



# A Bronze Age Round Barrow Cemetery, Pit Alignments, Iron Age Burials, Iron Age Copper Working, and Later Activity at Four Crosses, Llandysilio, Powys

Tim Havard, Timothy Darvill & Mary Alexander

To cite this article: Tim Havard, Timothy Darvill & Mary Alexander (2016): A Bronze Age Round Barrow Cemetery, Pit Alignments, Iron Age Burials, Iron Age Copper Working, and Later Activity at Four Crosses, Llandysilio, Powys, Archaeological Journal, DOI: [10.1080/00665983.2017.1238687](https://doi.org/10.1080/00665983.2017.1238687)

To link to this article: <http://dx.doi.org/10.1080/00665983.2017.1238687>



Published online: 14 Oct 2016.



Submit your article to this journal [↗](#)



View related articles [↗](#)



View Crossmark data [↗](#)

# A Bronze Age Round Barrow Cemetery, Pit Alignments, Iron Age Burials, Iron Age Copper Working, and Later Activity at Four Crosses, Llandysilio, Powys

---

TIM HAVARD, TIMOTHY DARVILL AND  
MARY ALEXANDER

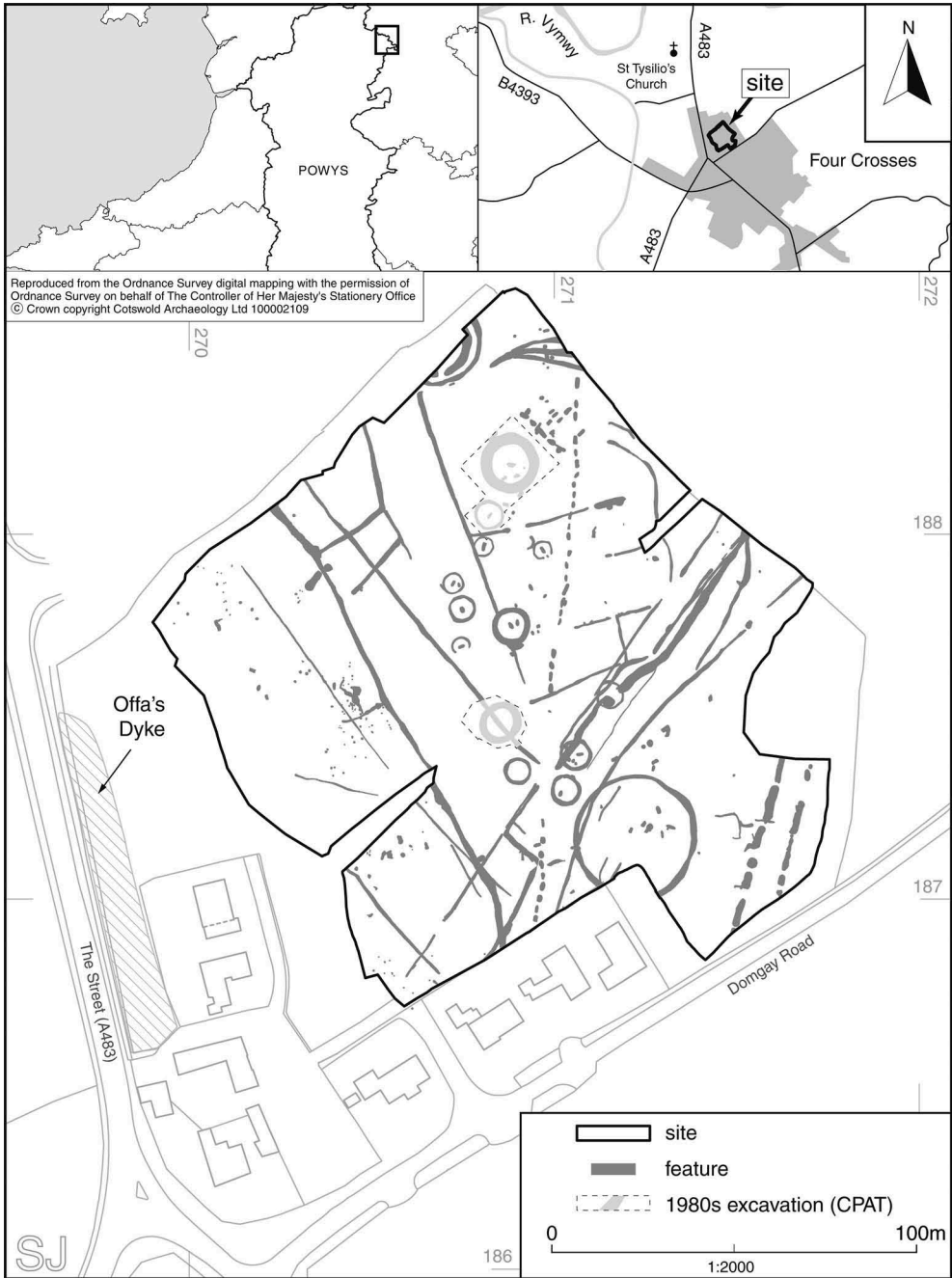
*With contributions by Rowena Gale, Harriet Jacklin, Helen Lewis, Ed McSloy,  
Elizabeth Pearson, Keith Wilkinson and Tim Young*

*Excavation undertaken at the Upper Severn valley round barrow cemetery at Four Crosses, Llandysilio, Powys, between 2004 and 2006 has increased the known barrows and ring ditches to some twenty-seven monuments within this complex, and revealed additional burials. Based on limited dating evidence, and the data from earlier excavations, the majority of the barrows are thought to be constructed in the Bronze Age. The barrows are considered part of a larger linear cemetery. The landscape setting and wider significance of this linear barrow cemetery are explored within this report. Dating suggests two barrows were later, Iron Age additions. The excavation also investigated Iron Age and undated pit alignments, Middle Iron Age copper working and a small Romano-British inhumation cemetery and field systems. Much of this evidence reflects the continuing importance of the site for ritual and funerary activity.*

## INTRODUCTION

The important round barrow cemetery at Four Crosses, Llandysilio, Powys, has been known since the 1960s and 1970s through aerial reconnaissance. Prior to 2002, the site was known to contain at least five ring ditch crop marks, three of which had been excavated by CPAT in the 1980s (Illus. 2: Barrow 2, Barrow 3 and Barrow 8) together with a series of pit alignments. The barrows were considered to belong to the Beaker to Early Bronze Age period, although dating was poor (Warrilow et al. 1986, 83).

Between 2004 and 2006 an opportunity to investigate elements of this barrow cemetery arose ahead of residential development at Domgay Road, Four Crosses (centred on NGR SJ 2707 1878) (Illus. 1). Geophysical survey and trial trenching in 2002 and 2003 respectively confirmed the presence of a further twelve barrows or ring ditches, alongside pit alignments and elements of a ditched field system (Jones 2002; Marches Archaeology 2003). Dating



ILLUS. 1 Site location

evidence from trial trenching suggested an Iron Age date for one of the pit alignments, and the presence of Roman and post-medieval ditches (Marches Archaeology 2003, 30).

The site was subject to area excavation by Cotswold Archaeology between 2004 and 2006 before construction of the new housing development. Archaeological features exposed by machine stripping were hand-excavated, employing standard sampling strategies. This report sets out the results of these excavations.

## THE EXCAVATIONS

The site comprises an area of approximately 2.4 ha in the north of Four Crosses, and is situated on a low gravel terrace (*c.* 60 m OD) close to the confluence of the rivers Severn and Vymwy. The course of Offa's Dyke runs less than 100 m to the west. The site was under pasture prior to excavation and was generally flat, although the southern half of a barrow mound (Illus. 2: Barrow 20) lay in the north of the site on top of a slight natural rise. The solid geology of the site is mapped as Early Triassic Kinnerton sandstone formation, sealed by Devensian glacial-fluvial deposits of sands and gravel (BGS).

The principal features of the 2004–6 excavation were eight previously unrecorded ring ditches or barrows of the Four Crosses barrow cemetery. The monuments of the barrow cemetery are described from south to north, rather than by sequence, as not all the monuments could be dated with any certainty. As barrows of this cemetery have previously been allocated unique identifiers (Barrows 1–8), that number sequence is continued and now provides for a total of twenty-seven monuments. These are listed in Appendix A, with a summary description of each one. All the ring ditched features on site are referred to as barrows, although evidence for a mound was not always present.

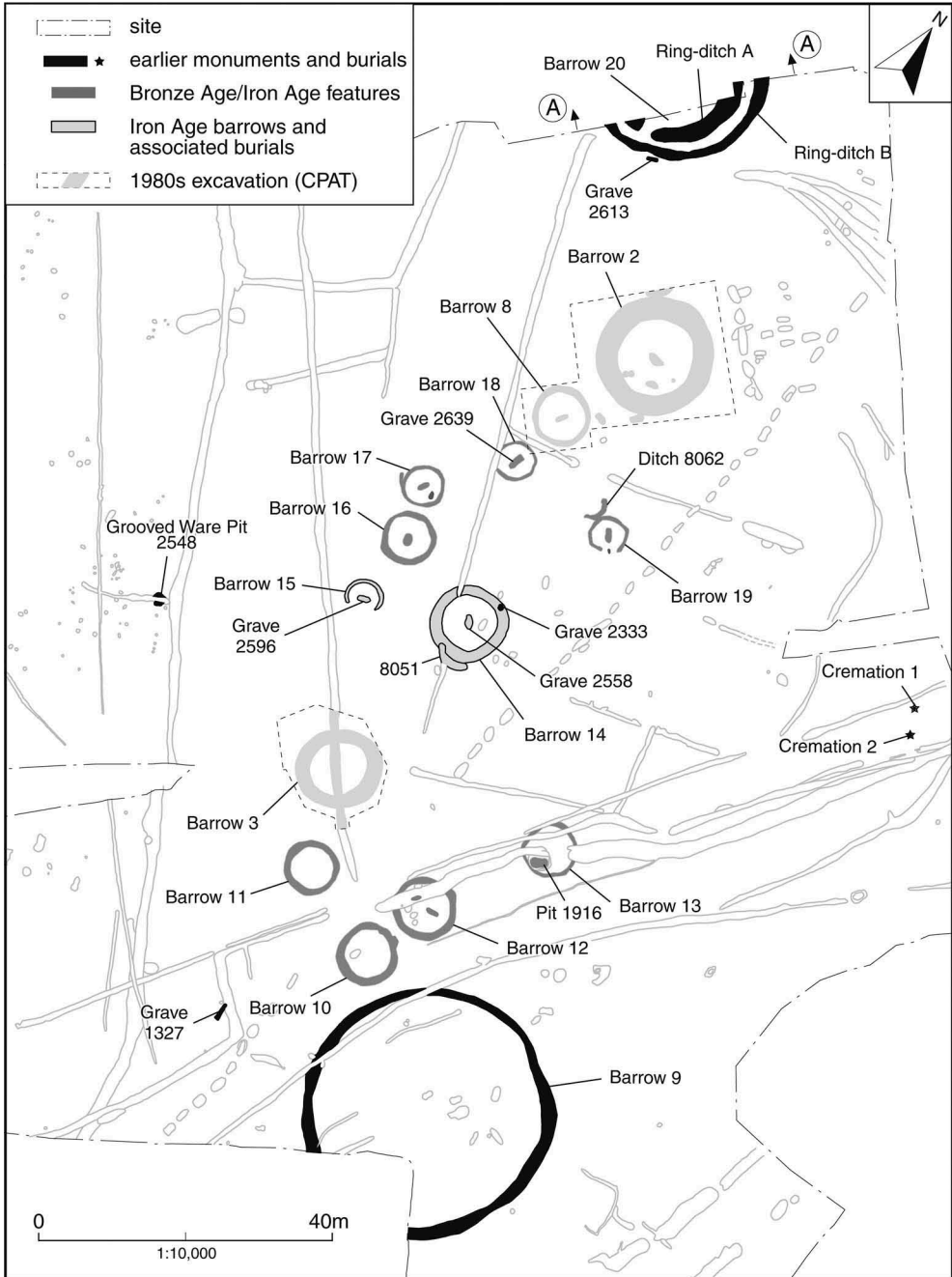
Other activity on the site was represented by a pit containing Grooved Ware pottery, Iron Age pits containing copper working debris, Iron Age pit alignments, and Romano-British enclosures, field systems and a small inhumation cemetery. These features are described in chronological order. In addition to these features, a series of post-medieval and modern field boundaries were recorded and these are not discussed further in this report.

Radiocarbon determinations are presented as calibrated dates though conventional radiocarbon ages (Stuiver and Polach 1977) are given in Table 1. All calibrations have been calculated using the calibration curve of Reimer et al. (2004), and the computer program OxCal 3.10 Bronk Ramsey (2005). Date ranges cited in the text are those at 95% confidence level (two sigma) unless otherwise specified. Ranges are derived from the probability method (Stuiver and Reimer 1993).

The interpretation of date and function of the features excavated on this site are those of the authors. As with many sites for which a securely dated sequence is lacking, other interpretations are also possible.

## SITE LAYOUT

The barrows, represented by ring ditches of varying sizes, were loosely arranged on a north–south alignment in the centre of the site. The arrangement of other features found within the excavated area would suggest that the barrows remained as significant



ILLUS. 2 The barrow cemetery and burials

TABLE 1 Radiocarbon dating results

LAB. NO./ TYPE	CONTEXT	FEATURE	MATERIAL USED	RADIOCARBON AGE (BP)	CALIBRATED DATE RANGE (AT 2 $\sigma$ 95.4% CONFIDENCE)	ISOTOPIC DATA (FOR BONE SAMPLES ONLY)
Wk-23230/AMS	1775/1776	Cremation 2	<i>Quercus</i> (oak) sapwood charcoal	3486 +/- 31	1900-1730 cal. BC (93.6% probability) 1710-1690 BC (1.8% probability) (Early Bronze Age)	
Wk-23231/AMS	1775/1776	Cremation 2	<i>Corylus</i> (hazel) charcoal	3488 +/- 30	1900-1730 cal. BC (Early Bronze Age)	
Wk-23232/AMS	2243	Copper working pit 2242	<i>Alnus</i> (alder) charcoal	2181 +/- 30	370-160 cal. BC (Middle Iron Age)	
Wk-23233/AMS	2245	Copper working pit 2242	<i>Prunus</i> (blackthorn) charcoal	2163 +/- 30	360-270 cal. BC (42.9% probability) 260-110 cal. BC (52.5% probability) (Middle Iron Age)	
Wk-23234/AMS	2039	Copper working pit 2034	<i>Quercus</i> (oak) roundwood charcoal	2210 +/- 31	380-190 cal. BC (Middle Iron Age)	
Wk-23235/AMS	2039	Copper working pit 2034	<i>Corylus</i> (hazel) charcoal	2187 +/- 30	370-170 cal. BC (Middle Iron Age)	
Wk-23236/ radiometric	2561	Skeleton 3, central burial pit 2558 Barrow 14	Human femur shaft charcoal	2104 +/- 32	210-40 cal. BC Middle to Late Iron Age)	16‰N 11.06 ‰ <sup>15</sup> N 45‰C -21.01 ‰ <sup>13</sup> C C:N 3.3

earthworks into later periods. The north–south axis of the barrows was followed by the principle pit alignment (Pit Alignment 1) which also ran through the central area of the site and was interrupted where it crossed the barrows. On the south-east side of the excavated area an undated trackway ran on a similar alignment. The Neolithic pit and main concentration of copper-working activity were situated on the west side of the barrow zone. More scattered evidence for copper working was found to the west and within the perimeter of the southernmost ring ditch. The Romano–British field system imposed a different alignment across the area although gaps in the field ditches suggest some of the barrow monuments were still visible. The location of a small Romano–British or later cemetery close to one of the larger barrows (Barrow 2) would appear to be a deliberate reference to the significance of the earlier monument.

### GROOVED WARE PIT

A single sub-circular pit 2548, measuring 1.5 m in diameter and 0.5 m in depth lay in the west side of the site (Illus. 2). It contained a single fill, from which twenty-eight sherds of a single Grooved Ware vessel of Late Neolithic date were recovered. The sherds were large and unabraded, and some showed thick sooting on their outer surfaces. No other materials were recovered from the pit which was partly truncated by a later Roman-period ditch.

### THE BARROW CEMETERY AND BURIALS

Evidence for monuments and burials of the barrow cemetery within the excavation area comprised twelve ring ditches or barrows, at least six associated graves and two unurned cremations (Illus. 2). The barrows excavated in 2004–6 were numbered 9–20. Barrows 2, 3 and 8 excavated in the 1980s also lay within the excavated area. Barrows 2, 3, 9, 10 and 14 were previously known from aerial photography, whilst 16 and 20 were first discovered by geophysics. Barrow 8 was investigated by CPAT in the 1980s and barrows 11, 12, 13, 15, 17, 18 and 19 were only found by excavation, presumably because they were too shallow or slight to produce good cropmarks or geophysical readings. Dating evidence from the previously excavated barrows was equivocal, but on balance the Beaker period or Early Bronze Age was considered the most probable date for construction. Dating evidence from the 2004–6 was similarly sparse: one cremation approximately 50 m from the barrows returned an early Bronze Age radiocarbon date, and a Bronze Age date is suggested for the isolated burial 1327, whilst dating from two of the smaller barrows (Barrows 14 and 15) suggest the construction of funerary barrows continued into Iron Age. The evidence implies a long sequence of monument building and associated funerary/ritual activity spanning two millennia or more, but precision over the sequence of monument building, burial and reuse is not possible. The cemetery features are described from south to north.

### BARROW 9 AND GRAVE 1327

Barrow 9 was evident as a ring ditch in the south of the site, and measured approximately 35 m in diameter. On average the ditch measured 1.35 m wide and 0.8 m deep and had steeply sloping sides with a pronounced notch at its base. There was no

evidence for re-cutting. The thin, unmixed gravel-rich basal fills in the majority of ditch sections were most likely derived from gravel falling back into the ditch very soon after its construction. Subsequent ditch fills contained much higher proportions of silt which suggests gradual weathering and silting. There was no evidence for any deliberate back-filling, or to indicate on which side of the ditch a bank may have been situated. No dating evidence was recovered from any of the excavated ditch sections other than a single flint waste flake showing edge wear — broadly dated to the Late Neolithic or Bronze Age — which may be residual. The ring ditch was cut on its western side by a post-medieval ditch. Small amounts of charred plant remains were recovered from the fill of the ring ditch although none were suitable for radiocarbon dating.

The functional interpretation of this ring ditch is unclear, as upcast derived from the ditch, which enclosed a large area, would only have created a small mound or a low bank, if indeed either one existed. Several possible pit-like features internal to the ring ditch were investigated; all proved to be geological apart from oval pits 1766 and 1796. Both pits contained evidence for copper working and were similar in their form and fills to other features dated to the Middle Iron Age from radiocarbon determinations. The ring ditch of Barrow 9 was considerably larger than the other ring ditches that form the barrow cemetery, and although it has been interpreted as a funerary monument it is also possible that the ring ditch was a feature associated with the metalworking activity.

Grave 1327, lay 14 m to the west of Barrow 9, was rectangular in plan and measured 2.05 m in length, 0.95 m in width and 0.57 m in width. No bone survived within the grave, but a single amber bead recovered from the fill is stylistically of probable Bronze Age date. Root disturbance prevented any relationship being established with the adjacent post-medieval ditch.

#### BARROWS 10–13

Lying to the north of Barrow 9 was a cluster of four smaller barrows. The ring ditches of Barrows 10, 11, 12 and 13 measured between 7.4 m and 8 m in diameter; the varying widths (between 0.4 m and 1 m) and depths (between 0.2 m and 0.45 m) of the ditches were due to truncation, possibly by later ploughing.

The fills of the ring ditches of these barrows were generally naturally deposited sandy silts with low to moderate amounts of gravel inclusions, and neither conclusively proving or disproving the presence of mounds interior to the ring ditches.

Two possible graves, located in the interior of Barrow 12, were sub-rectangular in plan, measuring between 1.5 m and 1.9 m in length, between 0.65 m and 0.75 m in length and 0.3 m to 0.5 m in depth. Single fragments of charred remains of hazelnut shell and wheat were recovered from these two graves, however none of this material was suitable for radiocarbon dating. An intrusive modern calf burial was recorded inside Barrow 10 whilst no features interior to Barrow 11 were identified. Small quantities of charred plant remains were recovered from the ditches of both Barrow 10 and Barrow 11.

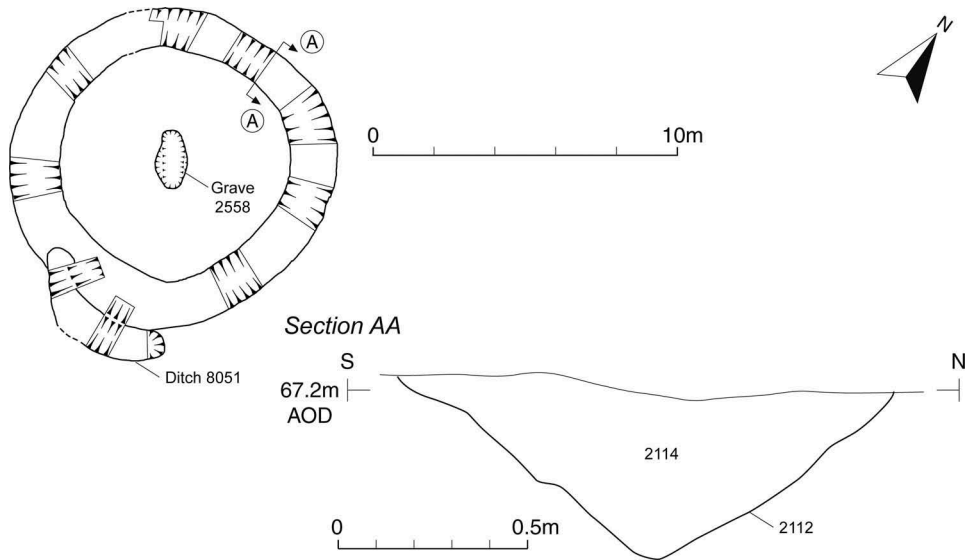
Pit 1916 was cut through the silty fill of the ring ditch of Barrow 13 (*Illus. 2*). It measured 2.8 m in length, 1.8 m in width, 0.7 m in depth, was ovoid in plan and had steep sides which became vertical towards the base of the pit. It was left open and silt accumulated in its base before the deliberate deposition of layer 1918, a distinct brown-



black layer containing wheat, knotweed, legume and a comparatively large quantity of hawthorn and willow charcoal. No skeletal remains were recovered from this deposit which was then sealed when pit 1916 was deliberately back-filled. Two unidentified animal bones and a single horse bone fragment were recovered from the pit fills.

#### BARROW 14

Barrow 14 was distinct in character compared to many of the adjacent barrows being slightly larger in size and with a wider ditch. The ring ditch measured 10 m in diameter, with the ditch having steeply sloping sides, a concave base and measuring between 1.3 m and 1.5 m in width and between 0.45 and 0.7 m in depth (Illus 3 and 4). The larger width of this ditch in comparison to the adjacent ring ditches might suggest the upcast was used to create a bowl barrow that extended to the inner lip of the ditch. The higher proportion of gravel in the primary fills of the ditch compared to other ring ditches on the site suggests the mound was slumping or eroding into the ring ditch. The siltier secondary fill of the ditch accumulated when this process slowed, once a stable surface had formed over the mound. The erosion of the mound, however, seemed to have continued on the southern side where re-cut 8051 may have provided upcast for a repair. On the north side of the barrow, the ring ditch had heavily truncated an earlier grave 2333 which contained the inhumation burial (Skeleton 1/2) of a mature adult, possibly a male oriented north-west to south-east. Grave 2558, located centrally within Barrow 14, contained an adult inhumation burial (Skeleton 3) of which only leg bones and two molar crowns survived. The femur produced a radiocarbon date of 210–40 cal. BC (Wk- 23236). If this burial is assumed to be the primary burial of the mound, and not a later insertion, this places the barrow in the Iron Age.



ILLUS. 3 Barrow 14



ILLUS. 4 Barrow 14 looking north-west

## BARROWS 15–19

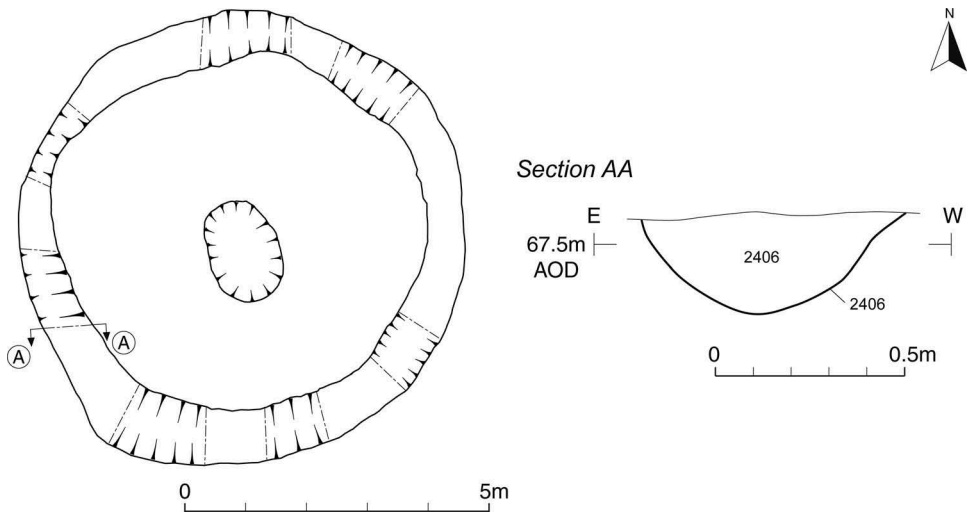
Barrows 15–19 formed a second cluster of smaller barrows located between Barrows 3 (excavated by CPAT) and 14 to the south, and Barrow 2 (excavated by CPAT) to the north. The ring ditches of Barrows 15, 16, 17, 18 and 19 were similar to Barrows 10–13 to the south but slightly smaller, with diameters in the range of 5.5 m to 7.5 m (Illus 5, 6 and 7). A short stretch of curvilinear ditch 8062, lay immediately to the north-west of, and was cut by, Barrow 19. The ditch measured 4 m in length and up to 0.6 m in depth, had an irregular ‘u’-shaped profile and contained a single undated silty fill. This may have been the remnant of an earlier ring ditch. It is possible that the gap in the ring ditch of Barrow 19 represented an entrance although it is more likely this was due to truncation, probably by ploughing.

The ring ditch of Barrow 15, like the ring ditch of Barrow 19, did not survive as a continuous circuit (Illus. 2). Here, the gap was too wide to be an entrance, and is almost certainly the consequence of later agricultural activity, which had truncated the surviving ditch to no more than 0.2 m in places.

A small quantity of bone of an adult survived in grave 2639 in the interior of Barrow 18 but was not suitable for radiocarbon dating. A copper-alloy finger ring (Illus. 16,1), was recovered from the fill of grave 2596 located centrally within Barrow 15, although no human remains survived. The ring is Iron Age in both its style and its composition (leaded bronze) (see McSloy below). Probable graves were also identified in the interior of Barrows 16, 17 and 19 although no finds or human remains were recovered from any



ILLUS. 5 Barrow 17 in the foreground looking south towards Barrows 14, 15 and 16



ILLUS. 6 Barrow 16

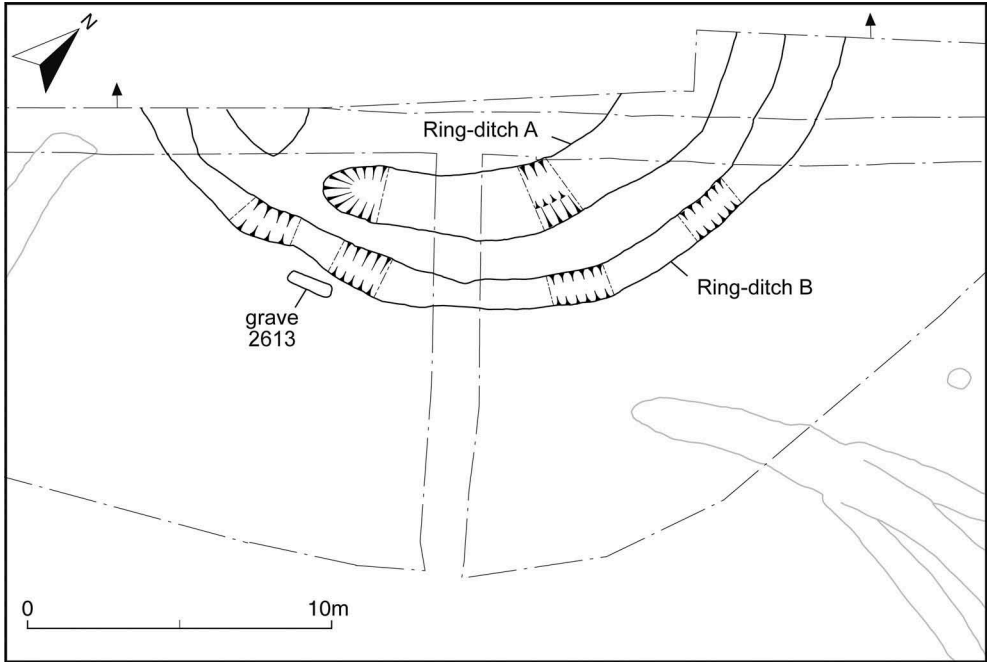


ILLUS. 7 Barrow 16 looking north-west.

of them. The shape and size of these graves was generally indicative of tightly flexed inhumations, although a smaller grave on the eastern interior side of Barrow 17 was perhaps more suggestive of a crouched inhumation. These graves had all been back-filled with the gravel upcast produced when they were cut.

#### BARROW 20 AND GRAVE 2613

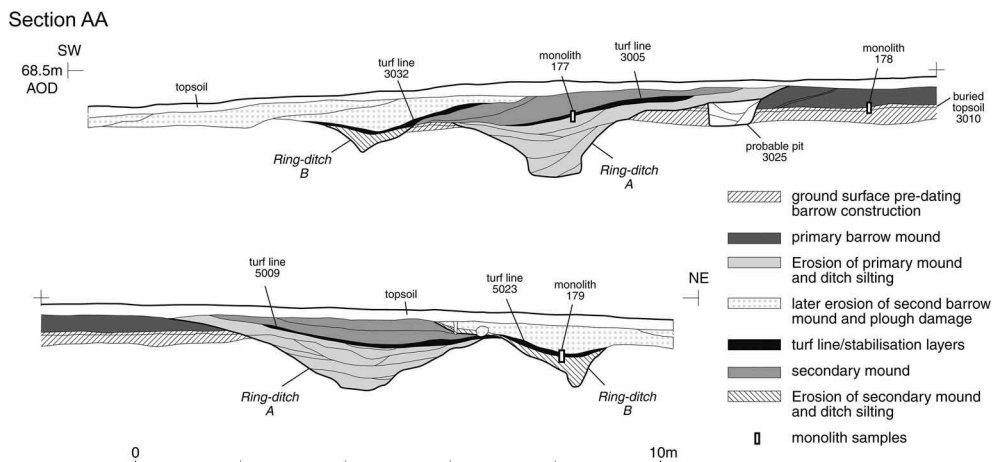
Barrow 20 lay at the northern edge of the excavation, and thus only partially within the excavated area. A buried subsoil and elements of a buried topsoil survived beneath the mound material of the barrow. The buried topsoil was relatively shallow, measuring only 0.08 m in depth, and micromorphological analysis suggested that the upper horizon had been removed some time before barrow construction. Ring Ditch A cut through the buried deposits and enclosed an area at least 10 m in diameter and measured between 1.9 m to 2.5 m in width and about 1.2 m in depth (Illus 2, 8–10). The ditch was not a continuous circuit, as a causeway was recorded within the excavation area. Gravel, derived from the cutting of the ditch, formed a primary mound which measured around 8 m in diameter and extended to the inner lip of Ring Ditch A. An original mound height of around 2 m can be inferred from the section (Illus. 10). A probable pit, 3025, was cut into the primary mound soon after construction and seen in section only. After initial erosion of the sides, the pit had been deliberately back-filled with the material it had been cut through, and was sealed by the earliest layer of erosion of the primary mound. Numerous small-scale episodes of gravel slumping from the



ILLUS. 8 Barrow 20



ILLUS. 9 Barrow 20 Looking north-west



ILLUS. 10 Section of Barrow 20 and ring-ditches A and B

primary mound and silting combined to in-fill and level Ring Ditch A. The final deposit in this sequence was a thin layer of whitish grey clay (3005 and 5009) interpreted as a turf line. The turf had formed over the in-filled ditch once erosion from the primary mound had ceased.

Construction of the secondary mound began with the cutting of Ring Ditch B. The ditch enclosed an area approximately 18 m in diameter and measured between 1.1 m and 1.8 m in width and 0.6 m in depth. The eastern half of the ring ditch was observed within the excavation area as a continuous feature encircling Ring Ditch A. The gravel upcast derived from Ring Ditch B was deposited over the primary mound and the turf line above the in-filled ditch of Ring Ditch A to create a larger secondary mound. Geoarchaeological analysis suggested that the upper horizon of the turf line had been truncated, although the lower horizon showed features of a mature soil. An episode of burning may be represented by inclusions of charcoal fragments and the magnetic readings from this soil profile (see Wilkinson and Lewis, this article). This might indicate the clearance of vegetation and levelling before the secondary mound was constructed, although the timespan between the two phases of barrow construction is uncertain. The secondary mound was enhanced by soil stripped from the exterior of Ring Ditch B to create a mound at least 18 m in diameter which, as with the primary mound, extended to the inner lip of the ditch. The outer ring ditch was filled with erosion materials from the secondary mound and silting. This was sealed by a thin layer of whitish grey clay (3032 and 5023), again interpreted as a turf line (Illus. 10). No dating evidence was recovered from either the primary or secondary mound or the fills of ring ditches A and B.

Grave 2613 was rectangular in plan and measured 1.4 m in length, 0.5 m in width and 0.1 m in depth. It contained a poorly preserved supine inhumation burial of an adult, possibly female (Skeleton 5), and lay immediately to the exterior of Barrow 20 (Illus 2 and 8) and was sealed by later erosion of the secondary mound.



## CREMATION BURIALS

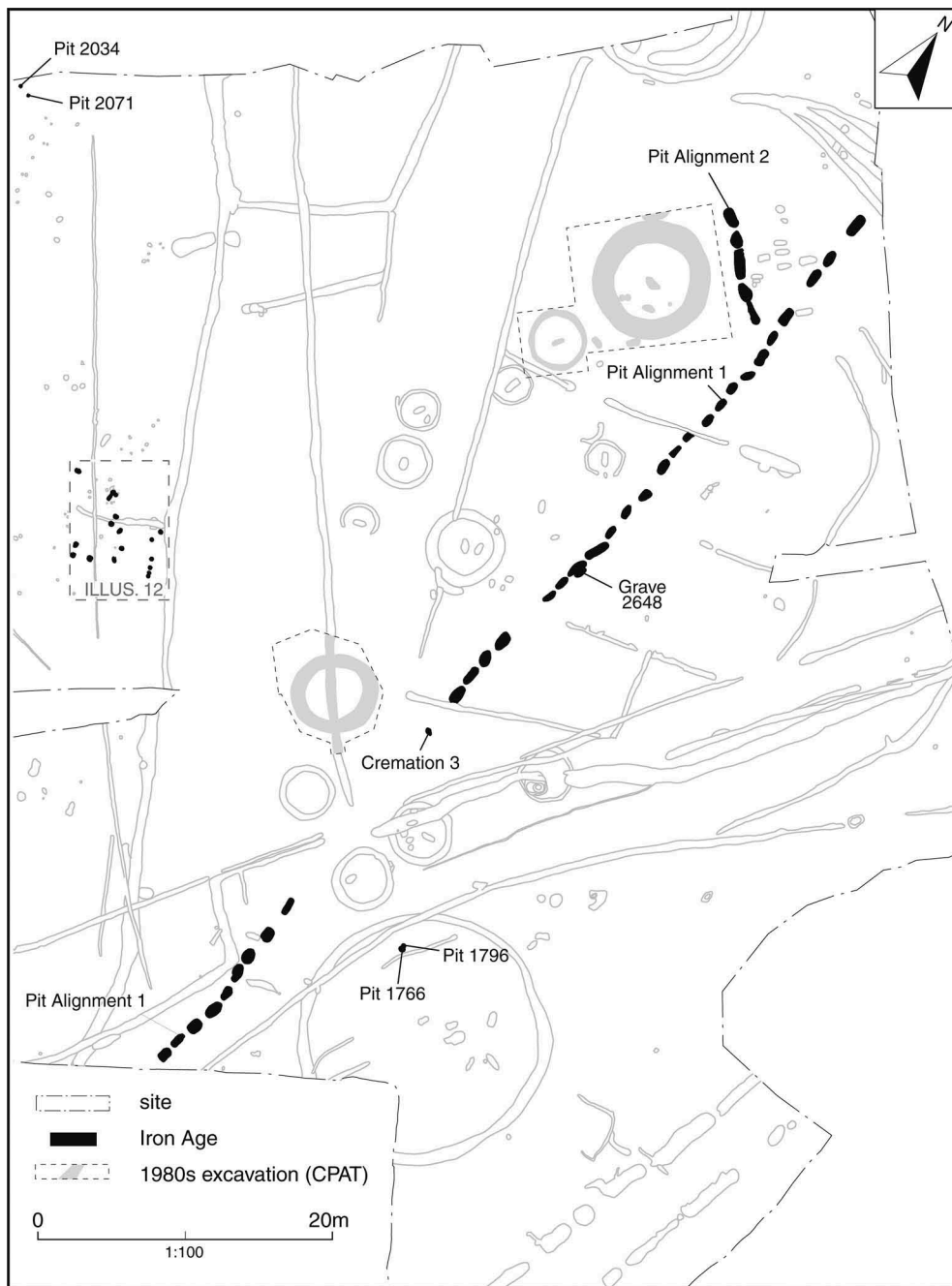
Two unurned cremation burials were recorded in the east of the excavation (*Illus. 2*). Cremation 2 was circular in plan, measuring 0.5 m in diameter and 0.27 m in depth. It contained the cremated bone (fill 1777/1778) of an adult, possibly female, which had been placed in the base of a grave pit which was then back-filled with a charcoal-rich fill 1775/1776, presumably derived from pyre debris. Charcoal of oak and hazel from the pyre debris produced a radiocarbon date of 1900–1730 cal. BC (Wk- 23230, Wk- 23231). Cremation 1 lay 4 m to the south, in a circular pit of similar dimensions with a single fill 1733. The cremated bone from Cremation 1 (recorded as 1732), which was unidentifiable to age or gender, was not suitable for radiocarbon dating but its proximity to Cremation 2, suggests a similar date.

## PIT ALIGNMENTS AND IRON AGE BURIALS

Pit Alignment 1 ran across the centre of the site on a north–south alignment (*Illus. 11*) for a length of at least 150 m and was probably the continuation of a cropmark pit alignment which approached the site from the north. It comprised thirty-three pits which were generally ovoid in shape with the long axis along the alignment. The dimensions of the pits varied between 1.6 m and 2.5 m in length, averaged 0.33 m in depth, and were set 1 m apart from each other on average. The pits had all in-filled naturally with sandy silts with rare gravel inclusions with no evidence for any maintenance or back-filling, or to indicate which side any bank may have been situated. A Middle Iron Age date was obtained from Cremation Burial 3, although the cremated bone may be residual and no further dating evidence was recovered from any of the pits, other than a single flint waste flake. A gap in the alignment respected Barrow 3 and Barrows 10, 11 and 12, and two pits of the alignment were cut by ditches of the Romano-British field system.

Cremation Burial 3 produced just 3 g of cremated bone. Charcoal recovered during the 2003 evaluation from the same feature produced a Middle Iron Age radiocarbon date of 385–115 cal. BC (Beta-181726: 2200±/-50 BP; *Marches Archaeology 2003*). It was not possible to establish if Cremation Burial 3 was residual material re-deposited during the construction of this pit alignment, or was a deliberate burial in the pit alignment.

Grave 2648 measured 1.55 m in length, 0.76 m in width and 0.5 m in depth and contained a single silt gravel fill. The grave had been partially uncovered during the earlier evaluation, and contained a poorly preserved inhumation burial of an adult, possibly male (Skeleton 7). It was immediately adjacent to and aligned parallel with Pit Alignment 1, suggesting that it may have been contemporary. A further pit alignment (2) ran for a length of approximately 16 m in a south–east–north–west direction from Pit Alignment 1, in the direction of Barrow 20. The pits were sub-rectangular in plan, between 2 m and 3.5 m in length and between 0.42 m and 0.6 m in depth with the long axis along the alignment. There was no evidence for any deliberate back-filling of the pits (which contained silty sand fills with few gravel inclusions), or to suggest on which side any bank may have been. No dating evidence was recovered from the pits and there was no stratigraphic relationship with the adjacent Romano-British cemetery



ILLUS. 11 Iron Age copper working and pit alignments



(see *Illus. 14*). Pit Alignment 2 was located immediately to the north of Barrow 2 suggesting the latter was still extant at the time this pit alignment was established.

#### TRACKWAY

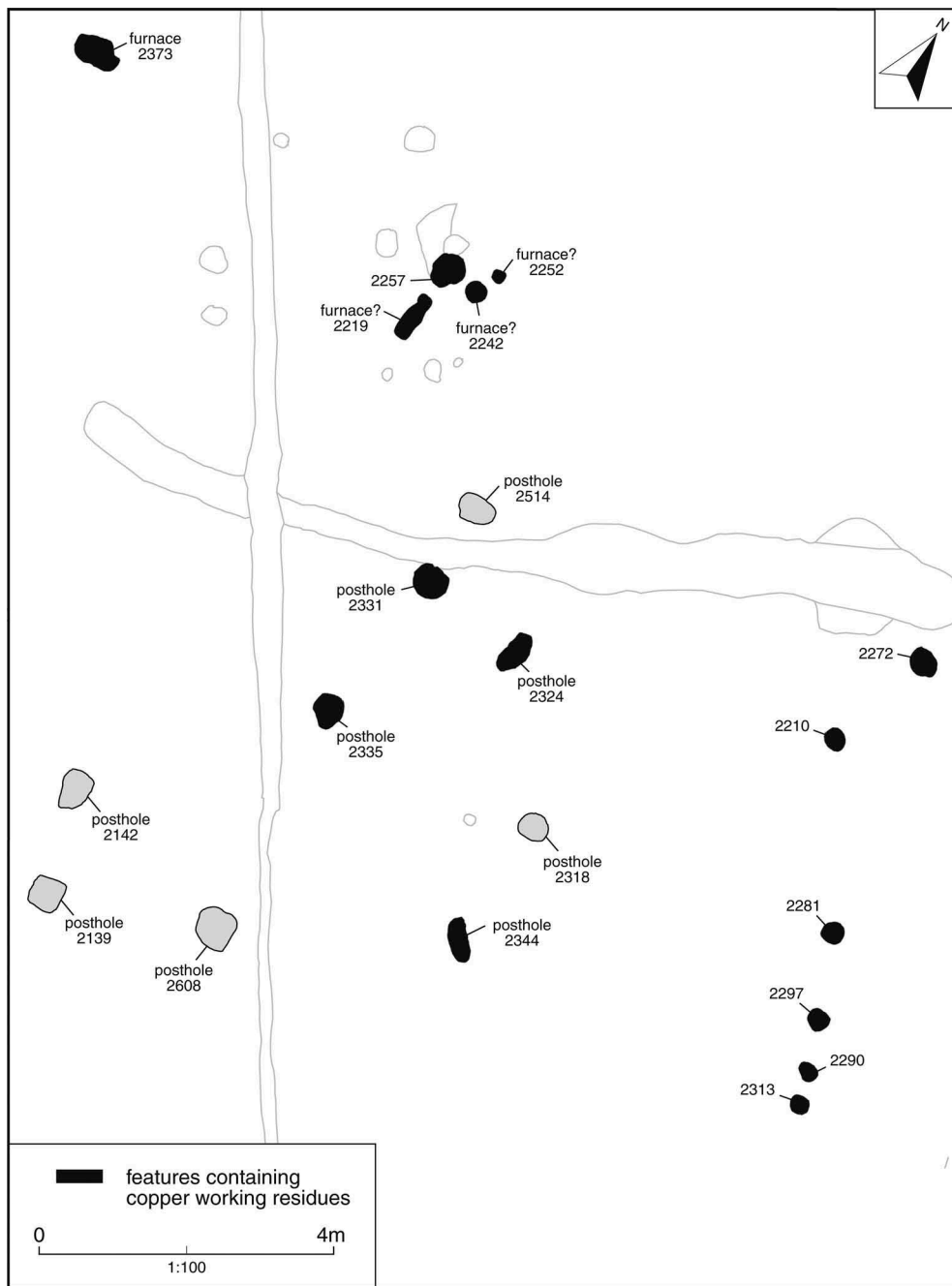
The trackway was recorded in the south-east of the site and was aligned north-east to south-west. It comprised two parallel lines of discontinuous butt-ended ditch segments, which were generally sub-rectangular in plan and which measured between 4 m and 10 m in length, between 1.1 m and 2.1 m in width and between 0.37 m and 0.51 m in depth. The bank was likely to have been located on the exterior of the trackway although this was not reflected in the silty clay fills recorded in the excavated sections, nor was there any evidence of any deliberate back-filling. No dating evidence was recovered from the trackway ditches which were different in form from the pits of the pit alignments 1 and 2 although the similarity in alignment of the trackway and Pit Alignment 1 raises the possibility that they are contemporary.

#### IRON AGE COPPER WORKING

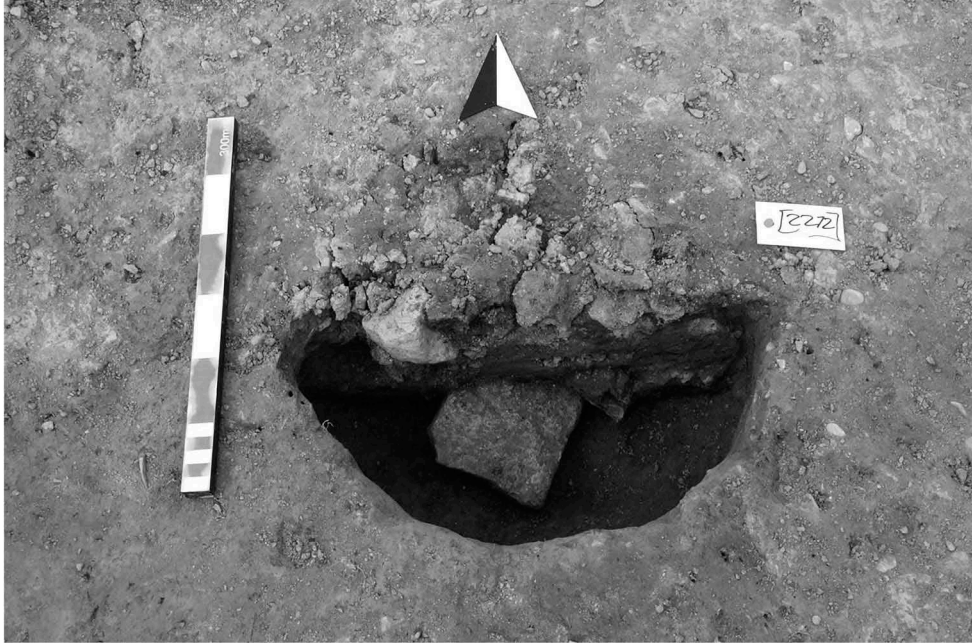
Copper smelting waste material was recovered from a series of small pits truncated by ploughing, two of which produced Middle Iron Age dating evidence. These features occurred in three groups: two pits (1766 and 1796) in the south-west of the site, within Barrow 9 (*Illus. 11*), a central group of pits in the west of the site (*Illus. 12*) and two outlying pits (2034 and 2071) in the north-west of the site. The waste material recovered comprised reduced-fired furnace lining fragments, a fragment of block tuyère and small quantities of slag, ore and copper prills. The waste material is discussed further by Young below.

Within the central group of pits, six probable furnace pits, irregularly spaced, formed a north-west/south-east alignment approximately 6 m long. The majority had vertical sides and a flat base. Pits 2210, 2272 (*Illus. 13*), 2290 and 2313 were circular, or slightly oval and measured between 0.23 m and 0.36 m in diameter, and up to 0.15 m in depth. Pits 2281 and 2297 were irregular in plan but similar in size. The sides of all pits but 2313 showed discolouration by burning, and a layer of charcoal was found at the base of pits 2210, 2272 and 2297. The fills contained charcoal, copper smelting slag and fragments of the fired clay furnace linings.

A cluster of three probable furnaces 2219, 2242 and 2252 lay approximately 7 m to the west of this alignment with an associated pit 2257. Pit 2219 was distinctly rectangular in plan measuring 0.70 m by 0.25 m and contained a charcoal-rich primary fill that lapped up to the top of the edge of the cut, but dipped away in the middle where it had been partially cleaned out. Pit 2242 was circular in plan with steep sides and a flat base and measured 0.3 m in diameter and 0.2 m in depth. Three pieces of block tuyère recovered from the primary fill 2243/2245 of pit 2242 were not *in situ*. Both the primary fill and secondary fill 2242 had been dumped into the open pit. Charcoal recovered from the primary fill 2243/2245 produced a Middle Iron Age radiocarbon date range of 370–110 cal. BC (Wk-23232, Wk-23233) from alder charcoal and black-thorn charcoal. Pit 2373 lay to the west of this cluster and was the only feature that contained possible *in situ* evidence of copper smelting. It was sub-rectangular in plan



ILLUS. 12 Pits and post-holes containing copper and working residues



ILLUS. 13 Smelting Pit 2272 looking north

with rounded corners and measured 0.6 m in length, 0.32 m in width and 0.08 m in depth. Fired clay in the base of the cut formed two sides of a square from which the majority of the metalworking residue 2374/2375 was recovered, although the degree of truncation of this feature meant it could not be determined if this fired clay was *in situ* or not.

A possible structure to the south of this cluster is suggested by post-holes 2514, 2324, 2318, 2344, 2608, 2139, 2142, 2335, and 2331. Post-holes 2331, 2324, 2335, 2139 and 2142 contained stone post-packing. The form of this structure was difficult to discern, it may have represented a small rectangular shelter associated with the copper working; two adjacent later ditches may have removed other post-holes. No dated material was obtained from these features, although post-holes 2324, 2331, 2335 and 2344 contained copper working residues.

Copper smelting residues were recovered from two shallow oval pits 1766 and 1796 which measured between 0.35 m and 0.5 m in diameter and were located within Barrow 9 in very close proximity to each other. The pits were of similar dimensions to the main cluster; the edge of pit 1796 was scorched, and both contained copper slag and burnt clay. Such residues were also recovered from the fills of pits 2034 and 2071 in the north-western corner of the site. These features preserved evidence of a clay lining and are interpreted as the truncated base of furnaces, surviving to a depth no greater than 0.12 m. Fill 2039 (of 2034) produced a Middle Iron Age radiocarbon date of 370–170 cal. BC (Wk-23234, Wk-23235) at 95.4% probability from oak and hazel charcoal.

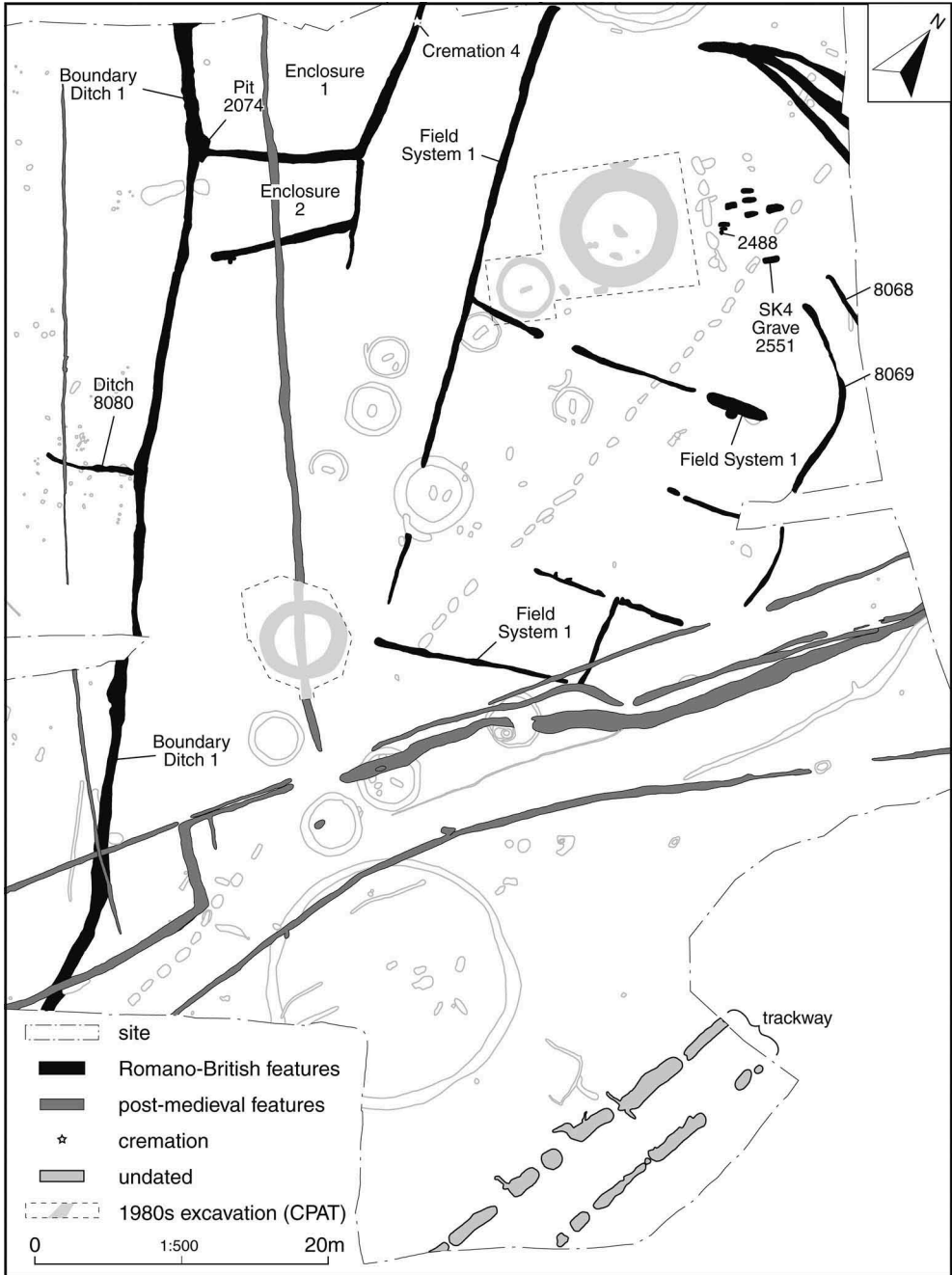
## ROMANO-BRITISH FIELD SYSTEM AND CEMETERY

## ENCLOSURE AND FIELD SYSTEM

A rectilinear ditched field and enclosure system was set out across the site in the Roman period (*Illus. 14*). Boundary Ditch 1 lay on a north-west/south-east alignment and was re-cut frequently along its length in a piecemeal fashion, and contained a small quantity of Severn Valley Ware of second–fourth-century AD date. Ditch 8080 appeared to pre-date Boundary Ditch 1 although such a stratigraphic relationship was likely caused by a re-cut of the larger ditch. It is more probable that Ditch 8080 represented a small sub-division of the area immediately to the west of Boundary Ditch 1.

Enclosure 1 lay in the north-west of the site, aligned on the north-west–south-east Boundary Ditch 1 and enclosed an area of at least 30 m by 17 m. The ditch varied in width between 0.8 m and 1.3 m in width and 0.46 m to 0.6 m in depth. Enclosure 2, defined by two additional ditches which measured between 0.8 m and 1.75 m in width and an average of 0.45 m in depth, was a later addition to the southern side of Enclosure 1 and enclosed a smaller area of 23 m by 10 m. A small quantity of cremated adult human remains (Cremation 4), apparently unurned and of indeterminate sex together with pyre debris (contexts 2010 and 2011) appeared to have been tipped into the open ditch at the north-eastern extent of Enclosure 1, whilst a stone disc-form spindle whorl of probable Roman date was retrieved from the southern extent of Enclosure 1. No features internal to either enclosure could be defined, and as such they are most likely to have represented agricultural enclosures.

Field System 1 lay to the east of these enclosures and ditches, and was defined by a main north–south ditch which measured an average of 1.05 m in width and 0.4 m in depth although it became slightly narrower and shallower towards its southern extent. Several east–west segmented ditches which lay to the east of this ditch defined small paddocks. These ditches generally measured between 0.5 m and 1 m in width and an average of 0.25 m in depth. One segment of the northernmost east/west segmented ditch was much larger than the others and measured 1.2 m in width and 0.6 m in depth. Although there was no sign of a re-cut within this segment it can be postulated that it represented a re-modelling of this part of the field system, perhaps to provide additional upcast for an adjacent bank. In none of the excavated sections of Field System 1 was there any suggestion as to which side any bank may have been located on. Possible post-holes, measuring no more than 0.2 m in diameter and depth were noted in one of the southernmost east–west aligned segments. The location of a gap, defined by butt-ended terminals, in the main north–south ditch and its northern terminus corresponded to the position of Barrows 14 and 20 respectively suggesting the associated barrow mounds were extant at the time of ditch construction. Field System 1 was dated by a single piece of Severn Valley Ware pottery recovered from the main north–south ditch; a piece of clay pipe stem also recovered is deemed intrusive. Although unconnected to the western complex of ditches, this system shared a similar alignment and is assumed to be part of the same pattern of land division.



ILLUS. 14 Romano-British field system and cemetery, post-medieval features and undated trackway

## INHUMATION CEMETERY

A small cemetery of eight inhumation burials was located in the northern part of the site. The graves were all approximately rectangular in plan on the same north-east–south-west alignment. Seven of them measured at least 1.5 m in length between 0.6 m and 1 m in width and 0.2 m and 0.5 m in depth. An eighth, smaller, grave only measured 1 m in length, 0.5 m in width and 0.18 m in depth. The very poorly preserved skeletal remains of an adult of indeterminate sex (Skeleton 4) survived in grave 2551 which also yielded several sherds of Romano-British pottery. This grave was set apart from the other graves which were comparatively closely packed lying no more than 1.2 m apart from each other. No human remains survived in any other grave. A large stone-packed post-hole 2488 measuring 0.6 m in diameter and 0.4 m in depth, immediately adjacent to the smallest grave, may have represented a grave marker.

## CURVILINEAR DITCHES

Three inter-cutting curvilinear ditches were recorded in the northern half of the site. These generally had steep sides and a narrow base and measured between 0.9 m and 1.4 m in width and between 0.5 m and 0.8 m in depth. They had silted up naturally with no signs of on which side any bank may have been located. These were also of Roman date, a small quantity of second-century pottery was recovered from the southernmost of the three ditches, but did not obviously fit into the pattern of rectilinear fields and enclosures to the west. The ditches, together with ditches 8068 and 8069 to the south may define a trackway leading to the cemetery.

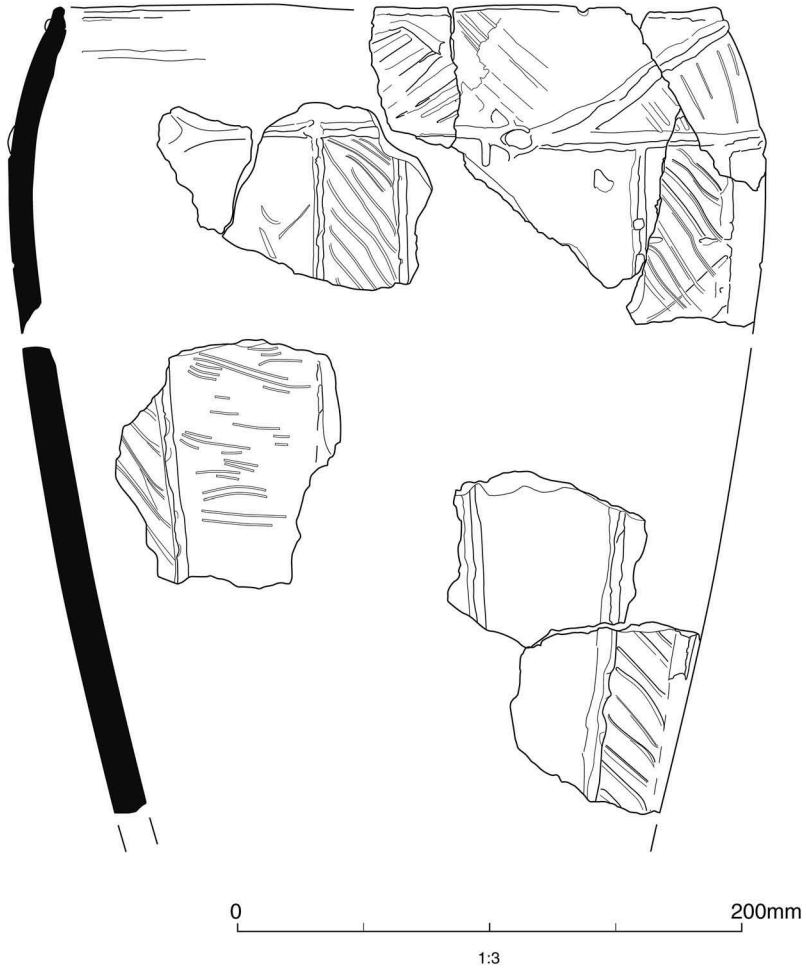
## THE POTTERY

by ED MCSLOY

## NEOLITHIC AND BRONZE AGE

Pottery of Neolithic and Bronze Age date occurred as Late Neolithic Grooved Ware from the fill of pit 2548 (location shown on *Illus. 2*) and an unstratified sherd, possibly of earlier Bronze Age date. Pit 2548 produced twenty-eight sherds (947 g) from a single Grooved Ware vessel (*Illus. 15*). The sherds, which were large and unabraded, were dispersed throughout the fill of this feature. Sufficient of the vessel is present to determine its form and decorative scheme. These, together with the large, bucket-like proportions of the vessel, are distinctive of the Grooved Ware of the Durrington Walls style, which is the most widespread of the styles defined by Longworth (1971).

The dating of Grooved Ware from Wales and elsewhere is hindered by the limited number of reliable absolute dates. Gibson considered that the largest known Grooved Ware group from Wales, that from Upper Ninepence, Powys, spanned the period *c.* 2900–2500 BC (Gibson 1999, 44). This is at the earlier end of the range given by Garwood (*c.* 2900–2100 BC) for Durrington Walls and Clacton style Grooved Ware from southern England (Garwood 1999). More recent studies of northern British material extends the earliest use of Grooved Ware vessels to *c.* 3100 BC and suggests



ILLUS. 15 Grooved Ware pottery

continuance to *c.* 2245 BC (Millson et al. 2011). Needham considered that Grooved Ware might extend as late as his 'Fission Horizon', *c.* 2200 BC (Needham 2005).

Neolithic activity, including funerary activity, was attested from previous investigations from Four Crosses (Warrilow et al. 1986, 81–3). Pottery from the preceding excavations consisted of a round-bottomed deep bowl in the Mortlake style of the Peterborough Ware series. Radiocarbon determinations from deposits in association with the Mortlake bowl reflect the Middle Neolithic (later 4th millennium) focus for Peterborough Wares, and suggest that the Grooved Ware described here related to a separate and later phase of activity. A similar sequence of Middle Neolithic burial succeeded by a 'Grooved Ware settlement' was evidenced at Trelystan, 17 km to the south. There a minimum of nine vessels, also in the Durrington Walls style, were

recovered in association with a sub-rectangular structure (Britnell 1982). Locally, Grooved Ware is also known in the area of Welshpool, Powys (Gibson 1994, 171–5).

The size and form of Grooved Ware vessels would have made them suitable for storage or other utilitarian functions. The vessel from pit 2548 at Four Crosses, in common with vessels in the Trelystan group (Britnell 1982, 163–4), exhibits evidence for its use as a cooking vessel as thick exterior sooting.

An unstratified sherd in grogged fabric ?EP GROG is suggested as dating between the Late Neolithic and earlier Bronze Age. This sherd is undecorated and identification is based on the fabric and characteristics of firing alone.

#### *Early Prehistoric Fabrics*

##### GW GROG

Grooved Ware fabric: patchy light brown/grey-brown surfaces with dark grey core. Medium-hard, smooth and with finely irregular fracture. Common self-coloured and well-sorted (1–2 mm) sub-rounded grog.

##### ?EP GROG

Miscellaneous earlier prehistoric grog-tempered: buff-coloured exterior surface with grey core and interior. Soft with smooth feel irregular fracture. Common self-coloured and well-sorted (0.5–1 mm) grog; sparse sub-rounded yellow-brown clay pellet (1–2 mm); sparse sub-angular quartz (1 mm).

Illustration catalogue description (Illus. 15): Pit 2548. Grooved Ware vessel in Durrington Walls style. Rim is internally bevelled with double groove. The upper part (rim zone) is separated from the body by a horizontal raised cordon. Further, diagonal, cordons demarcate panels of incised in-fill. The body zone is divided by vertical cordons into panels of alternating broad and narrower width, filled with incised diagonal lines.

#### ROMAN AND LATER

Pottery of Roman date amounted to thirty sherds, weighing 496 g. This small group was associated primarily with ditches forming the Romano-British field system. The majority was recovered by hand during the 2004–6 excavations, with additional small quantities (four sherds) recovered during the preceding evaluation (Marches Archaeology 2003) and identified by Jeremy Evans.

The condition of the Roman pottery is typically very poor. Surface deterioration is very marked for the majority of the Severn Valley-type wares, resulting in powdery surfaces. Most represented material occurs as small body sherds. A mean sherd weight, which at 16.5 g is moderately high for a Roman assemblage, is skewed by the small size of the group and presence of a large rim sherd weighing 202 g from ditch fill 2052 from Enclosure 1.

Almost all material is local in origin, comprising Severn Valley-type wares and related coarse oxidized wares (Table 2). Regional imports are restricted to single sherds in Malvernian-type rock-tempered ware, Oxfordshire whiteware mortaria and Dorset Black-Burnished ware (the latter noted only from the evaluation). The small size and



TABLE 2 Roman pottery summary quantities by fabric

FABRIC CODE	DESCRIPTION	COUNT	WEIGHT	VESSEL	RIM	EVES
LOC GREY	Misc. local greyware	1	1	1	-	-
MALV RE A†	Malvernian Group A reduced ware	3	13	1	-	-
OXF WH†	Oxfordshire white ware mortaria	1	21	1		.04
LOC OX	Sandy oxidized ware	7	87	4		.04
SVW OX†	Severn Valley ware	18	374	14		.27
<b>Total</b>		<b>30</b>	<b>496</b>	<b>21</b>		<b>0.35</b>

† indicates National Roman Fabric Reference Collection codes (Tomber and Dore 1998)

restricted character of this group limits its worth for dating or as an indicator of site function and status. Two examples of a wide-mouthed jar (Webster's type C; 1976, 25–7) in Severn Valley ware, and a flat-rim dish or bowl in coarser oxidized fabric were the only identifiable forms. The Roman group provides only broad dating, between the later first and fourth centuries AD. An unstratified and very abraded Oxford whiteware mortarium sherd probably dates to the third or fourth centuries AD. The Malvernian sherd, from fill 2063 from the curvilinear ditches, probably dates to the earlier Roman period. This small sherd is handmade and features burnished lattice decoration seen with Malvernian coarseware types and imitates Dorset Black-Burnished ware dishes and jars (Peacock 1967). The Dorset Black-Burnished ware noted from ditch E922 from the evaluation, very likely dates after *c.* AD 120.

#### MEDIEVAL, POST-MEDIEVAL AND MODERN

A total of 102 sherds (620 g) recovered from the excavation and a further six sherds from the evaluation (examined by Stephanie Rátkai) span the fifteenth/sixteenth centuries to the nineteenth century; the majority date to the eighteenth and nineteenth centuries.

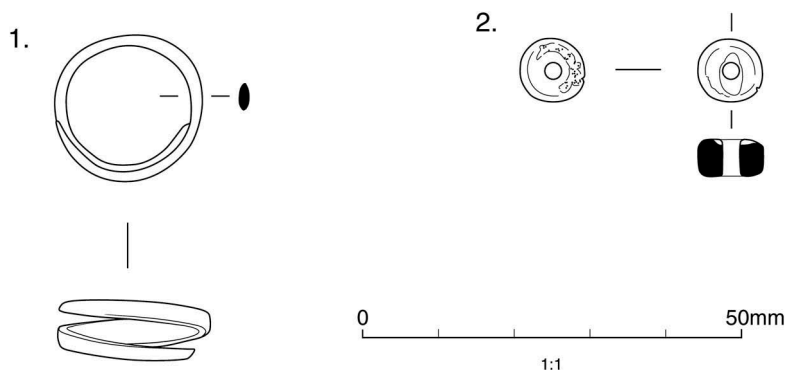
#### FINGER RING

*by* ED MCSLOY (ILLUS. 16, 1)

The copper-alloy ring was recovered from within grave 2596, internal to Barrow 15. No bone survived from the grave, and from its position it is unclear whether this object was worn. X-ray fluorescence analysis was undertaken by David Dungworth to compare the metal composition against the regional signature based on detectable impurities. The full results of this analysis are contained within the archive.

The X-ray fluorescence analysis shows the metal composition to be leaded bronze, with impurities of arsenic, silver and a little antimony. Although lacking in detectable zinc, the other measurable impurities match the regional impurity signature for Iron Age artefacts, and point to a local origin.

A number of parallels can be cited for the ring, from Iron Age and into Early Roman contexts. Examples from western Britain include the large Middle and Late Iron Age group from Glastonbury Lake Village (Bulleid and Gray 1917, 209–10), and a single find from a



ILLUS. 16 Copper-alloy finger ring and amber bead

Middle or Late Iron Age pit at Ryall, Quarry, Worcestershire (McSloy 2008, 57). There are few recorded instances of finger rings of this type from burials, more than likely due to the overall scarcity of Iron Age funerary deposits. One possible example is in association with a crouched burial, probably of Iron Age date, from Henbury, Bristol (McSloy 2006, 34).

There is some evidence for the re-emergence of coiled ring forms in the early Anglo-Saxon period (MacGregor and Bolick 1993, 169–71), although more commonly in silver. An Iron Age date in this instance is supported by the metal composition which matches the copper-smelting evidence from Four Crosses.

Catalogue description (Illus. 16, 1): Grave 2596. Coil ring. Copper alloy. Complete coiled finger-ring from undecorated strip with tapering terminals. Single, partial coil (terminals overlap to a depth approximate to one third of the rings diameter). Internal diameter 17 mm. Width of strip 3.6 mm.

### AMBER BEAD

by ED. MCSLOY (ILLUS. 16, 2)

The bead was retrieved during sorting of the coarse fraction of the processed soil sample taken from the fill of grave 1327, and was the sole find from the deposit. As with most British amber, a source in the Baltic is likely. As an isolated find, it is difficult to date. It conforms to Beck and Shennan's Group 1 'flat and thin disk beads', defined as having a diameter to thickness ratio between 2:10 and 5:10 of diameter (Beck and Shennan 1991, 53). The rounded profile characterizes it as of Class 1b (*ibid.*). Neither the broader or more tightly-defined classifications are chronologically diagnostic, the simple shape, not surprisingly re-occurring across the prehistoric period divisions. Incidence of Class 1 beads is highest by far in the Early Bronze Age however (*ibid.*, 54, tables 4.3–4.4), with 27 of 41 dated occurrences from this period. This, together with the character and dating of the site, makes equivalent dating more likely, though far from certain.

Class 1 beads with Early Bronze Age associations are primarily distributed in southern England and mostly from funerary contexts. None of this date are known from Wales, with the closest cluster being the southern Pennines/Derbyshire (*ibid.*, 72, fig. 6.1).

Finds of prehistoric amber from Wales are, in general, rare (Beck and Shennan (1991, 192–4) list nine find-spots). The sole Welsh occurrence of Class 1 beads, is as part of a necklace of Late Bronze Age date from Llangwyllog, Gwynedd (*ibid.*, 193, fig. 11.23.2).

Catalogue description (*Illus. 16, 2*): Grave 1327 (fill 1328). Amber bead. Cylindrical/disc-shaped with rounded rectangular section. Beck and Shennan Class 1b (Beck and Shennan 1991, 52–3, fig. 4.1). One face of this bead features an elongated depression – it is unclear whether this is a vestige of the original amber piece or results from wear. Diameter 9 mm; thickness 4.5 mm; diameter of perforation 3 mm.

## METALLURGY

by TIM YOUNG

A full report on the metallurgical analysis is available in the archive. This report represents a summary of the results. The site produced evidence for copper smelting during the Middle Iron Age (fourth–second centuries BC) from fifteen small cut features which occur in three groups, thirteen of which were probably furnaces. Two furnaces (2034 and 2071) form the north–west group, ten furnaces (2210, 2219, 2242, 2252, 2272, 2281, 2290, 2297, 2313 and 2373) make up the central group, together with an associated pit (2257); and a single furnace (1796) and associated pit (1766) comprise the south–east group. One furnace from the north–west group (2034) and one from the central group (2242) have fills which have both given calibrated radiocarbon dates from the fourth to second centuries BC (*Table 1*).

The furnaces were heavily truncated and their original form uncertain, but they terminated in a basal pit of diameter 0.23 m to 0.36 m and, in at least one example (2242), were blown through a pre-fired ceramic block tuyère (*Illus. 17*). This tuyère had a rectangular lower part, 120 mm wide, with a flat base. The top is not preserved within the main group of conjoining sherds, but further tuyère fragments suggest a curved upper section. It is not known how many tuyères might have been employed in each furnace. Despite the presence of oxidized-fired clays which appear to be associated with the fastening of the tuyères into the structure, there is little clear indication of how they were positioned or oriented, although the downward angle of the bore in the preserved specimen would be appropriate for a tuyère block mounted horizontally. The wedge-shaped profile of some oxidized clay fragments might indicate that the furnace profile widened above the tuyère.

Away from the tuyère the furnace lining was entirely reduced-fired. The lining was clearly a carefully placed layer covering the cut face of the gravelly substrate. In some examples this lining was of fine, dense clay, but in most examples it was very quartz-rich, mostly of silt grade, but ranging up into medium sand. These silt-rich linings were highly vesicular (porous) from bloating, with vesicle size increasing towards the glassy surface of the lining. The gas forming the vesicles may have been from the use of either an organic-rich, or wet, lining material. Metal contamination of the lining was typically limited to a superficial layer 1 to 2 mm deep. Much of the vitrified furnace lining was fragmented and *ex situ*, suggesting that the lining may have been removed and crushed at the end of a smelt to extract any copper prills (solidified liquid globules) that may have sunk to the furnace floor. These features suggest that the lining was vitrified during



ILLUS. 17 Block tuyère

a single use and the high vesicularity may have been deliberately induced in order to ease extraction of entrained copper prills. No fragments of fired clay showed an external surface, most graded into unfired clay or showed a contact with more gravelly material, suggesting that most, if not all, of the fired clay was from the lining of the pit, rather than from a superstructure.

The fills of the furnaces yielded a small quantity of ore, which indicates an oxidized zone source, with four main facies of ore material observed. The first facies comprises an iron oxide-rich (probably goethite) material with reticulate veining. Analysis indicates that this facies contains up to about 4 weight% of copper and zinc. A second ore facies is rich in copper, but low in zinc. The third and most abundant ore material was a facies that has a bulk composition with approximately 35 to 40 weight% copper and 5 to 8 weight% zinc. Local voids within this structure show late-stage iron oxide deposits with up to 5 weight% arsenic. The fourth ore facies was of botryoidal rosasite, with approximately 20 weight% copper and 16 weight% zinc. The ore particles were all very small, with the largest approximately 8 mm across and many of sand grade. This material resembles what is known of the supergene mineralization on Llanymynech Hill, 3 km north-west of the site (Musson and Northover 1989).

Metallic copper occurred as small prills (small droplets and runs) (up to about 5 g) as well as microscopic inclusions in the slag and furnace lining. The small number of copper prills have a variable composition with up to 0.6 weight% zinc and numerous other impurities, but smaller blebs trapped in slag show an even wider range of compositions, with up to 5.7 weight% iron, 2.0% nickel, 1.8% zinc, 5.4% arsenic, 0.8% silver, 0.4% antimony and 14.4% lead. Although the variation shown by individual blebs would be homogenized during the smelting process, there may still have been significant variability in the product, depending on the balance of the ore types in any particular smelt.

Slag was only recovered in small quantities, with the total weight of copper and slag prills and blebs recovered from the fifteen features being approximately 880 g (compared with 6853 g of furnace lining). The slag included some rare examples of prilly flow slag, solidified during its descent through the furnace charge. The flow slag is zinc-rich, but relatively copper-poor. Slag was also recovered from sieved samples as sand-grade crushed grains. The fragmented slags include some particles of similar mineralogy to the intact flow slags, but most are dominantly glass. These glassy slags may have formed on the furnace walls. One fragment was a sinter of ore fragments, quartz-rich sediment and charcoal fragments, bound by a slag rich in zincian wustite, and probably represents a variety of materials which have accumulated on the furnace floor.

The presence of the sintered material, together with the slag and copper prills, indicates that the material being smelted was not contained within a crucible, but the reaction was taking place within the furnace, a practice that is normal for the period.

Spherical, microscopic magnetic slag particles resembling spheroidal hammer-scale were recovered from several of the furnaces. The presence of hammer-scale-like particles was noted from a variety of contexts, from Bronze Age to Roman in date. It is likely that many, if not all, of these occurrences were actually of microscopic residues from copper smelting. Such material may be intrusive in earlier contexts, while its occurrence in features of Roman date close to the Iron Age copper smelting furnaces may be due to residual material. There is no convincing, independent, evidence for iron-working on the site.

The copper prills have slightly lower zinc contents than other examples of Iron Age high-zinc copper, attributed to production in northern Powys (and probably specifically the Llanymynech) area. In other respects the metal shows many similarities, with elevated contents of the same set of impurity elements. In particular, the relatively high levels of iron, arsenic and silver bear close comparison, and the levels of lead are even higher than those previously reported.

The high zinc content of northern Powys bronzes and raw copper pieces (Musson et al. 1992; Musson and Northover 1989; Northover 1991) has created much discussion. Northover (1991 and in Musson and Northover 1989) suggested that the high zinc content of some bronze from Iron Age contexts in Wales (up to 1.25%) was due to the use of a high-zinc copper source, although he could not exclude some of the evidence from Llanymynech and elsewhere as indicating the use of brass. The present study presents compelling evidence for the use of a high-zinc ore, but relatively modest levels of zinc were present in most copper samples. The zinc contents of the slag and furnace lining were, in contrast, very high. This suggests that much of the zinc may have been

lost as vapour during smelting, so that little entered the copper metal, although much was trapped by the liquid slags. It is quite possible that variation in the zinc content of the copper smelted from these zinc-rich ores could be produced by different smelting techniques, with the open-furnace smelting at Four Crosses trapping relatively little of the zinc in the copper, whereas smelting in a closed crucible might increase the proportion incorporated into the metal.

Northover also drew attention to the use of leaded bronze in the same area, despite this being an alloy which elsewhere had passed out of use by the end of the Bronze Age, before being used again from the first century AD (Northover 1991, table 25). The present material shows a range of lead contents, with significant elevation above normal levels for a raw copper. The copper analyses from this study show an average of 2.2% lead, with one droplet as high as 14.4% lead (Table 3). This suggests that the material described in Northover's regional review may not only have a naturally high zinc content, but may similarly have a naturally high lead content, rather than being an exceptional use of lead as a deliberate alloy in bronze in Wales at this period.

A single artefact from the Four Crosses site, a finger ring, shows on qualitative analysis to be a leaded bronze, with impurities of arsenic, silver and a little antimony. This artefact is probably to be added with the list of objects with the regional impurity signature, although it did not have detectable zinc. Indeed, so far as may be determined from the analysis, it matches the observed copper composition produced at Four Crosses and may have been produced from copper smelted at this site.

The small size of the recovered ore particles prevents interpretation of the ore as mined; it is unclear to what extent the different ore facies may have been intimately mixed within the deposits and to what degree, therefore, the bulk ore would have been homogeneous in composition between batches. The variability in the

TABLE 3 Metallurgical analysis

Comparison of bulk EDS analyses of copper from the present study (in wt% element) with microprobe data from other finds of raw copper in the area (comparative data adapted from Northover 1991, table 2 – his data for cobalt, gold and bismuth are omitted because they were at levels below detection for the EDS system used in the current study). < below detection.

SAMPLE	#	FE	NI	ZN	AS	AG	SB	PB
LBD1: Llwyn Bryn-dinas	1	0.80	0.09	3.76	0.40	0.16	0.14	0.23
	2	0.79	0.11	3.37	0.38	0.11	0.07	0.06
L1: Llanymynech hillfort	1	0.04	0.11	1.02	<	0.42	0.06	0.25
	2	0.05	0.08	1.41	0.88	0.97	0.09	1.04
	3	0.05	0.06	1.03	0.11	0.22	tr	1.00
	4	<	0.07	0.11	0.64	0.43	0.03	0.41
Four Crosses – this study								
Mean value (large prills)		0.08	0.11	0.11	0.97	0.16	<	2.23
Mean value (all)		1.23	0.34	0.21	1.17	0.10	<	2.28
Maximum value (all)		3.38	2.02	0.90	4.29	0.44	<	14.37

composition of the different facies of ore recovered from the site, however, makes it possible that batches of ore might have had quite widely different compositions, particularly in terms of the copper to zinc ratio and in the content of the ferruginous material, which may have contained much of the arsenic too. This leaves open the question of the homogeneity of composition of the copper produced. The microscopic droplets observed in the present material were of widely-varying composition, but may have become homogenized during the smelting process and the accumulation of small droplets and prills into the bulk product.

In contrast to previous interpretations of the zinc-rich copper from the Welsh Iron Age, it is clear that the ore smelted at Four Crosses was not dominantly sulphidic but was from the oxidic zone (contra Musson and Northover 1989, 279 and Northover 1991, 214). The new evidence allows the furnace ('bowl hearth 21') identified by Musson and Northover (1989) at Llanymynech Hillfort to be reinterpreted as a similar structure to the furnaces at Four Crosses. The pit of this furnace was of similar size to the Four Crosses furnaces (approximately 0.40 m diameter, 0.25 m diameter at the base and 0.25 m deep), and was of a broadly similar Iron Age date (cal. 336 BC–AD 129 for the furnace and cal. 386 BC–62 BC for an associated pit).

## THE HUMAN REMAINS

by HARRIET JACKLIN (*with preliminary analysis by* TERESA GILMORE)

Six inhumations (Skeletons 1/2, 3–7) and four deposits of cremated bone (Cremations 1–4) were recovered (Tables 4 and 5).

The analysis of the inhumations and the cremations included assessment of age, sex, dentition, dental health, cranial and post-cranial metrics, non-metric traits and stature of all the skeletal material whenever possible. Pathological analysis was also undertaken. The results were recorded using a standardized recording form created by Jacklin (2005), in line with Brickley and McKinley (2004). References used during skeletal analysis include Bass (1995), Buikstra and Ubelaker (1994), Brothwell (1981) and McKinley and Roberts (1993). All fusion data within this report are based on Scheuer and Black (2000). References used during cremation analysis include: McKinley (1994), McKinley (2000a), McKinley (2000b), and McKinley and Bond (2001). Pathological literature consulted during analysis includes Aufderheide and Rodriguez-Martin (2003), Ortner (2003) and Roberts and Waldron (1995).

### INHUMATIONS (TABLE 4)

All six inhumations were very poorly preserved and were very incomplete. The poor preservation was mainly due to the acid nature of the soil. Completeness is determined on a percentage basis depending on the amount of the skeleton present for analysis. Skeletons 1/2 and 5 were the best preserved and both had between 5% and 10% of the skeleton present; these are detailed below. The remaining individuals (Skeletons 3, 4, 6 and 7) were the least well preserved and had around 5% of their skeleton present, and these are not discussed further.

TABLE 4 Summary of the inhumation burials

SKELETON NUMBER	CONTEXT TYPE	PERIOD	PRESERVATION	COMPLETENESS	AGE	SEX	ELEMENTS PRESENT
1/2	Skeleton in grave 2333 cut by and pre-dating Barrow 14	Barrow Cemetery	Poor	5-10%	45-51+	?M	L&R temporal L&R mandible Occipital R. clavicle midsection L Maxilla L. inner ear bones R. malleus & incus 7 cervical vertebra (R side only) 1 thoracic vertebra 4 molars, 2 incisors, 2 premolars, 2 canines, 6 roots
3	Skeleton in grave 2558 central to Barrow 14	Barrow Cemetery	Very poor	<5%	Adult	?	L. prox. tibia L. prox. femur R. prox. tibia R. greater trochanter. R. femoral midshaft
3	Grave fill of 2558	Barrow cemetery	Very poor	<5%	Adult	?	Long bone fragments 2 molar crowns L. sciatic notch 3 lumbar vertebrae L. parietal
5	Skeleton in grave 2613	Barrow cemetery	Poor	5-10%	21-50	?F	Occipital L temporal L mandibular condyle Skull frags

*(Continued)*



TABLE 4 (Continued)

SKELETON NUMBER	CONTEXT TYPE	PERIOD	PRESERVATION	COMPLETENESS	AGE	SEX	ELEMENTS PRESENT
6	Skeleton in grave 2639 central to Barrow 18	Barrow cemetery	Very poor	5-10%	Adult	?	Acromion process 2 thoracic vertebrae Petrous portion 21 tooth roots Long bones Maxilla Cervical vertebral frag 4-5 molar crowns, 2, 5 premolars, 2 molar roots R. distal femur R. prox. tibia R. mandible R. maxilla. R. side atlas R. temporal bone R. Sphenoid I molar I premolar <b>Comments: Calculus buccal side on maxillary teeth</b>
7	Fill of grave 2648	Iron Age pit alignment	Very poor	<5%	Adult	?	
7	Skeleton in grave 2648	Iron Age pit alignment	Very poor	5-10%	Adult	?M	
4	Skeleton in grave 2551	Romano-British inhumation cemetery	Very poor	<5%	Adult	?	L. temporal bone L. petrous portion

TABLE 5 Summary of the cremated human bone

CREMATION NUMBER	CONTEXT TYPE	PERIOD	COLOUR	TOTAL WEIGHT (c)	ELEMENTS PRESENT	AGE	SEX
1	Fill of grave 1732	Barrow cemetery	Grey	5	Not identifiable	?	?
2	Fill of grave 1763	Barrow cemetery	White/light grey	2038	Clavicle, pelvis, glenoid cavity, humerus, fibula, femur, carpals, tarsals, metacarpals, ribs, vertebrae, ulna, radius, phalanges, Radial head, hamate, mandible, occipital, femora, parietals, temporals, Radius, zygomatic bone, tarsel tooth roots, acetabulum, patellas	25+	?F
3	Fill of grave 1817	Barrow cemetery	White	3	Not identifiable	?	?
4	Pyre deposit in ditch 2028	Romano-British field system	White/light grey	124	Alveolar bone Cervical vertebra Tooth root	25+	?
	Topsoil		White/light grey	2	Cranial fragment		Adult ?

*Skeleton 1/2*

Skeleton 1/2 was orientated north-west to south-east (head to foot) and was almost completely truncated by the ring ditch of Barrow 14. The grave cut 2333 was oval in shape, possibly indicating that this was a crouched/semi-crouched burial. The bone preservation was classed as fair but fragmented, and due to truncation, less than 15% of the skeleton was available for analysis. No associated finds were recorded with the individual.

The skeleton was sexed as a 'possible male' based on the assessment of the cranium (nuchal crest, left and right mastoid process) and the mandible (mental eminence). The overall size of the individual and the robusticity of the remains were also taken into account. A definite sex estimation could not be made due to the lack of more reliable sexual indicators such as the os coxae. The age at death of the individual was estimated to be between 45 to 51+ years based on dental eruption, dental attrition and epiphyseal fusion. *Ante-mortem* tooth loss, alveolar bone re-absorption, cranial suture closure and age-related changes such as osteoarthritis were also taken into account. Stature could not be established due to the lack of complete long bones.

The upper vertebrae were affected by localized osteoarthritis and ankylosis, possibly initiated by trauma. The cervical vertebrae (C2 and C3) were completely fused at the body and right articular facets (the left was not present). Osteoarthritis affected the bodies of the cervical (C2–7) and the thoracic (T1) vertebrae. Osteoarthritis is common in both ancient and modern populations; it is primarily an age-related disorder but can also be triggered by traumatic injuries (Rogers and Waldron 1995). No other pathological or metabolic evidence of ill-health or disease was found. The dentition comprised of nine dental roots from both the maxilla and mandible. One carie was found affecting the occlusal surface of the lower right molar.

*Skeleton 5*

Skeleton 5 (grave 2613) was orientated south-west–north-east (head to foot), buried in a supine extended position and located immediately outside Barrow 20. Bone preservation was poor, and due to truncation, less than 25% of the skeleton was available for analysis. The skeleton was categorized as a 'possible female' based on the assessment of the cranium (nuchal crest, left and right mastoid process) and fragments of the pelvis (left sciatic notch). The overall size of the individual and the robusticity of the remains were also taken into account. Due to a lack of age indicators, only a broad age estimate could be given of between 21 to 50 years. This was based on the assessment of cranial suture fusion and whether any age-related changes were visible. Stature could not be established due to the lack of complete long bones. No pathological or metabolic evidence of ill-health or disease was found affecting the individual.

## CREMATIONS (TABLE 5)

Overall the preservation of the cremation burials was significantly better than the preservation of the inhumed burials. Cremation 2 was the best preserved with over two kilograms of cremated bone surviving. Cremations 1 and 3 were the least well-

preserved with less than 10 g of cremated bone surviving and are not discussed further. The pyre debris of Cremation 4 consisted of over 100 g of material present.

An adult age could be assigned to all four cremation burials, but due to the degree of fragmentation and lack of suitable parts present (i.e. pubic symphysis, auricular surface and dental attrition) an exact age could not be determined for Cremations 1 and 3. Cremation 2 was the only burial sufficiently well-preserved to attempt to diagnose sex. Only the analysis of the two largest surviving assemblages from Cremations 2 and 4 is described in detail here.

#### *Cremation 2*

Cremation 2 was dated to the Bronze Age through radiocarbon dating, and nearby Cremation 1 is assumed to be contemporary. The cremated remains weighed 1778 g and there was no duplication of skeletal parts. The surviving cremated bone represents a 'possible female' aged 25+ years old. The age at death was based on the assessment of epiphyseal fusion and the estimation of sex based on assessment of the cranial fragments, the mandible, femoral measurements, and overall size and robusticity. The majority of the identifiable skeletal elements represented within the cremation were the long bones and the cranium, which take longer to burn than other skeletal elements. The small quantity of the smaller skeletal elements such as the hands, feet and ribs is as expected, as these elements take a shorter time to reduce effectively. The colour of the cremated remains reflects the degree of oxidization (temperature) to which the bone was submitted. The majority of the cremated material within Cremation 2 assemblage reached a temperature of > *c.* 600 deg. C (full oxidization).

#### *Cremation 4*

The cremated material was recovered from a ditch and is believed to represent pyre debris. The material was not urned and no cut was found in association with the cremated remains. The bone weighed 241 g and there was no duplication of skeletal parts. The bones seem to represent an adult aged 25+ years based on epiphyseal fusion. No sex indicators were available for study and no pathology was visible.

### PLANT MACROFOSSIL REMAINS

*by* ELIZABETH PEARSON

A total of 223 bulk samples was taken for the recovery of environmental remains, and the assemblage was assessed. Samples were selected for full analysis from deposits associated with the round barrow cemetery, Iron Age copper working activity, and Roman cremation deposits. The samples were processed by flotation. The flots were collected on a 250 µm sieve and the residue retained on either a 1 mm or 500 µm mesh. This allowed for the recovery of items such as small animal bones, molluscs and seeds. The residues were fully sorted and the flots were scanned using a low power MEIJI stereo light microscope. The plant remains were identified using modern reference collections maintained by Worcestershire County Council, and a seed identification manual (Cappers et al. 2006). Nomenclature for the plant remains follows Stace 2001.

Environmental remains were generally sparsely distributed across the site. These included charred plant remains, unidentifiable bone fragments, and uncharred seed and insect remains. The uncharred seeds and insect remains are unlikely to have survived in the soil for long, as there was no evidence of waterlogging or anoxic (oxygen reduced) conditions on the site. Moreover, a similar range of uncharred plant remains are found in all phases, suggesting they are modern and intrusive. The charred plant remains recovered are detailed in Tables 6 and 7.

Environmental remains from the ring ditches of the barrow cemetery were too sparse to determine any significant difference between the sampled ring ditches (Table 6). Only occasional charred grains of emmer or spelt wheat, unidentified grass grains (*Poaceae* sp indeterminate), fragments of hazelnut shell and a lime fruit

TABLE 6 Charred plant remains from the round barrow cemetery ring-ditches

Latin name	Common name	Habitat	BARROW 11		BARROW 10		BARROW 12	
			1355	1367	1415	1476	1487	
<i>Triticum dicoccum/spelta</i> grain	emmer/spelt wheat	F			1			1
Cereal sp. indet grain (fragment)	cereal	F			2			
<i>Poaceae</i> sp indet grain	grass	AF		2				
<i>Poaceae</i> sp indet grain (small)	grass	AF						
<i>Corylus avellana</i> shell fragment	hazelnut	C						
cf. <i>Tilia</i> sp fruit	lime	C						
unidentified seed								1
unidentified root fragments			1					
unidentified cereal grain/seed fragment								
<b>Barrow 9</b>								
Latin name	Common name	Habitat	1565	1571	1593	1599	1625	
<i>Triticum dicoccum/spelta</i> grain	emmer/spelt wheat	F						
Cereal sp. indet grain (fragment)	cereal	F			+			
<i>Poaceae</i> sp. indet grain	grass	AF			1			
<i>Poaceae</i> sp. indet grain (small)	grass	AF		1				
<i>Corylus avellana</i> shell fragment	hazelnut	C			4			2
cf. <i>Tilia</i> sp. fruit	lime	C					1	
unidentified seed								
unidentified root fragments				2				
unidentified cereal grain/seed fragment			1					

A = cultivated ground, B = disturbed ground, C = woodlands/hedgerows/scrub etc., D = grasslands, meadows and heathlands and F = cultivar

TABLE 7 Charred plant remains from Iron Age and Romano-British contexts

Latin name	Common name	Habitat	IRON AGE COPPER WORKING PIT 2297		CREMATION BURIAL 4 – PYRE DEPOSIT	
			2298		2010	2011
<i>Triticum</i> sp grain	wheat	F	1			
cf. Cereal sp indet grain	cereal	F				1
<i>Festuca</i> sp.	fescue	ABD			9	41
cf. <i>Festuca</i> sp.	fescue	ABD			12	68
cf. <i>Avena</i> sp grain	oat	AF				1
Poaceae sp. indet culm node	grasses	AF				1
<i>Atriplex</i> sp.	orache	AB				1
<i>Rumex</i> sp.	dock	ABCD			39	311
cf. <i>Rumex</i> sp.	dock	ABCD				17
<i>Vicia</i> cf <i>tetrasperma</i>	smooth tare	AD				1
<i>Festuca</i> sp.	fescue	ABCD			9	41
cf. <i>Festuca</i> sp.	fescue	ABCD			12	68
<i>Poa annua</i>	annual meadow- grass	AB			21	45
unidentified seed						1
unidentified fruit fragments						1

A = cultivated ground, B = disturbed ground, C = woodlands/hedgerows/scrub etc., D = grasslands, meadows and heathlands and F = cultivar

were recorded. Free-threshing wheat was identified in the ring ditch of Barrow 12, which is uncommon in deposits of this period compared to emmer and spelt wheat, but as it is in an upper fill, may be intrusive. Spelt wheat appears to have been the main wheat crops in cultivation at this time. Occasional weed seeds were noted during assessment (Pearson 2006), which were presumably harvested and charred with the crop.

From 2298, fill of copper-working pit 2297, only one cereal grain of an unidentified wheat species was recovered (Table 7).

Samples from the Romano-British field system were generally more charcoal-rich than the earlier samples, although identifiable remains were only occasionally present. Two deposits 2010 and 2011 from Cremation 4, tipped into the north-eastern ditch of Enclosure 1, were relatively rich in identifiable charred remains (Table 7). They were dominated by charred nutlets of dock, and small grass grains which included fescue grass and annual meadow grass.

## DISCUSSION

The low level of charred cereal crop remains is not unexpected from a barrow cemetery context. Sparse remains are consistent with other ceremonial sites in the British Isles, with low levels of waste being expected, as agricultural processing is more likely to have taken place close to settlement areas. However, any scant remains recorded may represent the remains of food gifts associated with burials (van der Veen 1985). Charred plant remains were similarly sparse in a Beaker pit associated with the barrow complex at Four Crosses, excavated during 1981–85 (Milles 1986), and in two Bronze Age round barrows at Pant y Butler, Llangoedmor, Ceredigion (Caseldine and Griffiths 2013), although here hazelnut fragments were relatively more common.

At Four Crosses, emmer or spelt wheat are likely to have been the main wheat crops in cultivation, evidence of which was present in these samples. Hazelnut fragments are frequently found in deposits of this date and were probably commonly collected as part of the staple food resource. The lime fruit may derive from timber and branches burnt on fires during ceremonial (or other) activities.

Pollen evidence from Four Crosses indicates a relatively open, grassland-dominated landscape surrounding the barrow (see Head below) with no specific evidence of cereal cultivation. In Wales generally, pollen evidence shows an increase in woodland clearance only from the later Bronze Age onwards, with indications of a predominantly pastoral economy but some cultivation of cereals (Caseldine 2004). The low levels of cereal remains at Four Crosses may reflect low levels of cereal cultivation in the area, but, as is the case through much of Wales and western England, there are few comparative assemblages from both ceremonial and non-ceremonial sites on which to base a broad interpretation.

The low level of charred cereal crop waste associated with the Romano-British field system, suggests that processing of cereal crops was only undertaken on a small-scale in this area. The abundant dock nutlets and small grass grains from the cremation deposits suggest that the pyre was made on grassy or abandoned arable land, or that grassy or fast-burning material was used as tinder. Docks and grasses when dry make particularly good tinder material, so are likely components for a pyre. Similar assemblages have been recovered from other pyre deposits, such as those of Late Iron Age date found at Walton, Warwickshire (Pearson 2012); Harbury, Warwickshire (Monckton 2009) and of Bronze Age date from Barton-under-Needwood, Staffordshire (Pearson 2001; Martin 1996).

## CHARCOAL

*by* ROWENA GALE

Eight samples of charcoal were selected for full analysis from Bronze Age cremation burials, Romano-British cremation debris, and deposits of probable industrial fuel from Iron Age copper-working. Species identification was undertaken to evaluate and compare the fuel employed for cremation and industrial activities, and also to obtain environmental data.

TABLE 8 Charcoal identification

SAMPLE	CONTEXT	DESCRIPTION	ALNUS	CORYLUS	PRUNUS	QUERCUS	SAMBUC.
Round Barrow Cemetery							
56	1733	Cremation 1 Primary fill 1	-	7	-	21h, 54s	-
70	1775/ 1776	Cremation 2 Final fill	-	7	-	1h, 15s	-
71	1777/ 1778	Cremation 2 Primary fill	-	7	-	40h, 13s	-
Iron Age Copper Working Pits							
127	2243	Primary fill	8	1	2	39h/u	-
128	2245	of pit 2242,	3	1	3	28h	-
140	2314	Primary fill of pit 2313	-	-	-	78h	-
Romano-British							
103	2010	Cremation burial 4.	3	-	-	-	1
104	2011	Pyre deposit in ditch 2028	18	1	-	-	3

Key: h = heartwood; s = sapwood (diameter unknown); u= maturity undetermined (*Quercus* only)  
The number of fragments identified is indicated

The condition of the charcoal varied from firm to friable. The charcoal was too fragmented to include intact sections of roundwood. The samples 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.

The taxa identified are presented in Table 8. Classification follows that of *Flora Europaea* (Tutind et al. 1964, 80). When a genus is represented by a single species in the British flora it is named as the most likely origin of the wood, given the provenance and period, but it should be noted that it is rarely possible to name individual species from charcoal fragments, and exotic species of trees and shrubs were introduced to Britain from an early period (Godwin 1956; Mitchell 1974). The anatomical structure of the charcoal was consistent with the following taxa:

- Betulaceae. *Alnus glutinosa* (L.) Gaertner, European alder;
- Caprifoliaceae. *Sambucus nigra* L., elder;
- Corylaceae. *Corylus avellana* L., hazel;
- Fagaceae. *Quercus* sp., oak;
- Rosaceae. *Prunus spinosa* L., blackthorn.



## THE BARROW CEMETERY AND BURIALS

*Cremation 1*

Sample 56 from the primary fill (1733) of Cremation 1 consisted mostly of fast-grown oak, comprising heartwood and sapwood, with a small amount of hazel.

*Cremation 2*

In this cremation the bone had been placed in the base of the cut, which was then back-filled. It is probable that the cremation took place close by. Charcoal samples 70, the upper fill (1775/1776), and 71, the primary fill (1777/1778), of Cremation 2 were similar in species content to Cremation 1.

## IRON AGE COPPER WORKING

A large volume of charcoal, sample 140, was recovered from the primary fill (2314) of pit 2313 and was named as oak heartwood. If, as seems likely, this material resulted from metal working, the evidence implies the specific selection of oak; had the material been back-fill, a diverse range of species would be anticipated.

A further five pits in this central group which contained copper-working debris (slag and fired clay) were sampled. Charcoal from associated samples 127 and 128 from 2243, the primary fill of pit 2242, almost certainly represents fuel waste from the copper industry. Although fuel debris deposited here consisted predominantly of oak heartwood, other species included alder, hazel and blackthorn.

## ROMANO-BRITISH FIELD SYSTEM

*Cremation 4*

The remains of this cremation appear to have been deposited directly into the ditch of Enclosure 1. Although burnt bone was plentiful only a small amount of the charcoal collected was suitable for identification. Samples 103 (2010) and 104 (2011) included alder, hazel and elder.

## DISCUSSION

The methods of pyre construction at Four Crosses are unknown; evidence from Cremations 1 and 2 suggests that the pyres were built predominantly from oak large-wood. Hazel, also present in both contexts, may have been incorporated into the main framework or as kindling. In Cremation 2, the cremated bone (and charcoal) was placed in the base of the pit and it is probable that the pyre site was nearby. The close proximity of the two cremation burials and the similarity of the charcoal residues infer common cremation practices during the Bronze Age. Oak heartwood would have provided a high calorie, long-lasting heat source. In addition to the practical aspects of wood/fuel supply and associated burning qualities, it is possible that for ritual/ceremonial use such as cremations, certain tree species were considered as more auspicious or important. There is some evidence from the Bronze Age, for example, to link single species pyre construction (particularly oak, which was especially venerated

in the prehistoric period) with high status cremations (Smith 2002; Mullin 2003), and Tacitus (*Ger.* 2. 7), writing in the first century AD, referred to the Gaulish use of particular (unspecified) woods for high-status pyres.

The Romano-British cremation, on the other hand, appears to differ significantly from those of the barrow cemetery. The taxa identified consisted of shrubby species (alder, hazel and elder), with no evidence of the use of oak, although with only a small sample available the use of oak cannot be ruled out. The apparently casual deposition of the cremated bone and possible lack of substantial timber/ritual species for pyre construction could suggest a low status burial, or alternatively, a temporal change in funerary practices. The burnt remains of wooden grave goods and funeral biers placed on pyre structures may also have contributed to the charcoal content in the cremation deposit, but the use of such items at Four Crosses is unknown.

Although the melting point of copper is considerably lower than that of iron-working (for which the requisite temperature can only be achieved through the use of charcoal fuel), it is probable that the copper working dated to the Iron Age at Four Crosses also used charcoal fuel.

Fuel debris examined from the central group of pits showed differences between them. The primary fill of pit 2313 indicated the selection of oak heartwood, whereas the primary fill of pit 2242, although mainly oak, also included alder, hazel and blackthorn. It is difficult to know if these differences are meaningful, although it is feasible that the activities associated with each pit related to different aspects of copper processing and thus fuel type.

A relatively narrow range of species was identified from the cremation and copper-working samples: oak, alder, hazel, blackthorn and elder. A number of other taxa were, however, present in the landscape (identified at the assessment stage): the hawthorn/*Sorbus* group (Pomoideae), ash (*Fraxinus excelsior*), gorse (*Ulex* sp.)/broom (*Cytisus scoparius*) and willow (*Salix* sp.)/poplar (*Populus* sp.). The evidence suggests that throughout the Iron Age and Romano-British periods oak formed the dominant woodland cover, probably associated with ash and hazel. Wetland species included alder and willow and/or poplar. Open or scrubby areas would have supported species such as gorse/broom, hawthorn, blackthorn and hazel. Hawthorn and blackthorn may also have grown in hedgerows.

## POLLEN

by KATIE HEAD

Six sub-samples were taken, two from each monolith taken from the two phases of construction of Barrow 20 (*Illus.* 10) (see Wilkinson and Lewis, this article).

Pollen grains were counted, where possible, to a total of 250 land pollen grains (TLP), on a polarizing microscope at 400x magnification, and identification was aided by using the pollen reference manual by Moore et al. (1991), and the author's reference collection. Nomenclature for pollen follows Stace (2001) and Bennett (1994).

With the exception of one sample, counts of 250 TLP (total land pollen) could not be achieved due to the degraded nature of the pollen grains and their low concentrations.

## CONTEXT 3010, MONOLITH 178

The monolith was from the buried ground surface beneath the first phase barrow mound. The lower sample within this context (9–10cm) was dominated by Poaceae undiff. (grasses), making up almost 50% TLP. Other herbs were dominated by *Plantago lanceolata* (ribwort plantain) and *Scabiosa* species (scabious), while *Ranunculus acris*-type (meadow buttercup), Caryophyllaceae (e.g. fat hen), *Potentilla*-type (cinquefoil), and *Bidens*-type (bur-marigold) were in very low numbers. Trees and shrubs only made up 16% TLP, dominated by *Alnus* (alder), followed by *Corylus* (hazel). Other arboreal taxa included occasional examples of *Quercus* (oak), *Salix* (willow), and *Tilia* (lime). There were high numbers of *Polypodium* (polypody fern), and just one example of *Calluna vulgaris* (heather).

The upper sample of this context included similar taxa, but with a slight increase in the tree and shrub taxa seen in the previous sample. There was a significant fall in *Plantago lanceolata* (ribwort plantain), while other herbs were in comparable numbers to before, with the additions of *Filipendula* (meadowsweet) and *Urtica dioica* (common nettle). *Polypodium* (polypody fern) continued to be represented in high numbers although there was a slight fall in this taxon.

## CONTEXT 3005, MONOLITH 177

This monolith was taken from the turf line at the top of the secondary fill of the first phase barrow ditch, sealed by gravels of the extended second phase barrow. The lower sample, located at a depth of between 160 mm and 170 mm, contained exceptionally degraded pollen grains in very low concentrations and counts of 250 TLP were abandoned. Therefore this lower sample could not be used in the interpretation except to note that it was dominated by Poaceae undiff. (grasses).

The upper sample (9–10 cm depth) contained better preserved pollen and counts of 200 TLP were achieved. Poaceae undiff. (grasses) made up 63% TLP and so was the dominant taxon. Other herbs included *Plantago lanceolata* (ribwort plantain) and *Scabiosa* sp. (scabious) recorded in minimal numbers. Trees and shrubs contributed just 19% to the pollen sum. *Alnus* (alder) and *Corylus* (hazel) were in slightly greater values than other arboreal taxa, although *Tilia* (lime) was notable. As this latter taxon is under represented in the pollen record due to it being insect pollinated, lime would have been significant in the regional vegetation. *Polypodium* (polypody fern) was in significant numbers, and there was a single grain of *Calluna vulgaris* (heather).

## CONTEXT 5023, MONOLITH 179

This monolith was from the turf line above the primary fill in the second phase barrow ditch and sealed by gravels eroding off the second phase barrow. Counts of between 200 and 250 TLP were achieved for the upper and lower sample. The lower sample (10–11cm depth) was dominated by Poaceae undiff. (grasses) which made up 64% TLP. Other herbs were as in previous contexts, with *Plantago lanceolata* (ribwort plantain) dominant but not as significant. Unlike context 3005, however, *Scabiosa* sp (scabious) was low in values comparable to ribwort plantain. Trees and shrubs were represented by species and numbers similar to contexts 3005 and 3010, with the exception of *Tilia* (lime) which was absent. *Polypodium* (polypody fern) was also in high numbers.

The upper sample (3–4cm depth) of context 179 mainly comprised Poaceae undiff. (grasses), while trees and shrubs only contributed 10% TLP. Other herbs were as in previous samples, although there was a large increase in *Scabiosa* species (scabious), overshadowing *Plantago lanceolata* (ribwort plantain). *Polypodium* (polypody fern) was still notable but less numerous.

#### DISCUSSION

All three contexts appear to represent a substantially cleared landscape, dominated by grasses and herbs such as scabious. Clearance indicators were also present, particularly ribwort plantain. Trees and shrubs probably reflect a more regional component of the vegetation, with alder and hazel growing in wetter areas and the valley bottoms, while lime in particular would have been colonizing the drier lowland slopes. As palaeosols (see Wilkinson and Lewis, this article) then these samples appear to represent periods of stability in between the two phases of the barrow's construction. The pollen evidence from all contexts is very similar in species composition, possibly supporting the hypothesis of landscape stability. The presence of herbaceous vegetation including clearance indicators supports the idea that populations constantly used the site, and the large number of polypody ferns suggests this species was able to colonize the banks of the barrow between construction phases.

A number of Bronze Age barrows and cairns have been analysed for pollen in both the uplands and lowlands of Wales. Pollen sequences indicate that the Welsh landscape had been extensively cleared by the Bronze Age (Caseldine 1990). At the Bronze Age site of Cefn Gwernffirwd, near Rhandirmwyn in mid-Wales (Chambers 1982a), the mixed oak-hazel woodland was substantially cleared during this time, leading to an open landscape of grasses and ribwort plantain, comparable to the Four Crosses site. More recent investigations undertaken for the Prehistoric Funerary and Ritual Sites project has provided further evidence for widespread clearance activity and the development of grass and heathland on upland sites, and open grassland with secondary woodland at lower levels. In the locality of Four Crosses, evidence for grassland with some secondary woodland was indicated from the limited plant and charcoal remains from the ring ditches at Sarn-y-bryn-caled to the south of Welshpool and at Causeway Lane, near Llanymynech, whilst from Meusydd timber circles and a ring ditch Llanrhaeadr-ym-Mochnant a landscape of open grassland with some mixed woodland was indicated (Caseldine 2013, 299).

The evidence suggests the early Bronze Age Welsh uplands were characterized by the clearance of oak woodland and hazel scrub, which was replaced by *Calluna* heath (Chambers 1982b). At sites in the lowlands, following the construction of Bronze Age monuments, the landscape was newly dominated by grassland herb communities, which was the case at the Four Crosses site.

#### THE GEOARCHAEOLOGY

by KEITH WILKINSON AND HELEN LEWIS

Three 200 x 70 x 30 mm monolith samples were taken from strata buried beneath the mound of Barrow 20 (Illus. 5). The monoliths were studied to determine whether the

fine-grained units sampled in the field were 'palaeosols' and to determine the nature of the soil-forming regimes.

#### METHODOLOGY

The stratigraphy revealed in the monoliths was photographed and described using standard criteria in the University of Winchester laboratory (i.e. Tucker 1982, Jones et al. 1999, Munsell Color 2000). Sub-samples for magnetic susceptibility measurement were then taken by removing 10 mm thick by 15 mm wide slices from the left hand side of each monolith. These sub-samples were dried, homogenized and passed through a 250 µm mesh. Sediment/soil coarser than 250 µm was discarded, while finer material was used for high and low frequency magnetic susceptibility measurement using the methodology of Gale and Hoare (1991, 221–6). Two of the monoliths (177 and 178) were then passed to University College Dublin where two thin sections were made from each monolith and examined under high power microscopy.

#### RESULTS

Two distinct phases of development of the barrow have been identified; the later phase increasing the diameter of the barrow and thereby in-filling the first ditch. All parts of the barrow mound were composed of Pleistocene gravels cast up from the surrounding ring ditches A and B. These gravels were of pebble to cobble-sized sub-angular clasts in a medium sand matrix. They were decalcified. Three putative palaeosols were buried by the gravels at the following locations (Illus. 5):

- (1) Beneath the first phase barrow mound (context 3010): Monolith 178
- (2) At the top of the secondary fill of the first phase barrow ditch and sealed by gravels of the extended second phase barrow (context 3005): Monolith 177
- (3) Above the primary fill in the second phase barrow ditch and sealed by gravels eroding off the second phase barrow (context 5023): Monolith 179

Macroscopic laboratory description demonstrates that all three palaeosols have similar properties. Each comprises two sub-units, an upper consisting of a 10 YR 5/6 yellowish-brown silt/clay with occasional sub-rounded pebbles, and a lower of 10 YR 5/4 yellowish-brown silt/clay with moderate quantities of sand and a higher quantity of gravel than the overlying sub-unit. There are greater differences when the thin sections are observed microscopically. Four distinct layers were noted in Monolith 178 (context 3010):

Layer 1: *c.* 40 mm; loose reddish-brown fine crumb and intergrain microaggregate structure with frequent rounded and sub-rounded gravel (5–20 mm). In the lower 10–20 mm this is mixed with material from Layer 3.

Layer 2: 1–3mm; almost continuous layer of red clay, defining a sharp but irregular boundary between Layers 1 and 3.

Layer 3: 20–30 mm; of denser yellowish-brown crumb and sub-angular blocky structure (5–10 mm) with occasional rounded, sub-rounded and sub-angular gravel (2–10 mm, most <5 mm). Sharp wavy boundary to:

Layer 4: 50–60 mm; layer of dense reddish-brown crumb (10–15 mm) and apedal structure (composed of densely packed microaggregates), with frequent gravel as in Layer 1. This layer is physically surrounded by a zone of loose crumb and sub-angular to angular blocky aggregates (0.3–1 cm), which appears to represent the disaggregation of the sample upon sampling or drying.

Layers 1 and 4 have similar groundmasses, components and pedofeatures. There are more faunal excremental features in Layer 1 (mite excrements and crumb peds) than Layer 4. The structural differences appear to relate mainly to compaction of the lower layer, and to increased bioturbation of the upper. Otherwise they were essentially the same material, and appear to represent an oxidized lower A horizon (i.e. former near surface layer) of a brown earth soil. At the base of Layer 4 there is slightly increased packing of gravels and frequent ped and grain coatings of the main soil groundmass. These indicate disturbance.

Layer 3 is greyish-yellow clayey silt that had been leached of iron, but was nevertheless enriched with clay in-filling pedofeatures. This is unusual in that although a leached horizon I is typical of mature brown earths, such soils are usually leached of clay as well as iron. E horizons are also usually underlain by B horizons (i.e. subsoil), but Layer 3 is underlain by a further A horizon that contains relatively few illuvial features. Comparing gravel sorting in Layer 3 with Layer 4, suggests that surface-casting earthworms may have been active in this profile; Layer 3 resembles an intermediate layer within an earthworm-sorted sequence. These observations suggest that the profile was stable and undisturbed for some time. However, the absence of a well-sorted casting layer normally associated with worm action may suggest that the upper part of the soil profile had been truncated.

There is a clear turf line visible in Monolith 177 (Layer 6), comprising dark reddish-brown sub-angular blocky and crumb peds (10–12 mm size), and separating a 10–20 mm thick reddish-brown layer with fine gravels (<8 mm) (Layer 5), from a 30–40 mm thick layer of yellowish-brown soil with apedal crack and channel structure (Layer 7). The latter includes a stone line of gravels (3–17 mm size) in its upper 10 mm, but is otherwise stone-free. The boundary between Layers 6 and 7 is also marked by columnar structure over the first 10–20 mm of upper Layer 7; this is indicative of a clay-rich soil. The lowermost 30–40 mm of the profile (Layer 8) is composed of yellowish-brown silt/clay with moderate to frequent rounded and angular gravels up to 20 mm in size.

Layer 5 comprises gravels in lower A horizon soil material, similar to that described for monolith 178 Layer 1. Layer 6 is a thin upper A horizon, with moderate organic staining and indicators of earthworm activity. It appears relatively undisturbed, and has only a few textural pedofeatures, probably leached from overlying layers. The stone line underneath this layer, in the top of Layer 7, could represent an earthworm sorting feature. Layer 7 is a weakly developed B horizon, with short cross-striated clay zones. With depth, this horizon shows increasing occurrence of clay and silty clay coatings. The B horizon continues into Layer 8, which is distinguished by its gravel inclusions and some mixing with reddish-brown lower A horizon aggregates.

*Glossary*

**Ped:** the solid structural unit of a soil i.e a soil particle or granule. Pore space or void separates them. There are 5 classes (granular, blocky, platy, prismatic and columnar) plus structureless.

**Apedal:** a soil without peds and therefore structureless, possibly because it is wet.

**Palaeosol:** or fossil soil is a soil that formed on a landscape of the past. They will usually be buried.

Terms specific to micro morphological analysis of soil thin sections:

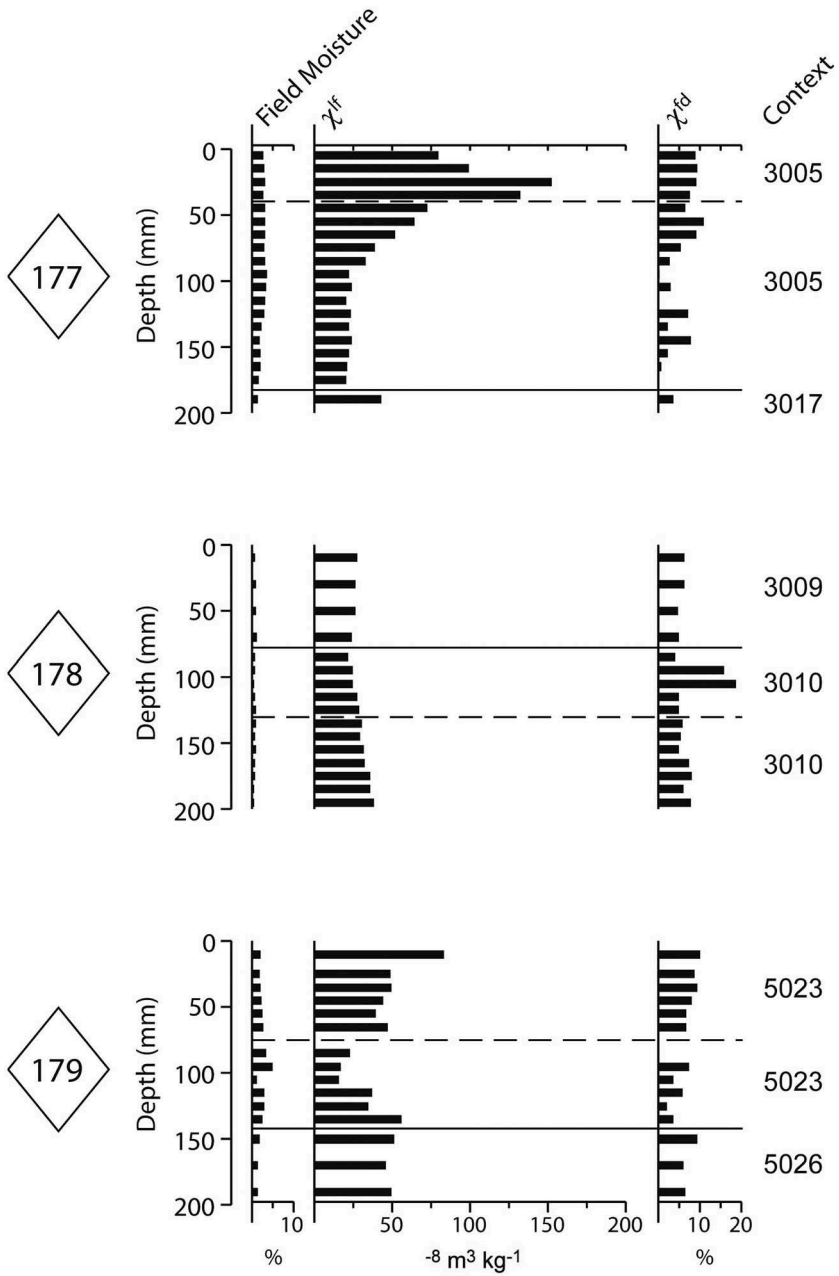
**Pedofeatures:** discrete fabric units present in soil materials recognizable from an adjacent material by difference in concentration of a component or components.

**Groundmass:** the finer grained mass of material in which larger grained clasts are embedded i.e. the material left after the identification of the pedofeatures.

**Intergrain microaggregate:** Microstructures in which the solid units are a mixture of single particles (sand grains) and small aggregates of finer material, all separated by and defining complex packing voids. Or more simply: almost entirely sand-sized grains between which are micro aggregates of fine material.

## MAGNETIC SUSCEPTIBILITY

Enough sub-samples were examined from reworked Pleistocene gravels to establish the magnetic properties of the parent material of the putative palaeosols. Low frequency magnetic susceptibility ( $\chi^{\text{lf}}$ ) in these deposits varies between 25 and  $50^{-8} \text{ m}^3 \text{ kg}^{-1}$ , while the percentage difference between low and high frequency magnetic susceptibility ( $\chi^{\text{fd}}$ ) is between 3% and 10%. In a mature soil higher  $\chi^{\text{f}}$  measurements would be expected in the B horizon than the A as a result of translocation of iron-rich clays from the overlying A horizon, however the magnetic properties of contexts (3010) (monolith 178) and (5023) (monolith 179) vary little from that of the worked parent material, suggesting that both soils are immature. In contrast the low frequency magnetic susceptibility of context (3005) (monolith 177) exceeds  $150^{-8} \text{ m}^3 \text{ kg}^{-1}$  at 20–30 mm depth and then rapidly tails off to  $\approx 30^{-8} \text{ m}^3 \text{ kg}^{-1}$  at 90–100 mm (Illus. 18). It is well known that pedogenesis leads to enhanced magnetic susceptibility in soils (Maher 1986), but this usually occurs in the B horizon, which is not present in the monolith sample. Thus a cause other than soil formation has to be sought for the enhanced  $\chi^{\text{lf}}$  readings. Given the magnitude of the readings the most likely mechanism is heat (Le Borgne 1960). It is therefore likely that some form of burning took place on the surface of context (3005) before it was sealed by the expanded barrow. Gradually diminishing  $\chi^{\text{f}}$  measurements from the peak at 25 mm depth suggest that the burning occurred at that level, impacted on underlying strata, while mixing (i.e. by earthworms or human disturbance) also transported heated particles upwards. Unfortunately the magnetic data alone cannot determine what form this heating took.



ILLUS. 18 Magnetic susceptibility of the palaeosols below the mound of Barrow 20



## DISCUSSION

Field and laboratory description suggest that contexts (3005), (3010) and (5023) (monoliths 177–179) are palaeosols that were buried by various stages of barrow construction. Characteristic soil forming features such as the developed horizons and clay translocation were noted, although features of mature soils are only present in context (3005). The evidence of magnetic susceptibility measurements in which readings in the A, and in the case of Monolith 178, B horizons are very similar to that of the parent material, suggest that all three soils are relatively immature.

The buried soil profile sampled in Monolith 178 has a complex developmental history. The maturity of the brown earth soil is difficult to assess given the contradictory information obtained from the thin section. Nevertheless it is clear that prior to the construction of the barrow the soil was stable and earthworms were active in the A horizon. However, the soil profile is likely to have been truncated, possibly as a result of deturfing for barrow construction. In the case of Monolith 177, the turf layer (A horizon) is thin, but the B horizon is relatively thick. The latter has been constructed from illuviated clay, suggesting a relatively long period of stability. These data would appear to conflict with observations made of the A horizon, perhaps suggesting that the latter has been truncated.

Taken together the macro and microscopic data suggest that construction of the original barrow took place on a stable land surface, but that this stability was a relatively recent phenomenon. It is clear from the micromorphological evidence that the pre-barrow soil had been disturbed and perhaps that a previous soil of greater maturity had been removed decades or hundreds of years before barrow construction. Indeed the pollen evidence (see Head above) suggests that arable or grassland conditions predominated in the local environment, suggesting that early Holocene forests had been removed long before barrow construction. Low frequency magnetic measurements of context 3005 (Monolith 177) suggest that burning took place while the A horizons of this palaeosol was developing. This burning event is likely to be a result of cultural processes and most probably an effort to remove vegetation prior to the enlargement of the barrow.

#### DISCUSSION: THE BARROW CEMETERY IN ITS WIDER CONTEXT

*by* TIMOTHY DARVILL

The 2004–6 excavations and surveys provide a wealth of additional detail to expand understandings of the important round barrow cemetery at Four Crosses, one of a growing number of such cemeteries in Wales (Lynch 1993, 144). Aerial photography in the 1960s and '70s recognized about ten ring ditches and barrow mounds, but this increased to 16 as excavations between 1981 and 1985 showed that not all extant ring ditches and mounds were visible as cropmarks (Warrilow et al. 1986). The known extent of the cemetery has increased through the work in 2004–6 reported here, and on the Four Crosses Bypass in 2010 (Grant 2011), so that twenty-seven monumental components are now known, including five certain and three probable round barrows circumscribed by ring ditches together with sixteen further ring ditches that in some

cases might also have once enclosed barrows. Further important additions comprise pits and graves between the monuments. Other structures and features no doubt await discovery. Over the same period, work at barrow cemeteries across the British Isles and beyond has emphasized their longevity, the importance of considering their landscape settings, and exploring their wider cultural connections (Last 2007; Leary et al. 2010; Anon. 2013; Darvill 2013, 144; Fontijn et al. 2013). Large-scale excavations have also revealed the widespread presence of flat graves and other features between and around the main barrows, as well as open areas for ceremony and ritual (e.g. Barclay and Halpin 1999; Harding and Healy 2007; Bourgeois 2013). As a result, there is increasing interest in the role of barrow cemeteries as places for the living: arenas for the performance of a wide range of ceremonies and festivals that mythologized and dramatized prevailing world views (Garwood 2007a). Exactly what such cosmologies comprised is hard to visualize now, but one scheme that has been proposed for the European Bronze Age sees a universe in which the gods inhabited three levels — the sky, the earth, and the waters under the earth — conceived as circular planes that wheel eternally around an *axis mundi* (Kaul 1998; 2004; Kristiansen and Larsson 2005, 357). The living inhabited only the middle plane, while the dead inhabited the underworld that was accessible through liminal zones and disjunctions at the intersections of earth, sky, and water; it is here that barrow cemeteries and the activities that took place at them were crucial for Bronze Age communities.

The Four Crosses barrow cemetery extends over an area approximately 1600 m east to west, by 500 m north to south. Appendix A summarizes what is known of the barrows identified to date; *Illus. 20* shows the distribution of component mounds and ring ditches in relation to local topography. It is essentially a linear cemetery (Woodward 2000, 78–9) with the barrows arranged along a rather ragged south-west to north-east axis centred on Barrow 5. Whether this axis should be seen as a single line of barrows or as two lines flanking a ceremonial pathway or avenue as suggested for Barrow Hills, Oxfordshire (Barclay and Halpin 1999, fig. 9.8), is impossible to say in the current state of knowledge. Present evidence does suggest two further lines of barrows extending southwards from the main axis, one at either end, with the 2004–6 excavations focused on the south-western branch.

Like many linear cemeteries there is a close association with water. Four Crosses occupies a low gravel terrace overlooking the Afon Vyrnwy, which here flows south-west to north-east in a meandering channel roughly parallel with the axis of the cemetery about 500 m to the south of the river (*Illus. 20* and *21, A*). The exact course of the river in prehistoric times is not known, but the coincidence between the movement of water and the main axis of the cemetery can perhaps be linked symbolically to the passage of the sun from west to east through the watery underworld during the hours of darkness (Kaul 1998; Darvill 2010, 226). It is a pattern seen at round barrow cemeteries elsewhere in eastern Wales (Gibson 2002) and the mid-west of England (e.g. Garwood 2007b). About 2 km to the north-west of Four Crosses, on the northern glaciofluvial terraces of the Afon Vyrnwy, is the Llanymynech barrow cemetery comprising at least seven barrows/ring ditches over a distance of about 1200 m parallel to the Afon Vyrnwy (*Illus. 21, B*). Like Four Crosses it has a complicated pattern of investigation. A small ring ditch about 12 m across at Elmtree Farm near the eastern end

of the cemetery was partially excavated in 1992 (Gibson 1992) and fully excavated in 2007, but no central burial was found. A group of cremation burials lay to the west, some in stone cists, with associated Food Vessel and Collared Urn pottery and radiocarbon dates in the early second millennium BC (Colls and Halsted 2009). A third ring ditch at Causeway Lane, much larger than the others at about 57 m across, was sampled in 2010 as part of a wider study of similar sites in Wales. Radiocarbon dates on charcoal from the primary ditch fills of 3950–3800 cal. BC (SUERC-43274:  $5066 \pm 29$  BP) and 3340–3030 cal. BC (SUERC-43275:  $4483 \pm 29$  BP) suggest it was constructed in the later fourth millennium BC but no evidence of burials or the use of the site was recovered (Britnell and Jones 2012, 169–73). The linear ring ditch cemetery at Banhadla, Llangedwyn, in the Tanat Valley has many similarities to the arrangement at Four Crosses (Gibson 2002, fig. 9). To the south at Sarn-y-bryn-caled/Dyffryn Lane, Powys, a linear ceremonial complex runs parallel to the River Severn, here flowing south-west to north-east (Gibson 1994; 2010), and at Bromfield, Shropshire (Illus. 22, C), a linear cemetery of about twenty barrows lies parallel to the north-west to south-east-flowing Rivers Onny and Teme (Stanford 1982, fig. 2; Garwood 2007b, fig. 10.6). Further afield parallels include an extended cemetery beside the River Nene at Raunds, Northamptonshire (Harding and Healy 2007, fig. 1.4) and beside the Great Ouse at Roxton, Bedfordshire (Taylor and Woodward 1985) and Over, Cambridgeshire (Garrow et al. 2014). Unusually, the cemetery at Barrow Hills, Oxfordshire, parallels, albeit at a distance of about 2 km, a section of the River Thames that flows east to west (therefore not mirroring the passage of the sun) rather than on its dominant course west to east (Barclay and Halpin 1999, figs. 1.1 and 1.3; Illus. 22, D).

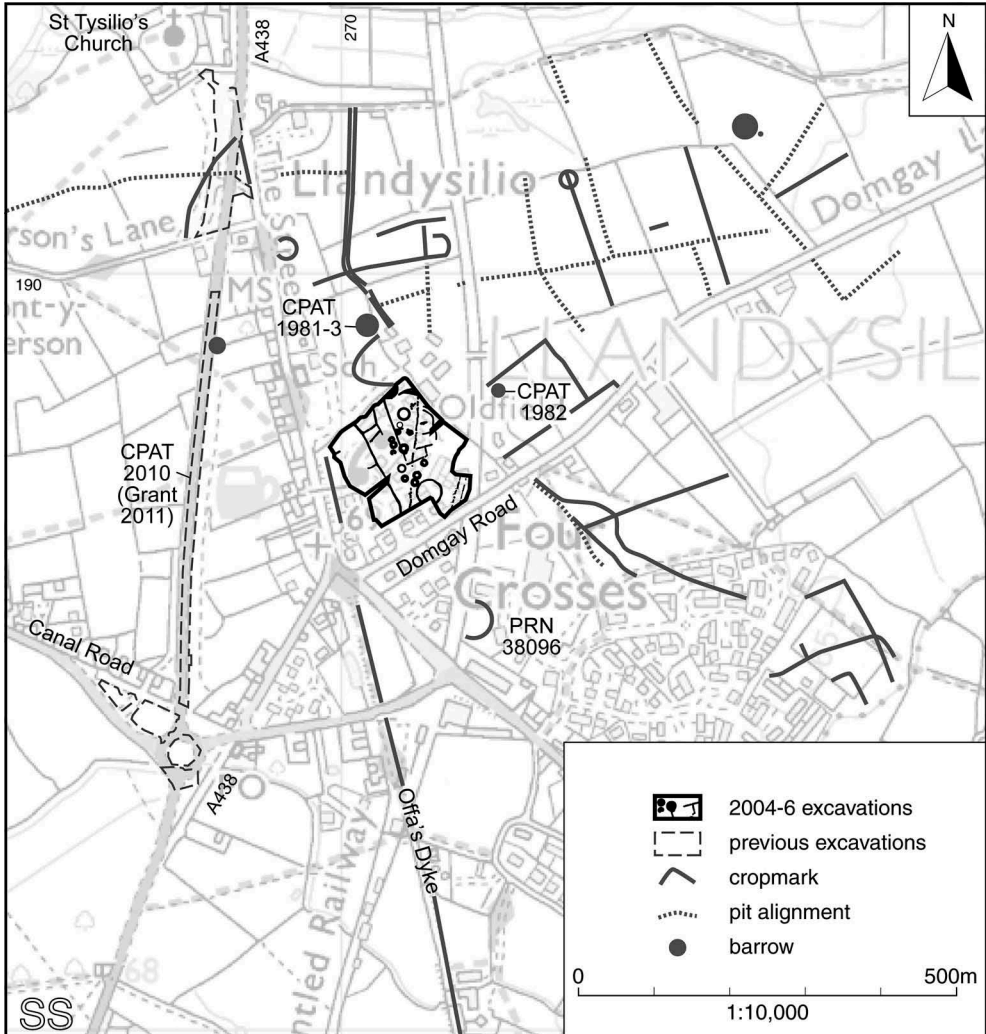
At Four Crosses people were clearly using the terrace of the Afon Vymwy at an early date. The presence of worked Mesolithic flints combined with seemingly residual charcoal dated to 6360–5920 cal. BC (CAR-849:  $7250 \pm 90$  BP) and 5980–5720 cal. BC (CAR-850:  $6990 \pm 80$  BP) from Barrows 2 and 8 respectively imply a focused episode, although what kind of activity was involved can only be guessed. The foundation of the barrow cemetery came several millennia later and may have involved the sub-circular pit 2548 containing Grooved Ware in what would become the south-western corner of the cemetery. It was in just such a position that a series of intercutting pits containing Grooved Ware pottery were found at Barrow Hills, Oxfordshire (Barclay and Halpin 1999, 302), and at Winterbourne Stoke Crossroads, Wiltshire, where a long barrow occupies this position (Grinsell 1978, 18). Indeed, Ros Cleal (1999, 6) has explored the seemingly widespread connection between features containing Grooved Ware and round barrows to conclude that there was a preference for putting Grooved Ware in the ground at sites subsequently used for the construction of barrows. How exactly knowledge of these deposits was perpetuated and then used to inform later activity remains to be explained.

The first barrow — the ‘*Founder’s Barrow*’ — at Four Crosses appears to be Barrow 5, a Neolithic round barrow well outside of the main distribution of recorded examples in Britain (Kinnes 1979, fig. 4.2). Within the cemetery it stands 550 m west of what would later become the main focus of activity (see Illus. 20). Burials placed in the central shaft-grave can be loosely dated to 3340–2910 cal. BC (CAR-670:  $4440 \pm 70$  BP), which accords well with the pottery from Phase 1 of the barrow (Warrilow et al. 1986, 63–8).

As with other round barrows of the late fourth and early third millennia BC, the cemetery element of the site involved the successive reuse of a single mound. Culturally, this monument connects with the round barrows of central and eastern England. Of rather similar date is Duggleby Howe, North Yorkshire, whose primary burial (Burial K) in a rock-cut shaft 2.7 m deep was associated with fragments of decorated bowl dated to 3630–3370 cal. BC (mean of OxA-16751 (4701±32 BP) and SUERC-13938 (4675±35 BP) = 4689±24 BP), and found with nine flint flakes, and two flint cores (Kinnes et al. 1983). Other round barrows covering shaft graves include Willie Howe, North Yorkshire, with a multiple disarticulated burial within a shaft dated to around 2000 BC (Gibson and Bayliss 2009, 95–6), and Octon Wold, North Yorkshire, with two centrally placed shaft-graves both of later third millennium BC date and associated with Beaker traditions (Gibson and Bayliss 2009, 97). All these sites, and others beside, form part of a widespread tradition of earth-cut burial pits under round barrows, whose immediate origins lie eastwards across the North Sea in the Corded Ware traditions of southern Scandinavia and the North European Plain. Indeed, oxygen isotope analysis of Burial K from Duggleby Howe shows that the person was not local and may have come from as far afield as the Hebrides, western Cornwall, the Paris Basin, or Denmark (Gibson and Bayliss 2009, 73).

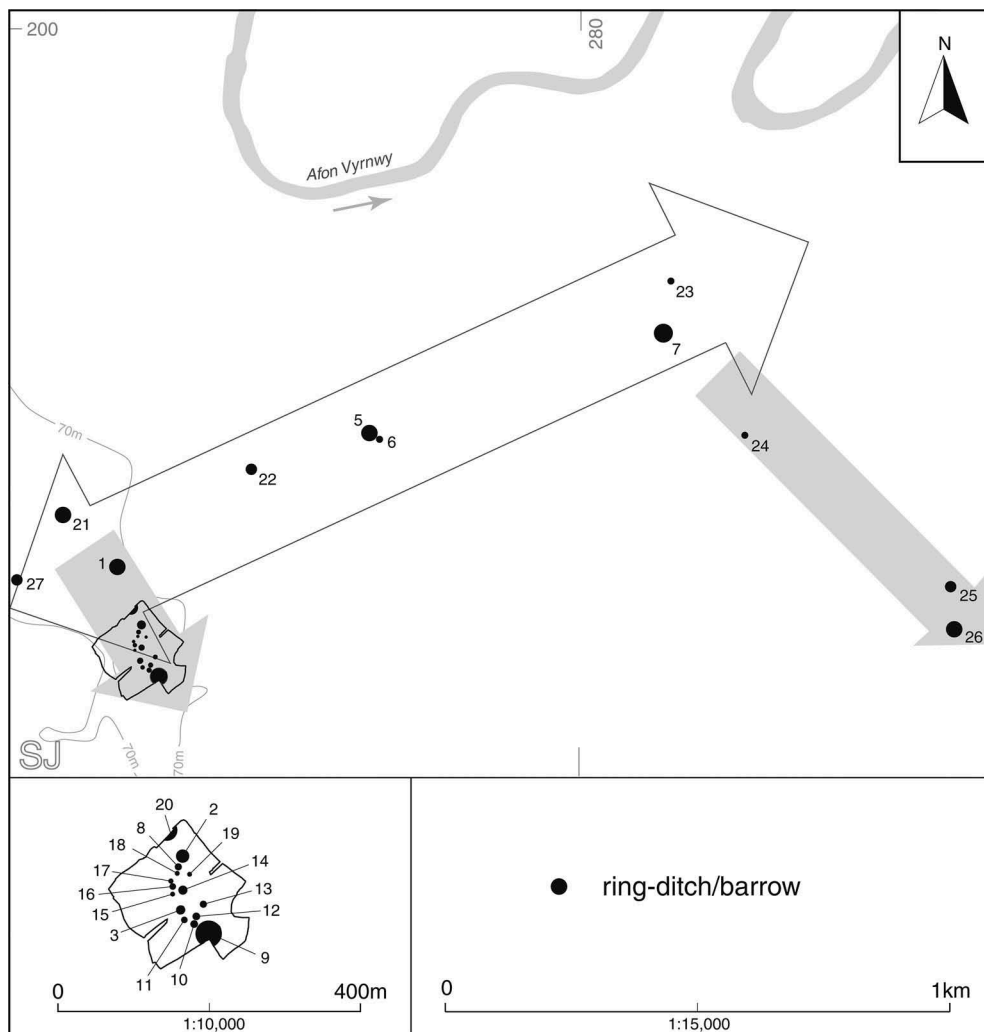
Once established, the Four Crosses cemetery became a focus of burial rituals for nearly three millennia, one of several such foci in the area (Gibson 2002; Colls and Halsted 2009). It is tempting to separate activities into period-based horizons, and archaeologically this makes sense. However, the likelihood is that the development of the site was far more fluid with episodes of heavy use separated by periods when nothing much happened. It is quite likely that a single community used the site over many generations and may have regarded it as their ancestral cemetery in a way that created a family or kindred's biography in monumental form (Last 1998). The enlargement and refurbishment of Barrow 5 in the early second millennium BC marks an important event in the history of the cemetery, and may tentatively be associated with activities in the surrounding landscape by users of Beaker pottery. The presence of a pit containing Beaker coarseware and fineware sealed below Barrow 2, and residual Beaker pottery and associated flintwork from the matrix of later mounds forming Barrows 5 (phase 3) and 7, and the ditch fills of Barrow 5 (phase 1), illustrate how widespread activity might have been at this time. Periodic visits to the site within a wider cycle of tethered mobility is a possibility (cf. Fleming 1971) and as such may represent the perpetuation of such a tradition in area well represented by the upland settlement at Trelystan, Powys, that was intermittently frequented by a Grooved Ware-using community in the early third millennium cal. BC (Britnell 1982).

An important change was the shift from using Barrow 5 as the focus for successive burials with associated elaborations of the mound (i.e. a cemetery mound), to a pattern of creating new barrows and flat graves as different needs arose (i.e. a cemetery of barrows). Current dating evidence suggests that from Barrow 5 as an established starting point, strings of mounds developed south-westwards towards the recently discovered Barrow 27 (Grant 2011; Illus 19 and 20) and northeastwards towards Barrow 7 broadly mimicking the course of the Afon Vyrnwy up-stream and down (Illus. 20). Such a scheme, in which one or more nodal barrows stand at the physical and temporal head of



ILLUS. 19 The 2004–6 excavations, other sites and cropmarks at Four Crosses (after Marches Archaeology 2003)

incrementally extended lines of barrows accords well with the way that barrow cemeteries can be seen to have developed elsewhere in Britain (Mizoguchi 1992; Garwood 2007a, 43). An exception to this trend is the Winterbourne Stoke cemetery where one sequence of barrows construction appears to have headed towards, rather than away from the earlier long barrow (Bowden et al. 2015, 61–2). To what extent different kinds of barrow are represented at Four Crosses is hard to gauge because preservation is poor, but there is clearly much variety in the size of the mounds and it is tempting to see the presence of fancy barrows (small barrows with a wide berm



ILLUS. 20 Four Crosses linear barrow cemetery in relation to the Afon Vyrnwy with arrows indicating the principal axis and developmental trends. (after: Warrilow et al. 1986, fig. 1 with additions)

between the mound and surrounding ditch) (?Barrows 1 and 7) alongside the more ubiquitous bowl barrows.

Through the first half of the second millennium BC the Four Crosses cemetery was probably at its most monumental. Barrow 27 within a ring ditch some 23 m across covered a central burial pit that contained, towards the northwestern end, a deposit of cremated bone dated to 2030–1770 BC (SUERC-34217) (Grant 2011). An elaborate barrow (Barrow 1) with concentric stake-circles was built at the western end of the cemetery soon after 2000 cal. BC. At about the same time the putative founder's barrow



(Barrow 5) was extended for a third phase, now also with a stake circle bounding the enlarged mound. Such structural modification and the mimicking of different barrow types within the same cemetery is seen by Andrew Martin (2011, 69) as evidence for conflicts and tensions between the communities responsible for making, maintaining and using different mounds, in which each group is establishing and asserting their particular identity through the medium of monument architecture. However, there is also a degree of unity and common purpose expressed by the mounds and the features archaeologically represented. A central post-hole dated to 1900–1530 cal. BC (CAR-666:  $3420 \pm 65$  BP) cut the fill of the central grave-pit at Barrow 1 near the south-western end of the cemetery and a central post-hole was also recognized at Barrow 7 near the north-eastern end of the cemetery (Illus. 20). From a practical perspective, these posts might be considered as temporary markers to help lay out the barrow or the axis of the cemetery. Symbolically, conversely, they could represent in a very tangible sense the vertical dimension to underlying cosmological beliefs — the *axis mundi* — around which the barrow was built. It might be suggested that the barrow was built to represent the vault of the heavens over a now-sacred circular patch of ground into which a pit had been dug in order to physically situate the corpse within the underworld.

Unaccompanied inhumations not covered by mounds were probably present around and between barrows, but the poor survival of bone at the site makes the understanding the burial rituals very difficult. Two burials at the northeastern edge of the 2004–6 excavations, north-east of Barrow 13, were cremations, one dated to 1900–1730 cal. BC (Wk-23230:  $3486 \pm 31$  BP). Three graves (1327, 2333, 2613), all originally inhumations on the basis of the cut sizes, lay in between Barrows 9 and 20. Grave 1327 contained an amber bead, further emphasizing connections eastwards to the coastlands of the North Sea (Beck and Shennan 1991). Pottery of the early second millennium BC is rare at Four Crosses and the cultural affinities of the user-communities at this time are hard to determine. Across the Afon Vyrnwy at Llanymynech, excavations at Carreghofa Lane in 2007 also revealed four seemingly unmarked cists and a cremation pit west of a ring ditch (Colls and Halsted 2009, 74–80). Here, though, a locally made Food Vessel was found in one cist, while an inverted Collared Urn associated with cremated bone dated to 1880–1680 cal. BC (SUERC-18873:  $3450 \pm 30$  BP) was found in another. Unassociated cremated bone from another nearby cist was dated to 1920–1730 BC (Beta-239523:  $3430 \pm 40$  BP).

The penannular form of Ring Ditch A bounding the first phase of Barrow 20 suggests this was meant to be an accessible space within the developing cemetery, perhaps for ceremonies, rather than a fully enclosed inaccessible space. The presence of a pit (3025) cutting into the primary mound of Barrow 20 also suggests accessibility, and it is notable that pits were also recorded cutting the ditches of Barrows 5 (phase 3), 7, and 13. Moreover, it is possible that some of the ring ditches, perhaps Barrows 3, 9 and 11 never enclosed a barrow or a central burial at all, but instead were simply open round enclosures. The ring ditch excavated at Carreghofa Lane, Llanymynech (Colls and Halsted 2009, 71–4) defined an internal space 13 m across by means of a V-profile ditch 2.2 m wide and 1 m deep but no internal features or secure evidence of a mound was found. Such enclosures, and also mounds with no underlying burials, have been

noted at various barrow cemeteries in Britain (Lynch 1993, 44–6) and their incidence and interpretation deserves further research.

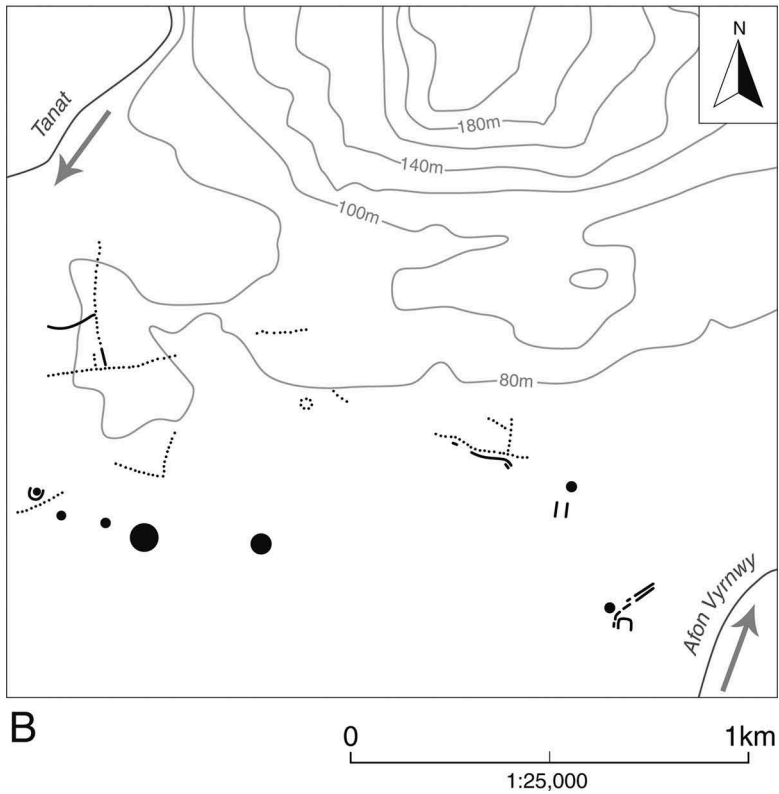
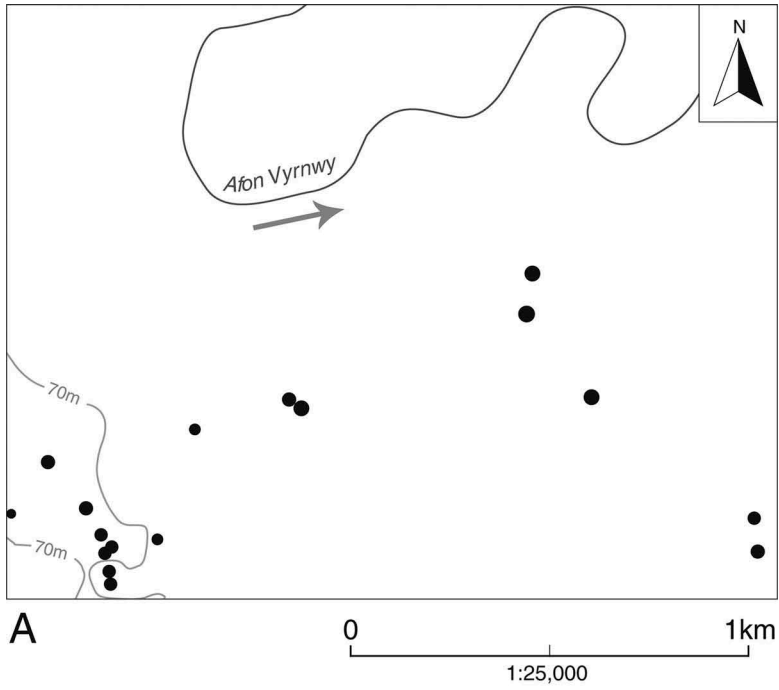
Cremation burials were probably deposited in Barrows 1, 3, 5, and 7, where pieces of broken bucket and globular urns of the local middle Bronze Age variant of Deverel-Rimbury traditions are represented in eroded mound material and topsoil. Whether these had been inserted into existing mounds or were incorporated into expanded or even newly-built mounds is not known. Erosion of the barrows has been such that none of these urns survived *in situ*, and it has to be accepted that more such burials might have been lost entirely.

Small barrows are a late feature of most excavated barrow cemeteries in Britain, and at Four Crosses take the use of the site well into the first millennium BC. At the Long Barrow Crossroads cemetery, Winterbourne Stoke, Wiltshire, a cluster of small late barrows can be seen forming a spur at right-angles to the main axis of the linear cemetery towards the north-eastern end (Bowden et al. 2015, fig. 4.8). At Four Crosses, the ten small ring ditches or barrows in a narrow band between Barrows 9 and 20 show a similar arrangement. The grave in Barrow 14 was dated to 210–40 BC (Wk-23236: 2104±32 BP), while a finger ring of Iron Age date was found in the grave central to Barrow 15. A cremation burial (Cremation 3) tentatively associated with Pit Alignment 1 and therefore loosely dated to 385–115 cal. BC (Beta-181726: 2200±50 BP) suggests the continued use of the area for burial even though the barrow cemetery as such was long abandoned (Illus. 23).

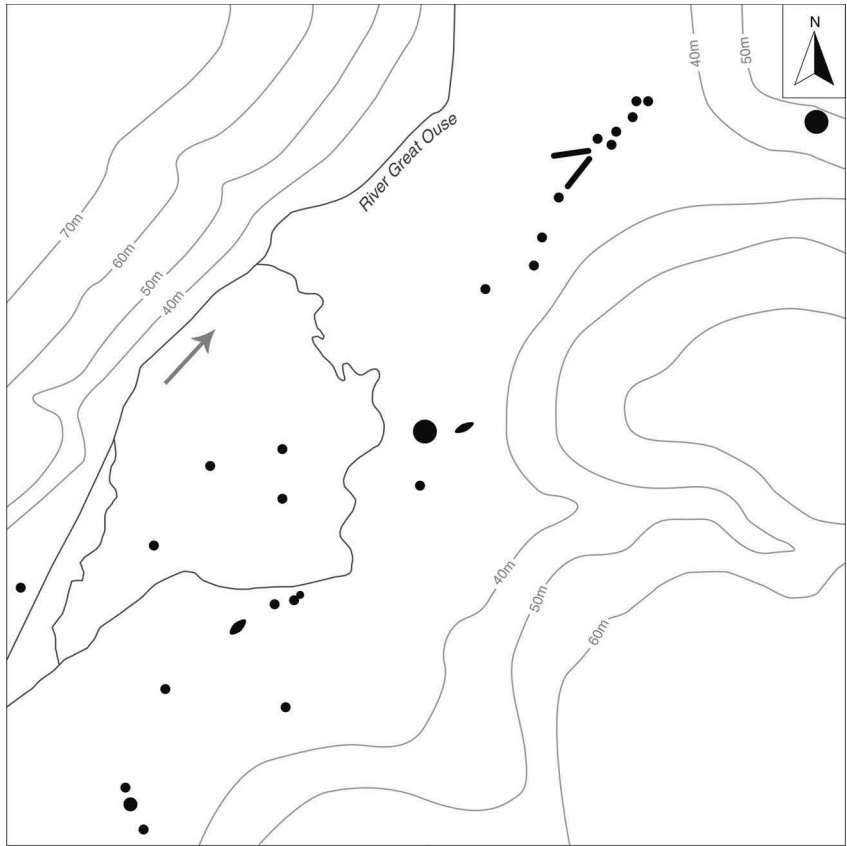
By the middle of the first millennium BC the area occupied by the barrow cemetery was hosting a range of other activities, some of them typically liminal and thus appropriately situated within an existing cemetery zone. Copper smelting dated to 370–110 cal. BC (Wk-23232: 2181±30 BP) and 260–110 cal. BC (Wk-23233: 2163±30 BP) on the basis of charcoal from Pit 2242 containing waste material from the process. Bronze-working was recognized at Barrow 2 during the excavations in 1984 (Warrilow et al. 1986, 60–1), and graves 2–6 in the same barrow may also date to the later first millennium BC. Taken together, these finds perhaps emphasize the way that, in some areas at least, metalworking in later prehistoric times was sometimes done away from settlements at remote unearthly places by itinerant communities who were considered outside mainstream society.

With the construction of the pit alignments across the site the area was divided up in a new way. Although perhaps aligned on particular barrows extant at the time of construction (Wigley 2007, 122), the main axis of the system does not really follow the south-west–north-east axis of the barrow cemetery, but rather weaves its way through the disposition of barrows and ring ditches suggesting a practical respect for extant features in the landscape even if the meanings and significance of them had been lost. The same applies to the alignment running through the south-western arm of the barrow cemetery excavated in 2004–6 and reported here. When exactly the pit alignments were constructed, and how they were used, is problematic not only in eastern Wales (Wigley 2007) but also across the British Isles (Wilson 1978). At Four Crosses, something of the extent and co-axial pattern to the alignments is known through aerial photography, while investigations of several sections provide detailed information through geophysical survey (Halsted 2007)



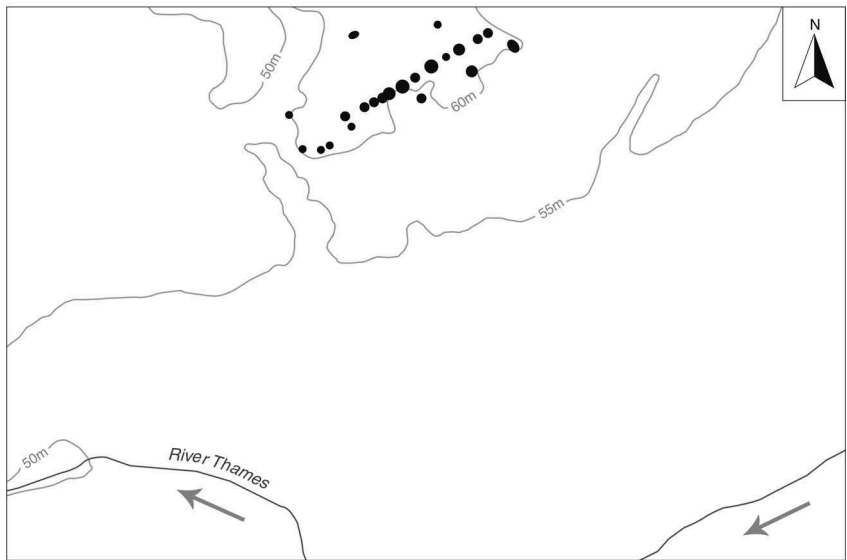


ILLUS. 21 Linear barrow cemeteries. A: Four Crosses, Powys. B: Bromfield, Shropshire. (after: A. Warrilow et al. 1986, fig. 1 with additions; B. Stanford 1982, fig. 2)



C

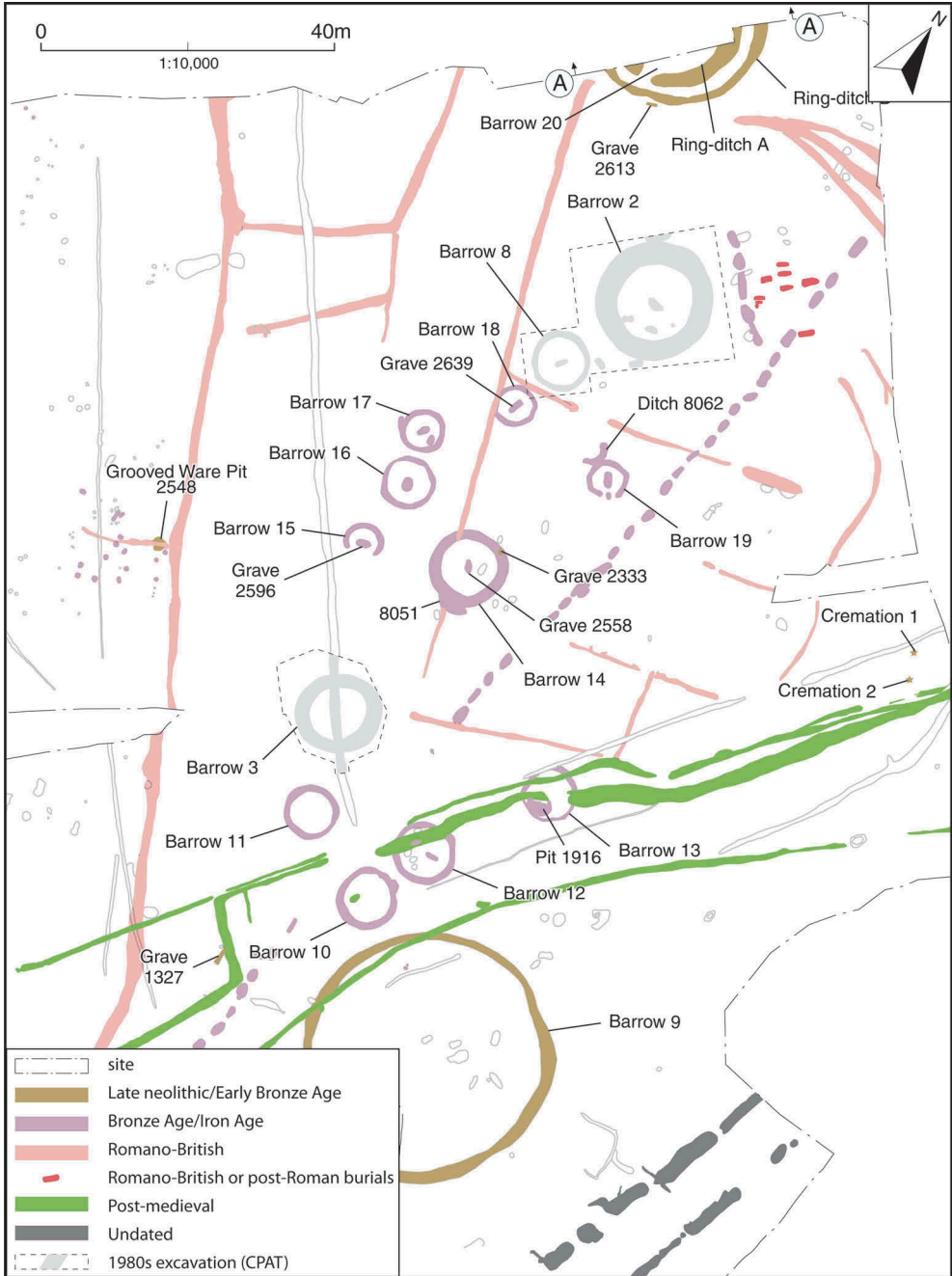
0 1km



D

0 1km

ILLUS. 22 C: Raunds, Northamptonshire. D: Barrow Hills, Oxfordshire. (After C. Harding and Healy 2007, fig. 1.4; D. Barclay and Halpin 1999, fig. 9.9)



ILLUS. 23 Tentative phasing scheme for the excavations

and excavations (Warrilow et al. 1986, 55; Owen and Britnell 1989), the 2004–6 work at Domgay Lane reported here, and on the line of the Four Crosses Bypass (Grant 2011, 89; *Illus.* 19). As discussed above, dating evidence for Pit Alignment 1 is sparse, but a gap in its course seems to respect Barrows 3, 10, 11, and 12 suggesting that it is later than the early Bronze Age; it is certainly older than the Roman field systems, and the pits had probably filled up by the Middle Iron Age to judge from the presence of Cremation burial 3 which may be residual in the fill of a fairly isolated pit (*Illus.* 11). This accords with evidence from the Four Crosses Bypass which suggests that individual components of the pit alignment investigated here had filled-up by the middle of the first millennium BC (Grant 2011, 89). An analysis of pit alignments across eastern Wales and the Welsh Marches suggests that they related to projects in the early part of the first millennium BC involving shared labour to create communal identities at a scale greater than that of individual neighbourhoods (Wigley 2007). Cropmarks suggest the Four Crosses pit alignments extend as far as Domgay Lane (Owen and Britnell 1989; *Illus.* 19) and the vestiges of pit alignments to the north of the Afon Vyrnwy at Llanymynech may belong to the same scheme (*Illus.* 21, B).

A continued awareness of the barrow cemetery is also evident in Romano-British times. The principal boundary of Field System 1 runs between Barrows 14 and 20, but does not slight them. In addition, although it must be presumed that the field division suggests use of the site for agrarian purposes, some significance above the purely practical is suggested by the citing of the small cemetery immediately to the east of Barrow 2. Whether the cremated remains excavated from the Romano-British ditch reflect Roman cultural influence, or a more ancient tradition cannot be determined. Given the dispersed distribution of the earlier cremations, it is also possible that this cremation is the re-deposited remains of a pre-Roman cremation disturbed by Roman agricultural activity.

The small cluster of inhumations respects the earlier pit alignments, in that the burials do not cut through them, and the Romano-British pottery found within Grave 2551 suggests burials in the Roman period. There are three examples of single extended burials in pre-conquest Wales (Pollock 2006, 20), but discrete clusters of extended inhumations with a common alignment, defined as ‘managed’ cemeteries (Thomas 1981) reflect Roman influence and are found from the mid-second century AD onwards near forts and *vici*, predominantly in South Wales. This type of cemetery however, is not identified at rural locations until later in the Roman period, typically from the third century onwards. The earliest of these is at Abernant, Monmouthshire, dated to the second or third century AD, where notably, there is also a cremation burial of possible Roman date (Tuck et al. 2003). There are few examples of extended burials of this period in mid or North Wales; the reduction of military activity from the mid-second century onwards in these regions may have put a brake on the spread of Roman cultural influences, which were in any case slow to be adopted in the more rural locations. None of the late Roman inhumations of mid- or North Wales are securely dated. Accompanying grave-goods are characteristically absent from this type of cemetery, and the destruction of human bone by acid soils has limited opportunities for radiocarbon dating. A

late Roman phase has been tentatively identified at a few early medieval cemeteries, such as Plas Gogerddan, Ceredigion (Murphy 1992, 27) where a radiocarbon date of cal. AD 265–640 (CAR-1045: 1580±60 BP) was obtained, and Arfryn, Anglesey where late fifth/early sixth-century burials were preceded by an earlier phase of undated burials on a different alignment (White 1972, 35; Petts 2002, 35). A late Roman phase has also been postulated for Capel Eithin, Anglesey (Pollock 2006, 75). Despite the influence of Roman burial traditions on the inhumation cemetery at Four Crosses, the siting of the cemetery amongst the monumental earthworks of an earlier time reflects a desire to be associated with a more ancient indigenous lineage.

Consideration must be given to the possibility that the cluster of inhumations at Four Crosses are post-Roman. Post-Roman burials are not numerous in North Wales, but include examples of cemeteries found in association with earlier features including prehistoric monuments, such as the three cemeteries mentioned above, and a small cemetery at Trelystan, Powys considered to be post-Roman (Britnell 1982). Trelystan has particular similarities with Four Crosses, in that the inhumation cemetery is within a complex of prehistoric monuments which lie to the east of Offa's Dyke, and the later burials are also positioned on the eastern side of an earlier barrow. The north-east-south-west alignment of the burials at Four Crosses relates most closely with the pit alignments and Romano-British Boundary Ditch 1, but if the burials are post-Roman, the proximity of Offa's Dyke to the west may also have been a factor in their location. The discovery of an iron javelin and spear with sixth to seventh-century parallels in the upper filling of the ring ditch of Barrow 2 (Warrilow et al. 1986; Barford et al. 1986) testifies to a post-Roman engagement with these prehistoric monuments. Weapons of fifth to seventh-century date inserted (possibly thrust) into earlier monuments has been noted elsewhere and viewed as analogous with the deposition of weapons into rivers; a dramatic demonstration of both power and ownership (Semple 2013, 78–82). The course of Offa's Dyke has been much discussed in terms of its use of the natural topography of the area to create a symbolic and defensible frontier between Mercian control and the traditional territories of the Kingdom of Powys to the west (Ray and Bapty 2016, 131–2). From the high ground to the west it would also be apparent that the Dyke now separated the visible remains of the barrow cemetery from these territories, and from the populations who may have previously claimed them as their ancestral grounds (although the barrow identified on the Four Crosses by-pass lies to the west of the course of the Dyke (Grant 2011)). Subsequent use of the barrow cemetery for inhumations and other rituals would serve to reinforce control of these borderlands which had offered considerable resistance to Mercian expansion (Ray and Bapty 2016, 362).

#### ACKNOWLEDGEMENTS

The fieldwork was undertaken on behalf of Jennings Homes (now David Mclean Homes) at the request of Waterman CPM and subsequently the Environmental Dimension Partnership. Elan Homes generously funded the post-excavation work. We are grateful to Royston Clark, Andrew Crutchley and Shaun McCarthy for their support. The site was monitored by Mark Walters of Clwyd-Powys Archaeological

Trust Curatorial Section, and we are grateful for the support of the Trust during the course of the project.

The project was managed for Cotswold Archaeology by Mark Collard and Mary Alexander, directed in the field by Tim Harvard, supported by Dave Cudlip and a team of dedicated excavators. The post-excavation project was managed by Annette Hancocks and Mary Alexander. Pete Moore and Jonathan Bennett prepared the illustrations, which were edited by Sam O'Leary. Teresa Gilmore undertook the preliminary analysis of the human remains. Timothy Darvill usefully commented on the presentation of the results in this report, and Neil Holbrook of Cotswold Archaeology and Mark Walters of Clwyd-Powys Archaeological Trust Curatorial Section commented upon an earlier draft of this report. The project archives and finds will be deposited with Powysland Museum (Welshpool) under accession number A467/2005.

## BIBLIOGRAPHY

### ANCIENT SOURCES

Tacitus, *Ger. Tacitus, Germania* (Trans. J. B. Rives), 1999, Oxford: Oxford University Press

### SECONDARY SOURCES

AUFDERHEIDE, A. C. AND RODRIGUEZ-MARTIN, C. 2003. *The Cambridge Encyclopaedia of Human Paleopathology*, Cambridge: Cambridge University Press

ANON. 2013. Recent work on round barrows and cairns in Wales, *Archaeol. Camb.*, **162**, 19–32

BASS, W. 1995. *Human Osteology: A Laboratory and Field Manual*, Archaeological Society Special Publication No. 2, Columbia, Missouri: Missouri Archaeology Society

BARCLAY, A. AND HALPIN, C. 1999. *Excavations at Barrow Hills, Radley, Oxfordshire. Volume I. The Neolithic and Bronze Age Monument Complex.*, Thames Valley Landscapes Monogr., **11**, Oxford: Oxford Archaeological Unit

BARFORD, P. M., OWEN, W. G. AND BRITNELL, W. J. 1986. Iron spearhead and javelin from Four Crosses, Llandysilio, Powys, *Medieval Archaeol.*, **30**, 103–6

BECK, C. AND SHENNAN, S. 1991 *Amber in Prehistoric Britain*, Oxbow Monogr., **8**, Oxford: Oxbow

BENNETT, K. D. 1994. Annotated Catalogue of Pollen and Pteridophyte Spore Types of the British Isles, unpublished report, Department of Plant Sciences University of Cambridge

BGS (BRITISH GEOLOGICAL SURVEY) <http://maps.bgs.ac.uk> viewed 14.12.11

BOURGEOIS, Q. 2013. *Monuments on the Horizon. The Formation of the Barrow Landscape throughout the 3rd and 2nd Millennium BC*. Leiden: Sidestone Press

BOWDEN, M., SOUTAR, S., FIELD, D. AND BARBER M. 2015. *The Stonehenge Landscape: Analysing the Stonehenge World Heritage Site*, Swindon: Historic England

BRICKLEY, M. AND MCKINLEY, J. I. 2004. *Guidelines to the Standards for Recording Human Remains*, Southampton/Reading, BABAO/IFA Paper, No. 7

BRITNELL, W. 1982. The excavation of two Round Barrows at Trelystan, Powys, *Proc. Prehist. Soc.*, **48**, 133–201

BRITNELL, W. J. AND JONES, N.W. 2012. Large late Neolithic and early Bronze Age ring ditches in Wales, *Archaeol. Camb.*, **161**, 165–98

BRONK RAMSEY, C. 2005. OxCal version 3.10

BROTHWELL, D. R. 1981. *Digging up Bones*, Oxford: Oxford University Press

BUIKSTRA, J. E. AND UBELAKER, D. H. 1994. *Standards for Data Collection from Human Skeletal Remains*, Arkansas Archaeological Survey, No. 44, Fayetteville Arkansas Archaeological Survey Research Series,

BULLEID, A. AND GRAY, H. G. 1917. *The Glastonbury Lake Village*, Taunton: Glastonbury Antiquarian Society

- CAPPERS, T. R. J., BEKKER, R. M. AND JANS, J. E. A. 2006. *Digitale Zadenatlas van Nederland: Digital Seed Atlas of the Netherlands*, Groningen Archaeol. Stud., 4, Groningen: Barkhuis Publishing and Groningen University Library
- CASELDINE, A. 1990. *Environmental Archaeology in Wales*, Lampeter: Saint David's University College
- CASELDINE, A. E. 2004. *A Research Framework for the Archaeology of Wales: Nationals Seminar Paper*, 4th September 2004 – *Environmental Archaeology*, Available from: <http://www.cpat.org.uk/research/ns4envn.htm>, accessed July 2008
- CASELDINE, A. E. 2013. Pollen analysis at Craig y Dullfan and Banc Wernwgan and other recent palaeoenvironmental studies in Wales, *Archaeol. Camb.*, 162, 275–307
- CASELDINE, A. E., AND GRIFFITHS, C. J. 2013. Charred plant remains and charcoal, 53–9, in K. Murphy and F. Murphy, The excavation of two Bronze Age round barrows at Pany y Butler, Llangoedmor, Ceredigion, 2009–10, *Archaeol. Camb.*, 162, 33–66
- CHAMBERS, F. M. 1982a. Environmental history of Cefn Gwernffrwd, near Rhandirmwyn, Mid-Wales, *New Phytologist*, 92, 607–15
- CHAMBERS, F. M. 1982b. Two radiocarbon-dated pollen diagrams from high altitude blanket peats in South Wales, *J. Ecol.*, 70, 445–59
- CLEAL, R. 1999. Introduction: the what, where, when, and why of Grooved Ware, in R. Cleal and A. MacSween (eds) *Grooved Ware in Britain and Ireland*, Neolithic Studies Group Seminar Papers, 3, 1–8, Oxford: Oxbow
- COLLS, K. AND HALSTED, J. 2009. New evidence for monument reuse in Bronze Age Wales: archaeological excavation at Llanymynech, Powys, 2007, *Archaeol. Camb.*, 158, 69–96
- COTSWOLD ARCHAEOLOGY, 2007. Land at Domgay Lane, Four Crosses, Powys, Post-Excavation Assessment, Cotswold Archaeology unpublished report 06046
- DARVILL, T. 2010. *Prehistoric Britain*, Second edition, London: Routledge
- DARVILL, T. 2013. Monuments and monumentality in Bronze Age Europe, in H. Fokkens and A. Harding (eds) *The Oxford Handbook of the European Bronze Age*, 140–58, Oxford: Oxford University Press
- FLEMING, A. 1971. Territorial patterns in Bronze Age Wessex, *Proc. Prehist. Soc.*, 37, 138–66
- FONTIJN, D., LOUWEN, A. J., VAN DER VAART, S. AND WENTINK, K. (eds) 2013. *Beyond Barrows. Current Research on the Structuration and Perception of the Prehistoric Landscape through Monuments*, Leiden: Sidestone Press
- GALE, R. AND CUTLER, D. 2000. *Plants in Archaeology*, Otley/London: Westbury/Royal Botanic Gardens, Kew
- GALE, S. J. AND HOARE, P. J. 1991. *Quaternary Sediments: Petrographic Methods for the Study of Unlithified Rocks*, London: Belhaven Press
- GARROW, D., MEADOWS, J., EVANS, C. AND TABOR, J. 2014. Dating the dead: a high-resolution radiocarbon chronology of burial within an early Bronze Age barrow cemetery at Over, Cambridgeshire, *Proc. Prehist. Soc.*, 80, 207–36
- GARWOOD, P. 1999. Grooved Ware in southern Britain: chronology and interpretation, in R. Cleal and A. MacSween (eds) *Grooved Ware in Britain and Ireland*, Neolithic Studies Group Seminar Papers, 3, 145–176, Oxford: Oxbow
- GARWOOD, P. 2007a. Before the hills in order stood: chronology, time and history in the interpretation of Early Bronze Age round barrows, in J. Last (ed.), *Beyond the Grave: New Perspectives on Barrows*, 30–52, Oxford: Oxbow
- GARWOOD, P. 2007b. Late Neolithic and early Bronze Age funerary monuments and burial traditions in the West Midlands, in P. Garwood (ed.) *The Undiscovered Country. The Earlier Prehistory of the West Midlands, The Making of the West Midlands*, 1, 134–65, Oxford: Oxbow,
- GIBSON, A. 1992. The excavation of a ring-ditch at Elmtree Farm, Llanymynech, Powys, *Archaeol. Wales*, 32, 15–17
- GIBSON, A. M. 1994. Excavations at the Sarn-y-bryn-caled cursus complex, Welshpool, Powys, and the timber circles of Great Britain and Ireland, *Proc. Prehist. Soc.*, 60, 143–223
- GIBSON, A. M. 1999. *The Walton Basin Project: Excavation and Survey in a Prehistoric Landscape 1993–1997*, Council Brit. Archaeol. Res. Rep., 118, York: Council for British Archaeology and Cadw Welsh Historic Monuments
- GIBSON, A. 2002. Earlier prehistoric funerary and ritual sites in the upper Severn Valley. *Montgomeryshire Coll.*, 90, 1–40
- GIBSON, A. 2010. Excavation and survey at Dyffryn Lane henge complex, Powys, and a reconsideration of the dating of henges, *Proc. Prehist. Soc.*, 76, 213–48
- GIBSON, A. AND BAYLISS, A. 2009. Recent research at Duggleby Howe, North Yorkshire, *Archaeol. J.*, 166, 39–78



- GIBSON, A. AND BAYLISS, A. 2010. Recent work on the Neolithic round barrows of the upper Great Wold Valley, Yorkshire, in J. Leary, T. Darvill and D. Field (eds) *Round Mounds and Monumentality in the British Neolithic and Beyond*, Neolithic Studies Group Seminar Papers, **10**, 72–107, Oxford: Oxbow
- GODWIN, H. 1956. *The History of the British Flora*, Cambridge: Cambridge University Press
- GRANT, I. 2011. Four Crosses bypass, *Archaeol. Wales*, **50**, 89 and 109
- GRINSELL, L. V. 1978. *The Stonehenge Barrow Groups*, Salisbury: Salisbury and South Wiltshire Museum
- HALSTED, J. 2007. Four Crosses, Domgay Lane, *Archaeol. Wales*, **47**, 133–4
- HARDING, J. AND HEALY, F. 2007. *The Raunds Area Project. A Neolithic and Bronze Age landscape in Northamptonshire*, London: English Heritage
- JACKLIN, H. A. 2005. *A New, Fully Standardised Skeletal Recording Form Following BABAO and IFA Guidelines*, Unpublished
- JONES, A. P., TUCKER, M. E. AND HART, J. K. 1999. Guidelines and recommendations, in A. P. Jones, M. E. Tucker and J. K. Hart (eds) *The Description and Analysis of Quaternary Stratigraphic Field Sections*, Quaternary Research Association Technical Guide, **7**, Cambridge: Quaternary Research Association
- JONES, N. W. 2002. *Land off Domgay Road, Four Crosses, Powys: Archaeological Evaluation*, Clwyd-Powys Archaeological Trust Report No. 487
- KAUL, F. 1998. Ships on Bronzes. A Study in Bronze Age Religion and Iconography, *Pub. Nat. Museum Stud. Archaeol. Hist.*, **3**, Copenhagen: Nationalmuseet
- KAUL, F. 2004. *Bronzealderens religion. Studier af den nordiske bronzealderes ikonografi*, Copenhagen: Det Kongelige Nordiske Oldskriftselskab
- KINNES, I. 1979. *Round barrows and ring ditches in the British Neolithic*, Occasional Paper, **7**, London: British Museum
- KINNES, I., SCHADLA-HALL, T., CHARDWICK, P. AND DEAN, P. 1983. Duggleby Howe reconsidered, *Archaeol. J.*, **140**, 83–108
- KRISTIANSEN, K. AND LARSSON, T. B. 2005. *The Rise of Bronze Age Society*, Cambridge: Cambridge University Press
- LAST, J. 1998. Books of life: biography and memory in a Bronze Age barrow, *Oxford J. Archaeol.*, **17**(1), 43–53
- LAST, J. (ed.) 2007. *Beyond the Grave. New Perspectives on Barrows*, Oxford: Oxbow
- LEARY, J., DARVILL, T. AND FIELD, D. (eds) 2010. *Round Mounds and Monumentality in the British Neolithic and Beyond*, Neolithic Stud. Group Seminar Papers, **10**, Oxford: Oxbow
- LE BORGNE, E. 1960. Influence du feu sur les propriétés magnétiques du sol et sur celles du schiste et du granite, *Annals of Geophysics*, **16**, 159–195
- LONGWORTH, I. H. 1971. The Neolithic pottery, in Wainwright and Longworth 1971, 75–124
- LYNCH, F. M. 1993. *Excavations in the Brenig Valley. A Mesolithic and Bronze Age Landscape in North Wales*, Cambrian Archaeol. Assoc. Monogr., **5**, Cardiff: Cambrian Archaeological Association
- MACGREGOR, A. AND BOLICK, E. 1993. *A Summary Catalogue of the Anglo-Saxon Collections (Non-Ferrous Metals) in the Ashmolean Museum*, Oxford: Brit. Archaeol. Rep. Brit. Ser., **230**
- MAHER, B. A. 1986. Characterization of soils by mineral magnetic measurements, *Physics of Earth and Planetary Interiors*, **42**, 76–92
- MARCHES ARCHAEOLOGY. 2003. *Land off Domgay Lane, Four Crosses, Powys: Report on an Archaeological Evaluation*, Marches Archaeology Series **297**
- MARTIN, A. L. 1996. Barton-under-Needwood, Tucklesholme Farm (SK 208 188), *West Midlands Archaeology*, **39**, Council for British Archaeology West Midlands, **66**
- MARTIN, A. 2011. The alien within: the forgotten sub-cultures of early Bronze Age Wessex, in A.M Jones and G. Kirkham (eds), *Beyond the Core. Reflections on Regionality in Prehistory*, 63–73, Oxford: Oxbow Books
- MC SLOY, E. 2006. The metalwork and worked bone, 34, in D. Evans, N. Holbrook, and E. McSloy, *A Later Iron Age Cemetery and Roman Settlement at Henbury School, Bristol: Excavations in 2004*, 1–50, in M. Watts (ed.) *Two Cemeteries from Bristol's Northern Suburbs*, Bristol and Gloucestershire Archaeological Report, **4**
- MC SLOY, E. 2008. Metal and glass objects, 55–57, in A. Barber and M. Watts, *Excavations at Saxon's Lode Farm, Ryall Quarry, Ripple, 2001–2: Iron Age, Romano-British and Anglo-Saxon rural settlement in the Severn Valley*, *Trans. Worcestershire Archaeol. Soc.*, **3 ser. 21**, 1–90
- McKINLEY, J. L. 1994. Bone fragment size in British cremation burials and its implications for pyre technology and ritual, *J. Archaeol. Sci.*, **21.3**, 339–42
- McKINLEY, J. L. 2000a. Putting cremated bone into context, in S. Roskams (ed.) *Interpreting Stratigraphy; Site Evaluation, Recording Procedures and Stratigraphic Analysis*, 135–40, Oxford: Brit. Archaeol. Rep., Int. Ser., **910**
- McKINLEY, J. L. 2000b. The analysis of cremated bone, in M. Cox and S. Mays (eds) *Human Osteology*, 403–21, Greenwich Medical Media: London



- McKINLEY, J. L. and BOND, J. M. 2001. Cremated bone, in D. R. Brothwell and A. M. Pollard (eds) *Handbook of Archaeological Sciences*, 281–92, Wiley: Chichester
- McKINLEY, J. L. and ROBERTS, C. A. 1993. *Excavation and Post-Excavation Treatment of Cremated and Inhumed Human Remains*, IFA Technical Paper. No. 13
- MILLES, A. 1986. Charred plant remains from a Beaker pit at Site 2, Four Crosses, in W. Warrilow, G. Owen, and W. J. Britnell, Eight ring ditches at Four Crosses, Llandysilo, Powys, 1981–85, *Proc. Prehist. Soc.*, **52**, Microfiche 10
- MILLSON, D., WADDINGTON, C. and MARSHALL, P. 2011. Towards a Sequence for Neolithic Ceramics in the Milfield Basin, and Northumberland, *Archaeologia Aeliana*, 5th ser., **40**, 1–40
- MITCHELL, A. 1974. *A Field Guide to the Trees of Britain and Northern Europe*. London: Collins
- MIZOGUCHI, K. 1992. A historiography of a linear barrow cemetery: a structuralist's point of view, *Archaeol. Rev. Cambridge*, **11(1)**, 39–49
- MONCKTON, A. 2009. Charred plant remains, 156–9, in S. C. Palmer, Neolithic, Bronze Age, Iron Age, Romano-British and Anglo-Saxon sites excavated on the Transco Churchover to Newbold Pacey gas pipeline in 1999, *Trans. Birmingham Warwickshire Archaeol. Soc.*, **113**, 1–174
- MOORE, P. D., WEBB, J. A. and COLLINSON, M. E. 1991. *Pollen Analysis*, Oxford: Blackwell Scientific Publications
- MULLIN, D. 2003. *The Bronze Age Landscape of the Northern English Midlands*, Oxford: Brit. Archaeol. Rep., Brit. Ser., **351**
- MURPHY, K. 1992. Plas Gogerddan, Dyfed: a multi-period burial and ritual site, *Archaeol. J.*, **44**, 1–38
- MUNSELL COLOR 2000. *Munsell Soil Color Charts*, New Windsor (NY): Munsell Color
- MUSSON, C. R., BRITNELL, W. J., NORTHOVER, J. P. and SALTER, C. J. 1992. Excavations and metal-working at Llwyn Bryn-Dinas Hillfort, Llangedwyn, Clwyd, *Proc. Prehist. Soc.*, **58**, 265–83
- MUSSON, C. R. and NORTHOVER, J. P. 1989. Llanymynech hillfort, Powys and Shropshire: observations on construction work, 1981. *Montgomeryshire Coll.*, **77**, 15–26
- NEEDHAM, S. 2005. Transforming Beaker culture in north-west Europe: processes of fusion and fission, *Proc. Prehist. Soc.*, **71**, 171–217.
- NORTHOVER, J. P. 1991. Microfiche Appendix 13.4: Further comments on the composition of the Breiddin bronzes, in C. R. Musson, *The Breiddin Hillfort: a later Prehistoric Settlement in the Welsh Marches*, London, Council for British Archaeology
- ORTNER, D. J. 2003. *Identification of Pathological Conditions in Human Skeletal Remains*, Washington D.C.: Smithsonian Institution, Natural Museum of Natural History Academic Press
- OWEN, G. and BRITNELL, W. 1989. Alignments at Four Crosses, Llandysilio, Powys, *Montgomeryshire Coll.*, **77**, 27–40
- PEACOCK, D. P. S. 1967. Romano-British pottery production in the Malvern district of Worcestershire, *Trans. Worcestershire Archaeol. Soc.*, **3 ser. 1**, 15–28
- PEARSON, E. 2001. Palaeoenvironmental data, 12, in A. Martin and C. Allen, Two prehistoric ring ditches and an associated Bronze Age cremation cemetery at Tucklesholme Farm, Barton-under-Needwood, Staffordshire, *Trans. Staffordshire Archaeol. Hist. Soc.*, **39**, 1–15
- PEARSON, E. 2006. Assessment of Environmental Remains from Domgay Lane, Four Crosses, Powys, Worcestershire County Council, Historic Environment and Archaeology Service unpublished report, **1462**
- PEARSON, E. 2012. Charred plant remains, 50–6, in P. Thompson and S. C. Palmer, Iron Age, Romano-British and medieval settlements excavated on the Transco Newbold Pacey to Honeybourne gas pipeline in 2000, *Trans. Birmingham Warwickshire Archaeol. Soc.*, **116**, 1–139
- PETTS, D. 2002. Cemeteries and boundaries in Western Britain, in S. Lucy and A. Reynolds (eds) *Burial in Early Medieval England and Wales*, Soc. Medieval Archaeol. Monogr. Ser., **17**, 24–46, Leeds: Maney
- POLLOCK, K. J. 2006. *The Evolution and Role of burial Practice in Roman Wales*, Oxford: Brit. Archaeol. Rep. Brit. Ser., **426**
- RAY, K. and BAPTY, I. 2016. *Offa's Dyke: Landscape and Hegemony in Eighth-Century Britain*, Oxford: Windgather
- REIMER P. J., BAILLIE, M. G. L., BARD, E., BAYLISS, A., BECK, J. W., BERTRAND, C., BLACKWELL, P. G., BUCK, C. E., BURR, G., CUTLER, K. B., DAMON, P. E., EDWARDS, R. L., FAIRBANKS, R. G., FRIEDRICH, M., GUILDERSON, T. P., HUGHEN, K. A., KROMER, B., MCCORMAC, F. G., MANNING, S., BRONK RAMSEY, C., REIMER, R. W., REMMELE, S. M., SOUTHON, J. R., STUIVER, M., TALAMO, S., TAYLOR, F. W., VAN DER PLICHT, J. and WEYHENMEYER, C. E. 2004. INTCAL04 Terrestrial radiocarbon age calibration, 0–26 CAL KYR BP, *Radiocarbon*, **46**, 1029–58
- ROGERS, J. and WALDRON, T. 1995. *A Field Guide to Joint Disease in Archaeology*, Oxford: John Wiley and Sons

- SCHEUER, L. AND BLACK, S. 2000. *Developmental Juvenile Osteology*, London: Academic Press
- SEMPLÉ, S. 2013. *Perceptions of the Prehistoric in Anglo-Saxon England*, Oxford: Oxford University Press
- SMITH, W. 2002. *A Review of Archaeological Wood Analyses in Southern England*, English Heritage Centre for Archaeol. Lab. Rep. No. 75, London: English Heritage
- STACE, C. 2001. *New Flora of the British Isles*, 2nd Edition, Cambridge: Cambridge University Press
- STANFORD, S. 1982. Bromfield, Shropshire – Neolithic, Beaker and Bonze Age sites, 1966–79, *Proc. Prehist. Soc.*, **48**, 279–320
- STUIVER, M. AND POLACH, H. A. 1977. Reporting of <sup>14</sup>C data, *Radiocarbon*, **19**, 355–63
- STUIVER, M. AND REIMER, P. J. 1993. Extended <sup>14</sup>C database and revised CALIB 3.0 <sup>14</sup>C Age calibration program, *Radiocarbon* **35**(1), 215–30
- TAYLOR, A. F. AND WOODWARD, P. J. 1985. A Bronze Age barrow cemetery, and associated settlement at Roxton, Bedfordshire, *Archaeol. J.*, **142**, 73–149
- THOMAS, C. 1981. *Christianity in Roman Britain to 500 AD*, Berkeley, CA: University of California Press
- TOMBER, R. AND DORE, J. 1998. *The National Roman Fabric Reference Collection: A Handbook*, London: Museum of London Archaeology Service
- TUCK, M., TURNER, R. G. AND PENNEY S. 2003. Abernant, Kemmeys inferior, *Archaeol. Wales*, **43**, 120–3
- TUCKER, M. E. 1982. *Sedimentary Rocks in the Field*, Chichester: Wiley
- TUTIN, T. G., HEYWOOD, V. H. TUTIN, T. G., HEYWOOD, V. H., BURGESS, N.A., MOORE, D. M., VALENTINE, D. H., WALTERS, S. M. AND WEBB, D. A. 1964–80. *Flora Europaea*, 1–5, Cambridge: Cambridge University Press
- VAN DER VEEN, M. 1985. Plant remains, 146–7 in R. Miket, Ritual enclosures at Whitton Hill, Northumberland. *Proc. Prehist. Soc.*, **51**, 137–48
- WAINWRIGHT, G. J. AND LONGWORTH, I. H. 1971. *Durrington Walls: Excavations 1966–1968* London, Research Committee of the Society of Antiquaries of London Report **37**
- WARRILLOW, W., OWEN G. AND BRITNELL, W. 1986. Eight Ring ditches at Four Crosses. Llandysilio, Powys, 1981–85, *Proc. Prehist. Soc.*, **52**, 53–88
- WEBSTER, P. V. 1976. Severn Valley ware: a preliminary study, *Trans. Bristol Gloucestershire Archaeol. Soc.*, **94**, 18–46
- WHITE, R. B. 1972. Excavations at Arfyn: Bodedern, long-cist cemeteries and the origins of Christianity in Britain, *Angelsey Antiq. Soc. and Field Club*, 19–45
- WIGLEY, A. 2007. Pitted histories: early first millennium BC pit alignments in the central Welsh Marches, in C. Haselgrove and R. Pope (eds), *The Earlier Iron Age in Britain and the Near Continent*, Oxford: Oxbow Books, 119–34
- WILSON, D. R. 1978. Pit alignments: distribution and function, in H. C. Bowen and P. J. Fowler (eds), *Early Land Allotment*, Oxford: British Archaeol. Rep. Brit. Ser., **12**, 3–6
- WOODWARD, A. 2000. *British Barrows. A Matter of Life and Death*, Stroud: Tempus

## APPENDIX: BARROWS AND RING DITCHES IN THE FOUR CROSSES BARROW CEMETERY

by TIMOTHY DARVILL

For numbering, see [Illus 2](#) and [20](#).

- (1) Barrow excavated 1981–83 (Warrilow et al. 1986, 55–7). Central pit, ?inhumation but no surviving bone, the fill cut by a timber marker-post. Charcoal from the postpipe gave a date of 1900–1530 cal. BC (CAR-666: 3420±65 BP). Central four-stake structure centred on the post-hole. Six concentric stake circles centred on the post-hole/grave pit. Covering mound with residual material in the matrix. Concentric ring ditch about 24 m in diameter; 1.6–1.8 m across and 0.75 m deep below the natural gravel surface. Pieces of three urns from eroded mound material.
- (2) Ring ditch excavated 1984 (Warrilow et al. 1986, 57–61) and within the area excavated in 2004–6. Pre-barrow activity represented by residual charcoal from fill of Grave 4 dated to 6360–5920 cal. BC (CAR-849: 7250±90 BP), a chisel arrowhead and a pit containing pieces of seven Beaker pots, burnt clay, barley grains and charcoal. Radiocarbon dates of 2910–2570 cal. BC (CAR-767: 4190±70 BP), 2570–2140 cal. BC (CAR-811: 3890±70 BP), and 2290–1890 cal. BC (CAR-810: 3690

$\pm 70$  BP) from charcoal in the pit. Central grave, ?inhumation but no surviving bone. No mound surviving. Ring ditch 13 m in diameter, 2.3–3.2 m wide and 1 m deep from the gravel surface. Evidence of metalworking on or around the mound associated with a radiocarbon date of 370–20 cal. BC (CAR-766: 2130 $\pm$ 60 BP). Five graves, one (Grave 2) with surviving skeletal remains and carbonized material that gave a radiocarbon date of 350 BC–90 cal. AD (CAR-765: 2050 $\pm$ 70 BP). Sixth- or seventh-century AD javelin and spear deposited in upper ditch fill on the north side of the ring ditch.

- (3) Ring ditch excavated in 1984 (Warrilow et al. 1986, 62) and within the area excavated in 2004–6. No surviving mound. No central features. Ring ditch 7.7 m diameter, 2 m wide and 0.6 m deep from the surface of the natural gravel. Truncated by 18th century field-boundary.
- (4) Ring ditch excavated in 1982 (Warrilow et al. 1986, 62–3). No surviving mound. No central features. Ring ditch 17.5 m diameter, 3 m wide and 1 m deep from the surface of the natural gravel.
- (5) Multi-phase barrow excavated in 1983 (Warrilow et al. 1986, 63–8). Slight traces of a mound. Phase 1. Central shaft 4.5 m by 3.8 m by 1.4 m deep. Steep sided with a central burial: ?crouched inhumation but very little surviving bone. Grave-goods comprised a plain Neolithic bowl and a small pear-shaped stone. Either side of the burial was a slot 1.3 m by 0.5 m by 0.4 m deep; these could have contained further burials. Charcoal from above the northern slot radiocarbon dated to 3340–2910 cal. BC (CAR-670: 4440 $\pm$ 70 BP). Surrounding ring ditch 20.5 m–21.7 m diameter, 2.6 m wide, 1.11 m deep below the surface of the natural gravel. Fragments of a Mortlake bowl and Beaker in the upper ditch fill. Phase 2. Central shallow grave 1.25 m by 2.5 m by 0.6 m deep. Slight traces of bone suggesting an extended inhumation, possibly in coffin, accompanied by a jet/shale button. Ring ditch 16 m diameter, 1.2 m wide and 0.8 m deep below the surface of the natural gravel. Charcoal in the secondary ditch silt was radiocarbon dated to 3090–2620 cal. BC (CAR-671: 4260 $\pm$ 70 BP). Phase 3. No central grave recorded. Stake-circle 14.5 m in diameter cut into the Phase 2 ditch. Traces of mound with residual cultural material including Beaker pottery and a flint knife. Ring ditch 26.4 m in diameter, 2 m wide and 1.2 m deep below the surface of the natural gravel. Charcoal in a stabilization horizon with the ditch fill was radiocarbon dated to 1880–1520 cal BC (CAR-668: 3390 $\pm$ 70 BP). Charcoal from a pit cutting the stabilization horizon was dated to 2030–1660 cal BC (CAR-669: 3510 $\pm$ 70 BP). Some evidence for later cremations deposited in the mound. Fragments of a bronze dagger found outside the Phase 3 ditch.
- (6) Barrow excavated in 1983 (Warrilow et al. 1986, 68). Pre-mound activity represented by a Mesolithic flint scraper. Central oval hollow, perhaps a grave but no bone surviving. Slight traces of a mound. Ring ditch 5 m diameter, 0.5–0.6 m wide and 0.3 m deep from the surface of the natural gravel.
- (7) Barrow excavated in 1984–5 (Warrilow et al. 1986, 69–70). Pre-mound activity represented by a central post-hole 1.1–1.2 m across and 1.48 m deep. No evidence for a grave. Slight traces of a mound with residual cultural material including Beaker and Food Vessel. Ring ditch 35 m diameter, 3 m wide and 1.45 m deep from the surface of the natural gravel. Ditch cut by a pit containing charcoal dated to 1700–1420 cal. BC (CAR-648: 3280 $\pm$ 70 BP).
- (8) Barrow excavated in 1984 as a ‘satellite’ to Barrow 2 (Warrilow et al. 1986, 61–2) and within the area excavated in 2004–6. Central grave: ?inhumation but no surviving bone. Pine charcoal from the upper fill of the grave dated to 5980–5720 cal BC (CAR-850: 6990 $\pm$ 80 BP). No surviving mound. Ring ditch 6.8 m diameter, 0.5 m wide and 0.3 m deep below the natural gravel surface.
- (9) ?Barrow excavated in 2004–6. CA archive ref. Ring ditch 1. No central feature. Ring ditch 30 m diameter, 1.35 m wide and 0.8 m deep below the natural gravel surface.
- (10) ?Barrow excavated in 2004–6. CA archive ref. Ring ditch 2. Ring ditch 8.2 m diameter, 0.25–0.45 m wide and 0.5 m deep below the natural gravel surface below the natural gravel surface.
- (11) ?Barrow excavated in 2004–6. CA archive ref. Ring ditch 3. Ring ditch 7.5 m diameter, 0.8–1 m wide and 0.2 m deep below the natural gravel surface.
- (12) ?Barrow excavated in 2004–6. CA archive ref. Ring ditch 4. Ring ditch 8.7 m diameter, 0.7–1 m wide and 0.37–0.5 m deep below the natural gravel surface. Central grave with charred hazelnut shells and wheat, ?inhumation but no bone surviving.
- (13) ?Barrow excavated in 2004–6. CA archive ref. Ring ditch 5. Ring ditch 7.9 m diameter, 0.5–1 m wide and 0.2–0.3 m deep. Oval pit 2.8 m by 1.8 m was cut through the fill of the ring ditch below the natural gravel surface.

- (14) ?Barrow excavated in 2004–6. CA archive ref. Ring ditch 6. Central grave containing fragments of adult inhumation dated to 210–40 cal BC (Wk-23236: 2104±32 BP). Ring ditch 10 m diameter, 1.5 m wide and 0.45–0.75 m deep below the natural gravel surface.
- (15) ?Barrow excavated in 2004–6. CA archive ref. Ring ditch 7. Central grave dated to the Iron Age by the presence of a finger-ring, but no bone survived. Ring ditch 5.5 m diameter, 0.6 m wide and 0.3 m deep below the natural gravel surface but does not survive as a complete circuit.
- (16) ?Barrow excavated in 2004–6. CA archive ref. Ring ditch 8. Possible central grave. Ring ditch 7.5 m diameter, 0.45–1 m wide and 0.4 m deep below the natural gravel surface.
- (17) ?Barrow excavated in 2004–6. CA archive ref. Ring ditch 9. Possible central grave. Ring ditch 5.8 m diameter, 0.3–0.5 m wide and 0.3 m deep below the natural gravel surface.
- (18) ?Barrow excavated in 2004–6. CA archive ref. Ring ditch 10. Ring ditch 5.5 m diameter, 0.25 m wide and 0.3 m deep below the natural gravel surface. Central grave, adult inhumation but little bone surviving.
- (19) ?Barrow excavated in 2004–6. CA archive ref. Ring ditch 11. Possible central grave. Ring ditch 5.5 m diameter, 0.4 m wide and 0.3 m deep below the natural gravel surface but not surviving as a complete circuit.
- (20) Multi-phase barrow part-excavated in 2004–6. CA archive ref. Ring ditches 14 and 15/barrow mound. Phase 1: No internal features within the area investigated. Traces of low mound over immature (? previously truncated) soil profile. Ring ditch 16 m in diameter but not continuous, 1.9 m–2.5 m wide and 1.2 m deep below the surface of the natural gravel. Pit cut into the mound soon after construction. Phase 2: No internal features within the area investigated. Mound 18 m in diameter. Ring ditch 20 m in diameter, 1.1 m wide and 0.6 m deep below the surface of the natural gravel.
- (21) Cropmark ring ditch /barrow. No investigation.
- (22) Cropmark ring ditch /barrow. No investigation.
- (23) Cropmark ring ditch /barrow. No investigation.
- (24) Cropmark ring ditch /barrow. No investigation.
- (25) Cropmark ring ditch /barrow. No investigation.
- (26) Cropmark ring ditch /barrow. No investigation.
- (27) Ring ditch excavated 2010 (Grant 2011) No surviving mound. Central pit with a small quantity of cremated bone in the north-western end of the pit, possibly in association with two small flints. A sample of the bone dated to 2030–1770 cal. BC (SUERC 34217). Ring ditch 23m diameter 0.7m wide and up to 0.6m deep. Two small sherds of prehistoric pottery from the basal fill of the ditch, and charcoal which was dated to 2140–1900 cal. BC (SUERC 34216).

Tim Havard, Senior Project Officer, Cotswold Archaeology, Building 11, Kemble Enterprise Park, Cirencester, Gloucestershire GL7 6BQ  
Email: [tim.havard@cotswoldarchaeology.co.uk](mailto:tim.havard@cotswoldarchaeology.co.uk)

Timothy Darvill, Professor of Archaeology and Director of the Centre for Archaeology and Anthropology, Bournemouth University, Christchurch House C137, Talbot Campus, Fern Barrow, Poole, BH12 5BB  
Email: [tdarvill@bournemouth.ac.uk](mailto:tdarvill@bournemouth.ac.uk)

Mary Alexander, Post-Excavation Manager, Cotswold Archaeology, Building 11, Kemble Enterprise Park, Cirencester, Gloucestershire GL7 6BQ  
Email: [mary.alexander@cotswoldarchaeology.co.uk](mailto:mary.alexander@cotswoldarchaeology.co.uk)