears to be outside the general pattern of settlement; here there was evidence for the working of lead, lead/tin and copper alloy in the Roman period (Ratcliffe 1995).

At the rectilinear enclosure HER PRN 55556 the evidence is for iron smelting rather than smithing. Smelting has been identified at just a handful of Iron Age and Romano-British sites in Cornwall: Trevelgue Head cliff castle, from the fifth to first centuries BC; Higher Besore, Threemilestone, an unenclosed later Iron Age settlement; and an enclosure at Nancemere, Truro, in deposits of the third to fourth centuries AD (Lawson-Jones and Kirkham 2009–10, 220–1). As a smelting site, and from the quantity of slag (7kg) recovered from the small area excavated, it is possible that the rectilinear enclosure HER PRN 55556 was a specialised industrial site rather than a farming settlement. As suggested for the Little Quoit Farm enclosure (Lawson-Jones and Kirkham 2009–10, 220), placing the specialised activity within an enclosure may have been intended to reflect and enhance the status of the metalworkers, to protect the secrets of the craft, and to reinforce perceptions of the arcane and almost magical nature of the metalworking process.

The post-Roman enclosure

The excavations provided evidence for reuse of the Hay Close enclosure in the fifth or early sixth centuries cal AD. This took the form of a small pit and the recutting of part of the inner ditch. Most of the artefacts from the site were found within these contexts. These appear to be structured depositions; that is to say, deposits involving the meaningful and careful selection and placing of artefacts. These deposits are paralleled in later prehistoric and Romano-British contexts elsewhere and do not appear to have been of a Christian character. Before looking at this more closely it is useful to place the early medieval activity at Hay Close in the context of contemporary settlement and the development of Christianity in Cornwall.

The post-Roman period in Cornwall (fifth to seventh centuries AD) is not as well understood as either the preceding Romano-British period or the succeeding medieval period. However, evidence for settlement activity demonstrating contacts beyond Cornwall has been uncovered at several sites along the Cornish coastline (Thomas 1988; 2007). The most famous is Tintagel. In common with Hay Close, it was associated with imported post-Roman ceramics and glass but at Tintagel the quantities of pottery were substantial, indicating a high-status site, perhaps the seat of one of the regional ruling elite that emerged in Britain after the breakdown of centralised Roman rule (Blair 2005, 15; Thomas 1993, chapter 6; Barrowman *et al* 2007, 334–6; Morris 1977, 441). It has been suggested that the finds at Tintagel are linked with Mediterranean traders who came in search of Cornish tin; at the same time, the traders supplied the Mediterranean goods sought by post-Roman rulers endeavouring to maintain some form of Romanised life-style (Penhallurick 1986, 240; Thomas 1988; 1993, 86). Under this scenario, it is possible to suggest a model whereby Hay Close and its imported pottery were linked to a Tintagel-like place on the coast, perhaps somewhere in the Newquay area, to which the pottery was directly imported. It is evident that the people who used the Hay Close enclosure were able to gain access

to some of the high-status artefacts which were being exchanged. This suggests that at least some of the individuals who were associated with Hay Close possessed some social standing and were influential enough to obtain materials which had been traded on the coast.

In addition to the high-status sites, there is also evidence that some of the older enclosed settlements or rounds, such as Trethurgy (Quinnell 2004) and Nancemere (Gossip 2005) continued to be occupied into the post-Roman period, suggesting the end of formal Roman rule was not as disruptive as in other regions (Rippon 2008, 119–21). The place-name evidence also suggests that some open settlements, which have continued in use to the present day, were founded in this period (Preston-Jones and Rose 1986; Rippon 2008, 125). Other securely dated sites which are suggestive of nearby settlement activity include metal and bone workshops at Gwithian (Nowakowski *et al* 2007) and a structure at Stencoose, St Agnes, which may have been associated with transhumance (Jones 2000–1). Additional settlement evidence comprises occasional discoveries of isolated pits and ditches with radiocarbon dates of the fifth to seventh centuries (Herring *et al* 2011, 268) and stray finds of local and imported ceramic styles, for example from Ventonarren, south east of St Newlyn East village (Thorpe 2008a).

The final form of evidence comes from the corpus of early Christian inscribed stones. These demonstrate a degree of stratification in society, with the further implication of ownership and control of land, while the character of the inscriptions and the use of ogham point to contact with Wales and Ireland (Thomas 1972; 1994, chapter 11; Turner 2006, 140; Rippon 2008, 122). These inscriptions also suggest that at least the upper echelons of Cornish society had become Christianized.

This wider evidence would imply that the enclosure at Hay Close was likely to have been set within a well-organised, settled landscape, whose inhabitants were steadily becoming converted to Christianity. It is reasonable to suggest that at least some of the many rounds and cropmark enclosures in the surrounding area were still occupied into the post-Roman period (Jones and Taylor 2004, fig 34). These cropmarks indicate an intensively exploited landscape in the Romano-British period.

Just how far Cornwall was Christian at the time when the Hay Close enclosure was reused, in the fifth to sixth centuries AD, is another question. The process of conversion to Christianity may have taken place over a long period (Turner 2006, 143). The evidence from Hay Close suggests that it may not have been fully established by this time and it is possible that where conversion had occurred it might not have altered all aspects of behaviour.

There is little or nothing to suggest that the Romano-British population in Cornwall had converted to Christianity before the withdrawal of the Roman legions in AD 410 (Thomas 1981b). The earliest evidence for Christianity in Cornwall is in the Hayle area, with a *chi-rho* stone at Phillack and an early inscribed stone nearby at Carnsew, both dated to the fifth century by Thomas (1994, 192–200); this may represent an isolated introduction of Christianity from Gaul (*ibid*, 206), but by AD 500 Cornwall was barely Christian (*ibid*, 306). Perhaps by this date one would also expect Christianity to be one of the attributes of the rulers at Tintagel, to bolster their authority as heirs to the Roman administration (Preston-Jones and Okasha 2013, 40). Evidence for Christianity here, at least by the sixth century, is supported by the cist burials which were recorded at Tintagel churchyard (Nowakowski and Thomas 1992), where evidence for grave-side ritual, in the form of small open fires, was associated with post-Roman imported pottery and a rather inconclusive radiocarbon date (Thomas 1994, 208). This activity was clearest in an area just to the south of a socket, believed to have been the location of an upright granite pillar (Nowakowski and Thomas 1992, 6–9). Interestingly, the rituals also appear to have involved the use of hallucinogenic herbs.

While Cornwall was part of a world of wider contacts with Ireland, Wales, Brittany, Gaul and the Mediterranean, the main impetus for the introduction of Christianity, from around AD 500 onwards, is thought to have come particularly from south Wales, where Christianity had its roots in the Roman period and by this time was well established, with priests, bishops and land-holding churches (Davies 1982, 169–71; Thomas 1994; Blair 2005, 15–16). The evidence of the inscribed stones suggests that east Cornwall in particular saw strong influence and even settlement from south-west Wales from the beginning of the sixth century, with a major point of contact through the Camel estuary (Thomas 1994); a secondary access point may have been the Gannel, Newquay (*ibid*, 239).

In that area, just 5 km from St Newlyn East, there are coastal Christian sites at Crantock and Cubert whose communities are likely to have received Christianity in the sixth century. Both have *lanns*, the early Christian enclosures which were being established in Cornwall in the sixth and seventh centuries (Preston-Jones and Rose 1986; Preston-Jones 1994; Preston-Jones 2011, 272–3). Cubert also has an inscribed stone, confirming an early date, and Crantock, which was a very large *lann* and a monastic site at the time of Domesday Book, has a dedication to a saint associated with Wales and Somerset; both areas of probable continuing Romano-British Christianity (Olson 1982; Preston-Jones and Rose 1986, 155). Further inland, communities in the St Newlyn East area may have hung onto pagan practices for longer.

Thus the dating from Hay Close, in the fifth or early sixth centuries cal AD, places it right at the point when we should expect an overlap between pagan and emerging Christian cultures. However, there is comparatively little evidence for pagan practices in the period after the collapse of the Roman administration. Some Romano-British enclosures included religious sites within them, as at Bosence, St Erth, which had a large, deliberately infilled shaft with artefacts that included a 'tin saucer' (Hencken 1932, 193–4), and Trethurgy round had a possible shrine inside it, but there is little evidence for continuity, although at the latter site it has been suggested that the shrine's abandonment in the sixth century could have been due to the impact of Christianity (Quinnell 2004, 237; Preston-Jones 2011, 271). A few sites, such as holy wells (Turner 2006, 132), may have had pagan origins and it is possible that *neved* place-names such as Lanivet (Padel 1985, 172; 1988, 106) could refer to sacred pagan groves, or perhaps more accurately 'sacred places' (Hutton 2013, 217). There is also evidence from the stories of the saints, most notably the *Life of Saint Samson of Dol*, probably written in the seventh century and describing events in the mid-sixth century (Thomas 1994, chapter 14), which refers to pagan activities at sites such as caves and standing stones (Turner 2006, 132). It is, however, uncertain how 'historical' these tales are, or if the events within them were entirely borrowed from elsewhere (Orme 2000, 7–8). In addition to the saints' tales, there is a more secular medieval folkloric tradition, which frequently incorporates earlier pagan sites into stories. This can be seen in both Irish and Welsh mythology, where barrows and passage graves become the homes of heroes and supernatural beings and places of mythic event (Dooley and Roe 1999; Gantz 1976, 117). These stories might suggest some blending of old and new beliefs.

Archaeological evidence has emerged in recent years for the reuse of earlier prehistoric monuments such as passage graves, henges and barrows in the later Roman and early medieval periods (Bradley 2002, 113–15; Swift 2003; Field 2006, 162–4; Smith and Brickley 2009, 141–5). In Wales, for example, at Plas Gogerddan, a third- to seventh-century AD burial was interred near to a prehistoric standing stone and Iron Age ring-ditches (Murphy 1992) and at Tandderwen, an early medieval cemetery was situated beside a Bronze Age barrow (Brassil *et al* 1991). Dark (1993) has argued that reuse of earlier sites was 'superstitious' and that earlier monuments were seen as appropriate places for certain forms of ritualised practice. However, it is also the case that certain mythologised or 'ancestral' sites, such as prominent Bronze Age barrows, standing stones or enclosures could have been brought back into service as a means of legitimising the present. Within Cornwall there is evidence for Romano-British activity at numerous prehistoric sites. The Eathorne menhir (Mabe) was re-erected during this period and Romano-British artefacts have been recovered from other prehistoric sites in the county (Hartgroves *et al* 2006). There is less evidence for the reuse of earlier sites in the early medieval period, although several churches seem to have been erected in rounds (Preston-Jones 1994, 82–3), and at Chapel Carn Brea (St Just-in-Penwith) a chapel was built upon a large cairn (Borlase 1885). At a number of church sites, including Crantock, Phillack, Lelant, Constantine and St Enodoc, possible pre-Christian burials have been found (Olson 1982; Preston-Jones and Rose 1986, 155), but in no case has this been shown for certain.

At St Newlyn East, there is no evidence for the date at which the church site was founded. Its first documentation is in 1259 as the 'Church of *Sancta Newelina*' (Polsue 1870, 1; Padel 1988, 129) and the earliest fabric in the church is of the Norman period (Sedding 1909, 305–6), but there is no evidence in the form of an inscribed stone, a Cornish place-name or a stone cross, to indicate an early medieval origin. Although the dedication is to a Celtic saint, all traditions concerning the

saint are recorded at a very late date (Orme 2000, 203). Nonetheless, this is likely to be a pre-Norman foundation and there is a good chance that it occupies the site of an earlier round: although the churchyard itself is a rough square, the pattern of roads in the village forms a large oval enclosure around the site of the church and nearby properties. Nonetheless, the story of Saint Newlina and her decapitation, or martyrdom, at the hands of local pagans (Henderson 1958, 365–6) provides an interesting, although fanciful and most probably fictitious account of early relations between Christians and pagans in the immediate vicinity.

The reuse of an old ceremonial site, which almost certainly carried 'pagan' associations, is therefore of significance to our understanding of the period. The archaeological features dating to the post-Roman period are particularly interesting as they incorporate imported artefacts, which are found at high-status sites such as Tintagel. Excavated early Christian sites are still scarce in Cornwall, which means that it is extremely difficult to make direct comparisons. Small-scale ritualised activity has been found elsewhere along the north Cornish coast: at Tintagel, for example, there is evidence for feasting and quartz pebbles were buried in some of the graves, and at Bossiney (Tintagel) a small pit was found to have been infilled with sea shells and animal bones in the fifth or sixth century (Nowakowski and Thomas 1992, 7–9; Jones and Quinnell 2014, 12, 133). However, the contexts in which they are found at Hay Close are rather different from the other sites of this period in Cornwall and in many ways are altogether more similar to those of the preceding Iron Age and Romano-British periods (for example, Grant 1984, 533–43; Hill 1995; Jones and Taylor 2004, 39).

This can be demonstrated by considering the two major find-spots where diagnostic objects were recovered. The first, the small pit [11] in trench 1, contained a large number of selected artefacts, which included 24 sherds of post-Roman pottery (including the rim from **P1**) and a perforated stone weight (**S1**). Comparable deposits in pits are a feature of the Romano-British period in Cornwall and similar pits have been found at the nearby enclosure at Pollamounter and at Stencoose, which were associated with deposits of pottery (Jones 2000–1; Jones and Taylor 2004). A perforated stone weight was found at Tremough (Penryn) (Gossip and Jones 2007, 47) in a posthole beside the door of a roundhouse. Throughout later prehistory and the Romano-British period similar pits, containing selected deposits of pottery, were often associated with domestic rubbish close to boundaries and it has been argued that there may have been rules governing the disposal of rubbish (Hill 1995; Clarke 1997). The infilling of rubbish pits is likely to have had a ritualised aspect which involved the placing of objects associated with specific events, places or activities into the open pit.

The evidence for selected deposition is even more marked in trench 3 with feature [16], the deep recut into the enclosure ditch. It is uncertain whether this feature represented a recutting of a substantive length of the ditch or a more contained, deep pit. What is certain is that it produced virtually all of the imported artefacts (for example, the Mediterranean Phocean slip wares and amphorae and the European E wares, **P2–P5**) and contained the setting of large quartz blocks, which had a distinctly cist-like appearance. It is important to stress that this was the only place on the site where there was evidence for any kind of conspicuous consumption and the finding of the cattle skull near to the setting of quartz blocks gave the appearance of a highly formal deposit. Furthermore, it is likely that other organic deposits had been placed into the fill of the cut, which reduced the acidic effects of the soil allowing the bone to survive. Although they seldom survive in Cornish soils, animal skulls are a common feature in later prehistoric sites and Romano-British shrines, within pits and ditch fills, and cattle skulls are frequently found in such contexts (Grant 1984; Green 1986, 178; Woodward and Leach 1993, 307; Barrett *et al* 2000, 291). Given the symbolism of cattle in the later prehistoric and Romano-British periods, the form of deposition is likely to have been associated with some form of ritual or magical act (for example Ross 1974, 388). At Hay Close it seems likely that the deposit was generated by at least one episode of large-scale social feasting, and indeed, the deposit has overtones of the kind of large-scale ritualised feasting associated with the inauguration of an Irish king described with disdain by Giraldus Cambrensis (1982, 109) several centuries later. If this were the case, it would appear that the mode of deposition was governed by older ideas concerning the disposal of feasting residues into the ground. These traditions owed little to Christianity, although the objects selected for inclusion were the same as those which were used by high-status, newly-converted communities.

The question remains, however, as to whether this activity was carried out as an act of overt defiance to the new religion by die-hard pagans or as a last gasp of an old religion, which was tolerated by the new. Perhaps, as with some early Anglo-Saxon burials, we are seeing a merging of two faiths? Indeed, much like the gifts left at the 'forest edge' by more recent Christian missionaries (Burger 1990, 132–3), the exotic artefacts in cut [16] could represent 'sweeteners', fine wine and table-wares intended to win over the sinful.

Although we will never know which of the scenarios outlined above was correct it is possible to consider briefly the context of the site. The post-Roman phase of Hay Close represented a continuing or perhaps more probably the renewed use of a 'pagan' site. The reworking of the site could be interpreted as an attempt to (re)create a focal point in the landscape as a communal ceremonial centre in the aftermath of the Roman empire, when there may have been a political void waiting to be filled.

However, if the intention had been to create a long-term centre, in opposition to the new religion, then ultimately it was unsuccessful and the project was doomed to failure. Late pagan sites such as Hay Close would not have been easily absorbed into Christian liturgical practices in the way that others, such as holy wells could have been (Borlase 1893, 58; Woodward 1992, 124). It is therefore not surprising that, despite being used at the dawn of 'history', all memory of Hay Close was lost until now.

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Pits and pyre debris at Tresavean, Lanner, Cornwall

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In April 2013 archaeological investigations were carried out at Tresavean, near Lanner, in advance of the construction of a housing estate. Ten pits were uncovered, a number of which had charcoal-rich fills. Although no artefacts were recovered, post-excavation analysis revealed that two of the pits contained cremated bone which is likely to be human. Three samples were submitted for radiocarbon dating and these produced determinations which fell in the period 1600–1400 cal BC, at the transition between the Early and Middle Bronze Age. This paper discusses the wider context of the pits and offers interpretations for their possible function.

In 2013 Historic Environment Projects (now Cornwall Archaeological Unit), Cornwall Council, was commissioned by Halsall Construction on behalf of Coastline Housing Association, in advance of a proposed housing development at Tresavean, Lanner.

Geophysical survey of the development area by Archaeophysica Ltd in 2013 had recorded a number of responses, including linear features, a possible mine shaft and other possible archaeological features (Thorpe 2013). In April 2013 the Historic Environment Projects team undertook an archaeological watching brief across the site. As a result a number of archaeological features were uncovered, including a group of ten pits which are reported on here.

Location and background

The project area (at SW 72448 39688) is located south east of Lanner in the parish of Gwennap (Fig 1), on a north-east facing slope at a height of 90m to 98m above sea level. Prior to the development the field had been used for grazing. The settlement of Lanner lies to the immediate north west and farmland to the north, south and east. To the west are areas of small fields and rough ground which contain shafts associated with disused mines.

The soils are recorded as being Manod (Loam over Shale) overlying a bedrock geology consisting of Devonian interbedded slates and sandstones of the Mylor Series that lies within the metamorphic aureole of the Carmenellis granite batholith. This area has been heavily mineralised with several lodes containing both copper and tin trending north east to south west and north west to south east, criss-crossing the land around the development site (British Geological Survey sheet 352).

The settlement of Lanner was first recorded in 1223 (Padel 1988, 106) and the area of the proposed development falls into a historic landscape character zone classified as Anciently Enclosed Land (Cornwall County Council 1996). This is land which has been settled and farmed since at least the medieval period and which often contains buried archaeological remains dating from the prehistoric to medieval period.

No archaeological sites were known within the development area but the Cornwall Historic

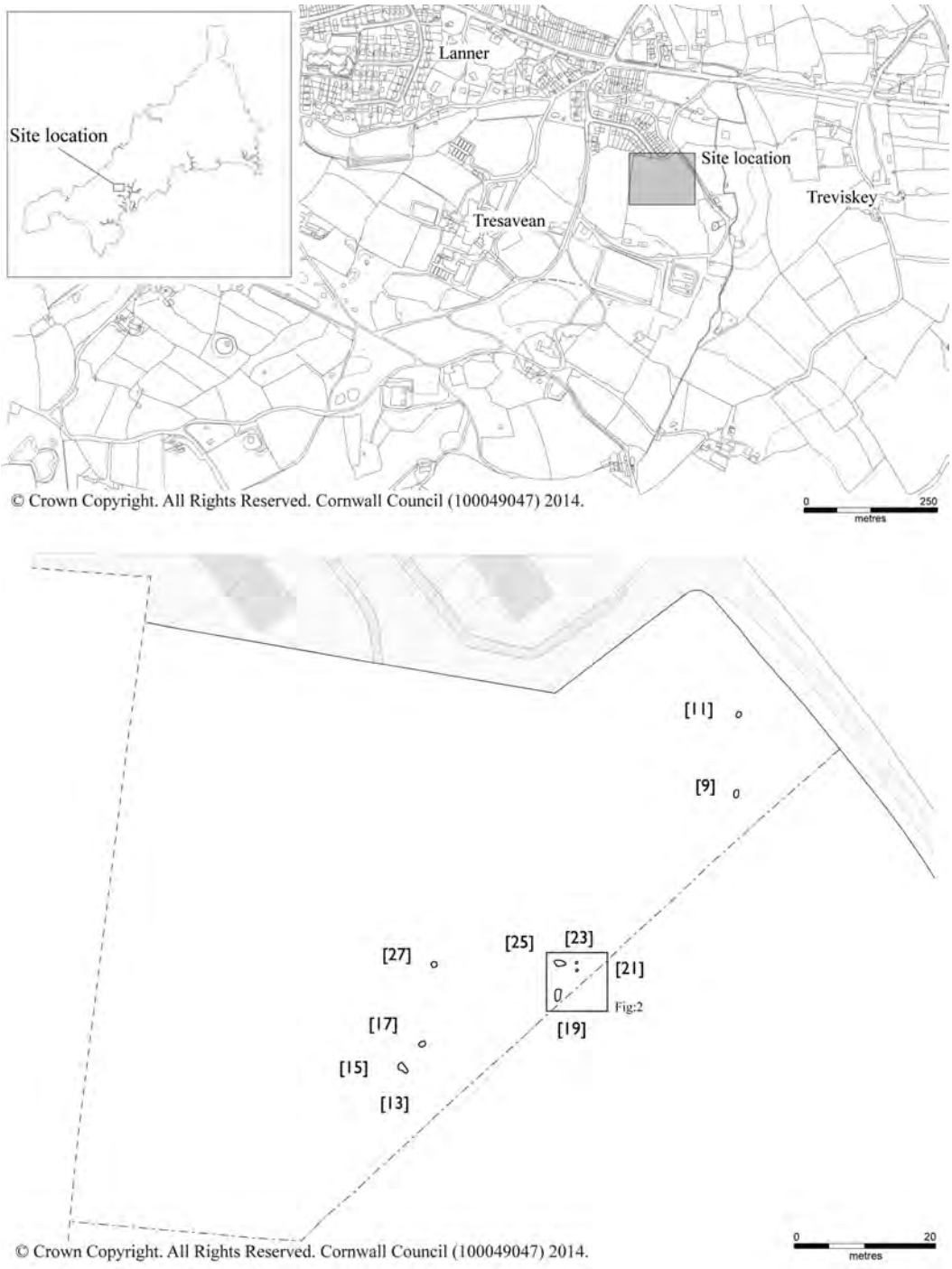

Fig 1 Tresavean: location and the overall distribution of the pits. All the pits contained charcoal. Pits [9], [11], [13] and [15] had evidence for burning in situ. *Pits [9], [11], [17], [23] and [25] contained burnt stones. Pits [21] and [23] included burnt bone.*

Environment Record (HER) documents a number of sites in the wider vicinity. These include a Bronze Age copper-alloy flanged axe head (MCO1714), which was found at Treviskey about 400m to the south east of the site, and a partially extant field system (MCO35449) in the vicinity of Treviskey to the east of the site is considered to be of medieval origin. The settlement of Treviskey was first recorded in 1319 (MCO17946) and Tresavean in 1336 (MCO17684). Most of the documented features near the site were, however, associated with East Tresavean Mine, which lay to the south and east of the development area (MCO12709; MCO39018). Anomalies identified by the geophysical survey were also considered likely to be mining-related (Thorpe 2013).

Results from the watching brief

The archaeological watching brief led to the recording of a number of features, including modern postholes, removed field boundaries and pits. All of these features have been described in an archive level report (Thorpe 2013). This paper reports on the ten pits which were thought to be of prehistoric date and in particular on a cluster of four, two of which produced cremated bone (pits [21] and [23]).

The pits were recorded running roughly north east to south west, spread out along the eastern side of the site, over a length of approximately 70m (Fig 1). All were of similar shape and form. None of the pits produced any artefacts.

There was no obvious pattern to their distribution, although four pits, [19], [21], [23] and [25], were close to one another and appeared to form a discrete grouping. Given that some of the pits occurred in close proximity to the eastern limit of the development area, it seems probable that more could be found within the field further to the south and east.

Scattered pits [9], [11], [13], [15], [17] and [27]

Pit [9]

Pit [9] was roughly oval, measuring 0.8m by 0.7m and 0.2m deep. The cut had a bowl-shaped profile with shallow concave sides and a rounded bottom. On the south-western side of the pit the bedrock had been heat-affected, turning it red-brown. The fill (10) consisted of very dark organic-rich black to grey-brown clay with numerous charcoal fragments and burnt stone, especially vein quartz.

Pit [11]

Pit [11] was roughly circular, 0.7m in diameter and up to 0.2m deep. It had a bowl-shaped profile with steep concave western and convex eastern sides and was flat bottomed. The north-western side of the cut had been heat-affected, turning it red-brown. The fill (12) consisted of a very dark organic-rich black to grey-brown clay with numerous charcoal fragments. Burnt stone, including a granite block and vein quartz, was noted within it. Large amounts of charcoal were recorded at the base of the pit (Challinor, below).

Pit [13]

Pit [13] was roughly circular, 0.6m in diameter and up to 0.08m deep. The cut had a bowl-shaped profile with convex sides and a rounded bottom. The south-western side had been heat-affected, turning it red-brown, and the north-western side had been removed by the cutting of pit [15]. The fill (14), consisted of very dark organic-rich black to grey-brown clay with numerous charcoal fragments and a few stones.

Pit [15]

Pit [15] was immediately beside and partly cut pit [13]. It was roughly circular, measuring 0.7m in diameter and 0.12m deep. The cut had a bowl-shaped profile with the south-eastern side being a shallow, slightly convex shape, while the northern side had a steeply sloping convex profile. The whole of the western side of the pit had been heat-affected, turning it red-brown. The fill (16), consisted of very dark organic-rich black to grey-brown clay with numerous charcoal fragments. There were few stone inclusions.

Pit [17]

Pit [17] was oval, 0.8m by 0.6m and 0.11m deep, with an asymmetrical profile, its southern side shallow and slightly convex, while the northern side had a steeply-sloping convex profile. The fill (18) consisted of very dark organic-rich black-brown clay containing numerous charcoal

fragments and some burnt stones.

Pit [27]

Pit [27] was not investigated fully as it had been tracked over by a mechanical excavator, and its shape and the character of its fill could not be fully determined. It appeared to be roughly similar in shape and size to pit [9] and there was evidence that its fill was charcoal-rich and contained burnt stone.

Concentrated pit group: [19], [21], [23] and [25]

In the middle of the site was a group of four pits (Fig 2). Although none of these appeared to have evidence for *in situ* burning they did generally share the same morphological characteristics of the more dispersed features described above. Two pits, [21] and [23], also contained calcined bone.

Pit [19]

Pit [19] lay at the southern end of the group close to the eastern edge of the site. Oval in shape, it measured 1m by 1.3m and 0.15m deep. The long axis of the cut was orientated north to south. The pit had a shallow U-shaped profile; the south-western side was concave, and the north-eastern was convex. It had a slightly rounded base. The fill (20), consisted of very dark organic-rich black-brown clay containing numerous charcoal fragments and some burnt stones.

Pit [21]

This small pit was sub-rectangular, measuring 0.3m by 0.2m and 0.15m deep. The long axis of the cut orientated north east to south west (Fig 3). The pit had a U-shaped profile with steep, nearly vertical sides and was flat bottomed. The fill (22), consisted of very dark organic-rich friable black-brown clay containing plentiful charcoal fragments. Numerous identifiable fragments of burnt bone were also present in the fill (see Higgins, below). No artefacts were recovered. A radiocarbon determination was obtained on the burnt bone, 3197 ± 26 BP, 1509–1419 cal BC (SUERC-53097) which dates the pit to the middle of the second millennium cal BC.

Pit [23]

This small pit lay just over 0.6m to the north of pit [21]. Sub-circular in plan, it had a diameter of 0.2m and was up to 0.12m deep (Fig 3). The cut had

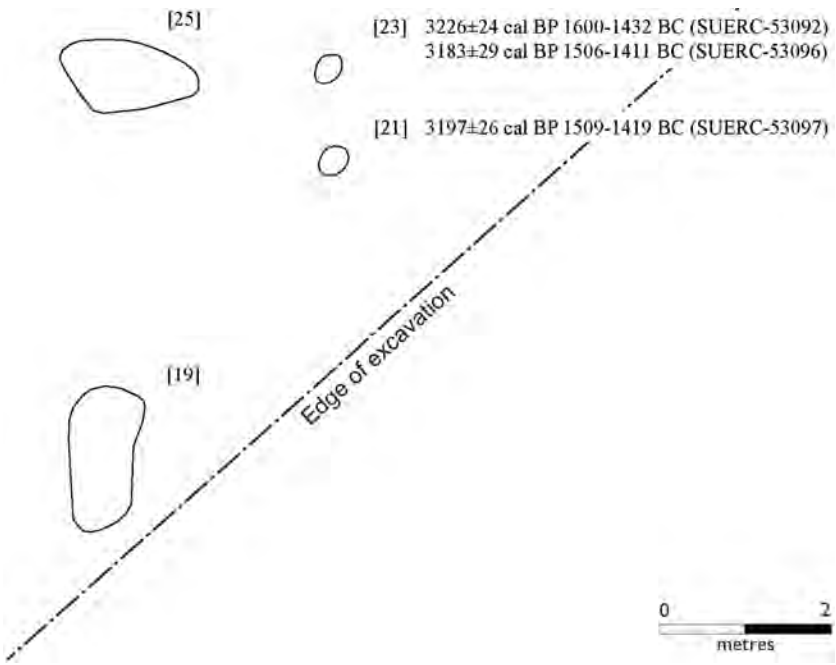

Fig 2 Plan of pits [19], [21], [23] and [25].

Fig 3 Photograph from the north showing pits [21] (background) and [23] (foreground) after excavation.

a U-shaped profile with steep, near vertical sides and was flat bottomed. The fill (24), consisted of very dark organic-rich friable black-brown clay containing plentiful charcoal fragments. Numerous identifiable fragments of burnt bone were present in the fill along with a few burnt stones. Two radiocarbon determinations were obtained, 3226 ± 24 BP, 1600–1432 cal BC (SUERC-53092) on charcoal and 3183 ± 29 BP, 1506–1411 cal BC (SUERC-53096) on burnt bone. Both dates fall in the middle of the second millennium cal BC and are very close to that from pit [21].

Pit [25]

Sub-oval in shape, it measured 1.5m by 0.8m and was 0.12m deep. The long axis of the cut was orientated north west to south east. The pit had a shallow U-shaped profile with convex sides and a slightly rounded base. The fill (26), consisted of grey-brown clay incorporating some flecks of charcoal and burnt stone.

Summary

The excavated pits at Tresavean did not contain artefacts and there was little in the way of direct stratigraphic relationships beyond the cutting of pit [13] by pit [15]. This means that the pits could belong to more than one period. Nonetheless, some links between them can be suggested.

It is noticeable that they all have charcoal in their fills, some in large amounts. Where identifiable, this included a large proportion of oak (Challinor, below), implying deliberate selection of wood.

Pits [9], [11], [13], and [15]), beyond the concentrated pit group, produced evidence for *in situ* burning and three ([9], [11] and [17], as well as pits [19] and [25], produced burnt stones. The *in situ* burning of wood and the deposition of burnt stone and charcoal may have been associated with activities involving hearths and cooking, and this hypothesis is explored below.

The contents of pits [21] and [23] were very similar in terms of large amounts of mature oak charcoal and burnt bone, implying a shared function. The radiocarbon dating is also very close and there is the likelihood that these pits were infilled with pyre debris associated with the cremation process (below).

Cremated bone

Jo Higgins

Small quantities of cremated bone were recovered

from fills (22) and (24) of two bowl-shaped pits [21] and [23].

Methodology

All fragments were examined macroscopically, using a hand lens (x10) where necessary. All analyses, where possible, were undertaken in accordance with current established standards and guidance (Brickley and Mckinley 2004; English Heritage 2002).

Results

Context (22), pit [21]

Bone from this context comprised a small quantity of white, well-calcined cremated bone fragments. General preservation was poor, with all fragments moderately to highly eroded. However, most fragments were greater than 5mm in size (84 per cent), with 41 per cent of the total measuring greater than 10mm (Table 1). The maximum fragment size was 28mm.

The total weight of the cremated material from (22) was 15.6g, well below the expected range (57–3000g) for an undisturbed burial of a single cremated adult from an archaeological context (McKinley 2000).

The fragments were all unidentifiable cortical bone, but were of similar character and density to highly fragmented cremated human bone. Two fragments from the 10mm fraction were possible cranial vault fragments (cortical surface of outer table and some diploe only), and a further six were long bone fragments. However, due to the small fragment size and level of post-depositional erosion of the assemblage, more specific identification was not possible.

Context (24), pit [23]

Bone from this context comprised a small quantity of white, well-calcined cremated bone fragments. General preservation was poor, with all fragments moderately-highly eroded. However, a majority of fragments were greater than 5mm in size (68 per cent), with 34 per cent of the total measuring greater than 10mm. The maximum fragment size was 16mm.

The total weight of the cremated material from context (24) was 5.98g, well below the expected range (57–3000g) for an undisturbed burial of a single cremated adult from an archaeological context (McKinley 2000).

The fragments were all unidentifiable cortical bone, but were of similar character and density to highly fragmented cremated human bone. One probable long bone fragment from the 10mm fraction had a U-shaped fissure and fracturing pattern, another characteristic of deliberately cremated human bone. However, due to the small fragment size and level of erosion, it was not possible to *positively* identify any of the fragments as human.

Conclusion

Although none of the bone could be positively identified as human, the form and density of the fragments were characteristic of cremated human bone, and some of the fragments from context (22) were identifiable as potential cranial and long bone fragments, suggesting the material is unlikely to be animal derived.

The white, well-calcined nature of the deposits suggests deliberate cremation. Bone becomes white and well-calcined when subjected to temperatures in excess of 600ºC, which is generally considered to indicate an efficient cremation process, employing a well-constructed and tended pyre (Brickley and McKinley 2004). In addition, the presence of U-shaped fissures in the bone from context (24) are indicative of

Table 1 Cremated bone: distribution of fragment size, by weight (g)

	Context (22)		*Context (24)*	
	Weight (g)	*Percentage of total weight*	*Weight (g)*	*Percentage of total weight*
10mm	6.4	41	2.0	34
5mm	6.7	43	2.0	34
2mm	2.5	16	1.9	32
Total	**15.6**	**100**	**5.9**	**100**

the cremation of a non-dehydrated (that is to say, fresh, either fleshed or de-fleshed) bone (McKinley 2000).

Both deposits of cremated bone should therefore be considered as potentially human, either as burials where the majority of bone incorporated has not survived, or only a token amount was originally deposited, or possibly as material derived from a pyre site which has become incorporated into the pit fills.

However, it should be noted that less well-oxidised brown, black and blue bone is likely to be more susceptible to post-depositional degradation, particularly in acidic burial environments. Therefore, there may be a bias in the surviving bone recovered, potentially leading to erroneous conclusions regarding pyre efficiency / technology and 'token' burials.

The charcoal

Dana Challinor

Samples were taken from a series of pits with charcoal-rich fills: [9], [11], [13], [15], [17], [19], [21] and [23]. The morphology of the pits was similar, but pits [9], [11], [13] and [15] showed evidence of *in situ* burning and pits [21] and [23] contained fragments of burnt, probably human bone. The absence of any other artefacts, except some burnt stone, meant that the charcoal was important as dating material as well as for understanding potential fuel use and offering insight into burning activities.

Charcoal was recorded as numerous in all the pits, although the material received for analysis was variable in quantity and size of fragments. This was due in part to the sampling, whereby 100 per cent of the fills from pits [21] and [23] were sampled, with 25 per cent or 50 per cent from the other pit fills.

Methodology

Samples producing <25 fragments of charcoal (of identifiable >2mm size) were examined in full, with a random selection of 30 fragments identified from the richer assemblages. This was considered an adequate quantity since it was immediately apparent that diversity was very low in the assemblages. The charcoal was identified by fracturing and sorting into groups based on the anatomical features observed in transverse section at ×7 to ×45 magnifications. Representative fragments from each group were then selected for further examination using a Meiji incident-light microscope at up to x400 magnification. Identifications were made with reference to Schweingruber (1990), Hather (2000) and modern reference material. Classification and nomenclature follow Stace (1997).

Results

Three taxa were positively identified: *Quercus* sp. (oak), *Corylus avellana* (hazel) and Maloideae (hawthorn group) (Table 2). It is possible that other taxa were present in the larger assemblages, but these would have represented only a minor component, as oak clearly dominated all of the samples. With the exception of pits [15] and [17], charcoal was abundant and fragment size was generally good, with some >8mm or larger. However, condition was notably poor: very friable, with frequent radial cracks and characteristic splitting along the rays into fine

Table 2 Charcoal identifications

Cut number	*[9]*	*[11]*	*[13]*	*[15]*	*[17]*	*[19]*	*[21]*	*[23]*
Deposit number	*(10)*	*(12)*	*(14)*	*(16)*	*(18)*	*(20)*	*(22)*	*(24)*
Quercus sp. (oak)	24hr	22hs	28hs	23h	7h	28hs	30h	29hr
Corylus avellana L. (hazel)		8r	1					
Maloideae (hawthorn group)								1
Indeterminate: bark	2		1					
Indeterminate: burrwood	2					2		
Indeterminate	2							
Total	**30**	**30**	**30**	**23**	**7**	**30**	**30**	**30**

h=heartwood; r=roundwood, s= sapwood

slivers. Another noteworthy feature was the high level of vitrification, almost to the point of total fusion, in oak fragments from several pits: [13], [15], [19] and [21]. Oak heartwood was recorded in all samples, but identifying tyloses was made difficult by the vitrification and tendency of the charcoal to fragment on fracturing and a key has been used in Table 2 (h=heartwood; s=sapwood; r=roundwood) to denote presence, without providing quantification, which would not have been reliable. Two further, general observations on maturity were made: firstly, many of the fragments came from slow-grown wood, with little or no late wood visible; and secondly, there was little evidence for any ring curvature.

With so few identifiable charcoal fragments, it is not reasonable to make interpretations about fuel procurement or usage. However, it is worth noting that oak and broom / gorse charcoal are commonly found in charcoal assemblages of prehistoric date in Cornwall. Broom / gorse charcoal dominated the Middle Bronze to Early Iron Age roundhouse samples from earlier 1984 excavations at Bosiliack (Challinor 2011).

Discussion

The presence of burnt, probably human bone in pits [21] and [23] could indicate that the charcoal from these deposits derives from cremation pyres. The paucity of bone, however, suggests that the main burials were elsewhere, with the material in these pits representing redeposited pyre debris. Pit [19], in closest proximity to the cremation pits, produced a large, rich assemblage comparable to those in [21] and [23]. The use of mature oak for cremation is appropriate, as the wood provides the high calorific value necessary to cremate a body. Oak is typically found as the primary fuel in prehistoric cremation assemblages, with the use of a single taxon possibly linked to ritual behaviour (Smith 2002).

In fact, there was great consistency and similarity in the character and condition of the charcoal in all of the samples (with the exception of pit [17] which was too sparse to be considered) and it is quite possible that these assemblages also represent fuel remains from cremations. However, the absence of burnt bone in the pits with evidence for *in situ* burning, [9], [11], [13] and [15], rather refutes the idea that these were actual pyres. Other cremation-related activities might have occurred, though there is no faunal or botanical evidence to suggest feasting. Of course, it is possible that the pits (those without human bone) represent a more prosaic activity, such as charcoal-making, or that they were not contemporary with the cremations. However, in addition to the similarities in the morphology of the pits, the homogeneity of the charcoal assemblages suggests a shared function, or similar recurring activity. In a series of Early Neolithic pits from Tregarrick Farm (Roche), the charcoal assemblages produced significant quantities of hazel charcoal (as well as nutshell), along with mature oak (Gale 2002–3). In that case, there was no evidence for funerary activities, although the pits may have formed a ritual function in deliberate deposition of artefacts (Cole and Jones 2002–3). Gale concluded that the use of oak and hazel for fuel reflected the dominance of oak-hazel woodland in the local environment. Certainly, the charcoal assemblages from Tresavean, while they may be event-specific, clearly show no shortage of mature oak.

Radiocarbon dating

In the absence of artefacts the key aim was to obtain secure dating evidence from the pits which had produced fragmented probable human cremated remains. This was to establish when the cremations had taken place and to build up knowledge of funerary practice in the region.

Three samples were submitted for accelerator mass spectrometry dating (AMS) at the Scottish Universities Environmental Research Centre (SUERC). Two were from pit [23] and one was

Table 3 Radiocarbon dates from pits [21] and [23]

Feature	*Lab no*	*Age BP*	*Material*	*Calendrical years 95.4%*
Pit [21], fill (22)	SUERC-53097	3197 ± 26	Cremated bone fragment	1509–1419 BC
Pit [23], fill (24)	SUERC-53092	3226 ± 24	Charcoal: *Maloideae*	1600–1432 BC
Pit [23], fill (24)	SUERC-53096	3183 ± 29	Cremated bone fragment	1506–1411 BC

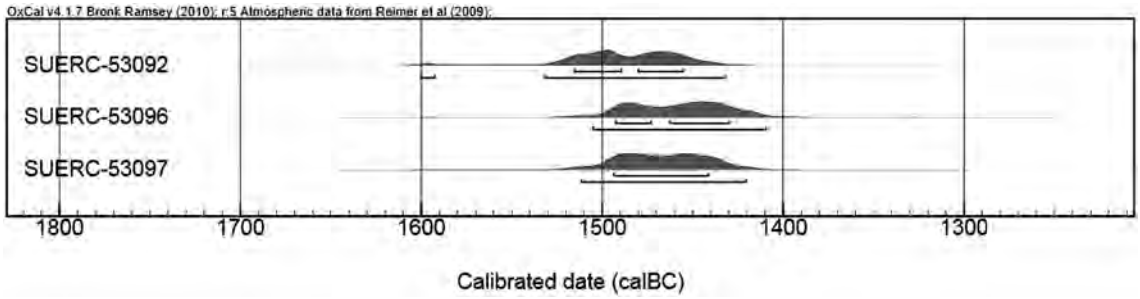

Fig 4 Results from the radiocarbon dating.

from pit [21]. Two of the determinations were on cremated bone fragments and the third was on short lived *Maloideae* charcoal (Table 3).

The probability distributions have been calculated using OxCal (v4.1) and all radiocarbon determinations are quoted at 95 per cent throughout this paper unless otherwise stated.

Results

The three radiocarbon determinations form a tight group (Fig 4) located in the middle centuries of the second millennium cal BC, at the transition from the Early Bronze Age to the Middle Bronze Age. The significance of the dating is discussed below.

Discussion

Although of a small-scale nature, the watching brief at Tresavean produced some interesting results. The shared character of the pits, the results from the radiocarbon dating and presence of probable human remains, presents a picture of an event or possibly events which took place between *c* 1600 and 1400 cal BC, with the weight of the dating suggesting the period between *c* 1510 and 1400 cal BC.

This period is significant because it is exactly the time when major changes were taking place in the landscape and the surviving archaeological evidence changes from one primarily comprising ceremonial monuments to a landscape dominated by fields and roundhouses (Barrett 1994; Yates 2007; Jones 2008). Because of the decline in barrow building, it is also a time when funerary activity is less easy to detect in the archaeological record.

The following discussion considers the characteristics of the pits themselves and their possible functions before moving on to a broader consideration of the relationships between the excavated pits and their significance in relation to wider changes in ritual activity.

The pits

The ten pits at Tresavean break down into three broad but related categories of feature, which might relate to differing, but potentially related activities. All contained abundant charcoal which where identifiable revealed significant amounts of oak (Challinor, above), perhaps indicative of selection, possibly for specific functions.

Pits with in situ *burning*

The first category of pits includes four, [9], [11], [13] and [15], which produced evidence of *in situ* burning. Although many prehistoric pits in Cornwall do contain charcoal, actual *in situ* evidence for heating within a cut hearth pit is comparatively rare. For example, at Scarcewater (St Stephen-in-Brannel) (Jones and Taylor 2010, 26), of the nine features comprising the Middle Bronze Age pit group 1350, only one, [1397], produced evidence for *in situ* burning, and this is likely to have derived from a single post. The evidence from Tresavean does not indicate this type of event, but instead is indicative of fuel being burnt which led to the scorching of the sides of the pit. Given that the scorching was localised, it does not suggest the kind of intense heat that would have occurred if it had been used as a fire pit beneath a pyre, but instead might indicate short-term or one-off events such as the cooking of food. It is possible that the burning was localised because the majority of the wood fuel

had been banked up on one side or because the prevailing wind had directed the heat to one side. Unfortunately the acidic soil conditions would not allow for the preservation of unburnt organic remains or bone which may have been associated with the function of the pit.

Pits with charcoal and burnt stone

The second category of pits is those which contained some charcoal, and also burnt stone, but with no evidence for *in situ* burning. These comprise pits [17], [19] and [25], although pits [9] and [11] also included burnt stone in their fills. The major difference from the first category of pits is that the burnt material was deposited into them after it had cooled.

Broadly comparable pits are found across Cornwall and can date anywhere from close to the onset of the Neolithic *c* 3900 cal BC, through to the earlier medieval period *c* AD 700 (Cole and Jones 2002–3; Jones and Quinnell 2014, 127–33). Securely dated Middle Bronze Age pits containing burnt stone and charcoal have also been recorded in Cornwall. These include pit [355] near Porthcurno (St Levan), which was radiocarbon dated to 1620–1450 cal BC and pit [25] at Tremough (Penryn) which dated to 1492–1134 cal BC (Jones *et al* 2012; Gossip and Jones 2007, 21). Both included pottery and pit [355] also contained worked stone, including a muller used for food production. In fact, most recorded Middle Bronze Age pits with deposits comparable to Tresavean are also associated with pottery or other artefacts. Elsewhere it has been suggested that such pits might have been associated with the ritualised tidying up of debris which had been generated by settlement activity (Jones *et al* 2012), possibly either as part of short-term occupation or, as at Tremough, near to a permanently settled area.

The deposition of charcoal, together with burnt stones which had not been burnt *in situ*, into several pits at Tresavean may have been associated with a similar cleaning up of occupation-related material. It is possible that after the pit was excavated it was rapidly backfilled with little formality, with occupation-related debris which had been generated by hearths. Again, the burnt stone and charcoal may have been associated with food preparation, although unlike the first category of pit this material was in a secondary context and had been produced by activities which had taken place elsewhere on the site.

Pits with pyre material and burnt bone

The third category is made up of pits [21] and [23]. Both were full of oak charcoal and contained small amounts of cremated bone, which on balance is likely to be human (Higgins, above). The remains were so sparse that it was not possible to establish the number of individuals or their age or sex. Significantly, the pits produced very similar radiocarbon dates, and it is likely that they are contemporary: 3197 ± 26 BP, 1509–1419 cal BC (SUERC-53097), and 3226 ± 24 BP, 1600–1432 cal BC (SUERC-53092) from pit [21], and 3183 ± 29 BP, 1506–1411 cal BC (SUERC-53096) from pit [23] (Fig 4).

The oak charcoal found within pits [21] and [23] is also significant as it is consistent with use as pyre material. Oak burns slowly and at a high temperature and is a frequently identified taxon at pyre sites associated with Early Bronze Age barrows in southern England (Thomas 2005, 288–9). However, comparable pits containing cremated bone are exceptionally rare in Cornwall and burials dating to the Middle Bronze Age are also scarce generally in the south-west peninsula (Jones 2009–10, 92).

Cremated bone of Middle Bronze Age date has, however, been recorded in a small number of instances. At Scarcewater, a ceramic vessel set within a pit was found to contain a small amount of burnt bone. This deposit was radiocarbon dated to 1610–1390 cal BC (Jones and Taylor 2010, 156), which is broadly contemporary with the pits at Tresavean, and at Gwithian (Camborne) Middle Bronze Age cremations were found within structures and pits along the line of a major field boundary (Nowakowski *et al* 2007). The pits at Gwithian were accompanied by pyre deposits which included shell and animal bone and have been phased to between 1500 and 1200 cal BC (*ibid*). The cremations from Scarcewater and Gwithian are therefore broadly contemporary with the pits at Tresavean; however, both sites are closely associated with Middle Bronze Age settlements and with ritualised practices which increasingly took place within the context of settlement after *c* 1500 cal BC (Brück 1999; Bradley 2005).

Non-settlement-related activity associated with features containing small amounts of cremated bone and larger quantities of charcoal is far more frequently encountered prior to 1500 cal BC, where

comparable deposits are typically associated with round barrows and cairns in Cornwall (Griffith 1984; Christie 1988; Jones 2005, chapter 5). The small amounts of cremated bone found at many sites in the south-west region are usually considered to be deliberate token deposits. Comparable Early Bronze Age pits without monumental associations are much rarer. However, although somewhat earlier than Tresavean, along the route of the north Cornwall pipeline, pit [101] west of Boscastle was found to contain a mixture of cremated bone and charcoal which was radiocarbon dated to 2010–1776 cal BC. The content of this pit is very similar to pits [21] and [25] and was interpreted as a potential pyre site or, given the lack of evidence for burning, more probably the cleaning up and burial of debris from a nearby pyre (Jones and Quinnell 2014, 24).

By contrast with other regions, such as Wiltshire or the north east of Britain (Thomas 2005, 288; Fowler 2013, 153), the identification of pyre material derived from the process of cremation is uncommon, although scorched ground was, for example, found beneath the Treligga 1 barrow (Tintagel) on the north Cornish coast (Christie 1985). Pits rich in oak charcoal, which could have been derived from pyres, but devoid of cremated bone are, however, much more commonly found in Cornwall and the south-west region as a whole. Again, these are usually found in association with Early Bronze Age ceremonial monuments, where they have been identified as forming part of a regional ritual tradition (for example, Miles 1975, 74–5). Examples of charcoal-rich pits associated with barrows include sites at Stannon Down (St Breward) on Bodmin Moor and at Shaugh Moor on Dartmoor (Jones 2004–5; Wainwright and Smith 1979). Most recently, at Headon Down on Dartmoor the excavation of two barrows led to the discovery of charcoal-filled pits which were devoid of artefacts (Dyer and Quinnell 2013). A third site comprised pits which had been cut into a natural rise in the ground and included a pit with a high oak charcoal content (*ibid*). All three sites produced Early Bronze Age radiocarbon determinations, which fell in the period *c* 2000–1700 cal BC. Although these sites are earlier than Tresavean they are indicative of an established ritualised burial of pyre material within pits.

The potential charred pyre debris and token amounts of cremated human bone in pits [21] and [23] can therefore be seen to have parallels with pits which are associated with cairns and barrows which have been dated to the Early Bronze Age, and with a smaller number of features which have been closely associated with later Middle Bronze Age settlements. However, the pits at Tresavean do not seem to have been associated with either type of site. Neither the wider excavated area nor the geophysical survey revealed evidence for settlement activity around the pits, nor was there anything to suggest that they had been covered by a barrow mound. The radiocarbon dating may, however, be of significance as it falls in the period when there were changes occurring both locally and nationally in the ways and places where ritual activity took place, with smaller-scale sites coming to the fore (Quinnell 1997; Bradley and Fraser 2010; Jones 2008; 2012).

Interpreting the pits: evidence for pyres and related practices during the Early–Middle Bronze Age transition (*c* 1510–1400 cal BC)

From the foregoing discussion it is evident that despite the lack of direct dating for most of the pits, there are similarities between them which might suggest that they are broadly contemporary. All three types of pit were located in the same part of the stripped area and there was little in the way of intercutting, which could imply that they were still visible features, or that they were recent enough for people to be aware of their locations. Likewise, they share similarities in their shape, size and contents. All had charcoal-rich fills, and the charcoal was in a similar condition showing signs of high vitrification, which means that it had been burnt to a high temperature, rendering it difficult to identify. Where identification was possible the assemblage was dominated by slow grown oak wood (Challinor, above). This implies not only a deliberate selection of wood sources but also the likelihood that the wood within the pits was derived from a similar source.

However, as discussed above, there are also dissimilarities between them which are likely to have resulted from functional differences. Some pits with *in situ* burning had probably been used for the cooking of food, others backfilled with burnt stone and charcoal for the burial or concealment of residues from other activities, and lastly the burial of pyre material derived from the cremating of probable human remains. Nonetheless, in addition to suggesting broad contemporaneity, the parallels

between the pits might also be indicative of there being links between them, and the first two types of pits could therefore have been related to the cooking and clearing away of food produced by one or more small-scale gatherings. The nature of such events is open to question. However, evidence from anthropology and the ancient world makes it apparent that the ritualised consumption of food often took place at key times of the year or as a way of marking social or biological transitions in the lives of people (Toussaint-Samat 1993; Baudy 1995; Jones 2007, 158). One of these key transitions is death, and funerals are frequently marked by gatherings involving feasting; these can often be the most important ceremonial, as well as prestige-giving, events which families or communities will organise (for example, Layard 1942, 541; Kis-Jovak *et al* 1988; Clarke 2001).

Given that the process of cremation can take many hours (Downes 1999), the transformation of the body may have been associated with funerary rites involving the consumption of food by mourners (for example, Blair and Blair 1988, 57–89). There is also evidence from other parts of Britain that the pyre material itself may have been important. In Orkney, for example, there is evidence that pyre debris associated with Early Bronze Age cremations was picked out and sorted before being deposited onto the barrow separately from the human remains (Downes 2009).

If the pits at Tresavean are considered with these points in mind, it is possible to develop an interpretative scenario which commenced with mature oak wood being collected and brought to the site. Most of the oak logs would have been stacked to form a pyre onto which a body (or bodies) was placed and burnt. Some of the wood could have been used in shallow hearths and food was cooked using heated stones and served to family members and mourners attending the cremation.

At the end of the event further pits were dug, some to hold the residues from the hearth. Two were dug to hold charcoal from the funeral pyre itself. The destination of the majority of the cremation(s) is unknown; however, a small amount of burnt bone was also included. It is not possible to determine whether or not this was intentional. It may be that it was accidental, as there was only a small quantity. It is, however, also possible that a token amount was deliberately included, perhaps to return part of the individual to the earth or perhaps as an echo of the deposition of small amounts of bone into charcoal-filled pits which is found at Early Bronze ceremonial monuments. It is certainly the case that there is a growing body of evidence for the reuse of older cairns and barrows in Cornwall during the Bronze Age (Jones 2004–5; Nowakowski, in prep); the pits containing cremated bone at Tresavean may therefore represent a further continuity or transformation of earlier traditions. It is also the case that Tresavean is not a hilltop site or ridge, where barrows tend to be, but a valley-side location suitable for settlement and it is possible that the site was on land associated with a settlement not far away. Again the token deposition of some cremated bone here might also have been intended to strengthen the bond between the community and the land. Whichever the case, the excavations at Tresavean have provided a valuable glimpse of rarely found funerary-related practices, closely dated to the middle of the second millennium cal BC.

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Two nested Bronze Age vessels from St Agnes, Isles of Scilly

CHARLES JOHNS AND HENRIETTA QUINNELL

with contributions from ROGER TAYLOR and CARL THORPE

In May and June 2007, Historic Environment Service (Projects), Cornwall County Council, undertook a watching brief for the Duchy of Cornwall during the preparation of a compound for the contractor carrying out the refurbishments to the quay at Porth Conger, St Agnes, Isles of Scilly. During the work the bases of two Bronze Age vessels, each containing the nested remains of a smaller pot, were discovered buried in two small, isolated pits.

In April 2007 Historic Environment Service (Projects), Cornwall County Council (HES) (now Cornwall Archaeological Unit, Cornwall Council), was commissioned by the Duchy of Cornwall to carry out a programme of archaeological recording during works associated with refurbishments to the quays on the off-islands of Bryher, St Agnes and St Martin's in the Isles of Scilly, in order to fulfil a number of planning conditions (Johns and Sawyer 2008).

To the north and west of the field selected for the contractor's compound on St Agnes lies a Scheduled Monument (National Heritage List Entry no 1014998), listed as 'Prehistoric settlement and field system at Porth Killier, St Agnes' (Fig 2). Although the compound field itself was not scheduled three of its boundaries (those to the north, west and south) were and the access track leading to it passes across the Scheduled Monument. Consequently, in accordance with the recommendations of the Environmental Impact Assessment (Parsons Brinkerhoff 2006), and the brief for archaeological recording (Markham and Breen 2007), a watching brief was undertaken by HES in late May and early June 2007 during preparation of the site.

Location and setting

The site is located 250m to the south east of Kallimay Point, on the northern side of St Agnes (NGR SV 88298 08502), in an open grassy field on the lower slopes of the hill below Higher Town (Fig 2). There are views from it to the north west out to Samson and the Norrard Rocks. The field was under a Countryside Stewardship agreement but prior to that had been ploughed and rotavated and used for 'bulking up' bulbs.

Archaeological and historical background

The Scheduled Monument includes the prehistoric field system surviving east of Porth Killier and across Kallimay Point. At the south-west tip of its surviving extent, the field system is adjacent to the prehistoric settlement exposed in the cliff face on the south-east side of Porth Killier, radiocarbon dated to the Middle to Late Bronze Age, with evidence for later settlement in the vicinity (Ratcliffe *et al*, in prep). In 1989 a geophysical survey was undertaken to determine the inland

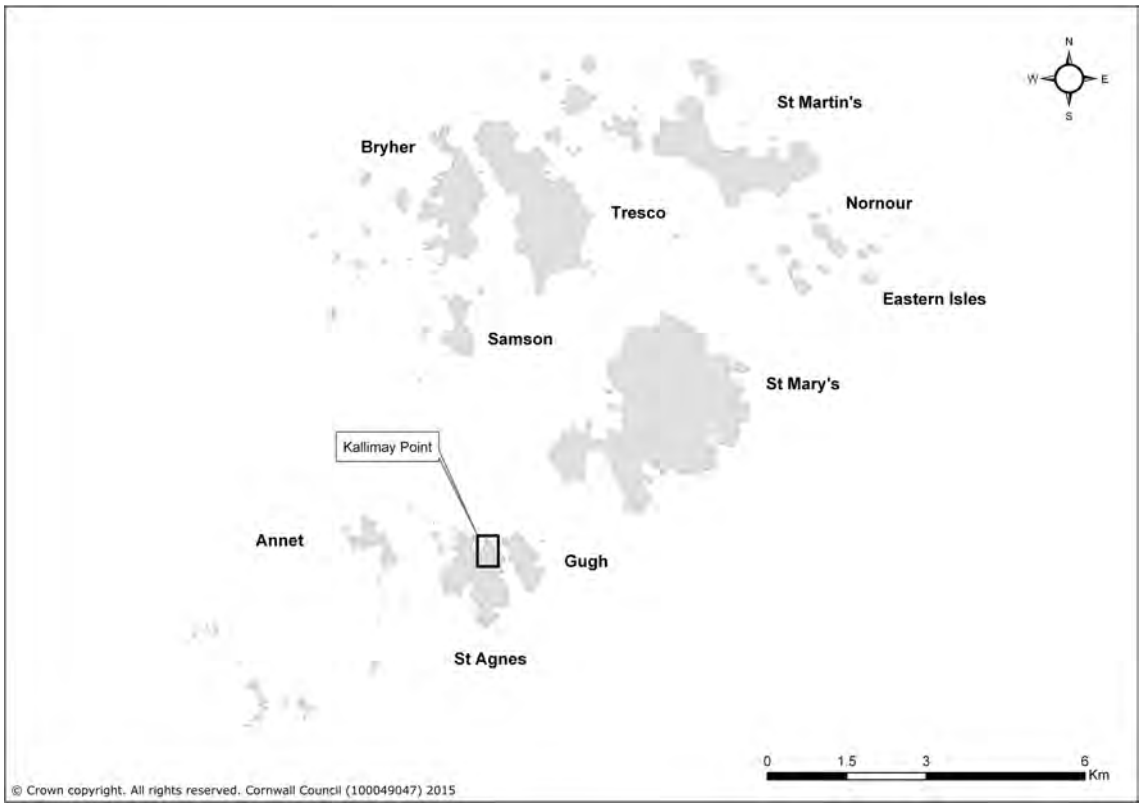

Fig 1 Location map.

extent of the settlement, concentrating on a field less than 100m south west of the compound field. None of the geophysical anomalies detected conclusively represented archaeological features or clearly-defined building remains, but were highly suggestive of an area of approximately 10m by 5m of stratigraphy, perhaps 1.5m deep, having been preserved in the central western part of the field (Jordan 1989).

The relict prehistoric field system occupies the broad spur behind Kallimay Point and extends inland, where it is perpetuated in the unusually sinuous modern field boundaries. On the spur, where not masked by soil deposits and vegetation, its walls are visible as lines of variously spaced or contiguous boulders, some edge-set, and generally 1.5m wide and 0.5m high (Hooley 1993).

Further surviving areas of lynchetted prehistoric field system with settlement sites survive from 50m to the south of the Scheduled Monument on the more elevated land north of Higher Town (Fig 2). These remains extend the line of some of the perpetuated elements of the Scheduled Monument, confirming their identity as parts of an overall field system which extended over much of north-eastern St Agnes. The relict field system near Higher Town (also a Scheduled Monument: National Heritage List Entry no 1015003; Fig 2) has produced various artefacts indicating Romano-British occupation, perhaps a confirmation that the early field system on the higher land contained a later or longer focus of settlement than that by the coast, as has been suggested from the disposition of dateable artefacts from the coastal settlement exposure at Porth Killier (Hooley 1993).

In 1974 Ashbee suggested Kallimay Point as the site of a possible promontory fort, with 'indications of a double rampart cutting off this headland' (Ashbee 1974, 321). This was tentatively identified by the Ordnance Survey in 1978 as a lynchetted field boundary and part of the early field system, rather than a fort rampart.

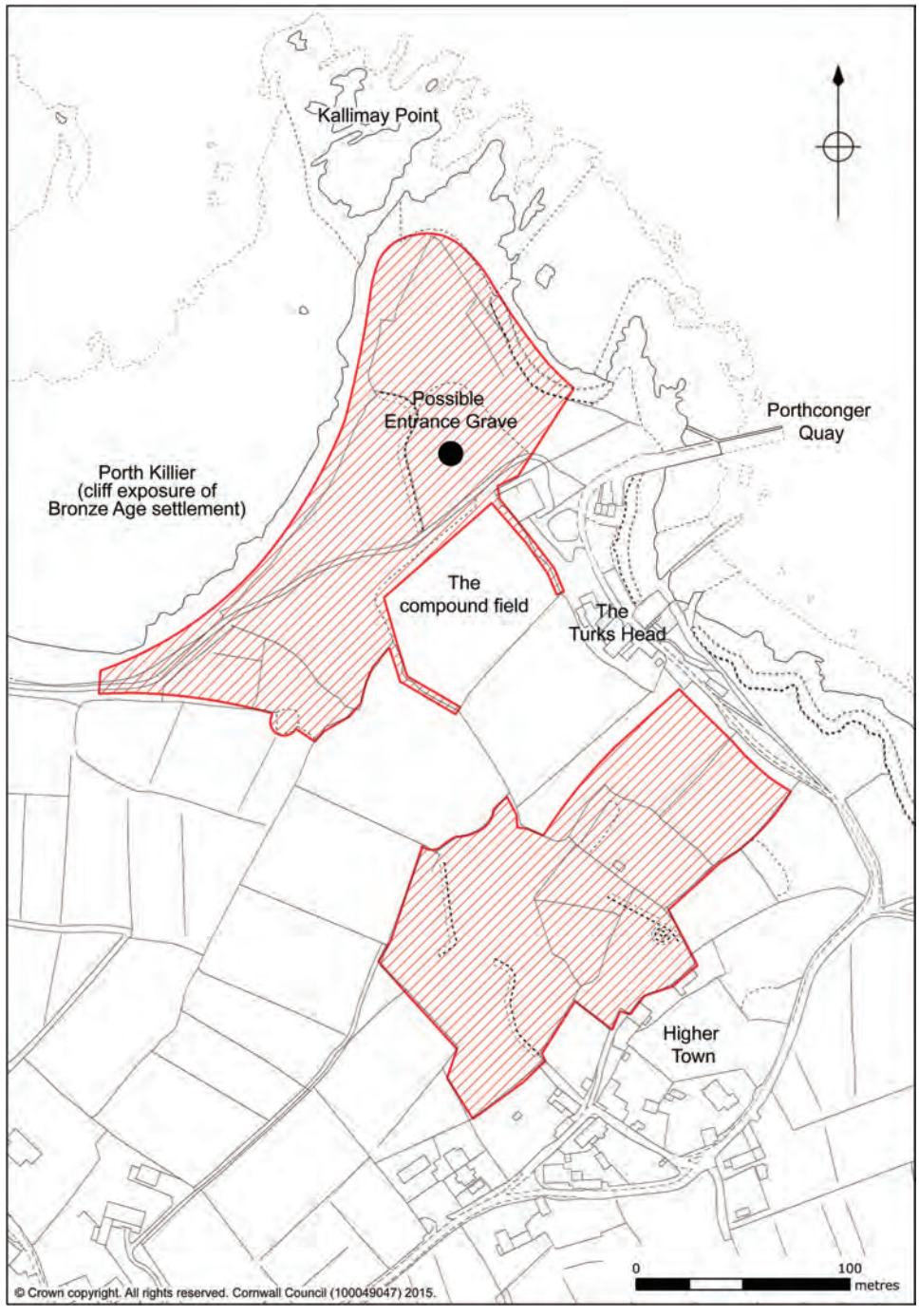

Fig 2 Kallimay Point and the compound field. Scheduled Monuments are shaded. To the north is the Scheduled Monument (NHLE no 1014998) 'Prehistoric settlement and field system at Porth Killier, St Agnes' and to the south (NHLE no 1015003) 'Prehistoric to Romano-British field system and settlement at Higher Town, St Agnes'.

Excavation

This section provides a summary description of fieldwork; throughout the article, the context numbers for features and cuts are shown in square brackets; for instance [1]. Those for deposits, layers and fills are shown in parentheses (25) and those for structures without brackets: wall 21.

The watching brief commenced on 29 May 2007, the topsoil being stripped by a mechanical excavator equipped with a 2m wide toothless bucket and taken by tractor and trailer to a stockpile on the 20–30m wide buffer between the excavation area and the south-west (Scheduled) field boundary. The stripped area was some 2250 sq m in extent with a buffer zone of over 5m being left between the Scheduled field boundaries and the excavated area (Fig 3).

Below the turf the topsoil (24) was a homogeneous layer of stony, very dark greyish-brown sandy silty clay grading to dark greyish-brown and varying in depth from 0.36m in the southern part of the field to less than 0.20m deep in the northern part. The natural subsoil (25) was hard, dark yellowish-brown (orange) *ram* with many outcropping granite stones.

The two vessel bases were both buried in pits of approximately the same dimensions as the urns, cut into the *ram*; the urns were only 0.18m apart (Fig 4). The top of the larger pot (**P2A**) measured approximately 0.38m in diameter (pit [1]) and the smaller one (vessel **P1A**) approximately 0.27m (pit [3]). The eastern edge of the larger pot was clipped by the machine, and possibly by earlier ploughing, and this accounted for the loose potsherds in the vicinity.

The pots were planned and photographed and the larger pot was then half-sectioned on the side that had been disturbed by the machine. This revealed the remainder of the side and part of the base of the

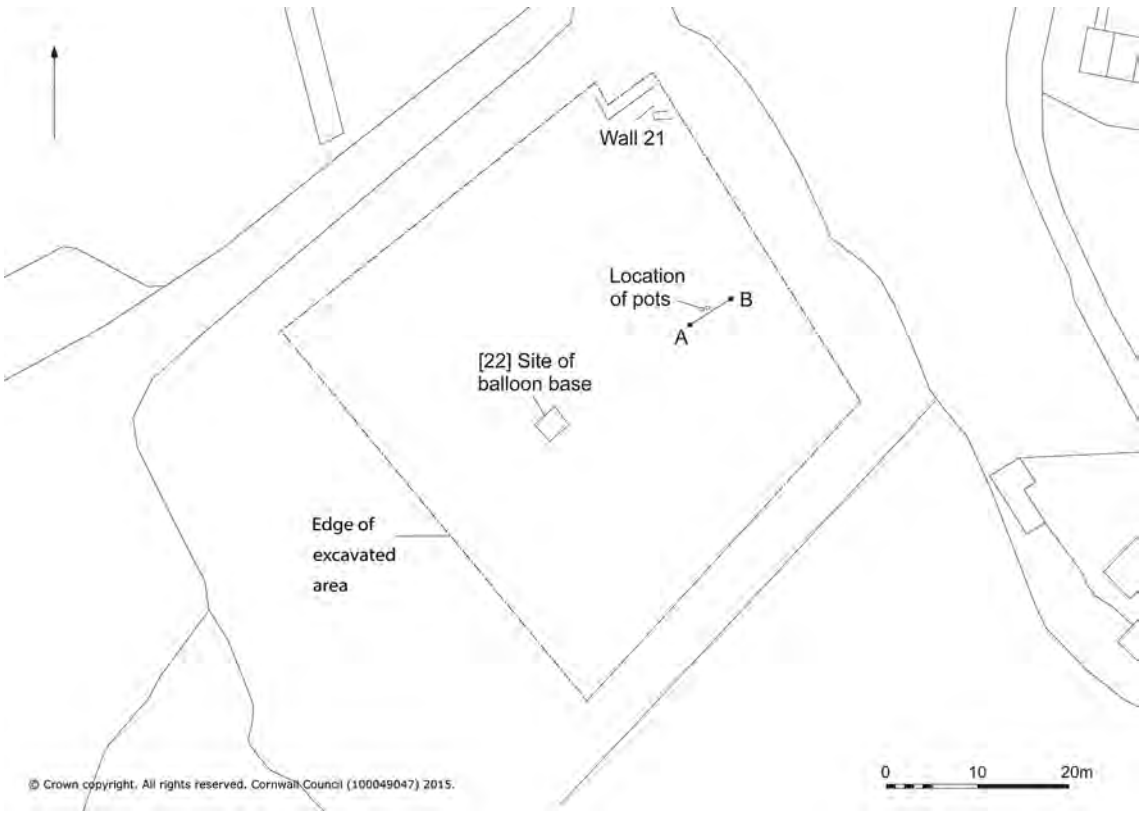

Fig 3 The compound field showing the location of features.

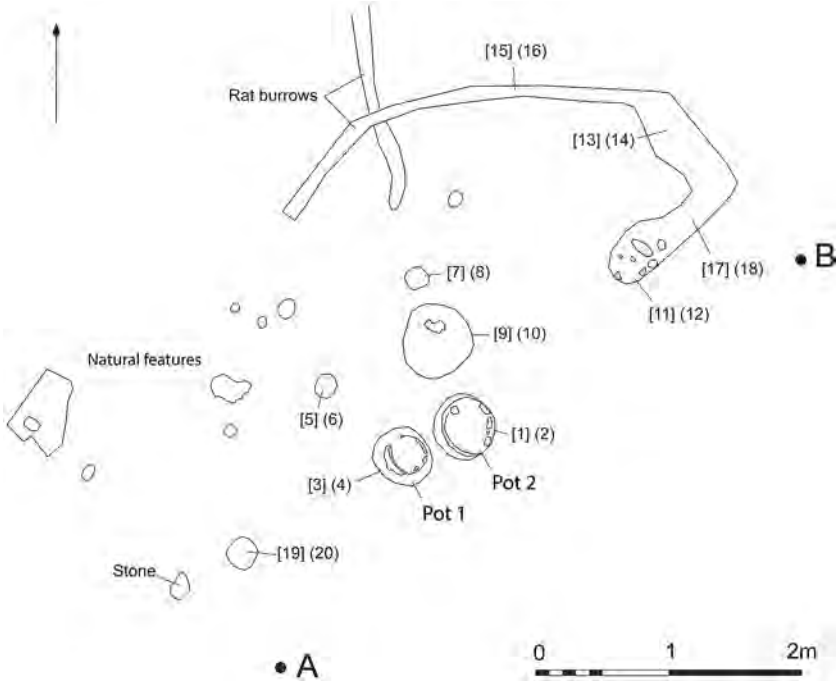

Fig 4 Plan of the pots in situ *in pits [1] and [3] and other features.*

Fig 5 Vessel ***P1A*** *during conservation showing smaller vessel base* ***P1B****. (Photograph: Laura Ratcliffe.)*

*Fig 6 Vessel **P2A** during conservation showing smaller vessel base **P2B**. (Photograph: Laura Ratcliffe.)*

pot. The fill, which was retained as a soil sample, was firm, dark brown sandy silty clay containing no finds, no cremated bone and no inclusions such as stones or charcoal.

The smaller pot, which seemed to be lying slightly on its side, showed no sign of any recent damage either by the machine or by ploughing.

Initially, a number of possible features were identified in the area around the pots and these were carefully cleaned, recorded and investigated (Fig 4). Almost invariably these proved to be disturbance caused by rat runs or dislodged stones (features [5], [7], [[13], 15], [17]. [19]); only one feature, [9], was a possible posthole. This was a circular cut 0.54m in diameter and 0.25m deep filled with very dark greyish-brown sandy silty clay (10) which contained no finds or inclusions other than small stones

The urns were lifted in blocks of soil and conveyed back to the mainland where the contents of the pots were excavated in controlled conditions by Laura Ratcliffe, Senior Conservator at the Royal Cornwall Museum. Each of the vessels proved to contain token basal sherds from smaller vessel bases (**P1B** and **P2B**, Figs 5 and 6). The excavated soil from inside the vessels did not contain any other artefacts or charcoal or bone fragments and the vessels did not contain any residues, so there was no material that could be used for radiocarbon dating.

Apart from some potsherds in the vicinity of the pot bases and a collection of flint, rounded stones and occasional quartz fragments recovered from the excavated soil and surface of the *ram* there were no other features or finds in the field apart from the remains of a late nineteenth-century field barn (wall 21) and a concrete base [22] and anchor points for a meteorological balloon that was temporarily sited in the field in 1987 (Hicks 1987–8, 112; 1988, 114–5) (Fig 3).

The four pottery bases

Henrietta Quinnell, with petrographic comment by *Roger Taylor*

Description

The bases of four pottery vessels were found, **P1A** and **P1B** in pit [1], and **P2A** and **P2B** in pit [3]. It is presumed that the upper parts of the vessels had been removed by activity, mainly agricultural, subsequent to their deposition. Unfortunately, although a few sherds were noted in the vicinity of each pair, there was nothing to indicate the form or possible decoration of their upper parts and it cannot be demonstrated that the urns were buried intact. Indeed, it is possible that the vessels were trimmed to bowl shapes before burial.

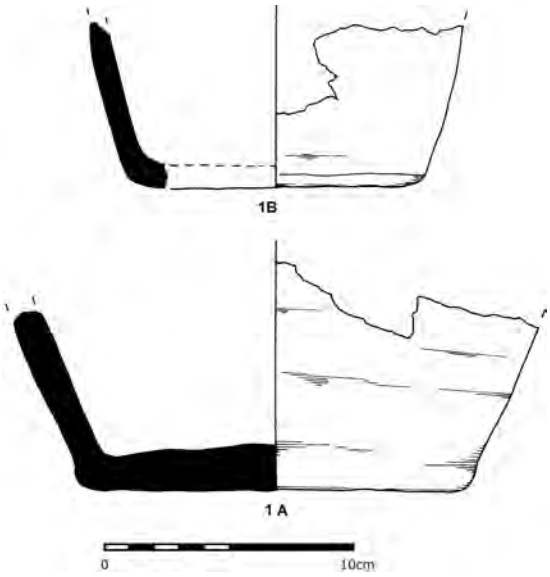

*Fig 7 Vessels **P1A** and **P1B**. (Drawing: Carl Thorpe.)*

The subsequent discussion reveals that bases or sherds of vessels were sometimes buried in pits on Scilly; bases of vessels are occasionally found elsewhere in the south west (Christie 1985, 68; Watts and Quinnell 2001, 27). The vessels are illustrated in Figures 7 and 8. They appear to have been well made, of identical fabric and evenly fired so that the whole thickness of the vessels is slightly reduced dark reddish-brown 5YR 3/2. Vessels **P1A** and **P2A** have well finished surfaces with slight burnish and finger modelling on the insides of the bases. The exteriors of these larger vessels show considerable signs of use.

Petrography

The four vessels were microscopically examined and found to be similar, with inclusions of the sizes quoted below ranging from 30 per cent to 50 per cent; at least double that found in Bronze Age vessels on the mainland. The vessels are all of a more or less identical granite-derived fabric

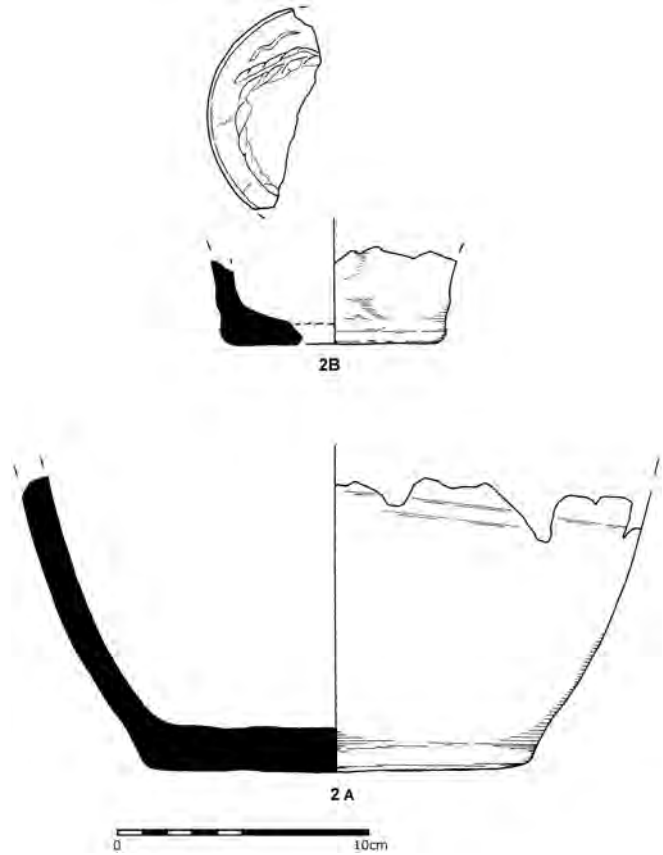

*Fig 8 Vessels **P2A** and **P2B**. (Drawing: Carl Thorpe.)*

sourced locally. The indications of rounding, particularly observed in **P1B** and **P2A**, could indicate that some of the coarser components of the fabric were sourced from beach sand. Full details are given in the archive and the data for **P1A** is presented here.

P1A *Quartz* – transparent to translucent colourless angular grains, 0.05–3mm; *feldspar* – white to translucent and buff angular grains, some showing cleavage, 0.1–3mm.; *mica* – muscovite cleavage flakes, 0.1–2mm; *tourmaline* – black glossy angular to sub-rounded grains, 0.2–0.5mm; *matrix* – sandy/silty.

Comment. The very high temper content of the vessels could indicate that the clay component was in short supply. Both temper and clay matrix are likely to have been sourced locally. Given that there is evidence for glacial impingement on Scilly, there is the possibility of fluvial-glacial clay occurring in small deposits, now submerged, which could have been used for potting. The beach sand would have then been incidentally included with the clay from these deposits. The granite components of the temper are of variable abrasion and have probably been added from beach deposits.

Discussion

The out-turned and slightly curved vessel walls of **P1A** and **P2A** are strongly reminiscent of the shapes of vessels decorated with a range of impressions in horizontal rows above the girth and found both on settlements and in the entrance graves in Scilly assumed to be of the second millennium cal BC (Ashbee 1976, fig 7; O'Neil 1952; *cf* Jones and Thomas 2010). There is as yet no hard evidence to support Robinson's suggestion (2007, 56) that such vessels may have originated in the third millennium BC, although this author would generally support Robinson's arguments (2007, 68 with references) that straighter-sided vessels appear during the Middle Bronze Age and continue into the Late Bronze Age. It may therefore be tentatively suggested that the St Agnes pots belong to the earlier part of the second millennium BC and to the Early Bronze Age.

Both inner vessels, **P1B** and **P2B**, appear to have been placed directly on the internal bases of the larger outer vessels. The practice of 'nesting' vessels is discussed further below and does not appear to be a major part of Early Bronze Age pot

Fig 9 Vessel ***P1A*** *after conservation. (Photograph: Carl Thorpe.)*

*Fig 10 Vessel **P2A** after conservation. (Photograph: Carl Thorpe.)*

*Fig 11 Vessel **P2A** inverted. (Photograph: Carl Thorpe.)*

depositional practice, either locally or nationally. **P1B** appears to have been a smaller version of **P1A**. **P2B**, however, is different. It was placed in one corner of the outer vessel and it is of small diameter with, apparently, straight sides. Its base retains the partial impression of a coiled mat. Such impressions have been noted before, usually on much larger vessels, and the assumption made that mats were on occasion used as the surface on which pots were made. A series of vessels from Knackyboy Carn forms the classic example (O'Neil 1952, pl XIV). Such impressions also occur in domestic contexts, such as buildings at Nornour, in contexts which may extend in date until the later second millennium BC (Robinson 2007, 58). **P1B** is only 90mm across its base, much smaller than most Scillonian vessels. It is just conceivable that it was deliberately made as a small 'accessory' vessel, a small vessel intended for deliberate deposition with a larger deposit. There does not, however, appear to have been a tradition of such vessels on the Isles of Scilly and, although its size is small, it is at the larger end of the size range for accessory vessels (Allen and Hopkins 2000).

Discussion

Prehistoric pits

While digging pits and burying pottery and other artefacts and deposits is a well-attested phenomenon in the British Isles during the prehistoric period (for example, Richards and Thomas 1984; Bradley 1998; 2007; Cole and Jones 2002–3; Jones and Reed 2006), and extensive archaeological evidence has been discovered in Cornwall for the curation and 'structured deposition' of broken potsherds (for example, Nowakowski 2007), the discovery of nested vessels dating to the Early Bronze Age is much rarer and so far unique in Scilly.

It has been argued that the character of such pits generally developed with time, with more care taken over the objects selected and the pits themselves being better crafted, although in Cornwall the shape of pits and repertoire of materials placed in them seems to have changed little from the beginning of the Neolithic period into the Bronze Age, other than the changing ceramic types placed in them (Cole and Jones 2002–3, 134). The act of pit digging and deposition may have been intended to render activity memorable and fix a connection between people and place (*ibid*).

A number of later prehistoric pits containing pottery have been found in Scilly. Two pits at East Porth, Samson, contained a large assemblage of Neolithic pottery (Neal, in prep). At Bar Point on St Mary's a layer of occupation soil contained several small pits, one of them filled by a complete pot standing upright (rim missing), while several of the others contained sherds (Sarnia Butcher, pers comm). At Pendrathen, also on St Mary's, the lower part of a flat-based coarse vessel was found in a clay-lined pit dug into the *ram* (Samuels 1975, 117); a similar vessel was found in a clay-lined pit at Halangy Porth, St Mary's, in 1936 containing about a dozen sherds from two or three different pots, along with some calcined bone and charcoal (Gray 1972, 34–5). Most recently, excavations at Old Quay, St Martin's, have revealed evidence of extensive early occupation, including a number of pits containing Neolithic pottery and artefacts including a greenstone axe fragment and a shafthole adze (Garrow and Sturt, in preparation).

At Porth Killier a series of Bronze Age pits was recorded during the coast protection scheme in 1996. The pits come closest to being single-period sealed contexts of any features yet studied for the Scillonian prehistoric period but only contained a small assemblage of pottery sherds. The types present were simple forms which occur throughout the long sequence of occupation at Nornour. The function of these pits is unknown; they do not seem to have been ovens or boiling pits. Stones and boulders had been deposited into them suggestive of some sort of levelling of the area after they went out of use and it is possible that they relate to the end of some significant episode in the history of the area (Ratcliffe *et al*, in prep).

It is unlikely that all prehistoric pits had the same function and it might sometimes be difficult to distinguish 'ritual' pits from domestic ones (Jones and Reed 2006, 20–1). However, the isolated position of the pits containing the St Agnes vessels suggests that they almost certainly had a ritual function, possibly associated with a life crisis such as the death of an individual or individuals. Brück (2006) has suggested that during the British Bronze Age objects such as pottery were thought of as animate, or possessing their own life force and that problems of materiality, identity and continuity associated with the death of an individual could be

overcome somehow by transforming dead people into objects.

Nested vessels

A search for parallel instances of nested vessels has revealed only a few examples: a Bronze Age urn discovered at Harlyn Bay, St Merryn, Cornwall, in 1887 contained a pygmy cup with a bronze dagger laid across it, a bronze pin, a whetstone, a slate spindle whorl and much cremated bone, all placed in a cavity and covered by a slate capstone, but with no definite evidence for a covering barrow or cairn (Preston-Jones and Rose 1987, 92). A Bronze Age Armorican *vase à anse* was found within a Food Vessel urn covered by a second inverted Food Vessel during the excavation of a round barrow at Gallibury Down on the Isle of Wight in 1979 (Tomalin 1988, 208, fig 5) and an Early Bronze Age cremation was discovered during rescue excavation on the Indian Queens bypass, St Enoder, Cornwall, in 1993, placed in a basket together with a bronze awl which had been placed in an urn and buried in a pit at the centre of the Highgate ritual enclosure, a sub-circular arrangement of ditches and postholes (Nowakowski 1993, 22–3). Finally, the most famous Bronze Age nested object is the Rillaton gold cup, from near Minions on Bodmin Moor, which was reportedly found inside an urn within a barrow in 1837 (Wilson 1851, 272–3; Smirke 1867). As noted by Quinnell (above), the practice of 'nesting' vessels does not appear to have been a major part of Early Bronze Age pot depositional practice, either locally or nationally.

Cosmological considerations

The position of the St Agnes vessels in the landscape was considered. Looking north from the pits containing the vessels there is a visual alignment comprising a small, badly degraded cairn or entrance grave beside the present footpath or track, White Island off Samson and beyond that Gweal Island off Bryher. Moving to the cairn, a prominent rock at Kallimay Point (not visible from the pits site) is also seen to be on this alignment. Looking south from the cairn, the position of the vessels can also be seen to line up with the hill rising behind the field to Higher Town. This alignment marks the line of true north – south. Looking due east from the vessels, Kittern Hill on Gugh is visible and to the west this orientation aligns with a prominent rock outcrop. It is possible that the burial of the vessels at this cosmological axis had a ritual significance. Although there were no surviving traces, the vessels may originally have been covered by a cairn of stones and earth which was removed when the field was first brought into cultivation.

Acknowledgements

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Within HES, Carl Thorpe assisted with the watching brief and processed the finds, Jo Sturgess digitised the field drawings and Francis Shepherd prepared them for publication. Katharine Sawyer and Trevor Kirk were subcontracted by HES to assist during the watching brief. Laura Ratcliffe, Senior Conservation Officer at the Royal Cornwall Museum, excavated the contents of the two Bronze Age pots.

The finds and documentary archive are deposited at the Isles of Scilly Museum, Church Street, St Mary's, TR21 OJD. The accession number is RN 05858. The HES project number was 2008089.

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A Late Iron Age and Romano-British settlement at Middle Amble Farm, St Kew

MARK BORLASE AND MALCOLM WRIGHT

with contributions from WENDY CARRUTHERS and DANA CHALLINOR

In 2011 a geophysical survey was conducted at Middle Amble to investigate cropmarks detected by the National Mapping Programme. This revealed a bivallate enclosure containing a circular feature, thought to be a roundhouse. Many similar features covered an area of several hectares in the immediate environs of the enclosure and a further bivallate enclosure was surveyed to the east. This, in Cornish terms, constitutes a lowland settlement of considerable magnitude. Tracks, fields and small enclosures were also associated with the settlement.

A small-scale excavation to obtain dating material produced not only Romano-British pottery but also uncovered a pit with a deposit of carbonized barley; this produced a Late Iron Age radiocarbon date.

Systematic mapping from aerial photographs as part of the National Mapping Programme (NMP) has identified a large number of enclosures and cropmarks in the Camel estuary environs. This shows the area to have been densely settled in later prehistory and the Romano-British period (Young 2012). The enclosure at Middle Amble was recorded as part of this programme (*ibid*, 87, fig 15, no 124). The bivallate enclosure surveyed to the east of the main enclosure was also recorded by the NMP (*ibid*, 87, fig 15, no 131). Around 500m to the north west at Smeathers there is a double-ditched enclosure (*ibid*, 94, no 111) with adjoining field systems. Less than 1km north of the site on Tregarmond Farm there appears to be a round and field systems, also detected by aerial photography, and the Historic Environment Record lists a first- or second-century AD Roman *fibula* found in this area (MCO 40336).

This study forms part of an ongoing programme of postgraduate research, part of which involves settlement study throughout the corridor formed by the Fowey and Camel rivers. Not many of these enclosures from the Camel estuary have been closely examined; the aim of this work is to further inform on these settlements and attempt to attain a loose chronology.

Location and situation

The site at Middle Amble farm runs along the top of a gentle north-facing slope. At 48m above OD, the summit of the hill is not the most prominent in the area (Windmill Hill, 3km to the west is 90m high and Cant Hill is 75m), although it does command a clear view all around and down to the Camel estuary (Fig 2). The bivallate penannular enclosure showing as a cropmark lies just north west of the summit (at SW 9889 7550). The location lies between two creeks running into the Camel estuary, Dinham Creek at Gutt Bridge to the west and the River Amble Creek to the south east. The River Amble would have been navigable in the early medieval period and Dinham Creek would have certainly been navigable up to Gutt Bridge. Today, the tidal limit

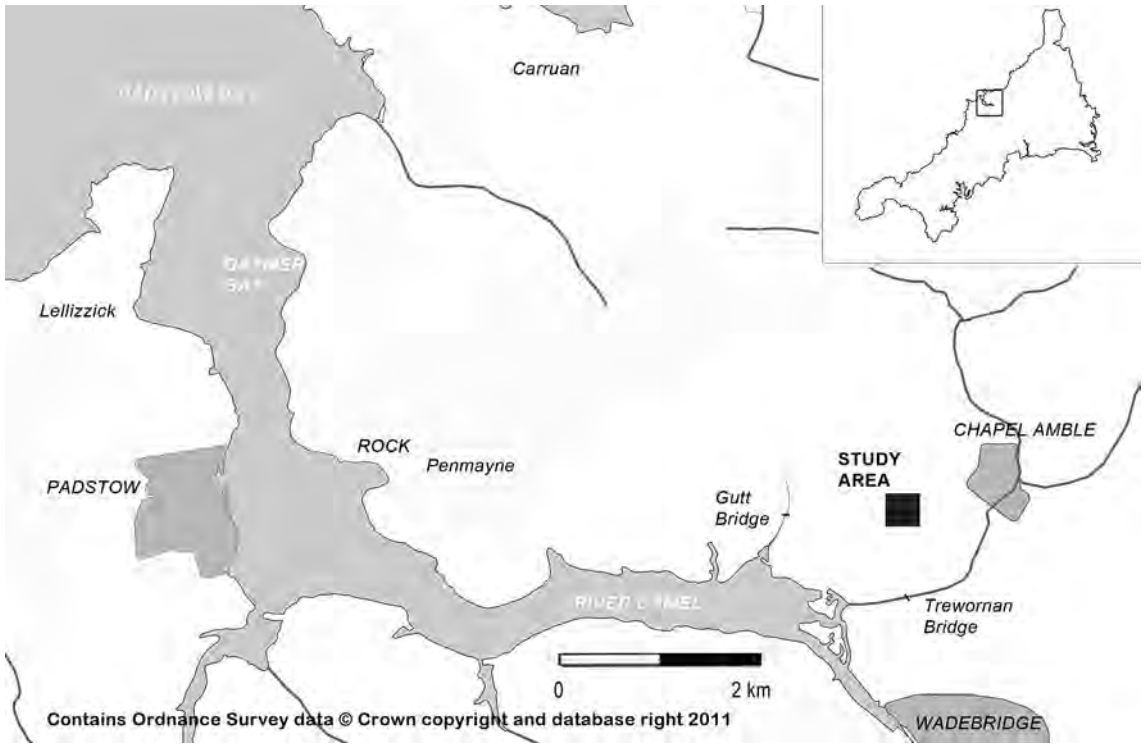

Fig 1 Location of the study area.

is just north of Trewornan Bridge. Barges brought sand for soil improvement as far as Chapel Amble up to around 100 years ago (Miles Pengelly, pers comm). The creeks would have provided sheltered inland lighterage, thus the location was strategically situated for coastal trade connections.

The site lies on Devonian slate; a thrust fault runs roughly through the centre of the surveyed

Fig 2 View west over the enclosure area to the River Camel.

area with Polzeath slates to the north and Harbour Cove slates to the south (British Geological data courtesy of EDINA).

Geophysics

The conditions for undertaking geophysical survey were excellent, all fields consisting of short stubble, or sheep-grazed grass. The instruments used were a Geoscan single fluxgate gradiometer and Geoscan resistivity meter.

The first block of grids set up to the south of Ten Acre field (Fig 3) immediately produced dramatic results: the bivallate curvilinear enclosure with a feature indicative of a roundhouse within. The magnitude of the magnetic responses suggest the enclosure ditches are up to 3–4m wide and around 2m deep. The presence of ring ditches was noticed outside the enclosure, so the survey was extended. The encouraging results eventually led to the survey being extended to the west, the north west and the east, in order to provide an overall context for the site in Ten Acre field. In all the survey consisted of 244 grids of 20m covering 9.76ha, and identified a second bivallate enclosure, in a field to the east (Higher Hill) and considerable numbers of ring ditches, suggestive of an organically sprawling settlement of roundhouses and associated fields.

The straight parallel lines are positive magnetometry responses of grubbed-out Cornish hedges, which typically show up this way. More interesting are the single lines that may indicate earlier or later field systems (Fig 3).

The bivallate enclosure in Ten Acre field

The suvey has shown that there are at least three phases of enclosure on this site. As well as the bivallate enclosure there is a smaller and slighter polygonal enclosure in the centre, and a rectangular enclosure falling roughly between the two ditches of the main enclosure (Figs 3 and 4).

The pentagonal enclosure ditch in the centre at first glance seems to be associated with the main enclosure ditches in some way as its entrance appears to align with the main enclosure entrances; perhaps a precursor enclosure to the much deeper-ditched bivallate enclosure. However, as it appears to cut the roundhouse feature, it is possibly later than this, so it could be a later feature. The rectangular enclosure measures approximately 60m by 60m and is clearest on the north west and south east between the outer and inner ditches of the bivallate enclosure and is probably an earlier enclosure. The outer ditch of the main bivallate enclosure measures around 90m × 80m covering an area of roughly 0.7ha with the roughly central inner enclosure measuring 50m × 50m. The outer ditch appears to cut a round feature on its south-western side, which may possibly be an earlier or later roundhouse feature. The intervallate area varies between 10m and 20m in width. The double track-like ditch curving away to the west plainly is contemporary with the outer enclosure ditch and forms an entrance with the outer enclosure ditch. The nearest source of water, a spring, lies 100m in this direction. One other L-shaped ditch cuts the outer enclosure on the north and is possibly later, as are further linears showing as broken lines (not including the outer ditch). Only area excavation would further clarify the phasing of the site.

Roundhouses and fields

Numerous circular features, which are probably associated with the drip gullies or ditches of roundhouses, were found throughout the area surveyed. Many showed signs of being erected over the footprint of successive houses, which together with the number of overlays in the enclosure demonstrates a *longue durée* for the site. From the enclosure in Ten Acre field the ridge swings to the west into Higher Hill Park field (1841 Tithe Awards map) towards Dinham Creek at Gutt Bridge. As it does so, more roundhouses follow the crest of the ridge and along the northern slope, trailing off near the wetter ground and the stream that runs down to Dinham Creek. Many of these roundhouse features are 18m in diameter, with one in Higher Hill Park measuring 20m; the smallest measures a still respectable 12m. If the walls of the houses were immediately inside the ring ditches, these would appear to be impressive houses by any standards. They may alternatively be more comparable to the excavated Late Iron Age settlement at Higher Besore, Threemilestone, where the gullies are like boundaries or small enclosures for the houses, whose walls are set somewhat back from the ditch (Gossip, forthcoming).

There is mostly no very obvious patterning or grouping of the roundhouses although at the north west, in Higher Hill Park, two small curvilinear enclosures associated with roundhouses may

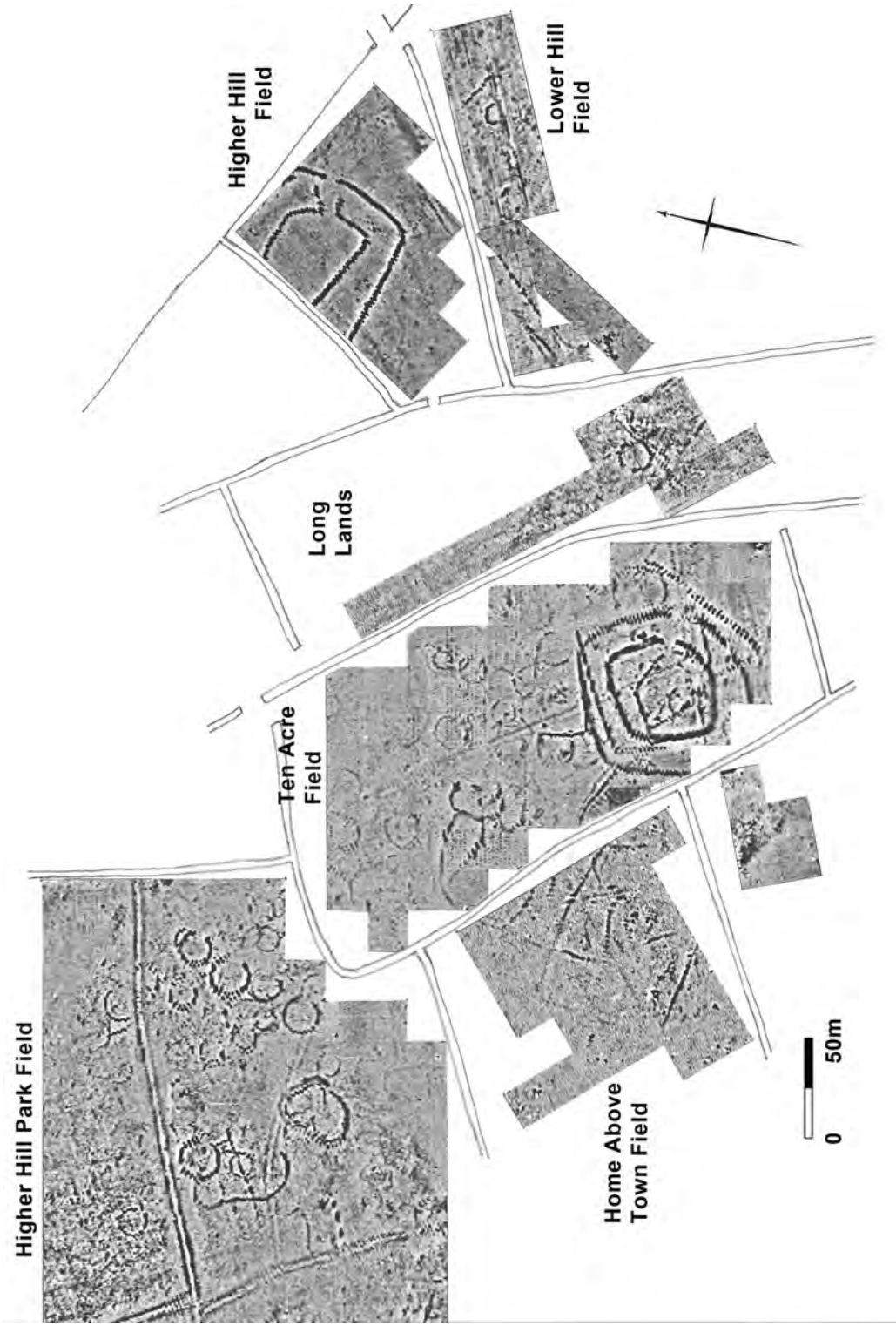

Fig 3 The overall magnetometry survey at Middle Amble. The narrow parallel lines in Ten Acre field and Higher Hill Park field are grubbed out modern field boundaries; in Ten Acre field they appear as a T-shape, the junction being in the middle of the enclosure. Small paddocks and allotments with connecting tracks are clear, one track is apparent running from just below the main Ten Acre field enclosure into the field with the eastern enclosure, which is probably a stock enclosure as structures or burning activity are not evident on the magnetometry.

be indicative of individual farmsteads, rather reminiscent of Romano-British courtyard houses and similar to the groupings at Higher Besore.

The magnetometry showed faint traces of two square features on the eastern side of Higher Hill Park which were surveyed with resistivity to check for the possibility that these may be square structures; the results proved negative for any such features. These are probably small stock enclosures or allotments associated with the roundhouses.

The responses in the south-west corner are probably geology as the ridge has a hump at this point and the rock is most likely close to the surface. The authors originally thought this might have been a barrow, but the geophysics results eliminated the possibility of any such feature.

The limit of the settlement was not reached in Higher Hill Park and it may well continue, but the number of roundhouses revealed by the area surveyed by magnetometry is in excess of 50, although not all will be contemporary (as some roundhouses cut others). However, this still establishes the Middle Amble settlement to be of considerable magnitude in terms of open settlement in Cornwall.

In Home Above Town field, to the west of the enclosure and roundhouses in Ten Acre, there are traces of field systems. Although it is difficult to draw a coherent picture, the track from the outer ditch of the enclosure in Ten Acre field curves round towards the fields. There is also a curving ditch running west from what appears to be a group of roundhouses just to the north west of the enclosure. This curves west into the Home Above Town field and back towards the track running from the outer enclosure ditch. Both these features help demonstrate contemporaneity of the fields with the enclosure and settlement. The fields are generally rectilinear in form.

The Higher Hill enclosure

Part of a second bivallate enclosure 260m to the north east of the Ten Acre field enclosure was revealed by magnetometry. The east-facing entrances were in line with ditches extending partially from the inner entrance, giving an antennae-like appearance in plan. The survey only partially covered the area of the enclosure so the dimensions can only be estimated: the outer enclosure may have been around 80m wide, whilst the inner enclosure is around 40m wide with the intervallate area averaging around 20m wide. Compared with the clutter of features in the enclosure in the Ten Acre field, the centre was remarkable for the complete lack of high magnetometry signals, thus an absence of features. The enclosure may therefore have had a stock corralling function, perhaps with the intervallate area used for sorting animals. It is quite possible that the purpose of the antennae features, if they terminated in a gate separating system, would be to facilitate the sorting of stock. Parallel linear features to the south may be a drove track or field boundary running for 240m south from the Higher Hill field enclosure through Lower Hill field and Long Lands towards the Ten Acre field enclosure and may indicate that the two enclosures are contemporary. There are traces of a roundhouse at the southern end of the linear abutting one of the ditches.

Surface collection

Fieldwalking was carried out in Ten Acre field, and Higher Hill field, although there is a risk of results being skewed in fields close to the Camel estuary by the possible introduction of archaeological material within estuarine sand imported for agricultural soil improvement. Finds were listed by Ordnance Survey National Grid Reference, counted, identified and weighed. Additional ceramic finds, recovered prior to or after the fieldwalking, were added to the general collection.

The Ten Acre field produced 2.1 kg of pottery. Apart from a large number of medieval and post-medieval pottery sherds, including Lostwithiel Ware of the fourteenth and fifteenth centuries, only one earlier sherd was recovered, a foot ring identified as post-Roman North African Red Slipware (Fig 15) which is described later. When discussing the finds with the farmer, Miles Pengelly, it was indeed confirmed that this field had been in the past regularly sand treated from the Camel estuary. In fact, a track led from the silted creek at Chapel Amble along the side of the field. Consequently, any surface finds cannot be attributed firmly to the settlement and there is a possibility that some may have been dredged from the river. The sherd of red slipware had probably not emanated from the River Camel, however, as the edges showed no sign of river erosion and were relatively crisp.

Further fieldwalking followed cultivation in Higher Hill field, in and around the enclosure. This produced 1.05 kg of medieval pottery which probably arrived there from manure spreading as the field is adjacent to the road leading from Chapel Amble settlement.

Excavation

Aims and objectives

Four small trenches were excavated to investigate the bivallate enclosure in Ten Acre field. The main aim was to recover dating material and establish a broad chronology, where possible determining the nature of the activity, character of the settlement and spatial patterning.

Methodology

All trenches were dug by hand. The overburden consisted of plough soil and plough pan to a depth of around 0.25m, the natural being shillet as commonly encountered from Devonian slates and shales geology.

The spoil heaps were organised in order that any finds within them could be traced to sectors of the trench and contexts. A metal detector was employed regularly to locate any metal finds. A total of 25 litres of environmental samples were taken. A reflexive approach to excavation was carried out on the site; the excavator's views and general impressions were recorded on context sheets.

Trenches

Trench 1 – gully [1-06]

Trench 1, 2m × 1.5m, was placed over the terminal of a curvilinear feature on the magnetometer survey. This is probably a surrounding ditch or gully of a large roundhouse structure of just over 10m in diameter. The gully can be traced on the magnetometry survey clearly for a third of the circle and vague outlines intermittently on the remainder. This was positioned around 20m to the south west of the inner enclosure entrance. The structure lay close to the west side of the inner enclosure, with its entrance facing south east towards the entrance of the enclosure.

Below the plough soil the material increased in compaction and grittiness (1-02) to merge with (1-03). The degree of compaction suggested that this could have been a surface of a floor post-dating the gully. The gully fill contained sporadic charcoal every 0.1–0.2m with a 20mm lens approximately mid-depth crossing the section (Fig 5). The most notable, unusual feature of the gully was a

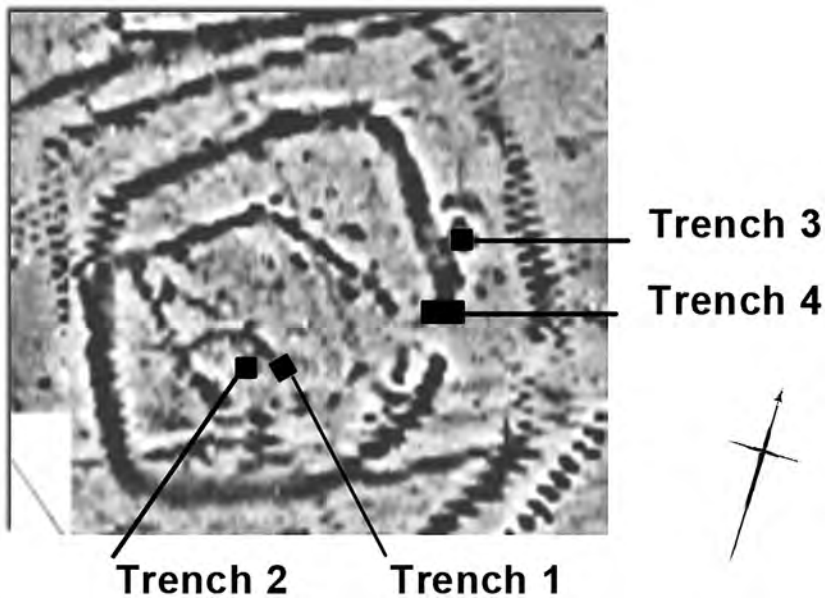

Fig 4 The position of the trenches overlaid onto the magnetometry survey of the enclosure.

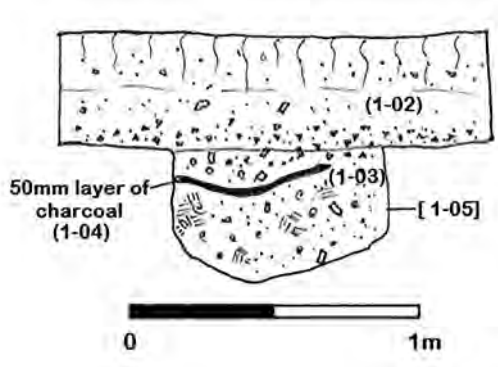

Fig 5 Trench 1, west section across gully of probable roundhouse.

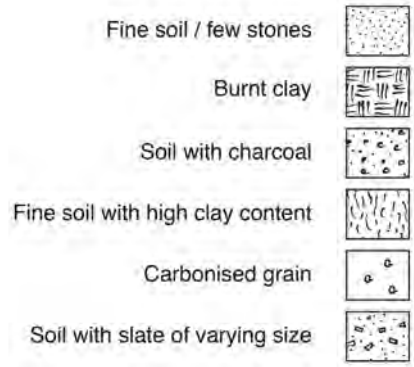

Fig 6 Key to figures and plans.

'causeway' dividing the ditch. Against the wall of this leant a 410 × 180mm slate (Fig 7). When the gully [1-06] was fully excavated it was observed that the state fitted snugly above the causeway and made up the height to equal that of the top of the gully (Fig 8). One explanation is that this could be a type of storage 'cool box' at the entrance to the structure, possibly kept cool with water and protected with a wooden cover. The slate would act as a weir, or could be lifted out to control the water height. The gully was 0.92m at its deepest.

There were no finds from trench 1.

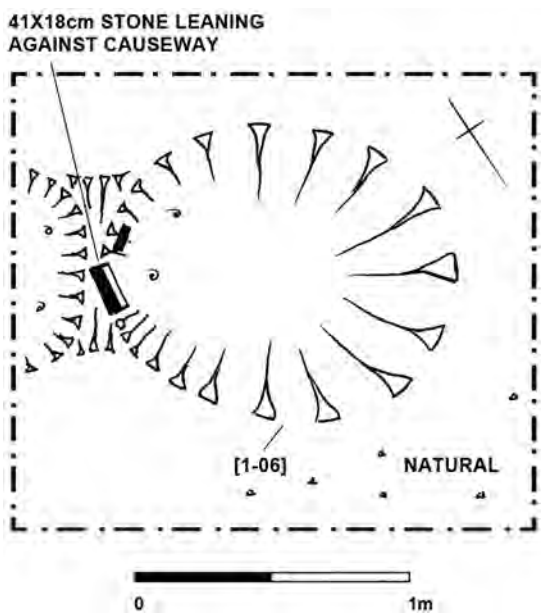

Fig 7 Trench 1 plan, terminal of gully of probable roundhouse.

Trench 2 – pit [2-05]

An anomaly on the magnetometer survey (20nt plus) was investigated around 2m inside the north side of the probable roundhouse structure. A compacted material (2-02), similar to (1-02) in trench 1, composed of small 1mm slate stone and clay lay below the plough soil. This appeared, as in trench 1, to merge with (2-03). One diagnostic rim of Romano-British gabbroic fabric (No.3) was found in (2-03) and another (No. 4) was recovered between (2-03) and fill (2-06) at the top of a pit, [2-05]. A crust of burnt clay and soil (2-04), at the top of the pit had the appearance being produced *in situ* as it was a complete lens and crust-like in character. It partly capped (2-06), a deposit of burnt clay, soil and charcoal of which there were some large pieces, one lump being particularly large. One small piece of burnt bone was recovered from the top of this context and two pieces of granite were also found. Below (2-06) was a large deposit of over 5.4 kg of charred carbonised grain (2-07). This context measured 0.95m × 0.55m and up to 0.17m in depth. The grain butted hard up against the pit side on the north-west side. Three sides of the grain deposit were notably square (Figs 9 and 10) where it had possibly been contained within a rectangular wooden tray, box or crate-type container. A semicircular setting of stone marked the north-eastern side. The feature did not appear to have any of the hallmarks of a grain drier.

Fig 8 Trench 1; the slate, found on the side of the 'causeway' in gully [1-06], reconstructed into its probable position.

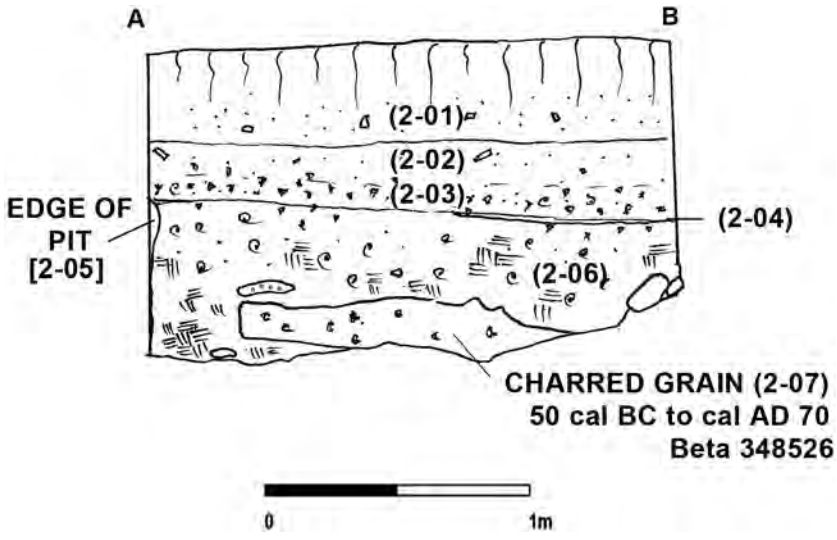

Fig 9 Trench 2, section A–B, pit [2-05].

Trench 3 – hearth [3-05]

Trench 3 was opened over a magnetometer reading of 15 nano-teslas to investigate the character of the anomaly. The trench lies between the outer enclosure ditch and the inner ditch. The contexts for trench 3 were much less compact than those inside the enclosure. It was apparent that the high magnetometer reading was due to the burning from a hearth pit, [3-05] (Figs 11 and 12) with slate placements (3-04) above and below burnt soils, clay and plentiful charcoal. Samples were taken. No finds were found within trench 3.

Trench 4 – inner enclosure ditch terminal

Trench 4 was opened directly over the ditch of the north terminal to the enclosure entrance, in the hope of maximizing the possibility of recovering dating material. The trench was stepped in compliance with safe archaeological practice so as not to create a vertical surface of more than 1m, except for the stable rock-cut edge of the ditch terminal. Although the ditch sides were not excavated (only the terminal was mostly exposed) to show the complete profile, from the depth of 2.3m and the magnetometry readings it was calculated that it

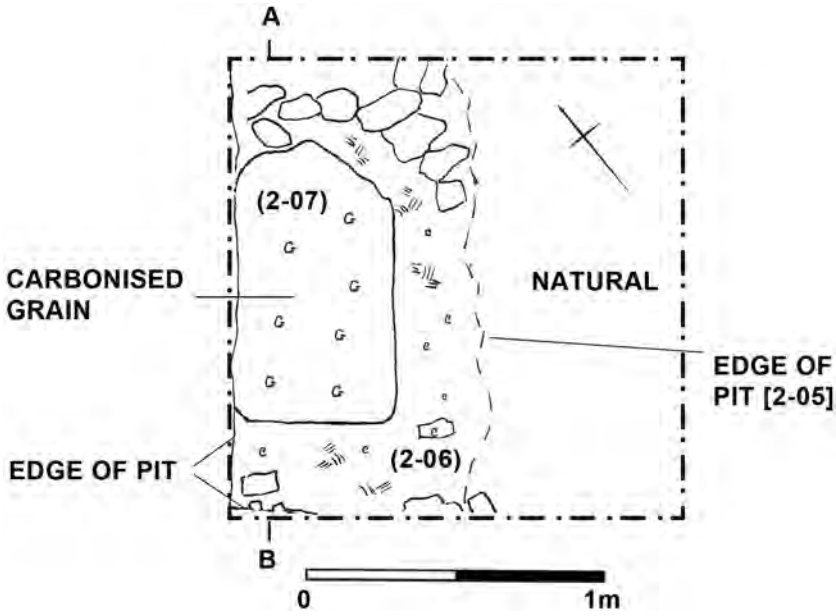

Fig 10 Trench 2, plan, pit [2-05].

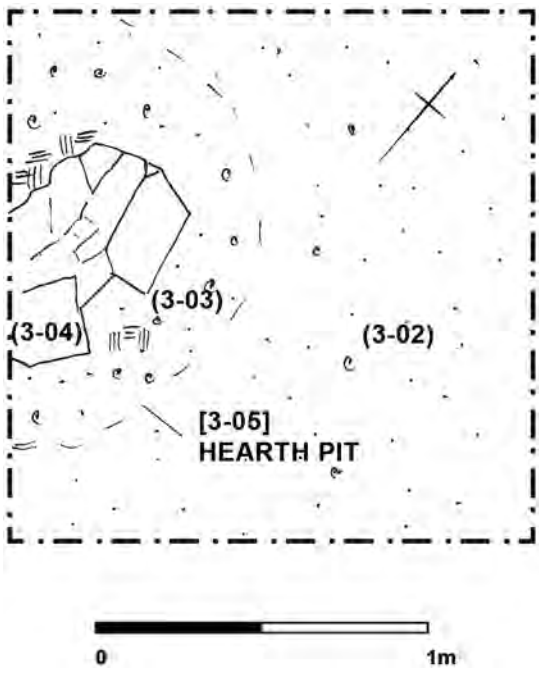

Fig 11 Trench 3, plan.

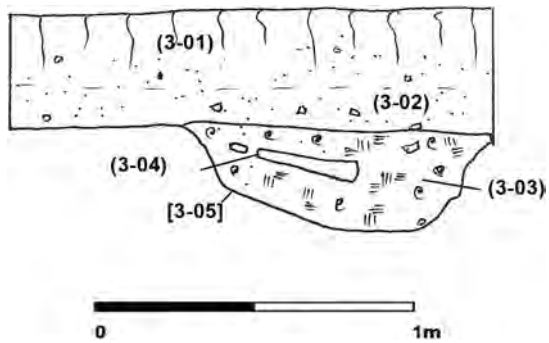

Fig 12 Trench 3, west section, hearth pit [3-05].

was over 3m wide. The ditch bottom appeared to be a shallow curve in profile.

The slumped nature of the contexts in the ditch section showed that the ditch had filled naturally over time. Lenses of compact clayey material of slate grit (4-03) with some larger slate (4-06), alternated with soil with less clay (Figs 13 and 14). Only one sherd of pottery was found, from a Roman mortarium (No. 2), 0.39m from the present surface in context (4-03).

Context (4-06) appeared to be material that may have originally been from the bank or side that had slumped in during a natural process of fill. The primary silt (4-10) was composed of a very dark grey, fine gritty silt, with a high inclusion of charcoal, probably around 50 per cent. The charcoal diminished exponentially throughout (4-09) from the lower level upwards.

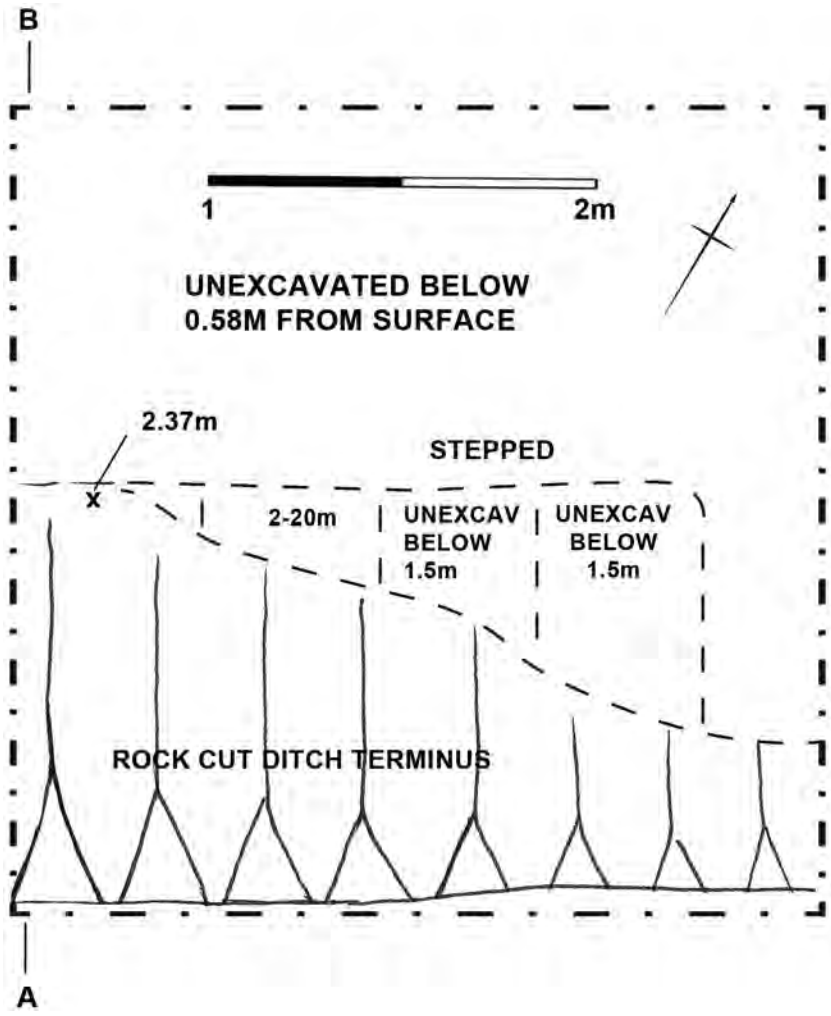

Fig 13 Trench 4, plan, enclosure ditch [4-04].

Ceramics

The pottery was examined by Henrietta Quinnell. The material recovered from the excavation consists of seven sherds weighing 114g, and one sherd dating to the post-Roman period, retrieved from fieldwalking, which weighed 17g. Vessel numbers can be relatively accurately computed owing to the variation of fabrics found per context and in several cases sherds clearly belonged to the same vessel, found broken *in situ*.

Table 1 Pottery sherd numbers and weight by context and fabric

Context	*African red slip ware*	*Mortaria*	*Gabbroic*
Surface collection	1s/17g		
(2-02)			1s/24g
(2-03)			1s/3g
(2-03)			1s/14g
(4-02)		3s/56g	
Mean sherd weight	17g	17g	14g
Totals	17g	56g	41g

Surface collection

No 1. North African Red Slip Ware. The foot ring profile is a very close match to the foot-ring

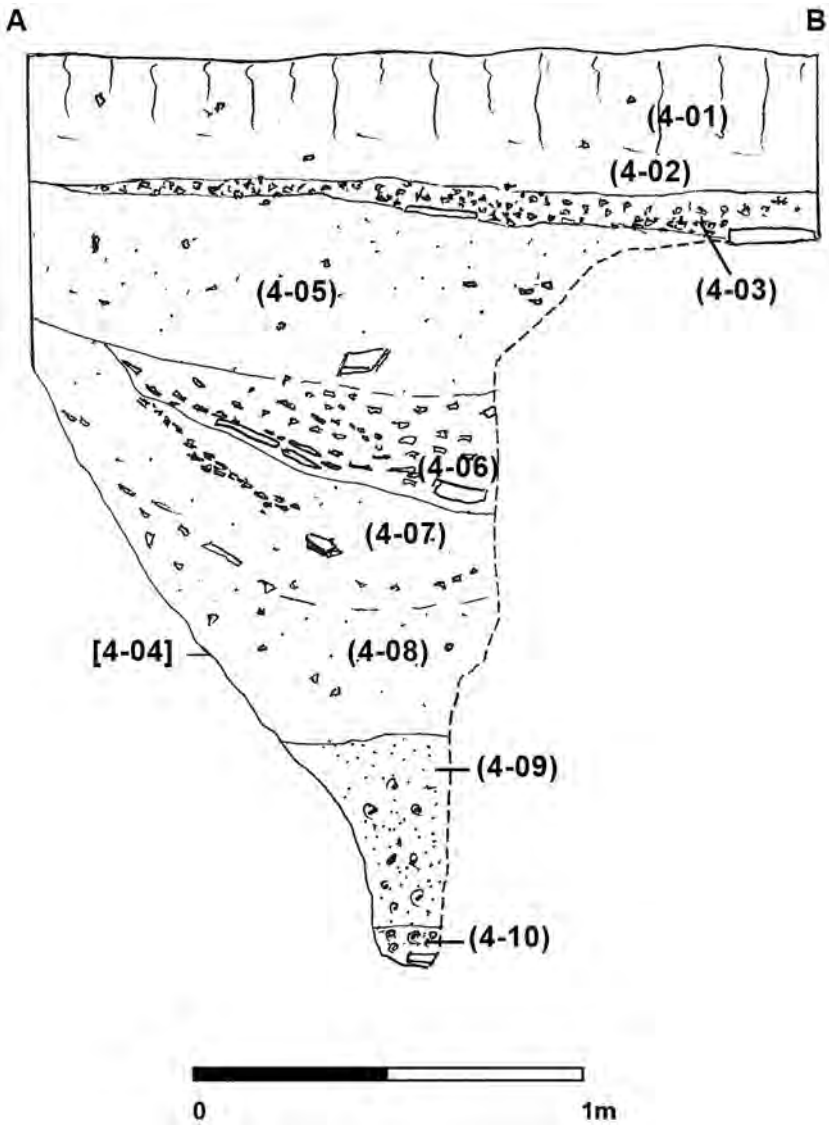

Fig 14 Trench 4, south-west section A–B, enclosure ditch [4-04].

of Tyers 3C (Tyers 1997; 2014). The 60 × 33mm sherd retained small traces of its red slipware on the inner surface (the largest 10 × 8mm) and on the outer side all along the protected inner corner of the foot ring.

Recovered from a position just north of the enclosure area. As mentioned previously there is a possibility that surface finds may have arrived in the plough soil from sand spreading activity. Nevertheless, this sherd appeared to be relatively crisp and fresh around the edges and it was thought it had not been immersed in water or river-worn for over a millennium (Carl Thorpe, pers comm). A sherd of NARS was similarly collected from the surface on the west bank of the Camel at Lellizzick (Wessex Archaeology 2008).

Excavated material

No 2 (4-02). This sherd was identified by Carl Thorpe. Mortarium, Pas de Calais Hartley group II

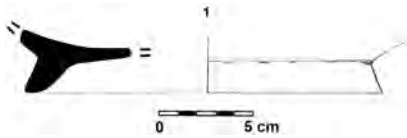

Fig 15 North African Red Slip Ware foot ring. (Drawing: M Borlase.)

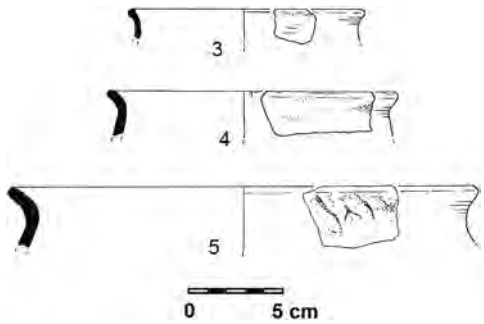

Fig 16 Gabbroic wares nos 3–5. (Drawing: M Borlase.)

(Gillam 238). Flat rim bead just truncated. Similar to three sherds found at Restormel (Thorpe 2007). Mid-first century to early second century AD. This was found in trench 4, 0.39m from the present ground level at the top of the ditch fill of the enclosure ditch.

No 3 (2-03). Lower depth of context (2-03). Well-made gabbro with good burnish. Provisionally first to second century AD.

No 4 (2-03). Fairly well made. Second to third century AD. Similar to Trethugy Type 4 - P58 rim profile (Quinnell 2004, 115).

No 5 (2-02). Standard gabbroic fabric jar. A variant of Trethurgy Type 4, an unusual slack profile type with possible decoration on the neck, unburnished.

Stone and lithics

Two granite stones were found in trench 2, within (2-06). These could have been used for crushing stone, although there were no visible pecking marks that would indicate continual use for such activity. Equally there were no very smooth surfaces that would indicate use as a rubber. However, the nearest source of granite is the De Lank area approximately 7km away.

One large flake of dark nodular flint was recovered in an upper unstratified context, probably a debitage flake. This is probably a prehistoric flint finding its way on to the site randomly and is not an indication of lithic working contemporary with the enclosure.

Environmental: the charred plant remains from pit [2-05]

Wendy Carruthers

Around 2m inside the north wall of the roundhouse within the bivallate enclosure a pit was excavated close to the probable entrance (pit [2-05], trench 2). The pit was overlain with a possible compacted floor deposit (2-02) and a Romano-British sherd. A deposit of burnt clay and charcoal (2-06) overlay a large deposit (over 4.5 kg) of well-preserved charred grain (2-07). The grain filled a rectangular area of 0.95m × 0.55m × up to 0.17m. The sharply delineated edges suggested that some sort of rigid container such as a shallow box, crate or tray may have been used to hold the grain, and that this had been burnt *in situ*. A radiocarbon date of 50 cal BC to cal AD 70 (at 95 per cent, Beta-348526) was obtained from a grain sample. This report discusses the analysis of a sample from charred deposit (2-07).

Methods

Processing and assessment – A 1.9 litre whole earth sub-sample from the lower part of the charred grain deposit was processed and assessed by Vanessa Straker (South-West England Science Advisor, English Heritage). Standard methods of flotation were employed, with a minimum mesh size of 250 microns being used for the flot. The flots and residue from the sub-sample have been examined in detail for this report (called sample 1 hereafter) in order to characterise and quantify the plant remains. Sample 1 comprises around 9 per cent of the total volume of deposit (2-07). The assessment report pointed out that much of the charred plant material had failed to float during the first flotation, so the residue from sample 1 was re-floated by hand (that is, using repeated mixing and decanting through sieves into buckets) with a

minimum mesh of 250 microns being used. Even after re-flotation, some charred material remained in the Devonian slate residue. Therefore, in addition to sorting flots 1 and 2, the residue was fully sorted under the microscope. All of the charred plant remains from these three fractions were reunited for analytical and quantification purposes, but it was thought useful for future investigations into methodology to present the three fraction counts separately in Table 2 (except for barley grains which were quantified using extrapolation). Large fragments of charcoal were extracted and sent to charcoal specialist Dana Challinor for analysis (see report below).

Sorting *– All except barley grains*: All three fractions of sample 1 were fully sorted for charred remains excepting barley grains (barley chaff, oats, hulled wheat, weed seeds, charcoal), and accurate counts are presented in Table 2. The exceptions to this were a few small, highly fragmented chaff fragments such as oat and barley awns and oat lemma fragments which were given approximate frequency ratings (+ = occasional; ++ = several; +++ = frequent; ++++ = abundant).

Barley grains: Because barley grains were extremely abundant, making up the bulk of the unprocessed soil sample, quantification was carried out by counting the number of grains and grain fragments (roughly adding fragments together to make whole grains) in a number of 5ml sub-samples up to the point where a reasonable estimation by extrapolation could be made. This was found to be at around five × 5ml sub-samples. Although using this method meant that only a rough idea of grain number was obtained, it made best use of the resources whilst enabling a rough estimate of the quantity of grain in the pit to be made. The difficulties in arriving at a more accurate figure are discussed further below. An attempt was also made at this stage to determine the relationship between straight median grains and twisted lateral grains, in order to differentiate between two-row (*Hordeum vulgare* subsp. *distichum*) and six-row hulled barley (*H. vulgare* subsp. *vulgare*) (see 'Notes on identification' below).

Results

Table 2 presents the results of the analysis of sample 1. Nomenclature and most of the habitat information follows Stace (2010), with Zohary and Hopf (2000) being used for the cereal taxonomy.

Notes on identification

Barley – Most of the grains were well-preserved and still retained their husks, so hulled barley was confirmed as being present (*Hordeum vulgare*). Two subspecies have been cultivated in the past, six-row (*H. vulgare* subsp. *vulgare*) where all three florets at each rachis node develop into grains and two-row (*H. vulgare* subsp. *distichum*) where only the central floret of the three develops into a grain. The latter subspecies is primarily recovered from medieval or later contexts, although there are a few tentative earlier records (for example, Romano-British (traces) from the M6 Toll, Warwicks: Clapham 2008). Well-preserved rachis fragments are required in order to positively identify two-row barley, although the total lack of twisted side grains in a sample would also indicate the cultivation of this crop. For this reason an examination of the ratio of straight median grains to twisted lateral gains was undertaken. In most normal six-row barley ears this would be one straight to two twisted, but crop processing, poor preservation and charring can reduce the ratio, because lateral grains are sometimes thin enough to pass through sieves during processing and to become burnt up or damaged by charring, making identification impossible. In the five 5ml sub-samples of sample 1 the ratio of straight to twisted grains was 191 straight to 200 twisted grains, that is, roughly equal, but with slightly more twisted grains than straight. Six-row hulled barley is clearly present, but it is not safe to rule out the possibility that some two-row barley could have been grown. In the author's opinion, however, the approximately 1:1 rather than 1:2 ratio is likely to be due to differential preservation, and failure to be certain whether the 123 poorly preserved grains had been straight or twisted. For the reasons stated below, crop processing may not have been a factor at this site. It is most likely that six-row hulled barley was the only crop plant present in the deposit.

Barley rachis fragments were frequent but seldom very well-preserved. Where the complete rachis internode was preserved it could be seen that internode length varied from long, slender internodes suggestive of a lax-eared form of barley to a few short, thick internodes indicative of a more dense form (or of the ends of the ear where nodes become shorter). High genetic diversity in prehistoric cereal crops means that both forms may have been present, or that the length varied

Table 2 Plant macrofossils

Barley	*Total in 25ml of extracted barley grain*	*Extrapolated number in Sample 1 (530ml barley)*		*Total (extrapolated)*	*% Composition*
Hordeum vulgare L.emend. (straight hulled barley grain)	191	3820		3820	
Hordeum vulgare L.emend. (twisted hulled six-row barley grain)	200	4000		4000	
Hordeum sp. (indeterminate hulled barley grain)	123	2460		2460	
Hordeum vulgare L.emend. (pair of hulled six-row barley grains fused in position)	2 pairs	40 pairs (13 pairs sorted)		80	
Hordeum sp. (sprouted hulled barley grain)	1	20		20	
Total	**518**	**10380**	**range = *c* 10 to 12 thousand**	**10380**	**85% barley grain**
Oats	*First flot*	*Second flot*	*Re-floated residue*	*Total (counted)*	
Avena fatua L. (wild oat grain in floret) A	133	7	5	145	
Avena sp.(wild/cultivated oat grain in floret, no floret base) A	20	4	3	27	
Avena sp.(wild/cultivated oat grain, no chaff) A	819	89	26	934	**9% oat grains**
Chaff					
Hordeum vulgare L.emend. (barley rachis fragment)	129	127	3	259	
Hordeum sp. (barley awn fragments)	++	+	++	++	
Avena fatua L. (wild oat floret base) A	102	8	63	173	
Avena sp. (oat lemma fragments) A	++	++	+++	+++	
Avena sp. (oat awn fragments) A	++	++	+++	+++	
Triticum cf. *dicoccum* (cf.emmer spikelet fork)	1			1	
Triticum dicoccum/*spelta* (emmer/spelt spikelet fork)	3	4	1	8	**4% chaff**
Weed seeds					
Polygonum aviculare (knotgrass achene) CD	1			1	
Rumex sp. (dock achene) CDG	20	24	4	48	
Raphanus raphanistrum ssp. *raphanistrum* (wild radish mericarp) CDa	2 + 6f			2+6f	
Lapsana communis L. (nipplewort achene) CD	1			1	
Bromus lepidus-type (cf. soft-brome grass caryopsis) AD	220	12	3	235	
Anisantha sp. (barren brome caryopsis) AD	2		1	3	
Hordeum sp. (long, thin straight grains, wild species or cultivated ear terminal grains)	35	4	5	44	
Poaceae (indeterminate grass caryopses) CG			3	3	**2% weed seeds (excluding wild oats)**
Total				**12,250**	
Charred fragments per litre soil				6447	

Habitat key:
A = arable; C = cultivated; D = disturbed; G = grassland; a = acidic soils; + = occasional; ++ = several; +++ = frequent.

considerably at different points in the ear. No two-row barley rachis fragments were identified amongst the 129 rachis fragments recovered from sample 1. The relationship between the number of rachis fragments and grains is discussed below.

Oats – Naked oat grains, whole florets and fragments of lemma possessing floret bases were frequent amongst the barley grains. In every case where the lemma base was preserved a suckermouth scar characteristic of common wild oat (*Avena fatua*) was present. In addition, wherever lemmas were well-preserved awns were observed on the dorsal sides. Awn fragments were frequent and naked grains possessed long hairs on their surfaces. Grains were not especially long or plump and they were fairly parallel sided. All of these characteristics point to an identification of common wild oat, *Avena fatua*, rather than a crop species (Jacomet 2006).

Brome grass – Although brome grasses within section *Bromus* are difficult to tell apart using grain morphology it may be useful to make a tentative suggestion as to which species is most likely to have been present. The caryopses were small (around 4mm long), shallow (thin rather than plump) and usually folded. The widest point laterally was around three-quarters of the way up from the embryo and the embryo end was very pointed. The most likely identification is slender soft-brome (*Bromus lepidus*) due to its small size, but it may belong to another species in the *Bromus hordeaceus* group (soft bromes). The origin of slender soft-brome is uncertain and it may have been introduced from mainland Europe as an arable weed (Hubbard 1954), whilst soft-brome is a common native weed of grassy and cultivated land. The Middle Amble brome is notably different to the very large, plump, spoon-shaped brome grains in Romano-British samples from Penhale Round, Cornwall (Carruthers, forthcoming b).

Discussion

The recovery of such a large sample of well-preserved barley provides the opportunity to a) try to work out how much grain was present and in what form (processed or unprocessed), b) investigate crop quality and husbandry methods, and c) make suggestions as to why the grain had been deposited and burnt in this way. The deposit is unique as far as the author has been able to determine, although the closest parallels are discussed below.

a) Processed or unprocessed?

Although the deposit is dominated by well-preserved barley grains, barley rachis fragments were fairly common in comparison with most large barley deposits (see comparative sites below). Chaff fragments made up four per cent of the assemblage from sample 1, most of which came from barley (259 barley rachis fragments). However, wild oat chaff was also frequent (173 floret bases, plus 172 oats still in the floret). These two cereals cannot be directly compared in terms of chaff survival, as different structures are preserved by charring, depending on the robust nature of the chaff items. It is clear that much of the chaff is destroyed by burning, particularly the dry, papery structures such as oat glumes and rachis which either become immediately reduced to ash or are too brittle following charring to survive, disintegrating on excavation and processing.

Experimental charring by Boardman and Jones (1990) demonstrated that components such as straw have very limited chances of survival under a range of burning conditions (temperature and duration of burning). Rachis fragments tend to disintegrate fairly readily, with barley rachis being a little more vulnerable than wheat. Survival is improved under reducing conditions, so it is possible that the fact that sample 1 came from the lower levels of the tray (Mark Borlase, pers comm) helped at least some of the rachis fragments to survive. Grains survived the longest in Boardman and Jones's experiments, and over the widest range of conditions. Considering how well-preserved the grain was, with long hairs surviving on most of the oat grains, it is likely that high temperatures were not reached in the base of the pit at Middle Amble, and that conditions were fairly reducing in the region from which sample 1 was taken. Boardman and Jones's preservation and distortion experiment (1990, 9, fig 3) suggests that temperatures did not exceed 300°C, since the state of preservation was predominantly at the 'good' end of the scale (code 1 or 2; *ibid*, 4). Boardman and Jones also note that even at 300°C rachis fragments were beginning to disintegrate after 5 hours, especially barley rachis. It is easy to see, therefore, how grains may have been well

preserved after one or two hours of charring at a fairly low temperature but rachis fragments may have begun to disintegrate. Taking information from the charcoal discussion (Challinor, below), which notes that a temperature of around 350°C is required to ensure that oak wood is completely charred, it can be suggested that charring took place at around 300 to 350°C, with perhaps the tray receiving most of the direct heat from the flames.

To determine whether the barley had originally been present as fully processed grain or in the ear the ratio of grain to rachis fragments was examined, alongside the incidence of different sized weed seeds. Fully processed barley would have contained very few rachis fragments or weed seeds, although grain-sized contaminants such as oat grains may have remained with the barley after fine sieving for small contaminants (that is, small weed seeds and rachis fragments). Uncharred ears of six-row barley have a ratio of three grains to each rachis fragment. However, taking into account Boardman and Jones's findings, there is likely to have been differential preservation in favour of grains in the Middle Amble sample. Therefore, the fact that rachis fragments were roughly ten times less frequent than might be expected in whole ears (38 grains to 1 rachis fragment, as opposed to 3 to 1) could be explained as being due to differential destruction of rachis fragments.

When hulled six-row barley is processed and sieved for small contaminants some of the lateral grains, which are often thinner, twisted and sometimes poorly developed, can be lost through the fine-meshed sieve. Looking at the ratio of straight to twisted grains from the sub-samples it can be seen that the typical ratio of one straight to two twisted grains was not found; the ratio is more like 1:1 (191 straight to 200 twisted grains). This could be said to suggest that the grain had been processed, but as with chaff fragments, thin twisted lateral grains are more likely to be destroyed by charring than plump median grains. In addition, it is probable that the majority of the 'indeterminate' barley grains had been twisted lateral grains, as they are more likely to be poorly preserved and misshapen.

The range of weed contaminants was fairly limited in the deposit, with larger grain-sized weeds such as oat (1106 grains) and brome grass (235 grains) dominating the weed assemblage. It is uncertain whether these large grasses were originally present as ears or spikelets. Being wild plants they readily break into spikelets once ripe, so the latter is more likely. Small contaminants could just as easily have been sieved from whole ears as from processed grain, so it is not helpful to use weed frequency to show whether processing had been carried out. The few small items such as dock seeds (*Rumex* sp.) and wild radish mericarp fragments (*Raphanus raphanistrum*) may have been caught amongst the highly awned barley ears.

Perhaps the most compelling evidence was the fact that several pairs of grains were recovered, with the grains fused together in the position that they would have taken in the ear. In some cases the median grain was fused to a lateral grain as at a rachis node, and in others two median grains from successive rachis segments were fused, overlapping like roof tiles. Barley behaves like a free-threshing cereal such as bread wheat, with the ripe grains falling fairly readily from the rachis during threshing, although in the case of barley they are still enclosed in the husk (lemma and palea). If fully processed, the larger unthreshed segments of ear could have been sieved from the crop using a coarse sieve, so this is unlikely to indicate a poorly threshed crop. In addition to this, close examination of some unprocessed lumps of deposit using gentle irrigation to remove silt rather than total immersion in water revealed that some grains were aligned in ear formation, with a maximum of five overlapping median grains observed in one case. It is suggested, therefore, that the six-row hulled barley had been deposited in the ear, rather than as processed clean grains, but that charring had caused the loss of many of the rachis fragments so that when the sample was excavated and processed the ears fell apart. In the light of this analysis, it is recommended that in future cases where large grain deposits are found at least some of the sample is removed in a block and left unprocessed for the specialist to carry out a careful microscopic examination.

b) Crop quality and husbandry methods

The purity of the deposit in terms of crop species is notable, in that no grains and only nine spikelet forks from hulled wheats were recovered from sample 1. One of the poorly preserved spikelet forks appeared to be from emmer wheat but the identification remains tentative (*Triticum* cf.

dicoccum). Because no other samples have been examined from the site it is impossible to say whether the barley in sample 1 was typical of the period, being the main cereal consumed by the occupants, or whether it was a special deposit that had been burnt for symbolic reasons. Looking at other Late Iron Age/Early Romano-British sites in Cornwall, in most cases emmer and spelt wheat were the dominant cereals represented, but in occasional cases, such as Atlantic Road, Newquay, around 24km south west of Middle Amble, Romano-British samples produced predominantly hulled barley (71 per cent of the grain in the most productive sample) with frequent indeterminate oats and some spelt (Carruthers, forthcoming a). This suggests that barley was probably being grown for human consumption in some areas. It is a useful crop in coastal areas, being tolerant of a wide range of soil types and of salt spray. Barley is fairly undemanding in terms of nutrients, and prefers well-drained soils such as are found locally on the shale. Beaven (1947, 111) suggests that most races of barley do best on a light, medium strength soil or even a very poor, hungry soil in seasons where there is sufficient rain for growth to proceed without check.

In terms of grain size and appearance, the barley seems to have been in good condition, with no significant signs of premature sprouting (only one sprouted grain was recorded amongst 518 grains in the quantification sub-samples) or insect attack. The grain was of a good size and quality. It is possible that the crop was grown on the area of base-rich but slightly acidic soil fertile loamy soil around Wadebridge (www.landis.org.uk/soilscapes), but this cannot be confirmed. Because the range of weeds was fairly small and the taxa grow in a wide range of cultivated or disturbed habitats it is not possible to be specific about crop husbandry methods. The presence of wild radish, an indicator of acidic soils in the general sense (Ellenberg 1988), fits in with the grain having been grown locally. Wild oats would also thrive on the free-draining acidic soils in the area. It is possible that large-seeded grasses such as oats and brome grass were tolerated as weeds because they helped to bulk up the crop, particularly in difficult weather conditions, such as wet summers. Most Late Iron Age to Romano-British sites produce reasonable numbers of oat grains but in many cases it remains uncertain whether a crop or weed was present because poor preservation conditions mean that chaff is not recovered. A few sites, for example Danebury (Campbell 2000), have produced evidence for the presence of cultivated oats in the Late Iron Age. However, at Middle Amble it is clear that no cultivated oats were present but that wild oats were a well-established contaminant.

All of the weeds listed in Table 2 can grow to around 0.8m or more, a height at which they could have been gathered with the crop if cut below the ear. Although ears of barley are thought to have been placed in the container it is possible that the crop had originally been harvested by other means, such as uprooting or cutting low on the straw. The straw may have been cut from the plants later, perhaps to be used for fodder, bedding or thatching, taking with it the lower growing weeds.

c) Interpretation of the charred barley deposit

By calculating the quantity of grain present some idea of the importance of the deposit might be obtained, either as an accidentally burnt stored crop or as a ritually burnt 'sacrificial offering'. Fortunately a clearly marked area of burnt grain was recorded, enabling measurements to be recorded. It should be noted that in order to roughly calculate grain numbers many assumptions have been made (for example, that the deposit was uniform) and extrapolated figures have been used. Whilst this will have produced a very inaccurate approximation, there are other unquantifiable variables that mean that a more precise count would have been a waste of time. For example, the following are unknown factors:

- the number of grains lost during charring, a factor that probably varied with depth. A large proportion of the barley may have burnt away to ash, particularly the upper layers that were more exposed to oxygen if the box was burnt *in situ* in the bottom of an open pit. It may have been only in the lower part of the deposit that recognisable plant macrofossils were preserved by charring in a reducing atmosphere
- the uniformity of grain distribution
- how compactly the box had been filled, since springy, awned barley ears would have taken up a lot of room when fresh
- whether additional highly combustible items such as straw had originally taken up some space. Straw burns away to fine ash, but more solid structures such as the stem bases and nodes

are often preserved. This suggestion is therefore unlikely, since no nodes or culm bases were recovered from sample 1, but it cannot be ruled out.

Calculation of oak box contents

- *Sample 1* – 1.9 litres of soil produced around 10,360 barley grains (extrapolated figure) = 5453 barley grains per litre.
- *Further unprocessed soil* with visible abundant grains sent to author = 2.3 litres > 12,542 barley grains.
- *Total* = 4.2 litres unprocessed soil > 22,902 barley grains. This represents around 20 per cent of the total soil within context (2-07). A further 20 per cent unprocessed soil remains in storage.
- The number of *grains per ear* in six-row barley ranges from around 30 to 60 (differentially inherited character so dependent on field race) – the median of 45 grains per ear was used for this calculation.
- If 20 per cent of the deposit contained approximately 23,000 grains, 100 per cent would contain *some_115,000 grains*, or around 2500 ears. It is unknown whether the density of charred grain remained constant throughout the box, but because the ashy colouring was less intense in the upper layers (Mark Borlase pers comm) a suggested figure might be nearer approximately 2000 ears.
- Using reference material consisting of uncharred six-row barley ears and extrapolating the data, the *space taken up by 2000 whole ears* (straw cut off below the ear) is 0.018 cubic metres or 18 litres. When charred and compacted over time the volume would, of course, be greatly reduced.
- *Contaminants* – Although accounting for 11 per cent in number of items, the oat florets (9 per cent) and weed seeds (2 per cent) probably took up less than 1 litre of space depending on whether or not whole ears of oat and brome grass were originally present.
- Calculations of the *original volume of the oak box* carried out by Mark Borlase from site records provided the following dimensions;
  80 × 52 × 15 cm = 0.062 cu metres = 62 litres.

  However, this is measured from the outer edge of the charred deposit, so depending on the thickness of planking used for the box, the holding capacity would have been lower. While most of the larger fragments of oak were around 10mm thick one large fragment was 20mm thick in places. Taking into account possible shrinkage of up to 40 per cent of the wood as a result of charring (Dana Challinor, pers comm), the original holding capacity may have been more like 45 litres.

The 19 litres of charred barley ears would easily have fitted into the box, with room to spare. As noted above, charring is likely to have caused the loss of some more combustible items, such as chaff fragments (for example, barley rachis fragments). The loss of rachis fragments would have led to the collapse and compaction of many ears, although silicified ash from the burning of awns and light chaff may have remained *in situ* until the samples were excavated and processed.

The sowing rate of barley in the Iron Age cannot be known, but current agricultural guidelines suggest that a rate of approximately 200 to 250 winter (six-row) barley grains per metre square should be used which will produce some 500 ears per metre square (www.farmersguide.co.uk). This is probably a much greater rate than that used in prehistoric times, and it may rely on the heavy inputs of fertilisers and the use of machinery. If, for arguments sake, this figure is used the 2000 ears in the oak box could have come from around four square metres of land. It is worth bearing this figure in mind when determining whether the deposit became charred due to deliberate burning of an offering, or from the accidental or malicious burning of stored grain. Another factor to be considered is, why burn a valuable box as well as the grain if the burning was ritual in nature (Dana Challinor, pers comm)? Clearly, it would have increased the value of the offering, but unfortunately there are no known parallels for this type of sacrifice in the British Isles to help answer the question.

Comparisons with other sites and overall interpretation

Van der Veen and Jones (2006) have discussed the significance of large grain deposits recovered from Iron Age pits in a review paper. They suggest that the fact that grain surpluses existed at this time meant that feasting could take place, facilitating social bonding. This type of use was favoured in the Earlier Iron Age but by the Late Iron Age surpluses were more often used to acquire elite

items including exotic foods and artefacts. It is questionable whether the burnt barley at Middle Amble represented a surplus that could be used for spiritual purposes, that is, as an offering, or whether it represented accidentally/maliciously burnt seed corn that had been highly valued and not considered to be surplus.

No direct parallels with this deposit have been found, although large concentrations of barley in pits have been recovered from a number of Bronze Age sites in southern England; for example, clean naked barley and beans in a pit inside a Middle Bronze Age roundhouse at Rowden, South Dorset Ridgeway (Carruthers 1990). Barley was the most important cereal on many Middle Bronze Age sites in southern England but by the Iron Age hulled wheats tended to become dominant in most parts of the British Isles. In the earlier part of the Iron Age large beehive-shaped pits were being used to store grain on the chalk soils of southern England, and these have occasionally produced evidence of stored crops consisting of spikelets of emmer or spelt grain preserved *in situ* (for example, Danebury; Jones 1984, 491). On heavier soils, however, grain appears to have been stored in four-posters (for example, Iron Age settlement on Boulder clay at Beamont Leys and Humberstone, Leics: Monckton 2011). The presence of the Middle Amble barley inside a roundhouse, therefore, suggests that it was a special deposit that was being well-protected in a secure, dry place.

Evidence for storage in containers is scarce, but there was some suggestion that a cloth/textile container had been used in a storage pit at Wandlebury Ringwork, Cambridgeshire (Ballantyne 2004, 56). This pit is worth describing in more detail since micro-excavation revealed that possibly two episodes of burning had occurred, preserving frequent remains of emmer and spelt in spikelet form and six-row barley, probably in the ear. These conclusions were based on the grain to chaff ratios, taking into account some loss of chaff as indicated by Boardman and Jones's experimental work (1990). Although similar to Middle Amble, there are many differences between the two sites, including the interpretation from Wandlebury that the grain may have been burnt in order to 'clean out' the storage pit. It is notable, however, that other pits on this site contained 'closure' deposits which included articulated animal skeletons, including a dog. Ritual, therefore, clearly was associated with grain storage pits, suggesting that the burning of a box of barley ears may have fitted within the beliefs and associated activities taking place in Iron Age settlements.

Perhaps more similar to Middle Amble was a shallow pit at Gravelly Guy, Oxfordshire, that produced an almost pure deposit of six-row hulled barley estimated to amount to around 18,200 grains, located within 'scorched earth' which formed the lower half of the pit. There was no chaff or charcoal associated with the find, though the author suggested that the grain had 'been burnt in a container of some kind' (Moffett 2004, 638). Unfortunately no dates were obtained from the grain and the feature was dated to 'the Iron Age'. In addition, a Middle Iron Age storage pit contained primarily six-row barley with no chaff.

The location of the large box of barley inside a roundhouse at Middle Amble suggests that it had originally been placed in the pit for storage purposes. Storage of barley in the ear, however, would seem to be impractical, in that the awned ears take up much more space than detached grains would have done and is unnecessary from a pest/diseases-protection point of view as the grains remain husked until dried over a fire and hummeled (rubbed). However, if mixed with spikelets of hulled wheats, as at Wandlebury, it does make sense because separating the wheat from the barley would be very much easier if you simply had to pick out the large barley ears from the small wheat spikelets. This gives the occupant much more flexibility in which grains to use for different purposes. At Middle Amble, however, only tiny traces of wheat were present (nine spikelet forks of emmer/spelt and no grain) so either the wheat had already been consumed at the time of burning or another explanation needs to be found.

If the box had possessed a lid it would have provided good storage conditions for the grain once covered over with soil. This could also have hidden the grain from view, and provided security for what could have been valuable seed corn. Protection within a wooden box would have prevented crushing, kept the disease- and pest-containing soil from contact with the soil, and kept the damp soil away from the grain to prevent premature sprouting. It is suggested, therefore, that the fact that the grain had been retained in the ear, unthreshed (since threshing may have bruised the grain and reduced viability), and protected in a dry, rigid container suggests that the deposit probably consisted of the store of precious seed corn, being

kept safe until sowing time in the autumn or spring. Why this had been burnt remains a mystery, but it may have been a malicious act, or for ritual purposes.

The final suggestion is that the feature, which was located about 2m from the wall of the roundhouse, could have been used as a hearth after the ritually deposited box of barley had been burned. Clay with ash was placed above the box, and stones were placed in a semi-circle around the margin.

To conclude, the Middle Amble barley deposit seems to be unique, particularly since it appears to have been stored in the ear inside an oak box. Although only a single cache of grain (albeit very large and well-preserved), it has provided an opportunity to examine crop quality, and to discuss the possible reasons behind the burning of such a large amount of grain.

The wood charcoal from pit [2-05]

Dana Challinor

During excavation, it was recorded that the large deposit of charred grain in pit [2-05] was situated in a notably squared area within the pit, and the presence of large pieces of charcoal around the deposit indicated a wooden container or box. Several large pieces (up to 63mm in diameter) of the charcoal were examined at low magnification (×7–×45). This confirmed the identification of *Quercus* sp. (oak). No conclusive signs of toolmarks or woodworking evidence were observed. There was no (or very faint) ring curvature noted and the growth rings were perpendicular to the rays, with the rays aligned with the edges. Whilst this is a fragmentation characteristic of oak charcoal (splitting along the rays), it is possible that the wood had been radially converted. A few, rare tyloses were observed in the larger fragments, suggesting that the wood came largely from sapwood or at the transition zone between sapwood and heartwood. Ring counts on the largest fragment showed the tree was a minimum of 45 years in age.

Techniques and comparable finds

There are very few preserved examples of Iron Age boxes in Britain; four from Scotland were all monoxylous (carved from a single piece of wood) (Cavers and Crone, forthcoming) and one composite from Buckingham (Farley 1983). All of these appeared to be significantly smaller in size than the Middle Amble box, which suggests that a larger container was represented. Of course, it is unclear from the surviving charcoal whether it actually represents the base or lid of a composite item or part of a monoxylous trough. The earliest evidence for grooved joints in carved vessels for two-piece containers is early to middle Iron Age, and by the late Iron Age various jointing techniques were in usage, and there is evidence for stave-built containers (Earwood 1993). No comparable examples of the charred remains of a container have been found.

Shrinkage and width

The largest piece of charcoal measured 63mm by 59mm by 21mm and it is to be expected that the wood would have been larger prior to charring. Experiments on the charring of oak suggest that shrinkage rates are 15 per cent at 350°C, rising to 35 per cent by 800°C (Braadbaart and Poole 2008, 2442). The condition of the charcoal (and the preservation of the cereal remains) suggests that the upper temperature of 800°C would not have been reached, but it is also unlikely to have been significantly less than 350°C, which is the estimated minimum temperature for the preservation of wood charcoal in archaeological conditions (*ibid*, 2443). Assuming that the widest fragment of charcoal provides a shrunken indication of the width of the container, the wooden edge of the container must have been closer to 25mm in width.

Conclusions

The charcoal from Middle Amble is too fragmentary to provide firm evidence for the type of container, but the archaeological evidence indicates a squared/rectangular shape. This would be appropriate for a storage container, and the relatively large size must have been necessary for the storage of whole ears of barley. It is reasonable to assume that it was a functional object and may not have been of high value, but it still represents an investment in labour. It is unusual for a wooden container to have been included in a deliberate, ritual burning of cereals. Domestic burnt offerings in the Roman world regularly included food remains, along with wood or charcoal fuel (Robinson 2002), but there is no

evidence for the burning of food within wooden containers, and no Iron Age parallels in Britain have been found.

Radiocarbon dating

A sample of the charred grain from the grain deposition (2-07) was submitted for radiometric dating. Rubber gloves were worn whilst taking the sample from a 'clod' of grains bound together by compression rather than individual loose grains, thus eliminating the likelihood of contamination.

The results indicate that the grain was deposited around the turn of the millennia. The radiocarbon determination combined with the ceramic dates would suggest that this area of the site was in use at least from the late first century BC and probably continued to be occupied throughout a large part of the Roman period.

Discussion

The excavations at Middle Amble were designed to elucidate the nature of the enclosure in Ten Acre field and where possible obtain a general chronology in order to compare the site with others.

From the geophysics it is clear that the chronology is complex, with three phases of enclosure on the same site; also, the outer ditch of the bivallate enclosure cuts through a probable roundhouse, suggesting that at least some of the roundhouses pre-date the bivallate enclosure, although they may have been contemporary with other phases of the enclosed site. One radiocarbon date was obtained from pit [205], located within a roundhouse and presumably associated with it. The Late Iron Age date, 1990 ± 30 BP, 50 cal BC to cal AD 70 (Beta 348526), overlaps with dates from roundhouses at Higher Besore (second to first

Table 3 Radiocarbon determinations

Context	*Laboratory reference*	*Radiocarbon age BP (uncalibrated)*	*Calibrated age range 68%*	*Calibrated age range 95%*
(2-07) grain	Beta Analytical: (Beta-348526; Mid Amb (2-07))	1990±30	40–10 cal BC cal AD 0–30 cal AD 40–50	50 cal BC–cal AD 70

The database used was INTCAL09.

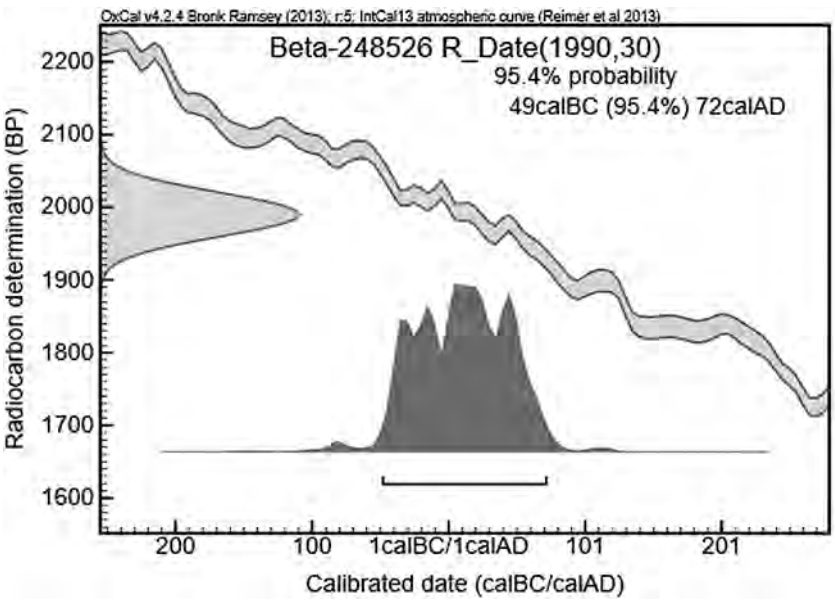

Fig 17 Radiocarbon determination. Radiocarbon age of 1990 ±30 BP, calibrated to 49 cal BC – cal AD 72 using OxCal 4.2.

centuries BC; Gossip forthcoming), but is later than the Middle Iron Age date from roundhouses at Penmayne, St Minver (third or second centuries BC; Gossip *et al* 2013). The date of the bivallate enclosure is uncertain and we cannot assume that the date from [205] dates the enclosure, though it might well do. Romano-British pot was found in layers above [205], showing that there was Romano-British activity in the area of the enclosure. Trench 4, across the inner ditch [404], did not unfortunately resolve its date. The only dating evidence was a mortarium sherd (No. 2) of the first or second century AD found in layer (403) above the ditch. If the sherd provides a date for (403) then the enclosure is likely to be Iron Age; but if the sherd is residual a later date for the ditch is also possible.

Middle Amble is significant in providing further evidence for unenclosed settlements of roundhouses in Iron Age Cornwall; other examples have been investigated nearby at Lellizzick (possibly later than Iron Age) and Penmayne, and further afield at Higher Besore (Wessex Archaeology 2008; Gossip *et al* 2013; Gossip, forthcoming). Like Lellizzick, Middle Amble is impressive for the size and density of the settlement, extending over at least 450m. The roundhouses at Middle Amble were defined by penannular ring-gullies up to 20m in diameter, but mostly 12–18m. The gully terminal investigated in trench 1 was 0.7–1.0m wide and 0.92m deep. As also noted for other sites in Cornwall (for example, Kingswood Round, Cardinham (Borlase 2013); Higher Besore (Gossip, forthcoming); Henrietta Quinnell, pers comm), the depth is often considerably more than would appear necessary to function purely as a drip gully. Elsewhere, some gullies may have served as ring-grooves to take the upright timbers of a roundhouse wall (Gossip *et al* 2013, 186), but there is nothing in the form of the excavated gully in trench 1 to support this. From the large diameter of some of the ring-gullies at Middle Amble, and also the large width of the entrances seen in the magnetometer survey, it is unlikely that the ring-gullies represent the line of the house walls. More probably they are boundaries as well as providing a drainage function around the house structure, as at Higher Besore where in some cases stakeholes marked the position of the house wall within the ring-gully (Gossip, forthcoming). This was also the case at Kingswood (Borlase 2013); there stakeholes were found around 2m from the ring ditch boundary but drainage was also thought to be a factor due to the proximity of the round bank.

At least around the Camel estuary, and probably elsewhere in Cornwall, unenclosed settlement complements the pattern of enclosed settlements or rounds. The two types of settlement in some cases also appear closely associated and seem to have existed side by side. This was certainly the case at Higher Besore, where the Late Iron Age roundhouses and a nearby round were contemporary (Gossip, forthcoming), and also at Carruan, St Endellion (Borlase and Wright, in prep), where a survey revealed that an almost square enclosure containing several roundhouses is associated with several hectares of open settlement. The same could well be the case at Middle Amble, although the distinction here is that there was only one apparent structure within the enclosure. Other examples of enclosures and ring-gullies side by side have been recorded by the National Mapping Programme (Young 2012, 107, fig 32; 109, fig 33; 111, fig 36). Where the enclosures and the unenclosed roundhouses were part of a contemporary settlement, presumably the enclosures either have a higher status or else serve a specialized function within the settlement.

The inner perimeters of the two enclosures at Middle Amble are fairly typical of Cornish rounds in size. The ditch of the enclosure at Middle Amble at 2.3m deep and 3m wide is relatively deep in comparison with some other enclosures of similar size. Reawla (Gwinear) was also 2.3m deep and 3m wide (Appleton-Fox 1992, 86), whereas the ditch at Trethurgy (St Austell) was 0.8–1.5m deep with a rampart estimated to be up to 2m high (Quinnell 2004, 16–17, 220); Shortlanesend round (Kenwyn) was around 1.4m deep and 3m wide with a rampart of just under 3m wide (Harris 1980, 67); at Grambla (Wendron), perhaps a high status site, the ditch is 3m deep with a rampart 6m wide at present and 1.5m high although originally much higher (Saunders 1972, 50); and at Kingswood the ditch was 1.8m deep and 3m wide (Borlase 2013). However, the fact that the two sites at Middle Amble are bivallate suggests a special status. Construction of the banks and ditches would have been a major investment of labour and resources; if enclosing a site demonstrated its significance, the addition of a second substantial ditch sent out a strong message about the importance of the site.

Although the enclosure bank would have been a substantial construction, mostly built from slate stone quarried from the 2.3m deep ditch, it is now conspicuous only by its total absence. The plough soil is relatively good loam devoid of any amount of stone over the site, and there was very little slate in trenches 2 and 4, although a few pieces had slipped into the inner side of the enclosure ditch, presumably from the bank, and one or two of the larger slates demonstrated that slate of a size suitable for building material had been on site. This raises the question, where did the stone go? It is very unlikely that the stone was simply taken away for use elsewhere at the time the ditches were dug. Most likely the bank was systematically robbed for building stone, presumably in the medieval period or later. It may be that the stone which formed the bank was of good enough quality to have been prized for local building material and probably to this day could be found in earlier buildings in the locality. This probably included a manor house at Middle Amble and chapel at Chapel Amble, both no longer extant. Alternatively it may have later been used for hedge building. Elsewhere in Cornwall the post-medieval clearance of prehistoric earthworks has been explained as the removal of earth for manuring (Kirkham 2012); in this case, the main use was more probably as a stone quarry.

There are no precedents for pits containing the quantity of carbonised grain found in trench 2 in Cornwall, in fact, even grain storage pits have not apparently appeared in Cornwall (Andy Jones, pers comm). Throughout the country, however, a small number of Iron Age and Roman sites containing charred grain, in addition to those in Wendy Carruthers' report, have been studied: Stanwick and Thorpe Therles (Huntley and Stalibrass 1995); Inchkeil (Sheperd and Sheperd 1989); Saxon's Lode Farm, Ripple (Barber and Watts 2002). Again none of these displayed the contained characteristics discovered at Middle Amble. Of the possibilities forwarded in the report, the option that the grain may have been deliberately placed in the pit as an act of propitiation or as a thank offering to the community's deities (Cunliffe 1992) has to be a prime consideration; even a ritual act of closure cannot be discounted. A fire damaged seed corn store seems another potential contender. There was a large amount of burning above the grain and a 20mm crust of ash and burnt clay (2-04), which is indicative of more continuous fire over an extensive period. However, as the report points out, there was no evidence of a stone setting that would typically be expected for a purpose such as grain drying, or a hearth.

The proximity of the site at Middle Amble to the River Camel suggests that the micro-economy of the settlement included trading networks focusing on riverine and coastal movements. This is probably true of several other settlements along the river such as Carruan and also Lellizzick on the opposite, west side of the estuary, which has a high density of roundhouses (Nowakowski 2011, 253, fig 9). Here the Channel 4 Time Team excavation also recovered a sherd of post-Roman African Red Slip ware, in addition to a possible Romano-British stylus (Wessex Archaeology 2008), which may imply literacy and the presence of perhaps native *argentarii* (bankers) recording trading transactions.

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A Romano-British enclosure at East Leigh, Stratton, Cornwall

MARK BORLASE AND MALCOLM WRIGHT

An enclosure at East Leigh Farm (near Stratton, north Cornwall) was investigated in June 2012 as part of a postgraduate programme of research for the University of Bristol. This study included communication networks of the Roman period along the north coast of Cornwall. A cropmark of the East Leigh enclosure attracted attention for its unusual pentagonal and bivallate form. A geophysical survey confirmed this layout and also revealed a track running east from the enclosure for several hundred metres. A series of trial trenches provided evidence of a date in the Roman period. Possible functions are discussed.

The enclosure at East Leigh was initially discovered from aerial photographs by the Cornwall Historic Environment Service (now Cornwall Archaeological Unit, Cornwall Council), as part of the National Mapping Programme (NMP) (Young 2006), and appears as a bivallate pentagonal enclosure covering around 0.55ha (1.35 acres). A magnetometer survey carried out in 2011 clearly confirmed the polygonal outline of the ditches, but also revealed a track or road and ditch running east from the enclosure. This could be followed by the magnetometer for over 300m before the trace is lost beneath modern landfill. An excavation on the enclosure at East Leigh was undertaken in order to obtain dating material and an insight into the nature and function of the enclosure.

Location and historical background

The East Leigh enclosure (NGR SS 252 068) lies 2km to the east of Stratton (Fig 1). It is situated at 150m OD towards the eastern end of a broad east–west ridge. The site is perched on the break of slope from which the ground falls steeply to the south allowing uninterrupted long-distance views to the east, south and west.

In good visibility landmarks to the south east and south include the north and west side of Dartmoor, Castle Cross, Brent Tor, Kit Hill, Caradon Hill and the north-east side of Bodmin Moor. The vista is also open to the coast to the south west, with High Cliff rising behind Cambeak Head at St Gennys, which is the most prominent headland in the mid-distance, with Trevose Head on the far horizon (Fig 2). To the north, the ridge drops more gently over several hundred metres, so the impact is somewhat less spectacular; nonetheless, many miles of country are visible beyond Kilkhampton towards Hartland. Leigh Wood stretches along the bottom of the valley to the south where there is a brook; a tributary runs in the valley to the east of the site.

Around 500m to the west, the extensive earthworks of East Leigh Berrys (MCO21890), lie midway down the side of the spur. The earthworks are recorded as an adulterine motte and bailey castle. A magnetometer survey carried out by Malcolm Wright in 2010 has shown this to be a complex and unusual site and pottery found in evaluation trenches by the University of Winchester in 2011, outside the Scheduled area, is

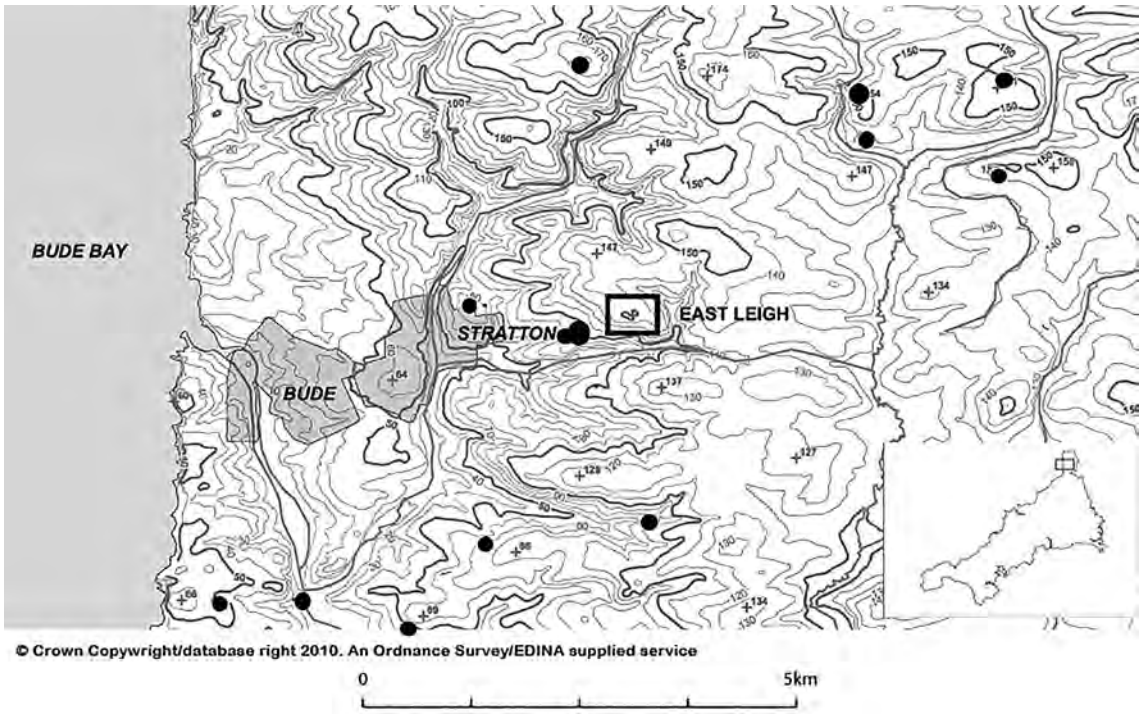

Fig 1 East Leigh location, with enclosures of probable Iron Age – Romano-British date in the wider area shown as black circles.

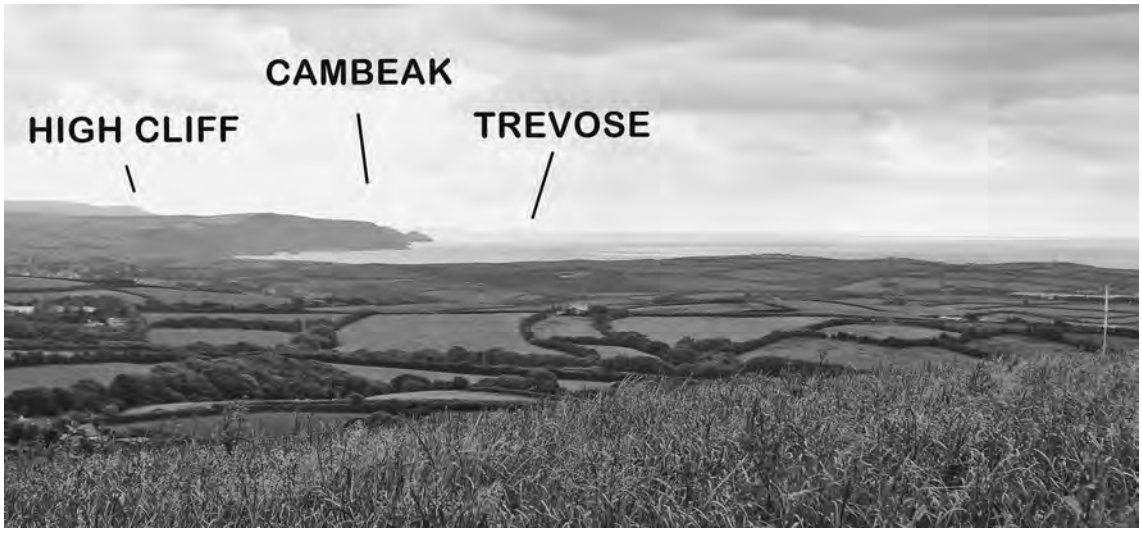

Fig 2 View to the south west, showing how the land falls sharply away and the long views in this direction.

possibly Iron Age (Chandler 2012). The Normans were known to reuse earlier Iron Age earthworks (Stuart Prior, pers comm), but further work would be worthwhile to unravel the site's chronology.

A number of enclosures likely to be Iron Age or Romano-British settlements, or 'rounds', lie within a 5km radius (Fig 1). The Civil War battle at Stamford Hill took place 2.5km further along the ridge to the west, which gave rise to the possibility that the enclosure might be a Civil War fort (Niall Finneran, pers comm), with the angles of the enclosure perhaps intended to house artillery. Further afield, 17.4km to the south west, there is a rectangular enclosure to the west of Cambeak at High Cliff, St Gennys (SX 1312 9419; MCO 21987; Ancient Monuments Laboratory 1994). This is described on the English Heritage PastScape website as a possible Roman signal station. Its situation may suggest a signalling or watchtower function; however, the outline from the aerial and geophysical surveys does not truly conform to an archetypal fortlet, and the NMP mapping suggests that it may be associated with a field system. Perhaps future surveying may help ascribe a function for the site. Also within line of sight is Castle Cross, Broadbury (MDV1698), west of Okehampton, where it is thought that there is a Roman signal station.

The rectilinear and bivallate plan of the East Leigh cropmark suggested that it might be a Roman site such as a signal station or a temple-like site; its striking location reinforced these possibilities. The geophysical survey and subsequent excavation were therefore planned to elucidate period and function.

The East Leigh site lays over geology of bands of clay overlying sandstone of the Bude formations of the Culm Supergroup.

Geophysical survey

A survey was conducted using a Geoscan fluxgate gradiometer and Geoscan Resistivity instruments.

The magnetometry survey (Figs 3 and 5) clearly shows a bivallate pentagonal ditch system with a ditch running for several hundred metres to the east. Several anomalies within the enclosure demonstrate that there was activity within the compound.

The outer ditch is 90m east to west at its farthest points and 86m north to south. The inner ditch is 44m east–west from the entrance and 42m north to south. The track could be traced by magnetometer for some 80m before swinging gently north east down the slope in a straight line for 160m where it meets the first of two enclosures. It is not entirely clear whether the enclosure ditch is cut by the track and is therefore earlier, or if there is an opening. The track then continues into the second enclosure before modern landfill then obscures it from the scope of the magnetometer trace. Banks and ditches of field systems or further enclosures indicate activity on the lower slope towards the stream. To the north west of the main kite-shaped enclosure two areas were surveyed either side of the modern track, as the Cornwall Historic Environment Record shows an enclosure (MCO 40493) covering an area of around 100m in diameter adjacent to the south-east corner of the farm buildings. The enclosure was not found and it is doubtful if it exists. The area east of the track was devoid of activity but the area to the west has several traces of curvilinear features, probably roundhouses.

A resistivity survey (Fig 4) covered the inner area of the enclosure, showing a band of high readings with negative readings running parallel. This is suggestive of geology, the dark band denoting rock and the light band clay. Another indication of geology is that the band of rock continues west beyond the enclosure bearing no relation to the archaeology. Traces of the enclosure ditches cutting the stone geology are denoted by negative readings, which are explained by clay and soil infill. This implies that the ditches were cut into rock and therefore the bands of dark registrations are mostly geology. The entrance to the enclosure may have utilised the natural band of rock, although there was not much evidence for this in the excavation on the terminal of the ditch (trench 2). The track ditch shown on the magnetometry coincides with the parallel line of stone on the resistivity, but by the entrance the magnetometry shows signs of the ditch veering slightly due west instead of following the line of stone. The layout of the track parallel to the band of rock may not be coincidental but without further resistivity survey it would be difficult to draw a conclusion. The dark line running roughly north to south by the entrance may be stone from the enclosure bank, rather than a feature such as a wall, as trench 1 failed to find a revetment or wall.

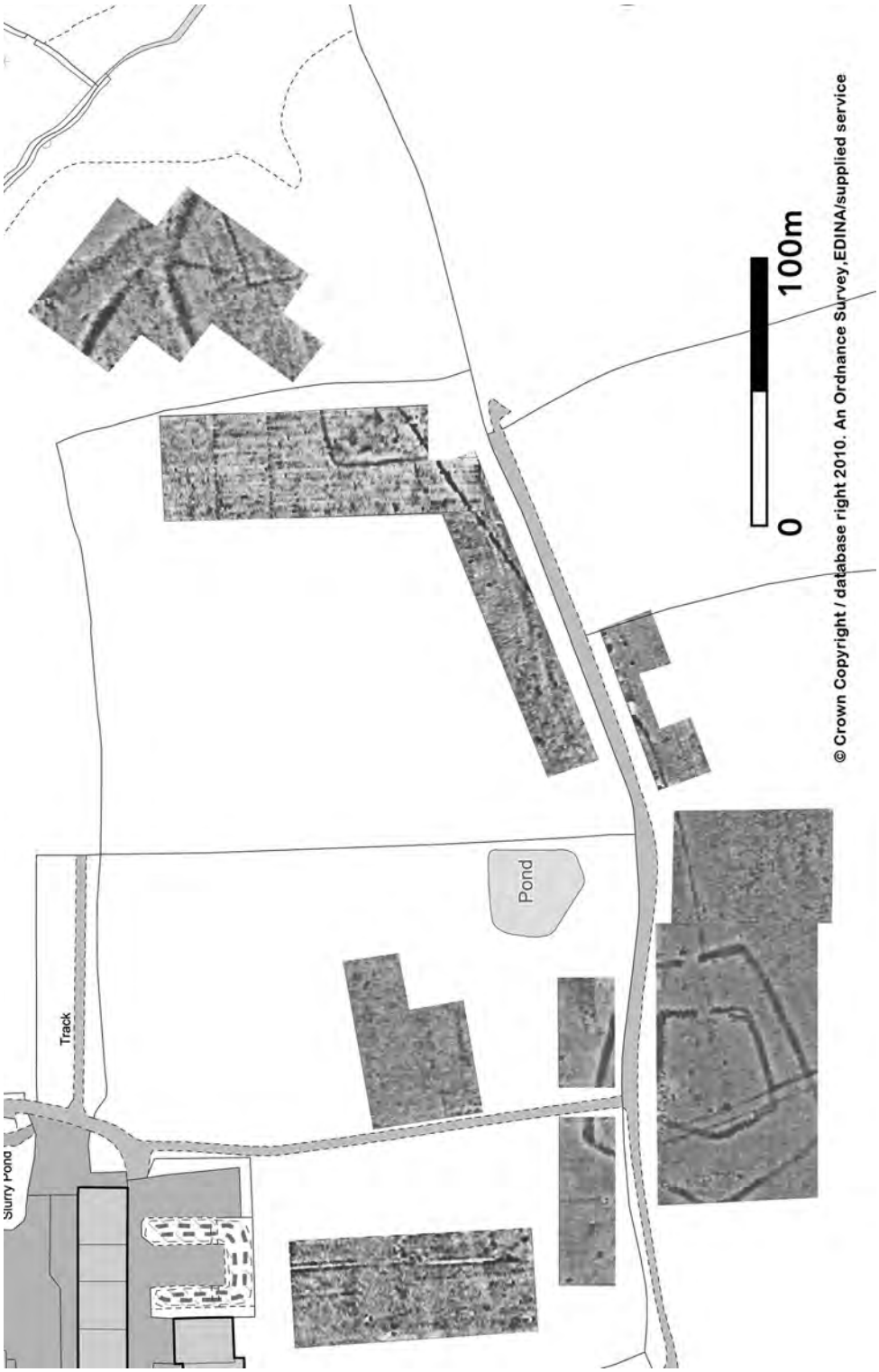

Fig 3 The magnetometer survey. (Ordnance Survey (GB) using EDINA Digimap Ordnance Survey Service, http://edina.ac.uk/digimap; created September 2011.)

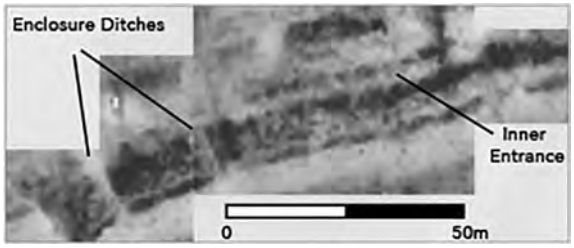

Fig 4 The resistivity survey.

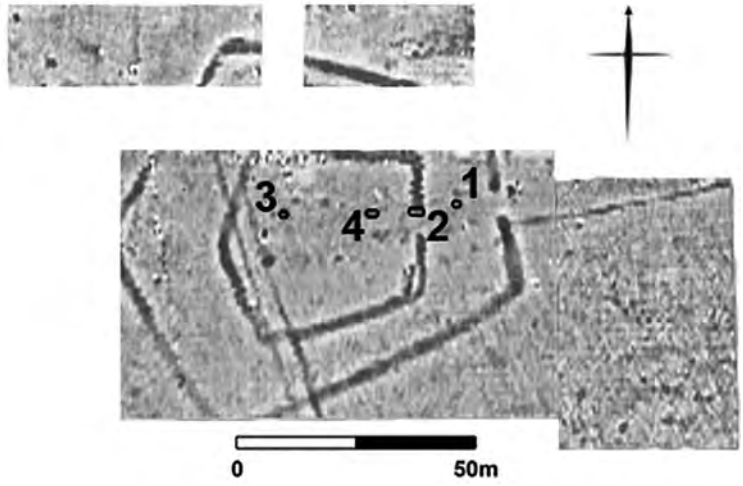

Fig 5 The magnetometry survey showing positioning of trenches.

The excavation

Trench 1

Trench 1 was placed between the inner and outer enclosure ditch near the entrances, to investigate an anomaly on the resistivity survey which was thought to be a possible wall. A 1.5 × 1.5m trench was opened. The plough soil proved to contain a relatively large amount of stone down to context (1-02), 0.22m below the surface. Context (1-02) increased in clay content and stone to merge with the natural, which consisted of small stone and yellow clay. Two flakes of burnt flint were recovered but no other finds. The stone uncovered had not been laid, and no wall features were recognized. It was concluded therefore that the anomaly on the resistivity was not a wall, but a dump of stone, probably emanating from a bank between the two ditches.

Trench 2

Trench 2 was placed over the terminal of the inner ditch with the aim of maximising the chance of recovering artefacts. The 3 × 2m trench revealed a stony compact layer (2-02) just below the plough soil (Fig 6) which contained a large proportion of stone. The compact nature of the stone layer in (2-03 and 2-04) above the upper ditch fills, was possibly due to plough pan, but it is more likely that a hard surface may have been laid at some time after the ditch had filled, or been filled in. These contexts had even-sized stones, with (2-04) being composed of small gritty chippings, but there were larger stones or boulders in the contexts below, particularly (2-07) on the inner side of the ditch. Several sherds from one pot and a small piece of bone were recovered from contexts (2-04) and (2-06). As is usual for ditch fill, the lower material contained more silt and was much more loosely packed. Charcoal was abundant in (2-09) but much more sporadic in the levels beneath. A second- to third-century AD pot rim (No 7; Fig 14) was recovered around the interface of (2-10) and (2-11) (Fig 6). Context (2-11) comprised loose stone and boulders with voids between. At this level the excavation was abandoned for safety reasons, but it was thought the bottom of the ditch was around 0.2 to 0.3m below, giving an overall depth of around 2m or more.

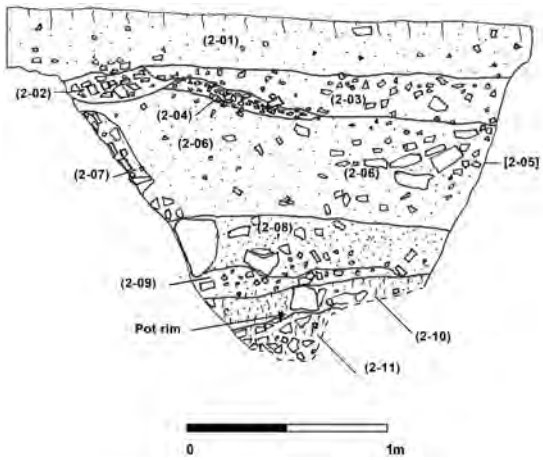

Fig 6 Trench 2: north section across the inner ditch near the terminal.

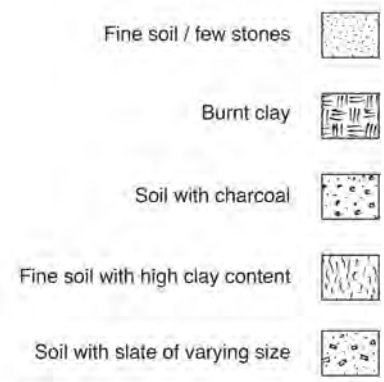

Fig 7 Key to sections and plans

The nature of the clay natural, with clay content and colouration the same as the ditch fill, particularly at the edges, often made the precise limit of the archaeology difficult to judge. A small 'sondage' dug on the outer side concluded that only when charcoal content completely ceased was the limit definite. Consequently digging of the side erred on the side of less excavation in order not to produce a false feature. The outer edge of the ditch therefore, may well have been perhaps a little steeper. The end slope of the ditch terminal (Fig 8) was similar in gradient to the outer side. Larger boulders were mainly concentrated on the slopes of the ditch where they had slipped in.

The only tentative evidence for a bank is the slightly greater preponderance of stone on the inner side of the ditch. There was no indication for a bank either in the form of earthworks or surface stone; the large amount of spoil and stone that would have formed a bank must have accordingly been removed or ploughed away.

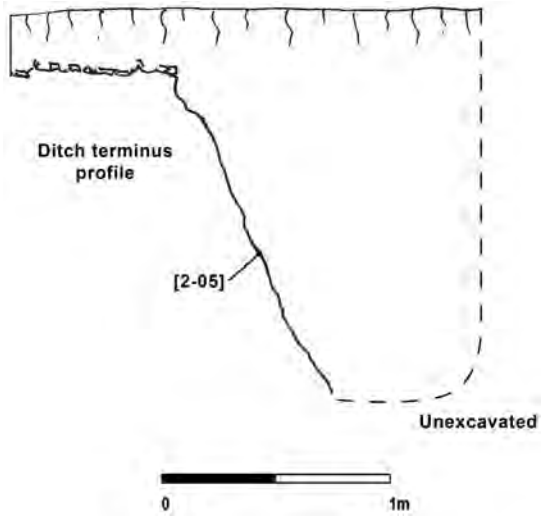

Fig 8 Profile of the inner enclosure ditch terminal (trench 2) looking west.

Trench 3

Trench 3 covered an anomaly on the magnetometer results near the centre of the enclosure. Just below the plough soil, context (3-03), was again found to be very compact.

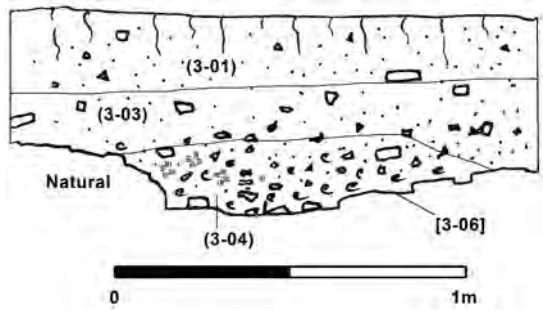

Fig 9 Trench 3: south section.

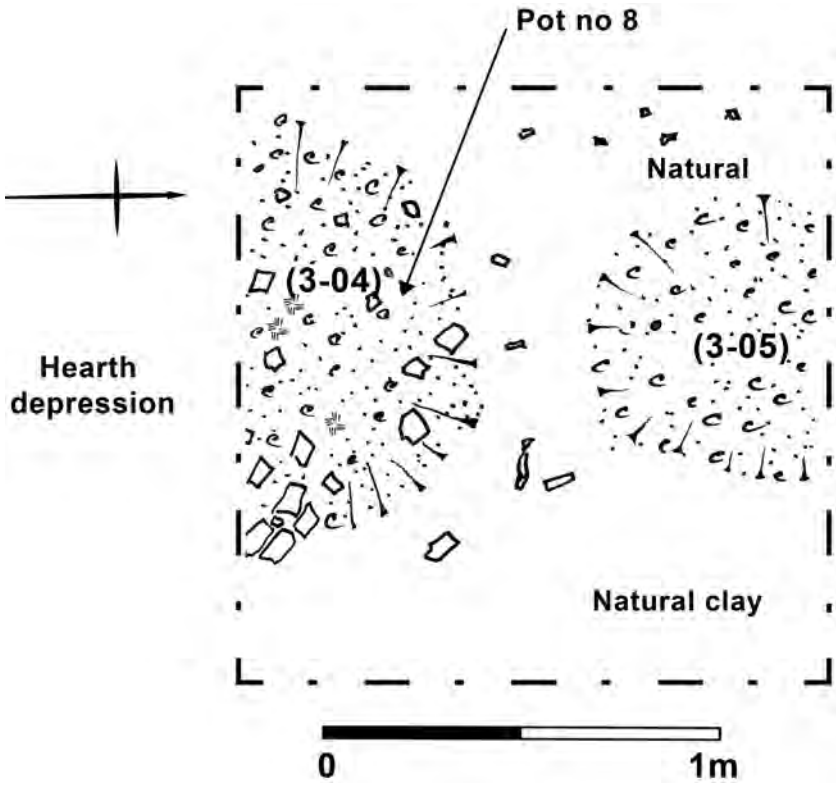

Fig 10 Trench 3: hearth plan.

A spread of charcoal (3-04) and (3-05), in a depression indicated a hearth (Figs 9, 10 and 11). Between (3-04) and (3-05) there was a central area with less charcoal, but as some charcoal did bridge this area it was felt likely that (3-04) and (3-05) were fills of a single main feature, [3-06], although this was not determined for certain because of the size of the trench. There was not an apparent hearthstone setting but burnt reddish clay and stone around the outer edges indicated that the burning was *in situ*. Pot no. 8 lay in the midst of the burnt material 50–60mm from the bottom, probably undisturbed.

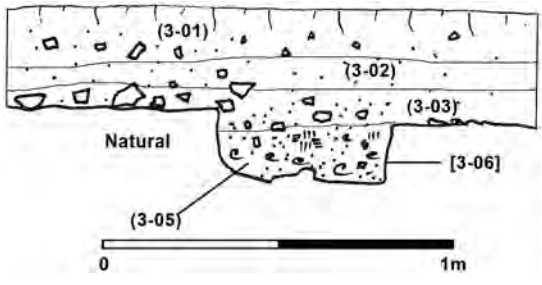

Fig 11 Trench 3: north section.

A compact deposit of larger stone in context (3-03) covered the northern end of the trench before fading out around 0.7m towards the centre.

Trench 4

Trench 4 was again placed over a linear anomaly, showing as a high reading on the magnetometer

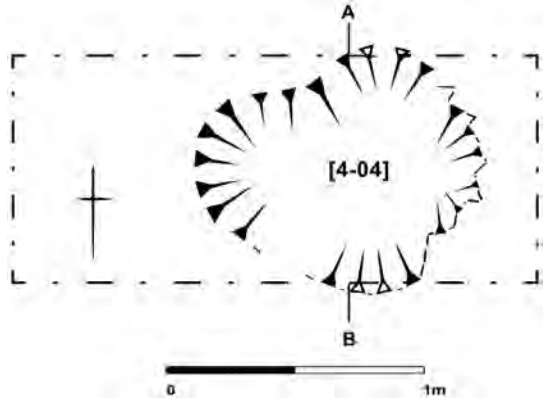

Fig 12 Trench 4: plan.

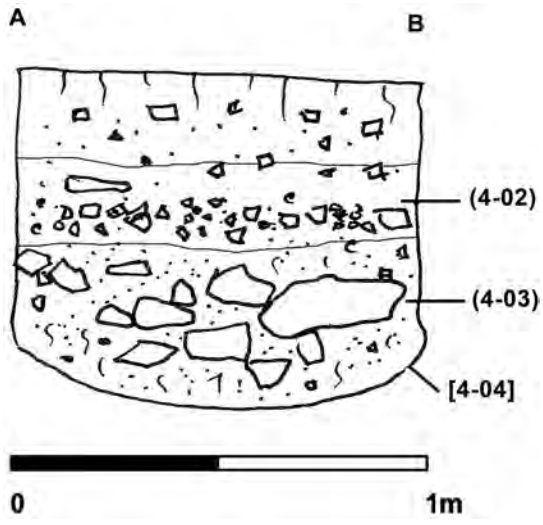

Fig 13 Trench 4: section A–B.

survey, approximately 4m long. The trench measured 2 × 1m (Figs 12 and 13).

A layer of compact gritty stone (4-02) was encountered which was typical of the other trenches. The feature identified in the magnetometry appeared to be a pit, [4-04], filled with medium to large stones up to 200mm long mixed with a loose fill of clay and soil (4-03). There were no finds or features to explain the pit's function or indicate that it may have been of structural character.

Ceramics

The ceramic assemblage was shown to Carl Thorpe of the Historic Environment Service, Cornwall Council, and to Henrietta Quinnell, for confirmation of identification.

Context (2-03)

No 1, Small sherds of an unknown coarse fabric, could be of locally made ware.

Context (2-03)

No 2, Small sherd of Granitic South Devon ware, probably part of a rim. Possibly second century AD but more likely third or fourth century. Granitic ware featured in the ceramic assemblage at Duckpool (Ratcliffe 1995, 96), 11km away.

Context (2-04)

No 3, Upper body sherds of a small to medium size Trethurgy type 4 jar of Roman period standard gabbroic fabric. Second century AD.

Context (2-06)

No 4, Several sherds of a base of a gabbroic 'well-made' type fabric. Probably a type between Trethurgy 1 to 4.

Context (2-06)

No 5, Body sherds of gabbroic fabric of unknown date. Similar fabric to No. 6 and may be part of it.

Context (2-06)

No 6, Base sherd and shoulder of standard gabbroic fabric jar. Base similar to Trethurgy P77 in style (Quinnell 2004, 116–17; fig 56).

Context (2-11)

No 7 (Fig 14), Rim of cooking vessel, recovered from near the bottom of the enclosure ditch. Gabbroic Trethurgy type 4, second to third century AD. Similar in form to Trethurgy P62 (*ibid*, 115, fig 55) with a more pronounced shoulder.

Context (3-04)

No 8 (Fig 14), Sherds of rim, neck and base of 'well-made' gabbroic fabric, well fired with burnished finish. A small-necked, probably

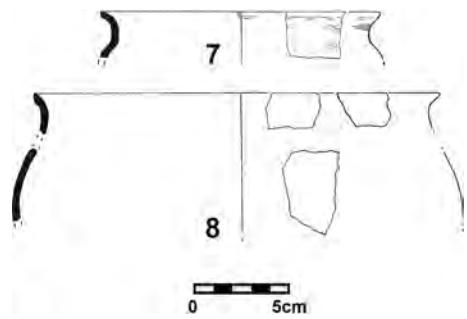

Fig 14 Pottery: No. 7 from the inner enclosure ditch, layer (2-11); no 8 from context (3-04), fill of hearth. Scale 1:4. (Drawings: M Borlase.)

Table 1 Pottery: numbers of sherds (s) and weight (g) by context and fabric

Context	*Gabbroic, Trethurgy type 4 or variant*	*Gabbroic, other*	*South Devon granitic*	*Local ware*
(2-03)			1s/5g	4s/12g
(2-04)	9s/41g			
(2-06)	13s/47g	11s/96g		
(2-11)	1s/8g			
(3-04)		33s/88g		
Mean sherd weight	4g	4g	5g	3g
Totals	23s/96g	44s/184g	1s/5g	4s/12g

Cordoned ware type N to type O. Plain jar, devoid of any decoration. Late first century AD to early second. Similar in shape to Trethurgy P56 (*ibid*, 115, fig 55) but with a slightly heavier roll to the rim and finer fabric.

Context (3-04)

No 9, Fairly well-made upper body sherds of gabbroic fabric of a type between Trethurgy 1 to 4; one small sherd shows signs of a shallow cordon.

Metal

A piece of Sphalerite (zinc ore) weighing 13.29g (identified by Carl Thorpe) was recovered from ditch [2-05] in trench 2, around the mid-depth of (2-06).

Although the spoil heaps were regularly checked with a metal detector only one forged nail was found, in the plough soil.

Stone

One sling-shot size beach pebble was recovered from (2-02), above ditch [2-05].

Lithics

Two small flakes of burnt flint were recovered from trench 1.

One flake of burnt flint was recovered from (2-01), the plough soil over ditch [2-05].

Discussion

The geophysical survey and excavation at East Leigh has gone some way towards clarifying the character of the site but has also raised other questions. The survey has shown very clearly the overall form of the pentagonal bivallate enclosure and has also recorded a probable trackway running from the entrance, as well as other features and possible enclosures in the area. The question then arises, what was the nature of the enclosure and was there occupation within it? The ceramic assemblage demonstrates that the enclosure was in active use during the Romano-British period; based on the pottery a loose occupation period from the late first century AD to the late second or early third century is a reasonable assumption (Henrietta Quinnell, pers comm). No postholes were discovered or other features indicative of structures, although the trenches were not extensive enough to establish incontrovertibly whether structures existed. However, the hearth feature in trench 3 and the pottery recovered *in situ* within the hearth demonstrates that there was some degree of domestic activity on the site, although the relative dearth of pottery finds may indicate that this was not particularly intense.

Two probable roundhouse features lay within the magnetometry survey around 70m to the north west of the enclosure. These features, indicative of settlement, raise the possibility that the main dwelling and occupation area may have been outside the enclosure and that the enclosure itself may have had a function other than principally domestic.

Enclosures thought to belong to the Late Iron Age and Romano-British period come in a wide variety of shapes and sizes, including different types of bivallate and multivallate enclosures

(Johnson and Rose 1982; Young 2012), no two being identical. Even within this broad spectrum it is hard to find a close parallel to the East Leigh enclosure, namely a regular-looking bivallate pentagonal enclosure with widely spaced ditches and of Roman date. Rectilinear enclosures are not uncommon; for example, Trevinnick, St Kew (Fox and Ravenhill 1969). Andrew Young's paper on enclosures in the River Camel environs (2012) recorded several polygonal enclosures, highlighting that these are not unusual in Cornwall: Tregirls (*ibid*, 84, fig 13, 113); Lower Treworder (*ibid*, 79, fig 6, no 90); Killibury (*ibid*, 80, fig 7, no 77); Tregaverne (*ibid*, 78, fig 5, no 126); Tredannick (*ibid*, 83, fig 12, no 65) and Nancolleth, St Newlyn East (Johnson and Rose 1983, 101; Young 2012, 116, fig 41). However, apart from Nancolleth, these enclosures do not quite conform to the regularity in design of East Leigh's bivallate enclosure and contain some curvilinear element. Neither are they sited in visually commanding locations. Perhaps typologically the closest form comes from across the Tamar, where there is a 50m × 40m symmetric polygonal enclosure on flat ground, near the summit of a spur, north of Kenn church, in Kenn parish (SX 9240 8590; Devon Historic Environment Record MDV 23199). Another sub-pentagonal shaped enclosure lies at Shobrooke, mid-Devon (MDV 57861), but this is not as symmetrical as East Leigh and has a horseshoe shaped enclosure within.

Because of its bivallate form, with two widely spaced and apparently substantial ditches, East Leigh does not appear to belong with sites which are considered to be the standard enclosed farming settlements or 'rounds' (for example, Quinnell 2004, 213–14). Rounds are predominantly univallate and although some do have a second ditch, for example Penhale (St Enoder), and Threemilestone (Kenwyn) (Johnston *et al* 1998–9; Schwieso 1976), these appear to be slighter and closer to the inner ditch than at East Leigh. The 'road' ditch running east from the enclosure (as described earlier) is also atypical and generically inconsistent with small 'round' enclosures and instead highlights the distinctiveness of the site. Possibly it is purely a herding track from pasture land to the east, but the deep double ditches of the enclosure would perhaps seem excessive for a stock pound.

On the other hand, there are some rectilinear bivallate enclosures with widely spaced ditches, which could be better parallels for East Leigh, though none have its striking polygonal form. Bogee, St Ervan (Johnson and Rose 1982, 192, fig 4, no 8) is a polygonal central enclosure within a

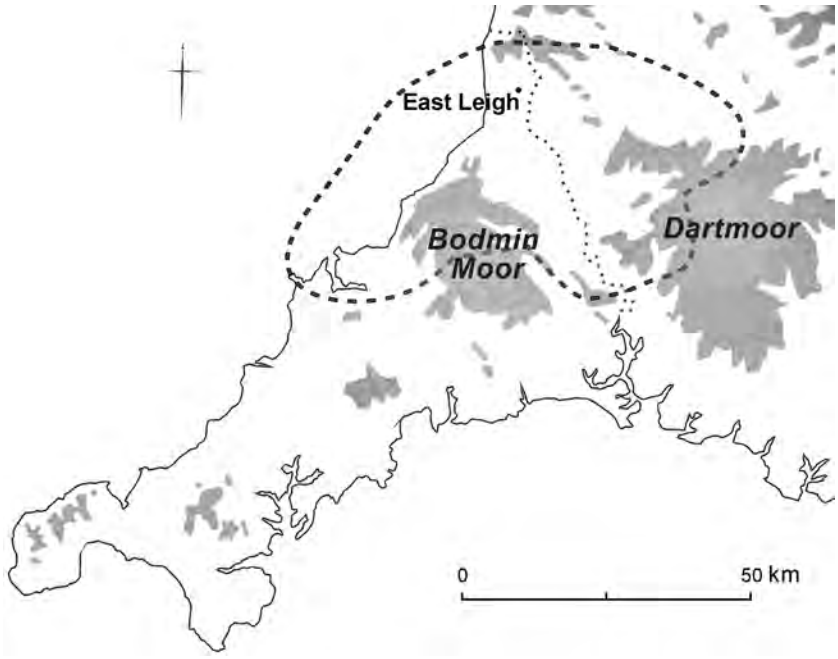

Fig 15 Approximate extent of visibility from East Leigh. Land over 200m shaded.

square outer bank and lies in a relatively elevated location. Treringey Rounds, Crantock (*ibid*, fig 4, no 7), is rectilinear and bivallate, but topographically is very different from East Leigh, enclosing a slope down to the river Gannel. Higher Treworder, St Kew (Young 2012, fig 15, no 130), is also, on the face of it, very different from East Leigh, being close to circular, rather than rectilinear, but it is like East Leigh in having a regular form (circles are exceptional amongst rounds), widely spaced ditches, and special treatment or definition of the entrance way. A bivallate enclosure at Middle Amble, St Kew, has produced a Late Iron Age radiocarbon date and Romano-British pottery and adjoins a large settlement of roundhouses (Borlase and Wright 2014 [this volume]).

The parallel, regular, linear plan of the East Leigh enclosure ditches is to a certain extent reminiscent of Roman form, although the pentagonal shape would be extremely unusual. However, examples of polygonal forts are known, such as Bewcastle (*Fanum Cocidii*; Wilson 1980, 69; Bidwell 2007, 74–6), an outpost for Hadrian's Wall, and Raedykes (Wilson 1980, 11). East Leigh bears a superficial resemblance to fortlets thought to contain signalling points such as Old Burrow, west of Porlock, Martinhoe on the north-west Exmoor coast, and Ide, near Exeter (MDV 20078; Fig 16), in as much as they are of broadly similar size and are bivallate, with widely spaced ramparts. In this context, the topography of East Leigh would be a key factor, with its overtly commanding view of a long stretch of the north Cornish coast (Fig 15), and with the site itself being prominent from this direction because of the pronounced change in the topography. Such positioning, to make a site stand out against the skyline from the direction from which the signals were viewed and received, is a feature of many of the signal stations on the Roman line in Scotland associated with the Gask Ridge (Woolliscroft and Hoffmann 2011). To the south east East Leigh is intervisible with the fortlet at Broadbury, 4km west of Okehampton (MDV1698), and a series of hypothetical ridge-top roads, now followed by the A3072 and A3079, could have linked the sites. The lack of domestic structures may be significant; at the Goldsborough signal station, near Whitby (Bidwell 2007, 41), no structures were found, only hearths; Old Burrow was similar.

On the other hand, there is no definite evidence from the site itself to confirm it as a fortlet with a signal station function. In particular, it is different from Old Burrow and the others in overall shape, regularity and the absence of rounded corners (Fig 16), which are such a common feature of Roman military sites. Furthermore, the lack of anything but local native wares seems unlikely for a Roman fort, and the period of occupation suggested by the pottery is different from Old Burrow (Gray and Tap 1912; Fox and Ravenhill 1966; Riley and Wilson-North, 76–7) and Martinhoe (Fox and Ravenhill 1966; Riley and Wilson-North 2001, 76–7) which are limited to the first century AD. On this basis it seems less likely that East Leigh is a fortlet, although it remains a possibility.

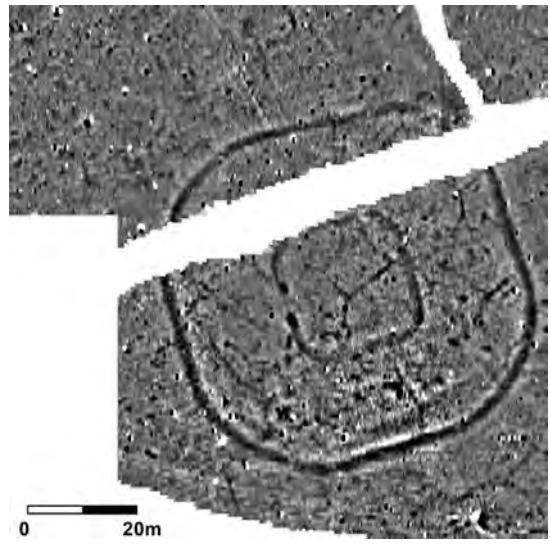

Fig 16 Magnetometer survey of Ide signal station fortlet, near Exeter (Johnson 1996). By kind permission of Oxford Archaeotechnics.

Another possibility to consider, bearing in mind the enclosure's unusual form and prominent location, is that it had a ritual or religious role. Romano-British temples are usually sited on the crest of a hill in order to maximise visibility, such as Brean Down (ApSimon 1965, 198), Lamyatt Beacon (Leech 1986) or Henley Wood, Congresbury (Watts and Leach 1996). East Leigh is certainly in an elevated position, but the ridge is inconspicuous as a landscape feature so it is unlikely that it would have been chosen for any dramatic visual impact as with the Roman temple on Pagans Hill, Somerset (Rahtz and Harris 1958). Romano-British temples elsewhere leave traces

of stonework and other appurtenances of temple trappings in the form of votive offerings or idols. There are no known Romano-British purpose-built temples to date in Cornwall or Devon, but here such sites would probably take a somewhat lower archaeological profile, making them more difficult to identify. Some religious sites have been suggested. Nornour, on the Isles of Scilly, is thought to have been a shrine, having a plethora of finds, some of ritualistic nature, interpreted as votive offerings (Butcher 1978, 64; 2001, 16). At Halangy, St Mary's, an argument is made for an aedicular chamber incorporated into a courtyard house having been a domestic shrine (Ashbee 1996, 47; 136–7), and likewise for the small structure G at Trethurgy (Quinnell, 2004, 208–9; 236–7).

However, it is becoming clear that Romano-British enclosures in Cornwall can have functions other than agricultural, as at Little Quoit Farm, St Columb Major, which is thought to have been an industrial site (Lawson-Jones and Kirkham 2009–10). Other enclosures may have been specialised religious sites. A possible instance is a rectangular enclosure at Bosence, St Erth, in which a possible ritual shaft was found containing a pewter bowl dedicated to Mars (Penhallurick 1986, 214–15, fig 124). No analogous evidence was found at East Leigh, and nothing else in the excavated finds or features suggests that it was a ritual enclosure, although this could simply reflect the limited extent of the trenches. However, the track running into the enclosure is unusual and could be seen as providing a controlled, ceremonial approach to an important site, or could even lead to an associated ritual site such as a sacred grove in the valley to the east. While the function of East Leigh remains elusive, some significant status seems probable.

Conclusion

The study has been of significance in demonstrating that an enclosure of unusual form is of Roman date. The function of the enclosure, as a Roman fortlet with a signalling function, a religious site, or even a settlement of a form not typical for Roman Cornwall, remains uncertain, but the project underlines the complexity and diversity of sites to be found in Roman Cornwall, as well as the value of geophysics in helping to show this.

Acknowledgements

The geophysical survey and excavation was conducted by Mark Borlase and Malcolm Wright using geophysics instruments supplied by the latter, the report and discussion being compiled by Mark Borlase. Gratitude is extended to the landowners, Phil Hopper and family. Also to Henrietta Quinnell and Carl Thorpe for identifying the pottery and to the Historic Environment Services in Cornwall and Devon. Lastly, to Peter Rose for his much appreciated advice on preparing the article for publication.

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Early-medieval Cornish pottery in Hiberno-Norse Ireland

IMOGEN WOOD

The discovery of Cornish pottery in the early eleventh- to twelfth-century Hiberno-Norse coastal settlements of Waterford and Wexford on the coast of southern Ireland provides new material culture evidence for contacts between Cornwall and Ireland in this period. The distribution of Grass-marked wares was previously thought to be limited to Cornwall and the Isles of Scilly and generally dated to between the seventh and eleventh centuries AD. The main assemblage of pottery found in Waterford was limited to one house and was deposited over several phases, dated by dendrochronology to between AD 1080 and 1155, a period at which these wares were in decline in Cornwall. The Scandinavian-style house had more accommodation available than the houses of bone- and metal-working craftsmen living on the same street, suggesting a non craft-based occupation. The Grass-marked ware was found alongside pottery from Normandy and the Severn estuary, suggesting a cosmopolitan household. The use of Cornish pottery in this context may signify a particular cultural identity for a household which was seeking out new markets for trade and new ways of living.

Evidence of links between Cornwall and its Atlantic neighbours in the early-medieval period has until now been based on the mutual consumption of imported Mediterranean pottery and vessels of the type known as E-ware (Campbell 2007). Evidence for cultural contact between Cornwall and Ireland can be found in the Irish names and use of ogham script on inscribed stones dating from the fifth century onwards (Thomas 1994) and the occurrence in Cornwall of Irish place-name elements (Padel 1985). Contacts across the Irish Sea can also now be demonstrated through the presence of Cornish pottery in southern Ireland. The discovery in 1997 of Cornish Grass-marked bar-lug forms in Hiberno-Norse coastal *longphorts* and trade centres in southern Ireland offers the first material culture evidence of contact 'across the water'. Claire McCutcheon notes that 'these wares appear to represent the earliest ceramic contacts between medieval Waterford and south-west England' (Gahan and McCutcheon 1997, 289).

The production of Grass-marked wares, including the bar-lug cauldron form, appears to have been unique to Cornwall between the seventh to eleventh centuries AD and represents an evolution of native styles. The distribution of the style was previously thought to be limited to the county (Thorpe and Thomas 2007) but can now be extended both geographically and chronologically. Examples of Grass-marked wares in late eleventh-century contexts were considered to be residual, as in Truro (Allan and Langman 1998–9) and Launceston Castle (Saunders 2006), but recent dating of this ware at Gunwalloe (Wood 2013) and Calstock (Smart 2014) suggests that it was still being produced at this period. The presence of Grass-marked wares in tenth- to twelfth-century contexts in the Hiberno-Norse trade centres of Waterford and Wexford in

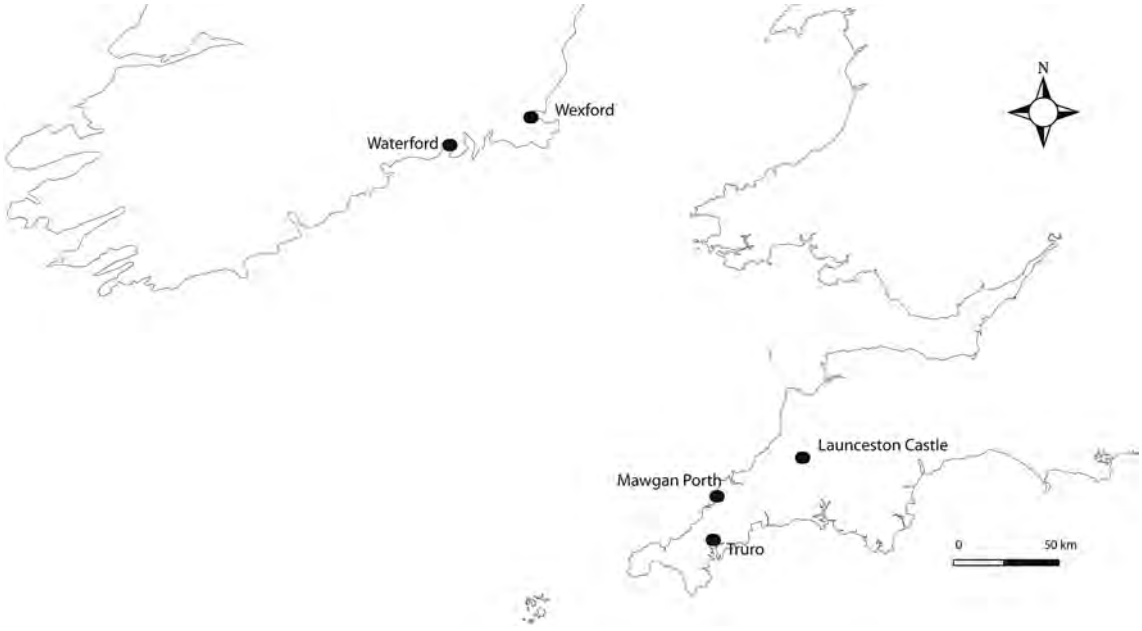

Fig 1 Location map for sites referred to in the text. (Map: Imogen Wood.)

southern Ireland supports this view but also offers a new understanding of trade and communication networks in action in this period (Fig 1).

Grass-marked vessels are coarsewares with grass-marked flat bases and straight-sided profiles; they vary in size and have differing levels of firing, from soft to hard (Fig 3). Grass-marked ware includes platters, dishes, cooking pots and bar-lug forms (Thorpe and Thomas 2007; Taylor and Thorpe 2008). The latter are thought to have been used as cauldrons, the covered lugs of which protected the suspension rope from burning (Hutchinson 1979; Thomas 1968; Thorpe and Thomas 2007). The forms of Grass-marked pottery do not change from the seventh to eleventh century, which makes dating problematic. However, current evidence suggests that production had stopped in Cornwall by the late eleventh century (Hutchinson 1979), although some Grass-marked platters were found at Old Lanyon in contexts dated to the twelfth century (O'Mahoney 1994). The known distribution of the ware within Britain does not generally appear to extend east of the Tamar and the Isles of Scilly to the west (Hutchinson 1979), although there is one example known from Southampton Castle, which is of great interest in relation to the possible associations of this ware in the eleventh century (Brown 1986).

The beginnings of Grass-marked ware in Cornwall are currently dated to between the mid seventh century and later eighth century AD. This start date for the ware comes from a stratigraphically secure context at Gwithian, yielding a radiocarbon date of 1310 ± 35 BP, 650–780 cal AD at the 95 per cent confidence level (SUERC-6160) (Hamilton *et al* 2007). The latest radiocarbon date for this ware is currently 910 ± 30 BP, 1030–1210 cal AD (95 per cent) (BETA-322801), from a rectangular structure excavated at Gunwalloe, Cury, on the Lizard peninsula (Wood 2013). There are other examples from relatively dated eleventh-century contexts (Allan and Langman 1998–9; Brown *et al* 2006). The largest relatively dated assemblage is from Mawgan Porth on the north Cornish coast, with a Saxon coin dated to AD 990–995 recovered from one of the excavated structures and the excavator suggesting a date range for the finds assemblage of AD 850–1050 (Fig 1) (Bruce-Mitford 1997, 71). The sherds from Launceston Castle date to around period 1, *c* AD 1068–75 (Brown *et al* 2006).

Although only a small number of absolute dates have been obtained, the ware currently appears to

have been in continuous use for around 500 years, and to have been the standard household ware in Cornwall into the eleventh century (Thorpe 2011). Archaeological evidence suggests that more typically Norman and medieval cooking pot forms such as chert-tempered (or Upper Greensand) ware were imported from east Devon and are found alongside Grass-marked wares in the construction phases of Launceston Castle and Tintagel (Brown *et al* 2006, 270; Freeman 2007, 258). It has been suggested that the forms of this pottery brought to Cornwall in the tenth–eleventh centuries established a new tradition and range of forms from the post-Conquest period onwards (Wood 2011, 322).

The social context surrounding the declining use of Grass-marked wares has not been explained, but it could be of great importance in highlighting the impact that the Norman occupation had on the sense of identity of the native population. The first documented market centres in Cornwall, most of which were associated with the church, can be dated to the tenth and eleventh centuries at Launceston, Liskeard, Bodmin, St Germans and Marazion; some of these were undermined by the new Norman lords to secure an income (Preston-Jones and Rose 1986, 164). This suggests that Cornwall's markets were from the beginning either under ecclesiastical or Norman control.

Grass-marked wares are generally thought of as a pre-Conquest ceramic tradition, with the Norman occupation of Cornwall apparently associated with the end of its production (Taylor and Thorpe 2008). However, it would appear that the people associated with the founding of Norman settlements utilised bar-lug cauldrons to serve everyday needs. This may be the result of incoming groups buying pottery for convenience, or the native Cornish involved in the construction of Norman settlements bringing their own pottery with them. This could certainly be the case for Launceston Castle, in east Cornwall, and at Truro (below), in mid Cornwall. The 195 sherds from Launceston were associated with the construction of the Norman castle in the period AD 1068–75, and were found with chert-tempered wares from the Blackdown Hills on the Devon–Somerset border (Brown *et al* 2006, 281). The fabrics of the Grass-marked sherds were divided between a fabric local to Launceston which was highly micaceous and a gabbro / micaceous admixture (Brown *et al* 2006, 269). This could suggest that some west Cornish gabbroic vessels may have been brought to the castle and subsequently copied using micaceous clays local to the Castle.

The almost complete base of a Grass-marked ware vessel, possibly a bar-lug form, was found in Truro and offers another settlement context (Allan and Langman 1998–9). Truro was the site of a Norman castle founded around AD 1140 by Earl Richard de Luci, with a new town then 'planted' on his lands immediately adjacent (Beresford 1968, 413; Sheppard 1980). However, there was earlier occupation in the vicinity, with the small Domesday manor of Trehaverne lying immediately to the north and a riverside settlement nearby at Newham. It is probable that there was also a small pre-Conquest settlement around the lowest crossing points on the Kenwyn and Allen rivers on the site subsequently occupied by the new town (Kirkham 2003, 13). Thirty-one sherds found in waste deposits cut by a pit with imported twelfth-century pottery (Allan and Langman 1998–9) and

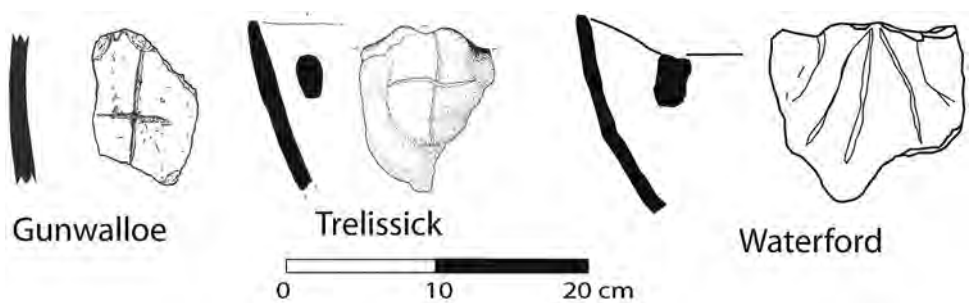

Fig 2 Incised decoration on bar-lug cauldron vessel forms from Gunwalloe, Trelissick and Waterford. (Drawings: after Wood 2013, figs 80–2.)

some redeposited sherds found in a stone culvert nearby (Nowakowski 1998–9) indicate use of the ware prior to or around the time of the Norman occupation phase.

Grass-marked ware with bar-lugs has also been found at Trelissick, only a few miles down the Fal estuary from Truro (Taylor and Thorpe 2008). The bar-lug pottery from Trelissick is the first to be associated with a place-name incorporating tre-, which Oliver Padel has identified as a key indicator of early-medieval settlements (Padel 1985; Preston-Jones and Rose 2003). Interestingly, the exterior of a lug from Trelissick has an incised cross comparable to an example from Gunwalloe dated to the eleventh century; these are the only two decorated examples currently known from Cornwall (Fig 2).

Bar-lugs in Hiberno-Norse Ireland

At the period when Grass-marked ware was apparently declining in Cornish settlement contexts it occurs in Ireland. It has been found in quantities in the early eleventh to twelfth century trading ports of Waterford and Wexford on the south-eastern coast of Ireland (Barton 1988; Hurley *et al* 1997). These *longphorts* were founded by Vikings and were strategically situated on coastal estuarine peninsulas providing both defence and ideal trading locations (Hurley 2010). In the late tenth century these settlements were taken over by native chieftains, resulting in a mixture of Norse and Irish cultural elements (Hurley 1998). These sites subsequently came under Anglo-Norman rule from AD 1170, but this had little effect on the material culture and expression of native identity (O'Sullivan *et al* 2008).

Waterford is the most extensively excavated Hiberno-Norse settlement in Ireland. Around 30 per cent of the medieval town has been excavated and this has revealed entire streets, complete with houses, back yards and craft areas (Hurley *et al* 1997). The waterlogged nature of the deposits has provided an impressive view of material aspects of life, with well-preserved wattle houses and organic materials. The settlement was laid out on a grid system, much like other Scandinavian sites, with narrow strips of land allotted to each house fronting on to paved streets.

The function of Waterford in the early eleventh to twelfth centuries was not as an emporium or a military outpost, but as a town with a mix of rural agricultural and seafaring occupants, with the common aim of trade (Hurley 1997, 895). In the wider context of Hiberno-Norse Ireland, the Gaelic chieftains strived to control towns such as Waterford, which had become crucial as focal points for economic and religious affairs and had extensive trade networks (Hurley 1997).

The artefactual assemblage at Waterford demonstrates that trade links with Cornwall, the Severn estuary and north-west France were well-established. The excavations have produced a substantial ceramic assemblage, including the largest Grass-marked ware assemblage anywhere for the tenth or eleventh centuries AD, with a total of 424 sherds from a single residence (Gahan and McCutcheon 1997). The main concentration is specific to house plot 3 on Peter Street (PS3) (Gahan and McCutcheon 1997). This produced 226 Cornish Grass-marked ware sherds relating to phases 1–3 of occupation; the remaining 198 sherds were found in later deposits, phases 4–12, and were considered residual, as were a few sherds from house plot 2 next door (Gahan and McCutcheon 1997, 329). There are examples of grass-marking on bases and lower body sherds, together with an example of a decorated lug and some sherds with internal charring (Fig 3). It is estimated that there are a minimum of 12 Grass-marked bar-lug vessels and a minimum of 71 cooking pots (Gahan and McCutcheon 1997, 288). Identification of the ware was confirmed by Dr Alan Vince, after which Professor Charles Thomas commented on sherds shown to him (Hurley *et al* 1997). Based on this identification of diagnostic vessels, the fabric and form helped identify further examples within the assemblage. These were all coarseware cooking pots; no Grass-marked platters were present. The decorated lug may provide a parallel for the incised cross on the examples from Trelissick and Gunwalloe, perhaps representing a late eleventh to twelfth century trait of Grass-marked ware bar-lug forms.

The fabric of the Cornish pottery from Waterford is described as 'very coarse and includes gravel temper' (Gahan and McCutcheon 1997, 289). Petrographic analysis of one sherd (L225) by Dr Vince could not identify it as a Cornish fabric, although no specific fabric source was given. The fabric is described as 'Sparse angular quartz grains up to 1mm across. Abundant igneous rock fragments up to 1.5mm across. The

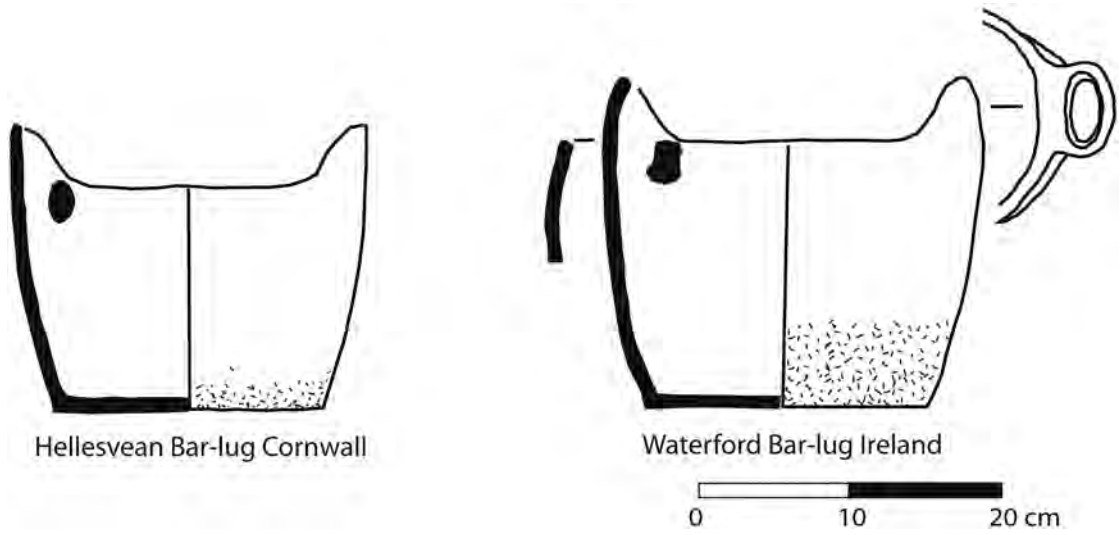

Fig 3 Grass-marked bar-lug cauldrons from Hellesvean, St Ives, Cornwall, and from Peter Street, Waterford. (Drawings: Imogen Wood.)

parent rock is rich in plagioclase feldspar but contains some quartz. The average grain size is in order of 1–1.5mm. The rock may be either a basalt or diorite. Sparse quartz silt in anisotropic clay matrix' (Vince 1997, 337). He concluded that 'while the fabric is not typical of the south west of England the vessel was probably made by someone who had knowledge of bar-lugs' (Gahan and McCutcheon1997, 290). It is certain that the fabric is not gabbroic, but it is not local to Waterford and may represent pottery brought from Cornwall or from elsewhere in Ireland (Clare McCutcheon, pers comm). Not all Grass-marked ware vessels in Cornwall have a gabbroic fabric, especially the later phase examples such as those from Launceston Castle and Gunwalloe (Wood 2013). Future collaborative research and petrological analysis is required to address this question.

The pottery from house plot PS3 was found in floor layers, backyard areas, pathways and rubbish pits, suggesting Grass-marked ware was an everyday item utilised like any other vessel (Hurley *et al* 1997). The exceptional preservation of wooden objects has made dating the phases of PS3 that contained Grass-marked wares possible through dendrochronology. This indicates a period of use between AD 1080 and 1155 (Brown 1997, 647). This would make it contemporary with the vessels at Launceston Castle and Gunwalloe. Unlike what has been found on the Cornish sites, the PS3 assemblage shows that Grass-marked wares were used alongside vessels from Normandy, Bristol, Bath and south-east Wiltshire (Gahan and McCutcheon 1997, 330). This suggests a far more cosmopolitan context in Waterford than in Cornwall, where there is no evidence that other wares were used within the region.

O'Sullivan *et al* (2008, 270) noted that Ireland prior to AD 800 was involved in a specific trade network that facilitated the transportation of exotic goods through coastal *emporia*, and this may also have been the case for sites in Cornwall such as Tintagel (Thomas 2007). These goods, including African Red slip wares, amphorae and later E-ware, may have been transported to other settlements such as high status and ecclesiastical sites, as seen elsewhere in the Brittonic community (Campbell 2007). The emporia model of goods distribution relies on elite members of society purchasing items at a location (not settlement) then transporting them to their own centres and making them available to others, effectively creating and managing their own markets. However, in Ireland, following the establishment of coastal Hiberno-Norse towns in the early tenth century, there was a significant change in the way external trade was managed and pottery

distributed (O'Sullivan *et al* 2008, 270). The 'town plays the role of both emporia *and* market place' as goods now arrived and were sold in markets within an urban context and not taken inland for distribution as before. O'Sullivan *et al* (2008, 271) suggest this may explain why so few exotic goods are found on ecclesiastical or high status sites inland in this period. This changing mechanism of trade in Ireland may have some comparative value and relevance in gaining an understanding of how goods could have been transported within Cornwall at this period.

Who lived at 3 Peter Street?

The clearly-defined house plots on Peter Street are thought to have accommodated the individual households of merchants, craftsmen and families, inhabitants of a cosmopolitan trading centre (Hurley 1998; 2010). The house on PS3 was a typical rectangular wattle structure with rounded corners (Hurley 2010). A path led from the entrance on the street front, through the centre of the house to the back door and into the back yard. The interior was tripartite in plan, had a clay floor, a central stone-lined boxed hearth, an aisled bed and benches and paved areas (Scully and McCutcheon 1997, 55).

It is possible that the concentration of Grass-marked wares in house plot PS3 represents occupation by a Cornish merchant or family who brought their own pottery or traditional pottery styles with them. The dates for the structural phases suggest the pottery was in use for around 70–80 years, perhaps implying three generations. The identity of the occupants is therefore of great interest in understanding how Grass-marked wares came to be there. Plot PS3 was unique in Waterford as it had both a house fronting the main street and two comfortable 'bunk houses' located on opposite sides of the back yard pathway (Scully and McCutcheon 1997, 62). The preservation of wooden planks and wattle walls suggests internal divisions for beds in the bunkhouses (Scully and McCutcheon 1997). The stone-lined hearth box had an unusual flat stone in one corner thought to be a pot-stand (possibly for a bar-lug pot?).

Grass-marked pottery went out of use on the site in the late eleventh to early twelfth century, with residual sherds turning up into the late twelfth century, although the house plot continued to be occupied into the early thirteenth century (Scully and McCutcheon 1997).

Other material culture evidence for this street suggests that the occupants of PS3 were sandwiched between bone comb makers and metal workers, but PS3 did not produce artefacts suggestive of a particular craft (Hurley 1997, 898). There was a higher proportion of wood chippings in the backyard, which could suggest woodworking or perhaps the dumping of chippings for a floor surface (Scully and McCutcheon 1997). The typical range of Waterford household items was found, including stick pins, a bone comb, stone weights, quern stones, iron nails, fish hooks, whetstones, a buckle, spindle whorls, leather shoes and wooden domestic items, and does not suggest a high-status household (Hurley 1997). One can only assume that the occupants derived their income from trading or performed another service in the town. It could be that this was the home of a shipping agent or pilot who provided accommodation for boat crews and that the wood chippings could be from repairing elements of boats, such as oars (Carl Thorpe, pers comm).

The Cornish pottery connection is not unique to Waterford. Grass-marked ware has also been found at Wexford, in Co Wexford, on the south-east coast of Ireland roughly 60km to the east of Waterford (Clare McCutcheon, pers comm). The port of Wexford has a similar history to Waterford: it was founded as a Viking *longphort* and represents another important tenth- to thirteenth-century trading centre (O'Sullivan *et al* 2008). The possible Grass-marked ware from this town was associated with a small house tentatively dated to the pre-twelfth century phase of occupation; however, this is a preliminary observation to be discussed in a forthcoming publication (Clare McCutcheon, pers comm). Further examination of the assemblage is needed, but initial findings suggest a similar context to Waterford. This may be another example of trade networks in action and suggests that selective use of Cornish pottery was not limited to one location but may have been integrated into elements of Hiberno-Norse society and its communication networks. Clare McCutcheon has suggested that there may be more Hiberno-Norse assemblages containing Cornish pottery but its significance in the Irish context has not previously been fully appreciated (pers comm).

More ceramic research and analysis are needed to plot the distribution of Grass-marked pottery in Ireland and the extent to which it was used. There are some vessels from the Waterford assemblage that are similar in form to Cornish Sandy Lane style 1 cooking pots, which are in the same fabric as the Grass-marked wares. It is hoped that future collaborative work will enable a more detailed overview to be made and answer some of the questions posed by the new evidence.

Discussion

The current evidence suggests the possibility of a very specific context of use for Grass-marked wares in Hiberno-Norse southern Ireland. It is probable that they were not transported from Cornwall as a commodity, as it is likely that they would then have been found in other houses in Waterford. The singular fabric representing around 70–80 years of consumption within the home suggests that that either a set of original vessels brought to Ireland was curated or, more likely, that they were made near Waterford by someone with a detailed knowledge of Cornish pottery traditions. The use of decoration on the lug at Waterford also suggests a link with the start of lug decoration seen on the examples from Gunwalloe and Trelisick, which must have represented a new trend or meaning specific to the wider community in Cornwall in this period of social change. The use of Grass-marked wares alongside pottery from Normandy and the Severn estuary suggests that the occupants of PS3 had a choice in what pottery was used in the home and the ability to purchase more if necessary. This leads to the possibility that the pottery was specific to the occupant of the house and perhaps preferentially procured because it signified a particular cultural identity synonymous with Cornwall or merely a tangible link. There is also the temporal context, which for some unknown reason links Cornwall and Ireland in the tenth–eleventh centuries. In Cornwall this period coincides with declining tradition of Cornish pottery production and the foundation of new markets in emerging Norman centres. The cultural context may infer that the Norman occupation of Cornwall motivated people to move out of the region, perhaps to areas beyond Norman control. The link between the disappearance of Grass-marked wares in Waterford in the early twelfth century and the growing Anglo-Norman involvement in the town leading to its occupation in AD 1170, could be interpreted as a similar avoidance of the Norman control over trading centres.

The evidence from Waterford certainly does not indicate a significant exodus of Cornish people to southern Ireland; rather, perhaps, the actions of an individual family living within the broader framework of Hiberno-Norse society. The presence of Grass-marked wares in Hiberno-Norse trading centres offers a tangible link between Cornwall and southern Ireland in the early-medieval period. The implications of this discovery may open new avenues of enquiry into the impact of the Norman occupation of Cornwall and Ireland and the effect this had on the identity of its people. It is clear that individuality and identity are pertinent to an understanding of the Waterford Grass-marked wares and that there was the freedom to express it. The model of the evolution of trade networks suggested by O'Sullivan *et al* (2008) could be of great relevance to understanding Cornwall's relationship with other cultural groups in the early-medieval period.

The new early-medieval trade networks in action for Hiberno-Norse Ireland after *c* 800 AD, and possibly Cornwall, were perhaps motivated by a different client base. This would require a new type of trader concerned with supplying not only exotic goods but bulk commodities. This could represent a new era of native entrepreneurs inspired by the new market towns across the sea where goods could be both sold and bought, perhaps outside the control of high-status patrons.

Conclusion

This paper has outlined the presence, nature and implications of the first material culture evidence for trade and communication between Cornwall and Ireland from the early eleventh to twelfth centuries. More work is required to realise the full potential of this data which will undoubtedly provoke more questions. However, it is clear that there is a relationship between an early Norman social context in which Grass-marked wares are seen to decline and their appearance in a Hiberno-Norse settlement across the water in southern Ireland. The emerging markets and trade networks in this period may have encouraged merchants from Cornwall to settle in southern Ireland due to the open economy of the newly formed market

towns such as Waterford. We may then imagine a Cornish merchant feeling at home in Hiberno-Norse Ireland as long as there was stew in a bar-lug cauldron to come home to.

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Cornish Archaeology 53, 2014, 233–237

A pit with Beaker pottery at St Stephen-in-Brannel: a note

HENRIETTA QUINNELL

In 2010 Exeter Archaeology carried out excavations on some 2ha of former playing fields adjacent to Brannel School, St Stephen-in-Brannel, St Austell, in advance of the erection of proposed new school buildings (SW 9429 5280) (Fig 1).

A number of ditches were exposed across the project area, representing boundaries of successive later prehistoric field systems (not illustrated). Excavation of these features produced one sherd of Late Bronze Age Plain Ware, two from the Early Iron Age, and 17 of Middle Iron Age South Western Decorated Ware: the field ditches shown with solid lines on the inset in Figure 2 were probably of Middle Iron Age date (*c* 300–100 BC), with the parallel ploughscores running north – south (depicted with dashed lines) post-dating them. Other finds from the site as a whole were a granite muller and three flint flakes. There was no Roman material but a small scatter of medieval sherds. Some of the latest ditches could be related to documented post-medieval field boundaries (Jones and Salvatore 2011).

There were a few scattered postholes and pits but no defined structures. An isolated pit containing Beaker pottery was excavated in area 3, and this is the focus for this short paper.

An archive report (Jones and Salvatore 2011) was prepared which included a report on charcoal from prehistoric contexts but, with the closing of Exeter Archaeology in 2011, full analysis for a published report was not possible. The excavation archive has been deposited at the Royal Cornwall Museum in Truro (Accession number TRURO: 2010.7).

Beaker pit [865]

Pit [865] with Beaker pottery lay immediately to the east of two roughly parallel ploughscores, set approximately 10m apart (Fig 2). These appear to post-date the current field system, although no dating evidence was recovered from them.

The pit was ovoid in plan, measuring 1.3m by 0.8m, and was 0.16m deep. It had a wide U-shaped profile with a rounded base (Fig 2). The pit contained two similar coarse sandy-clay fills (866) and (879). Only the south half of the pit fill was excavated. The recorded maximum depth of the pit suggests that it may originally have been cut from a higher level but was later truncated by agricultural activity.

The primary fill (866) produced a number of Beaker sherds, flint and charcoal. The charcoal was examined by Dana Challinor to select a suitable sample for radiocarbon dating. She comments: 'Three taxa were identified: *Corylus avellana* (hazel), Maloideae (hawthorn type) and *Quercus* (oak). The mixed nature of the assemblage confirms that the charcoal does not represent the remains of a post, but was presumably from some domestic or industrial fire which entered the feature with the pottery.'

A single fragment of *Corylus avellana* roundwood was selected for AMS dating. The date obtained (SUERC-30740), 3915 $\pm$ 35 BP, calibrates to 2488–2291 BC (95.4 per cent probability) (OxCal 4.7).

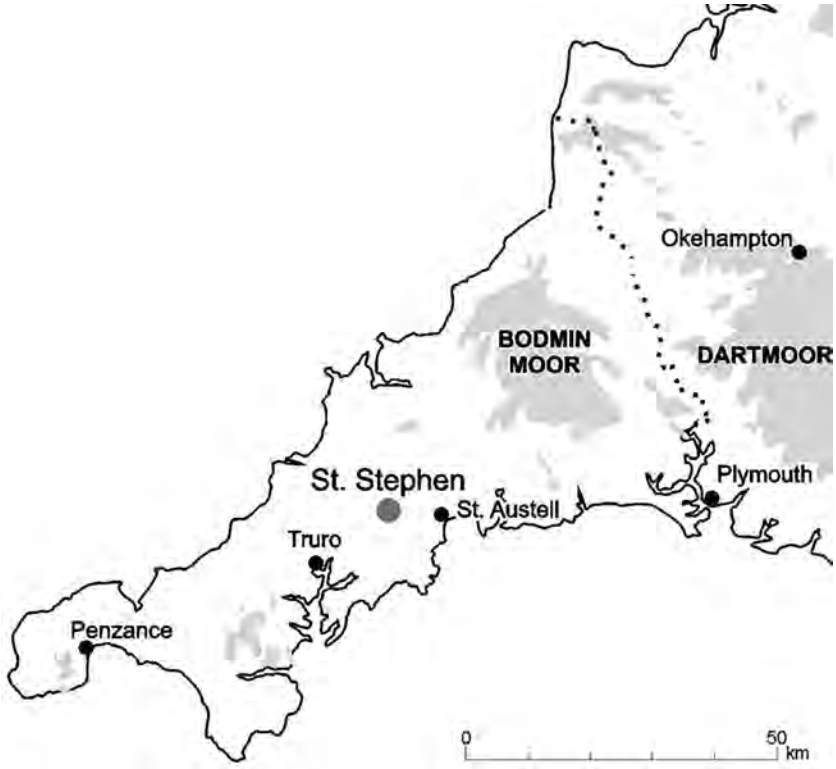

Fig 1 St Stephen-in-Brannel: location. (After Jones and Salvatore 2011, fig 1.)

Beaker pottery

About 90 sherds weighing approximately 615g came from (866), the lower fill of pit [865]. These sherds represent at least three vessels, all of apparently similar fabrics which may use a mixture of gabbroic and other clays; no petrological examination has taken place. Sherds are generally moderately abraded. These sherds come only from the half of the pit which was excavated.

Vessel 1 (Fig 3), oxidised fabric, is represented by about 80 sherds weighing 413g, probably about half the vessel; parts of the rim, with a thickened cordon beneath, and most of the base are present. The vessel has comb-stamped decoration and was probably an S-profile Beaker, but the full shape could not be reconstructed; it is just possible that the vessel was carinated but no obviously carinated sherds are present.

Vessel 2, oxidised fabric, is represented by several body sherds decorated with paired fingernail decoration. It is unusually thin for a vessel with this style of decoration.

Vessel 3 (Fig 4), reduced, is represented by a rim sherd with a cordon beneath and by body sherds with paired fingernail decoration. Its sherds are thicker than those of the other vessels. It appears to have had an S-shaped profile.

Cordoned rims appear to be present from the start of the Beaker tradition in Britain (Clarke 1970, 37) and are not generally present on later, long-necked, forms. The S-shaped forms present belong with vessels which pre-date long-necked forms (Needham 2005) and are generally appropriate for the radiocarbon determination, which calibrates to 2488–2291 cal BC (95.4 per cent probability). Vessel 1 has zones at least 40mm deep with close set horizontal comb-impressed lines combined with narrow bands of criss-cross comb-stamping. There are also plain zones (not illustrated). This style of decoration is appropriate to S-profiled Beakers and is found on vessels which Clarke (1970) assigned to his European (E) and Wessex / Middle Rhine (W/MR) groups. Vessels 2 and 3 belong with 'domestic' Beakers, of which the most comprehensive study remains that by Gibson (1982).

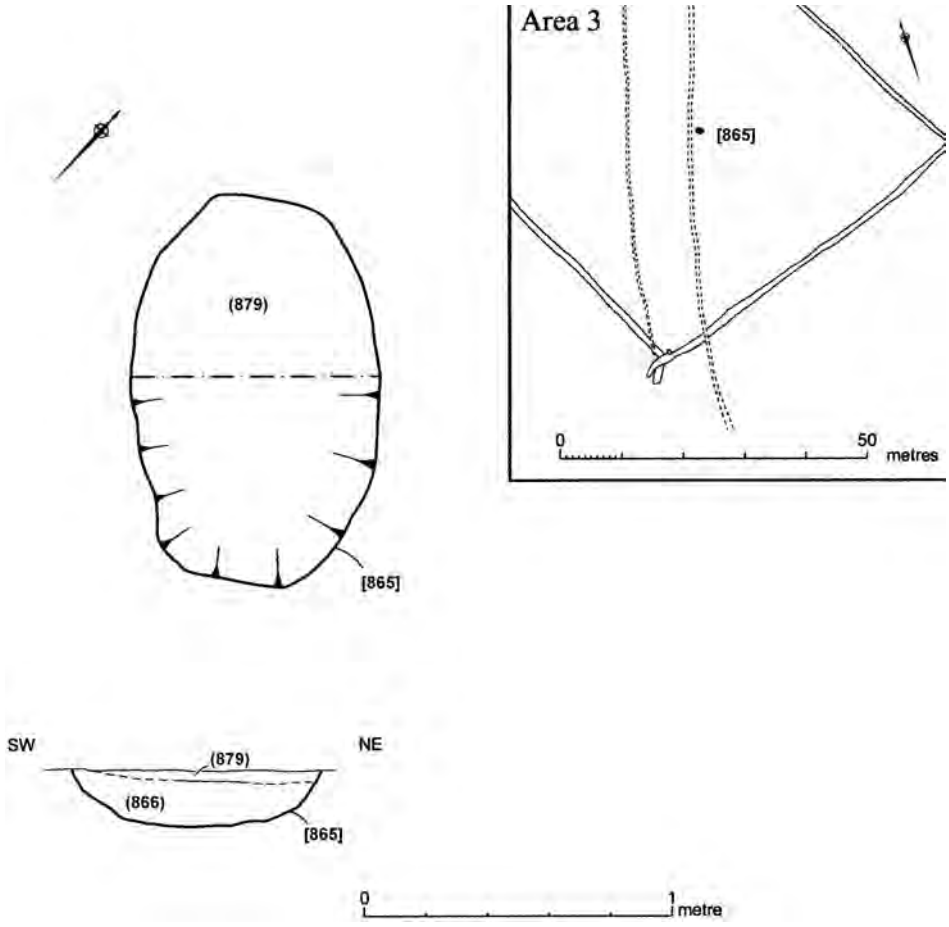

Fig 2 Pit [865] at St Stephen-in-Brannel.

Flint

Pit [865] produced a thick flake with an eroded nodular cortex, of very poor quality material similar to that on Haldon in Devon (Newberry 2002, 14); this appears to have been struck in the process of making a core. The wet sieving of sample <322> from lower fill (866) produced 43 tiny pieces, between 14mm and 3mm in size but mostly towards the smaller end of this range. Several of the pieces have pebble flint cortex; some are soft hammer thinning flakes and others the product of retouch. This small assemblage indicates flint working on the site using both nodular and pebble flint.

Comment

The Beaker pottery from St Stephen-in-Brannel with its associated date forms the earliest assemblage yet known from Cornwall. It has some similarities to, and an only slightly earlier date than, the material associated with a Beaker structure from Sennen (Quinnell 2012). It is now becoming clear that in Cornwall Beaker pottery first appears in domestic assemblages and as depositions in pits and only becomes associated with burials rather later (Jones and Quinnell 2006).

The pit clearly belongs to the long sequence running from the Early Neolithic (*c* 3900 cal BC) through to the end of the Early Bronze Age (*c* 1500 cal BC) which is found across most parts of Britain (Anderson-Whymark and Thomas

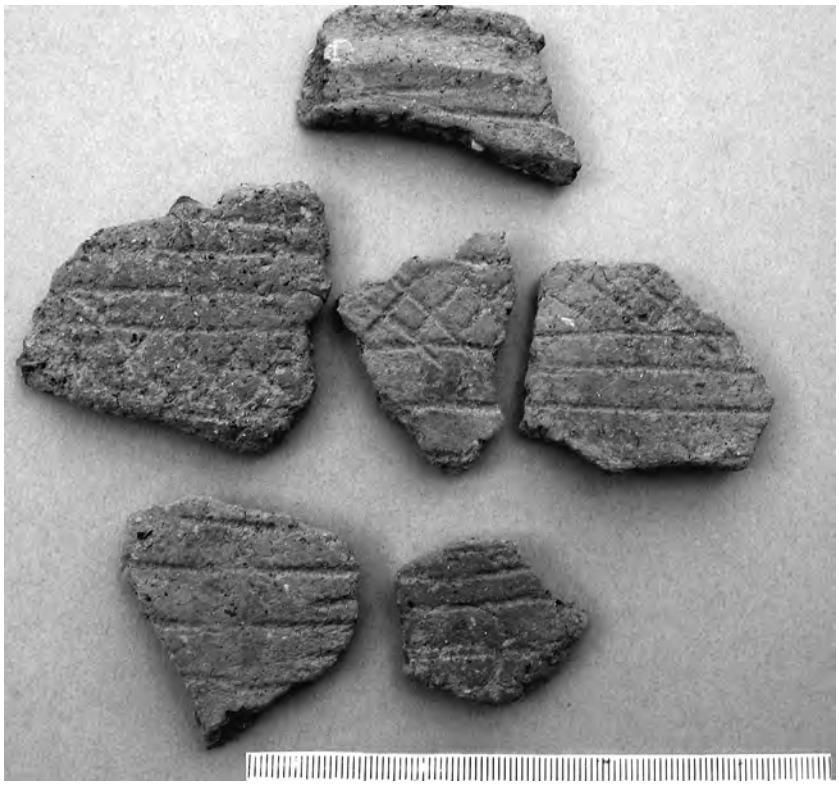

Fig 3 Sherds from Beaker vessel 1 from St Stephen-in-Brannel. Scale 100mm.

2012, *passim*), including Cornwall (Jones and Quinnell 2011). The St Stephen-in-Brannel pit contains pottery, detritus from flint working and from hearths, the most common materials found in these pits with structured deposition; the only obvious absence is animal bone (Whymark and Thomas 2012, *passim*) which does not usually survive in Cornish soils. These pits nationwide contain domestic refuse of various kinds and are thought to have been dug to bury this on sites which were occupied but on which occupation left little or no structural traces. They cannot be explained as storage pits or as being dug for the extraction of material. Instead, their digging and the deposition of refuse may have marked significant moments in cycles of seasonality and, quite probably, movement of settlement. A list of such pits associated with Beaker pottery in Cornwall is included in Jones and Quinnell (2006) (appendix 1) and discussed in the light of the pit subsequently found near Sennen (Jones *et al* 2012). Other than the pit at Sennen and that under current discussion, only two other Beaker sites of this type have been found in Cornwall since that list was compiled. One of these was at Calstock in east Cornwall and produced a radiocarbon date (SUERC-42846) of 2199–2027 cal BC (95.4 per cent probability) (Quinnell and Taylor, forthcoming). The other was at Camelford (Jones and Taylor, forthcoming), where three pits contained Beaker sherds with decoration comparable with that on vessels from Lower Boscaswell, St Just (Jones and Quinnell 2006) and Sennen (Jones *et al* 2012).

The Brannel School pit appears to have been alone in its immediate landscape, as nothing else of this date was found in the 2ha that were machine-stripped and cleaned; it is, of course, possible that other, shallower pits, did not survive the effects of later agricultural activity. One Beaker pit with parts of three vessels with fingernail decoration is known from Scarcewater tip, some 2.5km north west of St Stephen-in-Brannel, although it has a rather later radiocarbon date (Wk-21846) calibrating to 2337–2057 cal BC (95.4 per cent probability) (Jones and Taylor 2010, 5); the

Fig 4 Sherds from Beaker vessel 3 from St Stephen-in-Brannel. Scale 100mm.

extensive excavations at Scarcewater tip revealed two other scattered features with Beaker pottery. The St Stephen-in-Brannel and Scarcewater tip pits have produced the only Beaker material so far known from the St Austell granite and the area immediately around it.

Acknowledgements

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Cornish Archaeology 53, 2014, 239–244

Some unusual pottery from Bryher, Isles of Scilly

CARL THORPE AND CHARLES JOHNS

In 2010 a watching brief at Samson Hill Cottage, Bryher, Isles of Scilly, recovered 43 sherds of crudely-fired pottery with a fabric similar to that of briquetage, a specialised type of pottery used for the manufacture of salt. However, the shape and small size of these vessels differs from previously known prehistoric and Romano-British salt-evaporating vessels. The form of the pots suggests that they may have been either lamps or crucibles.

In the autumn of 2010 Historic Environment Projects (now Cornwall Archaeological Unit), Cornwall Council, carried out a watching brief for the Duchy of Cornwall at Samson Hill Cottage, Bryher, Isles of Scilly (NGR SV87957 14400), where an existing dwelling dating from the 1950s was demolished prior to construction of a new building (Fig 1).

The site lies near the southern end of Bryher on a north-east facing slope towards the foot of Samson Hill. There are good views eastwards from it across Tresco Channel to Tresco. It is located on the margin between the heathy rough ground of Samson Hill and land which was recorded as enclosed in the nineteenth century but which may have been enclosed in the medieval period or earlier (Land Use Consultants and Cornwall Archaeological Unit 1996). There are a number of prehistoric features in the wider area around the site, including entrance graves, roundhouses and field systems (Johns *et al* 2011, 10).

During the watching brief a collection of crudely-fired pottery was found in a corner of an excavation for a septic tank. The assemblage consisted of 43 sherds of pottery weighing 708g which came from the fill, context (10), of a truncated pit, [09]. The fabric of this material is very similar to briquetage, a specialised type of pottery utilised from the prehistoric to Roman periods for the manufacture of salt. The date of the Samson Hill Cottage pottery is uncertain, but it was associated with one undiagnostic waste flint flake and may be prehistoric (Johns *et al* 2011).

Condition and abrasion

The sherds are in a variable condition: some are soft and friable, presumably due to the effects of acid ground water, while others are very fresh. As far as is possible sherd counts are given as the number originally present in the ground and abrasion is estimated from preserved edges. All sherds were recorded as abraded 2/3 (‘core colour patinated, slight rounding of corners and slight erosion of surfaces’), based on the system devised by Sørensen (1996) for Bronze Age midden material at Runnymede.

Fabric

The fabric is described in accordance with the recommendations of the Prehistoric Ceramic Research Group (1997). The pottery is hand-made and poorly fired and is soft and porous, with

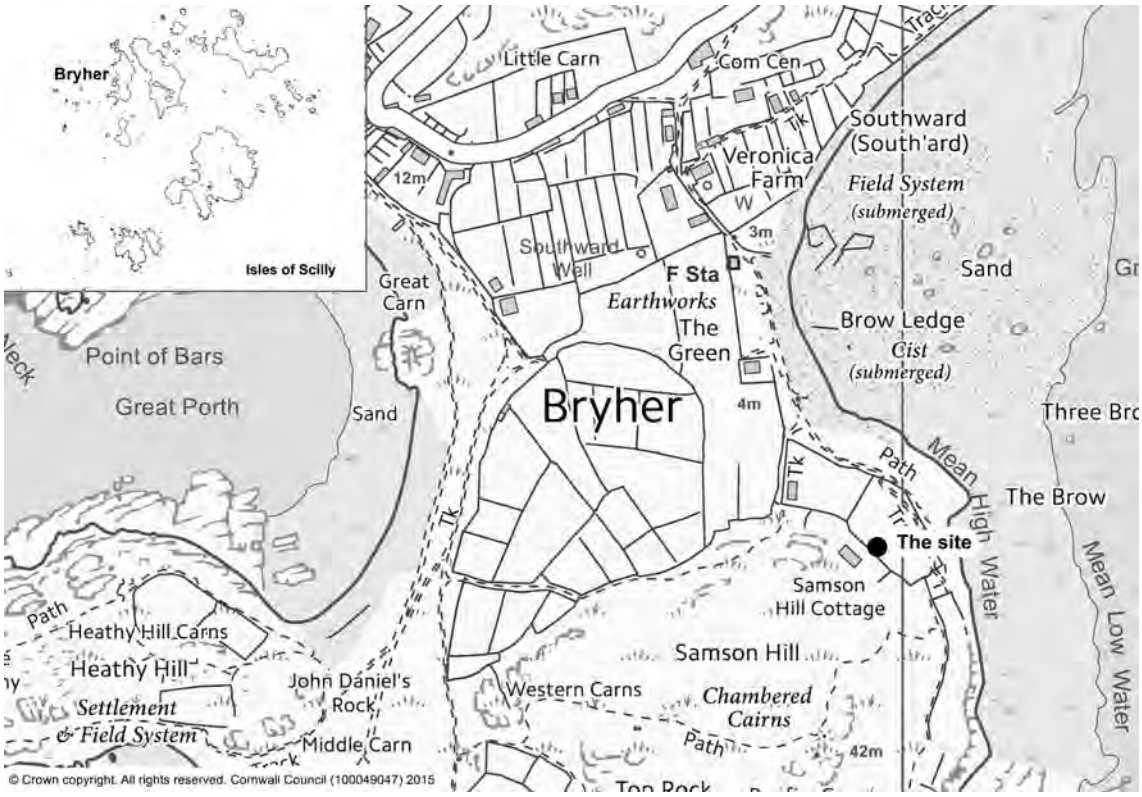

Fig 1 Location of the findspot at Samson Hill Cottage, Bryher.

several of the pieces exhibiting voids within their sections. It was probably made locally. The matrix is silty / fine or sandy with fine white muscovite flakes visible on the surface. The fabric is granitic, with occasional quartz grains and white angular feldspars visible as inclusions. All the material has been oxidised, showing a uniform orange, red-brown (brick red) colour throughout the thickness of the sherds. The interior surfaces show areas of cream / buff discolouration that exist as a very thin layer, possibly due to a chemical reaction occurring between heating and the fabric of the pot.

The Samson Hill Cottage ceramics seem to be of two forms, a small bowl or dish (**P1** and **P2**) and a straight-sided vessel or possible ceramic stand or pedestal (**P3**).

The small bowls or dishes are of a sub-oval, almost teardrop shape. They have a rounded, upright, simple rim with a bowl-like interior. The vessel shoulder is marked by a carination and the base is rounded. The pointed end of the teardrop is formed by a pouring lip or spout. The exterior is crudely finished with numerous finger impressions over the surface. Two vessels of this type were identified (**P1** and **P2**). Both the vessels show evidence for having been utilised (in that they have areas of possible heat alteration on their interiors) but neither vessel exhibits sooting on their exteriors.

P1. This is a near complete vessel represented by 13 conjoining sherds. It measures 120mm × 90mm and is approximately 40mm high, with the interior of the bowl reaching a maximum depth of 25mm. The carination of the shoulder occurs about 18mm below the level of the rim. This vessel is in a fine-grained, well-sorted fabric. The walls of the vessel average 12mm in thickness. Care has been taken in forming its shape, especially in the area of the pouring lip, which is approximately 15mm wide and carefully modelled. The spout is placed symmetrically at the centre of the point of the tear drop. The interior clearly shows signs of a

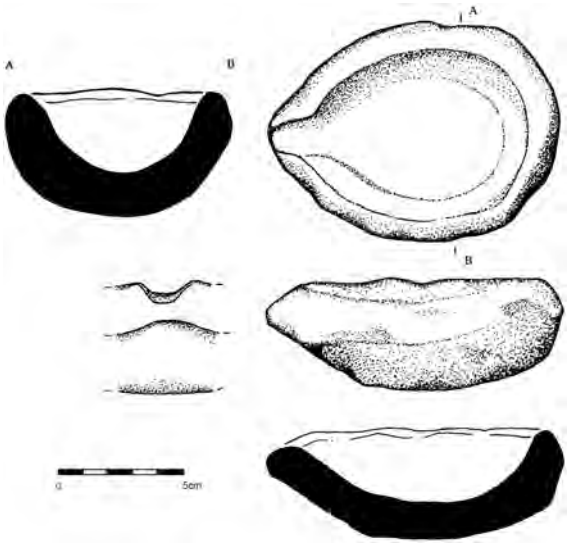

*Fig 2 Vessel **P1**. (Drawing: Carl Thorpe.)*

*Fig 3 Vessel **P1**. (Photograph: Carl Thorpe.)*

possible heat reaction layer and there is evidence of impact damage in the centre of the exterior of the base, suggesting that the vessel may have been deliberately broken (Figs 2 and 3).

P2. This vessel is represented by three conjoining sherds which represent roughly two-thirds of the complete vessel. This appears to have been of a similar shape to vessel **P1** but has been more crudely modelled. The surviving fragment measures 90mm × 70mm, and is approximately 45mm high, with the interior of the bowl reaching a maximum depth of 30mm. The

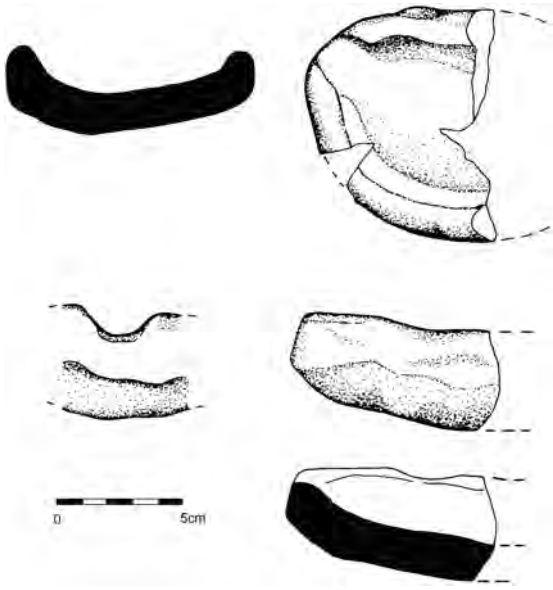

*Fig 4 Vessel **P2**. (Drawing: Carl Thorpe.)*

*Fig 5 Vessel **P2**. (Photograph: Carl Thorpe.)*

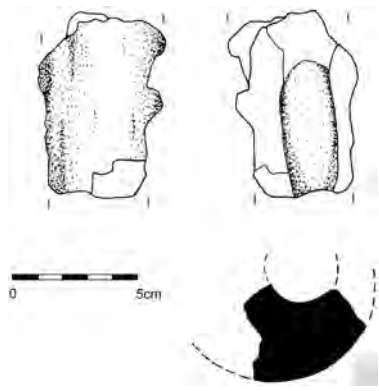

*Fig 6 Vessel **P3**. (Drawing: Carl Thorpe.)*

*Fig 7 Vessel **P3**, exterior. (Photograph: Carl Thorpe.)*

*Fig 8 Vessel **P**3, interior. (Photograph: Carl Thorpe.)*

shoulder carination occurs roughly 25mm below rim level. The walls of this vessel average 15mm in thickness. The fabric is much coarser and less well sorted than that observed in **P1**, with frequent inclusions of quartz and feldspar up to 2mm in size. The shape of the rim is irregular, with numerous finger-moulding marks visible on the exterior. The portion of the vessel that survives is the pouring end. In this case the lip is less well modelled, being asymmetrically placed and formed by part of the raised rim having been flattened by being squeezed, most probably by a thumb, resulting in a squared-off lip. This vessel also exhibits a layer or area of possible heat alteration on its interior (Figs 4 and 5).

P3. Three conjoining sherds form a fragment of either a straight-sided vessel or part of a hollow ceramic column. The latter seems the more probable, with the curvature suggesting a diameter (if circular) of about 80mm with an eccentric internal perforation 30mm in diameter. The fragment that survives is 75mm long and 50mm wide, the thickness of the wall averaging about 22mm. The fabric is fine grained and well sorted with rare inclusions and is brick red in colour. It is possible that another 13 sherds within the assemblage form part of this vessel but these could not be made to join (Figs 6, 7 and 8).

Discussion

The pottery from Samson Hill Cottage is unusual in that the fabric of the whole collection is similar to briquetage, a specialised type of pottery used for the manufacture of salt (*cf* Peacock 1969; McAvoy 1980; Quinnell 2007). The process involved the evaporation of sea water into concentrated brine which was then further reduced to obtain the salt. As far as can be determined the only possible briquetage recorded on Scilly to date has been some small abraded pieces of baked clay found during an evaluation at Dolphin Town, Tresco, in 1999, the forms of which could not be determined (Quinnell 2009–10).

The Samson Hill Cottage vessels, however, are much too small for salt evaporating trays, which are typically about 150mm to 200mm deep (*cf* McAvoy 1980), and because of their size and shape it is suggested that **P1** and **P2** may have been lamps or possibly crucibles. The shape of **P1** is certainly reminiscent of well-known lamp and crucible forms, although the fabric is atypical for such vessels (Henrietta Quinnell, pers comm). Certainly, the burial of this unusual collection of pottery in an apparently isolated pit is strongly suggestive of structured deposition, adding to the growing body of evidence for the burial of selected items in pits in Scilly from the Neolithic to the Roman period (Neal, in prep; Taylor and Johns, in prep).

Acknowledgements

This study was commissioned by Adrian Smith, Assistant Land Steward for the Duchy of Cornwall. Thanks are extended to Robert Horton, the building contractor, for his assistance. The fieldwork was carried out by Katharine Sawyer and Francis Shepherd. Henrietta Quinnell commented on the finds. The archive has been deposited at the Isles of Scilly Museum.

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Reviews

Recent archaeological work in south-western Britain: papers in honour of Henrietta Quinnell, edited by Susan Pearce, 2011. British Archaeological Reports, British Series, 548: Oxford. ISBN 978-1-407308-84-5. Pb £32, 175 pages.

This volume originated in a conference held in Tavistock in 2009 to mark Henrietta Quinnell's sixty-fifth birthday and to pay tribute to her outstanding contribution to archaeology in the south west. Cornwall has been particularly fortunate in this respect: Henrietta is a former President of Cornwall Archaeological Society, a past editor of *Cornish Archaeology*, a key specialist contributor to numerous reports on excavations in Cornwall and was herself the excavator of a number of particularly significant sites in the county, notably the Caerloggas and Watch Hill barrows, Killibury hillfort and Trethurgy round. She has also carried out pioneering work on Cornwall's pottery and distinctive stone artefacts.

Susan Pearce, in addition to editing the volume, contributes a short outline of Henrietta's early life and professional career, particularly the part which began in 1970 when she was appointed Staff Tutor in Archaeology in the University of Exeter's Department of Extra-Mural Studies. Short testimonies by Judith Cosford and Sue Watts, two of Henrietta's former students, highlight the impact of her long career of teaching archaeology. These and many of the acknowledgments by individual contributors testify to the warmth of the regard in which she is held by those she has taught and worked with: the bibliography of Henrietta's published work included in the volume in no sense measures the totality of her contribution to the current state of archaeology in the south west.

Many of the papers offered for this collection pursue the idea of the regional distinctiveness of the south west, which Henrietta has herself done much to establish. None, however, are narrowly (pen)insular in their approach and most are concerned not only with detailing aspects of this distinctiveness but also of locating these within wider settings.

Andy Jones, for example, a long-term collaborator with Henrietta, emphasises the distinctiveness of the Early Bronze Age in the south west, with practices associated with the use, construction and completion of cairns and barrows differing markedly from those in Wessex. The south west's place within a wider 'western' zone in Britain is also underlined in Paul Bonnington's account of a particular form of Early Bronze Age funerary rite in which multiple cremation burials were deposited in a 'cemetery mound'. Examples are found both in Cornwall – with a concentration in West Penwith – and Devon, but also in Wales and Scotland. Both Bonnington and Jones emphasise the siting of barrows at topographically 'special' places in the landscape – ridges, outcrops, sea cliffs – and the importance of intervisibility with particular landscape features such as distinctive hills.

The late Tony Blackman's contribution similarly focuses on ways in which 'special' places were marked or created, with an account of the 'propped stones' and 'pseudo-quoits' which have been identified on some areas of rough ground in the south west, initially on Bodmin Moor but latterly in West Penwith and on Dartmoor. He suggests that such features may have a wider distribution within Britain and further afield. This is not an archaeological report in any usual sense but rather a testimony to the boundless enthusiasm and generosity which Tony, Henrietta's successor as President of CAS, showed in leading others to share his discoveries and encouraging them to make their own. Regrettably the photographs illustrating this piece have been mis-numbered and do not relate to the references to sites in the text.

Alison Sheridan argues that several distinctive elements of the Early Neolithic in the south west may have originated from links with north-west France. A key element in the case is the simple passage tomb excavated at Broadsands, near Paignton, with dates for human remains in the thirty-ninth century BC, and with the closest parallels for its form in lower Normandy and adjacent areas. This is currently the earliest dated funerary monument in the south west, although Sheridan notes the recent suggestion by Tatjana Kytmannow that the simple chambers of Chun and Mulfra Quoits in Cornwall could perhaps be a century or so earlier. Finds of jadeite axes also indicate links with European exchange networks in the Early Neolithic, with that from the Sweet Track in Somerset known to have been deposited in the decade or so after 3807/6 BC. Axes of this type recorded from both Devon and Cornwall (Falmouth, Hayle, Newquay and one unprovenanced example) have a strongly coastal distribution. Sheridan suggests that this Early Neolithic pulse of migration across the Channel to south-west Britain may have been driven by some form of economic or demographic stress.

The Dartmoor reaves have been regarded as one of the south-west's most distinctive prehistoric features since they were first surveyed and identified as prehistoric in the 1970s, shortly after Henrietta's arrival in Exeter. Andrew Fleming, who published the first comprehensive account of these extraordinary patterns of boundaries, reflects on recent re-interpretations of the reave systems which have downplayed their role as tenurial or territorial divisions. In this respect he particularly re-emphasises the potential significance of the 'long, cross-country single reaves' which subdivide parts of Dartmoor.

Jacky Nowakowski, another collaborator with Henrietta on projects in Cornwall, offers an overview of the advances in understanding Cornwall's Bronze Age roundhouses which have been made in recent decades. She revisits excavated examples at Gwithian, Trevisker, Trethellan and elsewhere to examine the diverse 'biographies' of construction, use, re-construction and abandonment which can be identified during roundhouses' use-lives, which in some cases may only have lasted 10–20 years.

Henrietta has been one of a notable group of women archaeologists to work on Devon's hillforts. Frances Griffith and Eileen Wilkes provide an account of their ongoing work on these impressive defended enclosures, some of the forms of which – notably the 'hillslope forts' identified by Aileen Fox – are peculiar to the south west.

Anna Tyacke, Justine Bayley and Sarnia Butcher offer an analysis of a distinctive form of brooch, probably dating to the first century AD. Seven examples have been found in Cornwall, with a markedly coastal distribution. Two other comparable brooches are known from Somerset and the authors suggest that the type may have been manufactured in the south west, possibly in Cornwall.

Close analysis of regional pottery styles has been one of Henrietta's most important contributions to our understanding of the regional distinctiveness of the south west. Acknowledging this, Carl Thorpe offers a summary of early-medieval local pottery forms in Cornwall, specifically 'Gwithian-style' and the later, particularly long-lived 'Grass-marked ware' tradition. The restricted range of forms of the latter appears to indicate significant social changes taking place around the preparation and consumption of food in about the seventh century AD.

Peter Herring presents a thoughtful paper on the multiple and diverse identities which contribute and have contributed to Cornwall's historic distinctiveness (and that of the south west as a larger entity), not least how individuals and communities in the medieval and post-medieval periods may have addressed identity in terms not only of 'differences from' but also of 'belonging to'. An important element in this is likely to have been the sense of place, a particular 'localness'

expressed in the French word *pays*, of which he identifies a number of examples in Cornwall – the Meneage, Penwith and the Roseland, for example – which were clearly already established by the medieval period.

Two contributions with a primary focus on Somerset complete the volume. Paula Gardiner describes work on Mesolithic sites on the Falland ridge, near Bristol, and above Porlock on Exmoor, making comparisons with a range of other sites in western Britain, including Poldowrian, and highlighting the significance of occupation sites from which groups were able to access a diverse range of food and resource sources. Jodie Lewis and David Mullin present a study of the distinctiveness of the Mendips during the Late Neolithic, focused on Grooved Ware and Beaker pottery finds. The 'local practices' they identify associated with these pottery types in Mendip provide useful comparanda for those which Henrietta's work on pottery from this period has highlighted elsewhere in the south west.

Overall, this represents a useful collection for readers with an interest in the archaeology of the south west and of Cornwall in particular, not least because many of the papers offer a very necessary wider perspective. To misquote Rudyard Kipling: 'And what should they know of Cornwall who only Cornwall know.' The same could be said of Devon and of the region as whole. A broader vision and understanding is one of the traits which has made Henrietta's contribution to the archaeology of the south west over the past four decades so outstanding.

Graeme Kirkham

The historic landscape of Devon: a study in change and continuity, by Lucy Ryder, 2013. Windgather Press: Oxford. ISBN 978-1-905119-38-7. Pb xi + 244 pages.

Lucy Ryder's *The historic landscape of Devon* presents a comprehensive study of the nineteenth-century settlement pattern and farming landscape of Devon, through which she aims to identify historic patterns and processes of landscape change from the medieval period onwards. Her characterisation of Devon's historic landscape draws on documentary sources and historic mapping to establish patterns of land ownership and land use, and of the morphology of historic field and settlement patterns. It also draws on sources of social history to try and identify ways in which local communities perceived and adapted to their local environment. This 'regressive analysis' has been aimed at selected landscape areas of Devon, described by the French term '*pays*'; identifying and defining distinctive physical and social character regions within a given landscape is an increasingly popular theme within landscape archaeology.

Principal to the study is the information garnered from the nineteenth-century tithe surveys, including land ownership and occupancy, field names and their land use at the time of the survey. The information has been brought together to form a comprehensive database within a computer based Geographical Information System (GIS), to make it possible to interrogate selected criteria and create layers of comparative data. The results are discussed at a regional and sub-regional level to distinguish local character and overarching trends and processes and the whole is ultimately compared against the Historic Landscape Characterisation (HLC) carried out for Devon in 2004 by Sam Turner.

Ryder's study has particular resonance for those interested in similar themes within the Cornish rural landscape, which shares many common characteristics with Devon. Historic Landscape Characterisation (HLC) originated as a pilot project in Cornwall in the early 1990s and has since been widely used by planning authorities and heritage bodies. Although similar studies to Ryder's have taken place at a local level within Cornwall, there has not yet been as comprehensive or as widely inclusive a study at a county level and Ryder's work demonstrates how potentially useful and productive such a project might be.

The book offers a comprehensive historic narrative: a sometimes slightly impenetrable text is worth persevering with, as the reward is some delightful social detail and insightful analysis. The research has clearly been carried out at some depth and brings together a multi-stranded historic approach to landscape study. One area of disappointment, however, is with the accompanying mapping, which is of rather poor quality and frequently produced at a scale that makes it difficult to read. Map legends are sometimes absent and generally the maps rather poorly reflect the wealth and complexity of the data that sits behind them. This is a real

shame as the mapping is the only real visual in support of the text and instead of enhancing the reader's understanding it tends to reduce it. This one aspect aside, however, this publication is comprehensively researched and informative and will be of definite appeal to those interested in the study of the historic rural landscape of the south west, whether professional researcher or interested layman.

Fiona Fleming