Excavation of 10th- and 5th-century BC settlement at Hartshill Copse, Upper Bucklebury, Berkshire, 2003

by

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Introduction

Between January and April 2003 Cotswold Archaeology (CA) carried out an archaeological excavation funded by the Aggregates Levy Sustainability Fund (ALSF) at Hartshill Copse, Upper Bucklebury, West Berkshire (centred on NGR: SU 5310 6850; Figs. 1-2). The site lies within an active gravel quarry which is located to the east of Hartshill Copse and Dunston Wood, west of Burden’s Heath Plantation, and bounded to the south by Hart’s Hill Road.

In September 1986 the site of the gravel quarry was evaluated by Oxford Archaeological Unit. Machine-excavated trial trenches identified the extensive remains of a Late Bronze Age settlement covering an area of *c*. 200m x 100m on the summit of the ridge (Miles & Collard 1986). Within the western part of this area human cremations, buried in Middle to Late Bronze Age pottery vessels, were also found. Smaller, discrete areas of prehistoric features were also located further north, and Romano-British features were identified close to the southern boundary of the site.

Following the evaluation, planning consent for mineral extraction was granted in 1989 and the site subsequently acquired by Harleyford Aggregates Limited. Stripping of the ploughsoil from the site commenced in early 2001; this revealed an area of c 1ha of dense archaeological features, in excess of what would reasonably have been anticipated from the evaluation. Discussions over the course of 2001 and 2002 between the West Berkshire Archaeological Officer (for the Local Planning Authority), Cotswold Archaeology (on behalf of the quarry operators) and English Heritage resulted ultimately in an approach to the Aggregates Levy Sustainability Fund for resources to finance the excavation of this phase, and consequently any fieldwork in this area was delayed, pending the result of the application. Formal application was made to the ALSF in 2002 and following approval of the Project Design in December 2002, excavation of the archaeological remains in the Phase 1 extraction area (hereafter the ALSF area) was carried out between January and April 2003.

In the period between application to the ALSF and the decision on funding, a total area of some 6ha across the northern and eastern part of the quarry was stripped and archaeological excavation and recording carried out by Cotswold Archaeology between January and May 2002. The extent of the works is shown on Fig. 2, and Fig. 5 shows the excavated features. No post-excavation assessment or analysis has as yet been carried out on the data or artefacts recovered from the excavations, but a preliminary interpretation may be based on the spot-dates of pottery recovered. The earliest features comprised Late Bronze Age to Early Iron Age pits located in two distinct parts of the site. Later Iron Age activity was recorded generally across the site, but concentrated in the same two areas of previous activity. These features mostly comprised pits and postholes with no clear structural associations, although a ring ditch and several lengths of ditch were also identified. A number of features close to the ring ditch represented an area of industrial activity, including ironworking. In addition, two urned cremations of late Iron Age date were also identified as well as a number of unurned cremations. Several tree-boles were also investigated and in some instances were found to contain evidence of activity represented by burning together with Iron Age artefactual material.

A number of Roman ditches were revealed, including three phases of an enclosure. Two iron-smelting hearths were also identified, one of which contained the *in situ* slag produced from the (last) firing of the furnace, as well as a small amount of pottery; a small quantity of Roman pottery was found in the soil deposit in the upper fill of this hearth, but it is possible that the hearths belong to an earlier phase of occupation. All of the dateable Roman deposits dated from the mid 1st to 2nd century AD.

Medieval activity was represented by a small enclosure containing the beam slots of a building within a ditched enclosure, a series of pits and postholes and a number of other ditches forming an associated field system. Many of these features produced artefactual material, all of which dated to the 11th to 13th centuries AD. The latest features encountered in the 2002 excavation were three large post-medieval field boundary ditches. Cartographic and documentary research shows that the whole site was under arable cultivation from at least the earlier part of the 19th century.

Detailed archaeological knowledge about the immediate environs of the site is limited, although scatters of struck flint have been recovered during fieldwalking to the south of the site (Fig 4). The univallate hillfort site of Ramsbury lies c1.25km to the north, but its date is unknown. Extensive excavations by Wessex Archaeology at Dunston Park c. 0.75km to the south, have revealed have identified significant areas of Bronze age and Iron Age activity, including a probable burnt mound of Middle Bronze Age date, an 7th-century BC roundhouse and associated settlement remains, and evidence for contemporary ironworking (Fig. 4: Dunston Park 1991, 1996; Cooper's Farm. Fitzpatrick 1995, Wessex Archaeology 2000). Occasional finds of Roman pottery have also been recovered from the plateau; a Roman roadside settlement lay c. 2.8km to the south-west at Thatcham adjacent to the Roman road from Silchester to Cirencester.

Topography and geology

The whole quarry site is *c.*15ha in area and lies on the south-western end of a ridge covered in plateau gravel of the Bucklebury Common formation (BGS sheet 268) at *c.* 131m AOD above the Kennet Valley. The site, under arable cultivation since at least 1986 is generally flat, although the western edge drops steeply away at the edge of the plateau to the valley below. The area of the ALSF excavation carried out in 2003 occupies approximately 1ha in the south-western corner of the quarry site, and lies on noticeably fine-grained and free-draining flint gravel.

Excavation Results

General

Identification of key relationships and the allocation of individual features to certain phases has been achieved through the combined analysis of the site stratigraphy, spatial patterning of features, the ceramic evidence and analysis of a number of further categories of artefactual and ecofactual material, including plant macrofossils, charcoal and metallurgical residues. This analysis has been enhanced further by the results of a programme of radiocarbon dating.

Very few stratigraphic relationships existed between features, which occurred in discernible concentrations across extensive areas of the site (Fig. 6). Deposits had clearly been subject to extensive truncation a factor contributed to arable cultivation of the site. This had resulted in a general lack of depth to the features, and appeared to be exaggerated on the down-slope along the western edge of the site. Another general feature of the site was the homogeneity of the majority of the fills within the features. Although deposits of a specific nature were identified in many cases, features across the site typically contained this uniform fill. This factor, together with the truncated nature of the features, resulted in their limited interpretation.

Analysis of the stratigraphic and artefactual evidence suggests that five chronological periods are represented, containing up to 47 phases of activity across the site. Many of these phases are likely to be contemporary, although on the basis of the recovered evidence this cannot be proven absolutely. Many features remain undated by artefacts, however, during the post-excavation process many of these have been assigned to certain phases as a result of their spatial relationship or similarity to other, dated features.
Based predominantly on the ceramic evidence, but enhanced by the radiocarbon dating, the chronological periods represented by the archaeological activity are:

Period 1: Middle/Late Bronze Age
Period 2: Late Bronze Age
Period 3: Early Iron Age
Period 4: Romano-British
Period 5: Post-medieval/modern

The overwhelming majority of features have been assigned to the Late Bronze Age and the Early Iron Age (Periods 2 and 3). Features associated with both of these periods were generally confined to clearly defined zones across the site, with little overlapping or intercutting between the two.

Excavated features fell mainly into the categories of pit, posthole, ditch or gully. A total of 819 features were identified, 321 (39%) of which contained artefactual material. Of these, 167 contained pottery, representing 20% of the total number of features, and 110 (13.5%) contained burnt flint only. A total of 2254 potsherds, weighing 18.235kg, was recovered during the excavation and subsequent post-excavation processing of material (mostly bulk soil samples) recovered from the site.

The most abundant type of feature encountered throughout the site was the posthole. A total of 643 were identified during the excavation. Although several post-built structures were identified during the fieldwork, and several more during post-excavation analysis, no further definable patterns associated with structures or possible alignments could be derived from the remaining postholes. The number of postholes eventually assigned to structures was 371, representing 58% of the total.

Period 1: Middle/Late Bronze Age

Only one deposit belonged to the Middle/Late Bronze Age period as evinced by associated pottery and radiocarbon dating.

The cremation

A small pit, 446 (Figs 7, 13 and section 1), containing a cremation, was located between the two terminals of the eastern length of a later (Early Iron Age) enclosure ditch. Pit 446 was bowl-shaped, almost circular, 0.44m in diameter and 0.18m in depth, containing a single carbon-rich fill from which a total of 77 sherds (378g) from a single Middle/Late Bronze Age vessel was recovered, together with 871.5g of cremated bone. Both vessel and cremated bone lay in the western half of the pit.

Analysis of the cremated remains suggests that they are from a young-mature adult (20–40 years old), probably a female (McKinley, this report). They represent approximately 55% of the average bone weight expected from an adult cremation and were found to be in a highly fragmentary condition, probably as a result of the mode of collection of the bone (ibid.). The cremated remains were mixed with the pottery within the pit, suggestive of secondary deposition rather than an *in situ* burial within the pot. A small quantity of burnt flint was also recovered.

Four samples, two each of charcoal and cremated bone, from pit 446 were radiocarbon dated, these provided dates of 1300–1010 cal BC (GrA-23746) and 1380–1120 cal BC (OxA-12578) for the charcoal, and 1440–1130 cal BC (GrA-

23638) and 1370–1090 cal BC (OxA-12731) for the bone. The combined results provide a weighted mean range of 1320–1120 cal BC (Bayliss *et al*, this report).

Period 2: Late Bronze Age

Three discrete zones of Late Bronze Age activity were identified (Figs 7 and 14). In the central part of the site (Zone 1) two long intersecting post alignments and a further, shorter post-alignment were revealed, as well as a small number of discrete pits and postholes. At the eastern side of the excavation area (Zone 2) were two roundhouses and associated features, and on the gentle down-slope of the western edge of the site was an area containing two clusters of features (Zone 3).

Zone 1

***The post alignments* (Figs 7–12)**

Post alignment F (Fig. 11) comprised a sinuous line of 107 postholes running east/west from the central part of the site eastwards, and continuing beyond the north-eastern limit of excavation. The exposed line measured a total of 81m, including a gap of 11m towards its eastern end, where the ends of each section of the line were turned slightly northwards. A second break in the line, measuring 6m, lay 2.5m further east. The alignment was cut across in three places by later ditches.

The postholes of alignment F were all of a similar size, typically 0.2m in diameter, although occasional variations were recorded. They were shallower towards the western extent of the alignment, averaging 0.06m in depth, while to the east their typical depth was 0.15m to 0.2m. The difference in depth was most likely the result of truncation. Most of the features were steep-sided with rounded bases. The postholes were spaced approximately 0.2m apart but this distance occasionally varied, with gaps of between 0.1m and 0.7m recorded.

Two additional postholes were apparent towards the western end of the line, one to either side of the main line (Fig. 10). A gap of 2m was also apparent between the westernmost two postholes.

Each posthole in alignment F was filled by a homogeneous and largely sterile silty gravel deposit, although seven sherds (30g) of Late Bronze Age pottery were recovered from five postholes. Eight postholes also produced small amounts of burnt flint, four in conjunction with pottery sherds. The majority of the artefactual material was recovered from features close to the intersection of the two alignments (Fig. 10).

Post alignment G (Fig. 12), similar in character to alignment F, was revealed in the central part of the site. From its westernmost extent it ran east-south-eastwards, turning towards the south-east at its intersection with alignment F. Unlike alignment F, this line appeared almost continuous, except where truncated by a later enclosure ditch. It comprised 86 postholes and measured 63m in length within the excavated area, including a gap of 1.4m between two postholes towards the western end of the alignment.

The postholes in alignment G were of comparable size to those in F, and their depths averaged 0.11m. The gaps between the individual postholes were also similar to those in line F. Four postholes lay immediately off the main alignment, towards its western end, although they did appear to be constituent parts of the alignment.

As in alignment F, the postholes all contained homogeneous silty gravel deposits. Along this line however, only three features produced Late Bronze Age pottery, totalling five sherds (7g), whilst two contained four very small sherds of Late Bronze Age/Early Iron Age and Early Iron Age pottery. One of the latter two features also produced three small sherds of Roman pottery, probably the result of isolated disturbance towards the western end of the alignment. Twelve postholes produced small quantities of burnt flint, two in conjunction with sherds of pottery. As with alignment F, the finds were again concentrated around the intersection of the two alignments.

Posthole 1593 lay at the intersection of the two alignments (Fig. 10). There was no evidence of intercutting between the two lines and it is uncertain to which alignment this feature belonged. It may have been part of both (see Discussion). A single sherd of Late Bronze Age pottery (3g) and a small quantity of burnt flint was recovered from posthole 1593.

A sinuous, undated gully (5294) appeared to represent a southern continuation of post alignment G in a different form; similarly, a line of more widely spaced, undated postholes to the south of gully 5294 may also have been related. The gully lay just to the east of the line of the post alignment, and the postholes to the south of the gully were larger in size than those of the main alignment.

Towards the northernmost limit of the excavation area was post alignment E (Figs 8 and 9), notably different in character to alignments F and G. It was 11m long, aligned east/west, slightly curved and comprised 16 posts. The postholes were more substantial than in both alignments F and G, ranging from 0.35m to 0.6m in diameter and up to 0.32m in depth (e.g. Fig. 12, section 2). They were generally closely spaced, typically 0.1m to 0.2m apart and never more than 0.4m apart. Each feature contained a similar silty gravel fill. Three sherds (9g) of Late Bronze Age pottery were recovered from two features at the western end of the alignment and every feature in the alignment produced burnt flint. Posthole 470 in the centre of the line had been cut by a later (Early Iron Age) pit.

Other activity

As noted above, the main foci of the Late Bronze Age settlement were in the eastern and western parts of the site (Zones 2 and 3). In the central part of the site (Zone 1), besides the post alignments, there was little activity associated with this period.

To the north of post alignment G, towards its western end, were two postholes, 661 and 665, that contained pottery in sufficient quantity and exclusivity as to be confidently assigned to the Late Bronze Age period. They varied in shape and size, with measurements of up to 0.76m in length and 0.27m in depth, and each contained an indistinctive single fill. Posthole 665 produced six sherds (36g) of pottery, while 31 sherds (172g) were recovered from posthole 661. In addition, feature 661 contained a small fragment of polished sarsen stone from a saddle quern, as well as a concentration of burnt flint.

Pit 772 lay 15m to the north-east of postholes 661 and 665 and contained a small quantity (three sherds/1g) of Late Bronze Age pottery. Although a relatively small feature, it was found to be artefactually productive, containing burnt flint, charcoal, hammerscale and daub.

A further seven unremarkable features located within the later Early Iron Age enclosure (see below) produced exclusively Late Bronze Age pottery, but only one or two sherds. This paucity, together with the location of the features within the later enclosure suggests that the ceramic material is probably residual in nature and the features are more likely to be associated with the enclosure. This conclusion may also apply to pit 772, described above.

Zone 2

The roundhouses

Roundhouse C (Figs 15, 17 and 19), towards the eastern extent of the site, comprised 11 postholes forming a single ring, 9.5m in diameter, with a small posthole (1511) in the centre. Two smaller postholes and two larger post-pits formed a 1.5m-wide porch facing east-south-east. The postholes were generally 0.35m in diameter, although there was some variation, up to 0.85m in diameter in the case of posthole 1227, and their depths ranged between 0.15m and 0.31m. They were generally vertically or steep-sided with rounded bases (Fig. 24, sections 3 and 4) and they were spaced at intervals of between 1.8m and 2.4m. The post-pits at the front of the porch were relatively shallow; pit 170 was 0.08m deep, and pit 172 slightly deeper at 0.25m. A further posthole (174) adjacent to post-pit 170 may also be associated with the structure of the roundhouse.

Although the roundhouse was clearly a single-phase construction, three further postholes along the western side of the structure (1231, 1235 and 1243), which do not correspond with the postulated circuit of the roundhouse, may have been replacement or additional posts.

The majority of the postholes associated with the structure contained a homogeneous silty gravel fill, but some fills appeared to be more organically rich, predominantly in the northern half of the structure. Post-pipes were visible as in two adjacent postholes (1209, 1213) along the north-eastern part of the roundhouse.

The postholes of roundhouse C generally contained both artefactual and ecofactual material. Plant macrofossils, burnt flint and charcoal were recovered from almost every posthole. The charred plant remains included grains of barley and emmer or spelt wheat, and oats. Flax seeds and hazelnut shell fragments were also recovered from a number of the postholes. Posthole 1227 produced six chips of worked flint, and fragments of a fired-clay pit lining were recovered from posthole 1233. Late Bronze Age pottery was found in almost every feature associated with the structure, and, notably, in the greatest quantities along its western side, including the *in situ* base of a single vessel in posthole 1241 (Fig. 22), a feature from which 459 sherds (3568g), possibly representing two different jars, was eventually recovered. Overall, a total of 559 sherds (5053g) of pottery were recovered from roundhouse C. Much of this material (287 sherds) was found to have been burnt subsequent to initial firing, resulting in the sherds becoming bloated, cracked and an unusual pale grey colour.

The pottery recovered from the roundhouse C postholes appeared to have been deposited after the removal of the posts, as it was recovered from throughout the postholes and not around their outer edges, as would have been expected if used as packing material during construction.

Significantly, quantities of microscopic metallurgical residues, including spheroidal and flake iron hammerscale, were also found in the majority of features associated with roundhouse C.

Samples of cereal grains from postholes 1223 and 1235, and a cereal grain and fragment of charcoal from posthole 1241 were submitted for radiocarbon dating. This produced date ranges of 1110–820 cal BC (GrA-24695) for posthole 1223, 1050–890 cal BC (OxA-12581) and 1130–890 cal BC (GrA-23701) for posthole 1235, and 1050–900 cal BC (OxA-12582) and 1010–830 cal BC (GrA-23750) for 1241, and suggests that roundhouse C was in use between *1030–940 cal BC (start C)* and *970–880 cal BC (end C)*.

The two post-pits at the front of the porch, in complete contrast to the remainder of the features associated with roundhouse C, were almost completely devoid of any artefactual material.

A single pit (1239), a pair of postholes (1247, 1249) and a further small pit or posthole (1229) were excavated within roundhouse C. Although there is no evidence that all of these features are contemporary with the roundhouse, joining sherds of pottery were found in posthole 1237, part of the roundhouse, and in pit 1239 inside the structure, strongly suggesting contemporaneity between the two sets of features. All of the internal features contained the same homogeneous silty gravel fill described above. Whilst the pair of small postholes contained no cultural material, Late Bronze Age pottery, burnt flint, charcoal and hammerscale were found in the pit/posthole 1229 and pit 1239.

Immediately north of roundhouse C was a 3.65m-long crescent-shaped pit, 199, filled by a single deposit of burnt flint within a charcoal- rich silt matrix. This also yielded Late Bronze Age pottery (27 sherds; 203g), hammerscale, daub, worked flint and charred plant remains similar in character to those retrieved from the roundhouse postholes. Pit 199 also produced a single small intrusive sherd of Roman pottery.

Semi-circular structure A (Figs 15–17), 7.8m in diameter and comprising seven postholes, was located to the north-west of Roundhouse C. The individual features typically ranged from 0.3m to 0.38m in diameter and 0.13m to 0.19m in depth, however the easternmost posthole was larger, with a diameter of 0.56m and a depth of 0.34m. Posthole 5151 was cut into the top of an earlier pit, 154 (Fig. 24; section 7). Again, all postholes contained homogeneous silty gravel fills and yielded quantities of burnt flint, charcoal and hammerscale, as well as two struck flint chips.

Approximately 10m to the west of structure A was a second roundhouse, D (Figs 15, 18, 20 and 21), comprising two incomplete post-rings, the outer represented by six postholes giving the ring an overall diameter of 13m. The inner ring comprised nine postholes and was 11m in diameter. Two post-pits formed a south-east facing porch, measuring 2m long and 1.5m wide. The northern pit (092) was cut into a larger shallow pit, 108.

The postholes of the outer ring of roundhouse D were mostly circular, averaging 0.3m in diameter, with vertical or steeply sloping sides and rounded bases. They ranged in depth from 0.14m along the southern part of the ring, to 0.23m along the northern part. Distances between postholes where two survived adjacent to each other ranged between 1m and 1.6m. The postholes of the inner ring were generally larger, with an average diameter of 0.4m, and depths of between 0.11m and 0.3m. They varied in shape from concave to vertical or steep-sided, mostly with rounded bases. The gaps between adjacent surviving postholes ranged from 1.5m to 2.6m.

The majority of postholes in both rings contained homogeneous silty gravel fills, except for postholes 1483 and 1488 (see below), and in only one, 1396 (Fig. 24, section 5), could a post-pipe be determined. Late Bronze Age pottery totalling 13 sherds (42g) was recovered from the two post-rings, whilst the two post-pits at the front of the porch collectively yielded 31 sherds (354g). Burnt flint was found in the majority of the postholes, as was charcoal and hammerscale.

A long, shallow crescent-shaped pit (1373), similar in character to pit 199 in roundhouse C, was located in the northern part of the roundhouse, apparently between the inner and outer rings of postholes. It contained layers of ash that produced quantities of burnt flint, charcoal and hammerscale. The atypical fills of nearby postholes 1483 and 1488 may have derived from the same source of this material.

A number of features were excavated inside roundhouse D, including pits and postholes. Almost all contained the ubiquitous homogeneous, silty gravel deposits, although a post-pipe was identified in posthole 1368. A total of 77 sherds (585g) of Late Bronze Age pottery was recovered from these internal features, which also produced quantities of burnt flint, charcoal, waste pieces of struck flint and hammerscale. A small amount of charred plant remains was also retrieved from the features within roundhouse D, including a grain of emmer or spelt wheat from posthole 1382. Posthole 1401 contained a concentration of burnt flint, while a fragment of a clay weight of undiagnostic form was recovered from pit/posthole 1564. A fragment of a pyramidal clay weight was also found, in posthole 1403.

Samples of cereal grains from feature 1382, a cereal grain and fragment of charcoal from posthole 1439, and a sample from a cereal grain from posthole 1436 were submitted for radiocarbon dating. This provided date ranges of 1020–830 cal BC (GrA-23710) and 1130–910 cal BC (OxA-12583) for feature 1382, 1010–830 cal BC (OxA-12584) and 1000–820 cal BC (GrA-23751) for posthole 1439, and 1210–900 cal BC (GrA-24659) for 1436. Collectively, the radiocarbon dates suggest that roundhouse D was in use between *1060–940 cal BC (start D)* and *960–840 cal BC (end D)*.

Activity associated with the settlement **(Fig. 15)**

In contrast to the area surrounding roundhouse C, a concentration of pits and postholes representing further Late Bronze Age activity was identified fanning out to the north of roundhouse D, whilst limited contemporary activity was also revealed to the south (Figs 14 and 15). Many of these features produced small quantities of Late Bronze Age pottery, while a number of postholes to the north of structure D contained very dark fills, possibly organic nature.

A line of three similar pits, 1262, 1465 and 1456, lay towards the northern limit of excavation. Although all three appeared to be contemporary, two (1262, 1465) contained only Late Bronze Age pottery (4 sherds; 43g), whilst the other (1456) produced Early Iron Age material (5 sherds; 14g), and an Early Iron Age date for all three features cannot be dismissed.

The majority of Late Bronze Age features to the north and south of roundhouse D were unremarkable in nature, however pit 1104 (Fig. 15 and Fig. 24, section 8) was an exception. It was the second of two intercutting pits situated in the gap in post alignment F. Both pits were roughly circular in shape, no more than 1.2m wide and 0.38m deep, with bowl-shaped profiles. Pit 1106 contained a distinctly lighter silty gravel fill, whereas pit 1104 was filled by a much darker material of similar composition. However, the most notable difference between the two features was that pit 1106 was completely devoid of any artefactual material, whereas pit 1104 produced an abundance of finds and ecofactual evidence. This included 210 sherds (364g) of Late Bronze Age pottery, quantities of which had been burnt like those from roundhouse C. The similarity also extended to the fabrics and forms found in both locations. Pit 1104 also yielded burnt flint, charcoal, daub, fragments of a fired clay object and a clay weight, hammerscale and charred plant remains. Compared to the majority of other sampled features across the site, pit 1104 was also relatively rich in plant macrofossils. These included emmer or spelt wheat grains, hulled barley grains and 21 hazelnut shell fragments.

Immediately to the north-west of roundhouse D was a possible rectangular structure, X, possibly representing a small enclosure approximately 12m in length and 7m wide. It appeared to consist of 13 postholes of varying size, seven of which contained 16 sherds (180g) of Late Bronze Age pottery.

Zone 3

***Activity in the western part of the site* (Figs 14 and 23)**
Two other groups of Late Bronze Age features were found towards the western periphery of the site. These comprised two pit groups, V and W, together with possible associated activity to the east of group V.

Group V comprised five pits of varying size and shape. Amongst these, the two westernmost (084 and 257) contained homogeneous silty gravel fills and neither produced any dating evidence. Pit 068 contained the same sort of deposit but yielded 3 sherds (54g) of Late Bronze Age pottery. Pit 638, 3m to the west, contained a dark fill, possibly of an organic nature, which produced nine sherds (189g) of Late Bronze Age pottery. The largest feature in the cluster, pit 086 (Fig. 24, section 9), was cut by a later pit (1715) from which 202 sherds (2014g) of Late Bronze Age pottery were recovered. In addition, pit 068 produced a small quantity of burnt flint, three struck flint flakes were recovered from pit 086, and 638 contained burnt flint, charcoal and a very small quantity of hammerscale.

Analysis of the pottery recovered from pits 068, 086 and 638 identified the presence of burnt food residues on the inside of a number of sherds. Samples of this material were recovered and three were radiocarbon dated. That from context 069 produced dates of 970–800 cal BC (OxA-12641), a date range of 810–590 cal BC (OxA-12642) was provided by the sample from deposit 089; and that from context 639 produced dates of 830–760 cal BC (OxA-12640).

To the south, close to the western edge of the excavation area and situated between two areas of later quarrying, group W was identified. This cluster contained both pits and postholes and while there is variation in their size and shape in plan, the majority of these features were found to be very shallow, as little as 0.05m in depth.

The features in this group were mostly filled by the usual homogeneous grey-brown silty gravel. One exception was pit 027, which was filled by a charcoal-rich silty deposit. This pit also produced 19 sherds (164g) of Late Bronze Age pottery, as well as a quantity of burnt flint, a struck flint flake, hammerscale and plant macrofossil material including a wheat grain and a glume base, and a fragment of hazelnut shell. Other material found in this group of features includes a single sherd of Late Bronze Age pottery and two flint flakes from feature 019, and a small amount of hammerscale from pit 023.

Period 3: Early Iron Age

The main elements of the Early Iron Age activity on the ALSF site comprised part of a ditched enclosure containing a roundhouse and many other features associated with occupation, including several post-built structures. In addition, outside the enclosure there was a scatter of features in the western part of the site, and also a small number of features to the east of the enclosure.

Ceramic material dated to the transitional period of the Late Bronze Age/Early Iron Age (9th to 7th centuries BC) was found in small quantities within the excavation area. Although this material was often found residually with later pottery, it was also found exclusively in a small number of features located mostly within the Early Iron Age enclosure. While the small quantities of this pottery might all be residual its presence suggests that, if the features themselves do not actually date to this period, there must be settlement of this date nearby.

The enclosure **(Figs 25 and 26, 34–36, 40)**

The southern part of a trapezoidal enclosure bounded by a segmented ditch was revealed, extending beyond the northern limit of the excavation area. The enclosure was defined by three separate ditch lengths, the western and southernmost extents of which followed the contour that defines the edge of the plateau. Each ditch length was assigned a generic number, although unique numbers were also assigned to the ditch and its fills in each excavated section.

The westernmost exposed length of ditch (620) extended southwards from the north-western corner of the site, before turning in an east-south-easterly direction and terminating towards the centre of the excavation area. A southern entrance to the enclosure was formed by this and the western terminus of ditch 008 to the east. Ditch 008, approximately 39m in length, defined the south-eastern corner of the enclosure. A gap of 7m was revealed between its northern terminus and ditch 003 which extended beyond the north-eastern limit of excavation. It was in this gap that cremation burial 446, described above, was identified.

Ditch 620 was generally V-shaped, with steep sides and a rounded base (Fig 40, sections 10 and 11). However, towards the eastern terminus it became shallower and its profile more rounded. It was approximately 62m in length and varied in width from 1.35m to 1.75m, and in depth from 0.52m to 0.83m, being more substantial at its corner than elsewhere along its length. Deposits representing slumping or weathering were recorded in a number of sections excavated across the ditch, and some of this material may represent redeposited material from an interior bank. In the majority of the excavated sections it was clear that these deposits had been truncated by later recutting of the ditch (e.g. Fig. 40, section 10).

The south-eastern length of the enclosure ditch, 008, was generally broad and rounded in profile (Fig. 40, section 12). It varied in width from 1.07m to 1.7m and in depth from 0.28m to 0.46m. In contrast to ditch 620, ditch 008 contracted at its south-western corner to a width of only 0.7m and a depth of 0.26m. It was filled by deposits similar to those of its western counterpart, and had likewise been subject to recutting (e.g. ditch 5310, Fig. 40, section 13).

A short length of ditch, 003, commencing 7m to the north of the northern terminus of ditch 008, extended northwards beyond the limit of excavation and represented a continuation of the enclosure ditch. It was similar in size, profile and content to 008, although if a recut was present here, it was not easily discernible (Fig 40, section 14). A quantity of burnt flint, a small piece of iron slag and a corroded fragment of iron were recovered from the uppermost fill of ditch 003.

The fills associated with the original enclosure ditch produced two sherds (2g) of Late Bronze Age and a single sherd (1g) of Early Iron Age (17g) pottery. Further artefactual and ecofactual material was recovered in small quantities from the processing of a sample taken from the eastern terminus of ditch 620, including burnt flint, charcoal, a single retouched flint flake and hammerscale. In general, however, the earliest phase of the ditch was largely devoid of artefacts.

Recutting of the enclosure ditch

The re-cutting of the enclosure ditch occurred later in the Early Iron Age period and, where excavated, the recut feature contained greater quantities of artefactual material than its predecessor. This included 16 sherds (143g) of Early Iron Age pottery, as well as small quantities of residual Late Bronze Age (5 sherds/77g) and Late Bronze Age/Early Iron Age (4 sherds/9g) material. In addition, burnt flint was recovered in small quantities mostly from the eastern side of the enclosure, while fragments of daub were recovered from its south-western corner. A single struck flint flake was also found at the south-eastern corner and, a little further to the north, a biconical spindlewhorl was recovered. Fragments of slag were also found along the eastern lengths of the recut ditch.

In places the recut was narrower than the original ditch (as in Fig. 40, section 10), but it was also deeper in places. Where only a single deposit was apparent, it is likely that the recut had totally removed the original ditch (e.g. Fig. 40, section 12). Generally, the recut of the enclosure ditch contained a single fill of homogeneous grey-brown silty gravel representing natural infilling. However, the south-western corner of the enclosure ditch was filled by darker material, possibly representing a higher organic content. Evidence of two phases of silting was recorded along the eastern length of the recut ditch (Fig. 40, section 13).

Towards the south-eastern corner of the enclosure, the southern side of the recut ditch was cut by a further short length of ditch (5290). This was 6.8m long, up to 1.5m wide and 0.49m deep. It contained two fills, evidently representing two separate phases of silting. A single small sherd (1g) of Early Iron Age pottery was recovered from the basal fill, which also contained a small quantity of burnt flint.

***The roundhouse* (Figs 26–30)**

Towards the northern limit of the site, a double-ringed roundhouse (B) was identified (Fig. 28). It comprised two incomplete post-rings: the inner ring was formed by 9 postholes and was 7.6m in diameter, and the outer ring was represented by 12 postholes with an overall diameter of 10.2m. A further four more substantial features, two of which also lay along the line of the outer post-ring, formed an east-south-east facing porch, measuring approximately 2m long and 2m wide.

The postholes in the main post-rings were mostly circular, ranging from 0.32m to 0.74m (with an average of 0.49m) in diameter. Their profiles varied in accordance with their depth; where deeper they tended to have steeper sides, and the bases also varied from rounded to flat or irregular. They ranged in depth from 0.12m to 0.26m, with an average depth of 0.17m. Distances between postholes where adjacent features survived ranged between 0.45m and 1m.

The four porch post-pits were generally circular and ranged between 0.85m and 1.23m in diameter. The depths of these features were recorded at between 0.25m and 0.44m, except for post-pit 1125 which was deeper, at 0.72m. They were almost all steep-sided with rounded bases.

The majority of postholes associated with roundhouse B contained homogeneous silty gravel fills. Post-pit 408 (Fig. 41, section 16), associated with the porch, was one exception, containing packing stones and a post-pipe (526). Posthole 215 contained a typical silty gravel fill that had been sealed by a thin layer of orange-brown clay silt with patches of burnt red clay.

A total of 57 sherds (446g) of pottery was recovered from the postholes directly associated with the structure. This amounted to 10 sherds (38g) of Late Bronze Age, 23 sherds (244g) of Late Bronze Age/Early Iron Age, and 13 sherds (106g) of Early Iron Age material. The majority of the pottery was recovered from the porch post-pits.

Further artefactual and ecofactual material was recovered from the structure, some by hand collection and some from processed samples. This does create a bias towards those features which were sampled, but as approximately equal numbers of features from each of the post-rings, as well as the four post-pits of the porch, were selected for sampling, the overall distribution of material throughout the structure can be guaged.

Cultural material recovered from the post-rings and porch of roundhouse B included burnt flint, charcoal and hammerscale, which were found in the majority of features. In addition, two chips and three flakes of struck flint were recovered from features associated with the porch and the southern part of the roundhouse. Small quantities of daub, some with impressions of rods or wattles, were also recovered from two of the post-pits at the entrance to the structure. A fragment of iron slag, which once had been in contact with a furnace wall, was recovered from posthole 406.

Four postholes lay between the two main post-rings in the south-western part of roundhouse B. Three of these were slightly oval and of similar dimensions (0.5m to 0.57m in length, 0.4m to 0.44m in width, and 0.23m to 0.25m in depth), while posthole 314 was slightly smaller and shallower. All four had similar profiles; steep or vertical sides and flat bases, and their similarity extended to their homogeneous silty gravel fills and their paucity of artefactual material. Small quantities of burnt flint were recovered from each, as was charcoal, and three of the four contained small amounts of hammerscale.

Internally, the roundhouse contained a further ten generally small postholes, the majority of which were situated in the north-western quadrant of the structure, where they may have formed a two-sided internal division. A further two postholes were revealed in the southern part of the structure, one of which (351) produced a single small sherd of Early Iron Age pottery. No other artefactual material was recovered from inside the roundhouse. A tree-throw pit (388) of unknown date was also identified in the centre of the structure.

Samples of charcoal recovered from three roundhouse postholes (402, from the outer post-ring, and 357 and 394 from the inner ring) were subject to radiocarbon dating. Two samples from posthole 402 provided date ranges of 760–390 cal BC (OxA-12580) and 790–400 cal BC (GrA-23749). Two further samples from posthole 394 gave date ranges of 760–390 cal BC (OxA-13032) and 790–390 cal BC (GrA-24522). The single sample from posthole 357 provided a date range of 760–380 cal BC (GrA-24663). In addition, a sample recovered from a cereal grain from post-pit 1125 provided a date range of 400–200 cal BC (OxA-12968). The radiocarbon dates collectively suggest that the roundhouse was in use between *550–430 cal BC (start B)* and *390–320 cal BC (end B;* all at *68% probability)*.

Activity associated with roundhouse B

A number of features associated with roundhouse B clearly post-dated its construction. These were concentrated around the inner entrance to the structure, but also included a small pit, 379, within the interior, opposite the entrance.

Pit 379 (Figs 31 and 41; section 17) was circular, 0.63m in diameter and 0.25m deep. A deposit of yellow unfired clay covered much of the base of the pit, slightly lapping up the western edge. A small, near complete sarsen saddle quern lay within this material. These deposits were overlain by a deposit of dark brown silty clay containing abundant gravel, which produced five sherds (25g) of Early Iron Age pottery, as well as two sherds each of Late Bronze Age/Early Iron Age (8g), and Late Bronze Age (7g) material. It also contained a concentration of burnt flint, charcoal and a quantity of hammerscale. Samples were recovered from this context for plant macrofossil analysis and radiocarbon dating.

Analysis of the charred plant remains identified the presence of emmer/spelt wheat and barley grains. Radiocarbon analysis of samples of hazelnut shell and an indeterminate cereal grain provided identical date ranges of 400–200 cal BC (OxA-12579 and GrA-23747), suggesting that this feature is associated with activity towards the end of the use-life of the roundhouse.

Elsewhere, six similarly sized postholes were found around the inner part of the entrance to the roundhouse. Two of these truncated the south-western porch post-pit, while one was cut by the northernmost post pit. None of these postholes contained any ceramic evidence, however postholes 299 and 301 contained quantities of burnt flint, daub, charcoal and hammerscale, as well as a single fragment of burnt bone and two struck flint chips. A sample of charcoal from posthole 299 was radiocarbon dated and provided a date range of 520–260 cal BC (GrA-24526).

***The post-built structures* (Figs. 26, 32, 33 and 37)**

Analysis of the spatial distribution of features within the enclosure shows that the majority lie within the southern part, in a band approximately 25m wide, running parallel to the southern length of the enclosure ditch. The area to the north of this contains the roundhouse, and it is noticeable that discrete features are much less concentrated here, especially in front of (i.e. to the south-east of) the roundhouse. It is possible that features along the northern periphery of the concentrated area may be associated with some form of division e.g. a fence.

A number of square post-built structures and two possible racks were identified within the enclosure. Two of the square structures could be confidently dated to the Early Iron Age period; four contained no dating evidence but have been assigned to this period due to their similarity to the dated structures and position within the enclosure. In addition, structure L, due to its similarity to the other post-built structures, has been included in this phase, although it contained only Late Bronze Age pottery, as did one of the racks. The other rack was undated.

Structure N was located approximately 14m south-west of roundhouse B. It comprised four circular postholes ranging from 0.41m and 0.6m in diameter and

0.15m and 0.26m in depth, forming a structure 2.8m square. Each posthole was filled by a typically silty gravel deposit. The only cultural material recovered from this structure was a small quantity of burnt flint from posthole 606.

Adjacent to the eastern side of structure N was a second structure, P. This comprised four main postholes forming a slightly trapezoidal structure measuring 2.5m along each side. A smaller posthole along the western side may also have been a component of this structure. The main postholes were all of a similar diameter, averaging 0.51m, but varied in depth, from 0.38m to 0.52m. Four of the postholes contained homogeneous gravelly fills, however the basal deposit within posthole 690 appeared to have a high organic content. This deposit was also relatively artefact-rich, producing 48 sherds (160g) of Late Bronze Age/Early Iron Age pottery, a single sherd (3g) of Early Iron Age material, a quantity of burnt flint and an iron knife with traces of a horn handle. The knife has been identified as having a common convexly-curved blade, and is of a type that was popular from the Early Iron Age through to the Early Roman period (McSloy, this report). Burnt flint was recovered from three of the postholes in this group, and further Late Bronze Age/Early Iron Age (6 sherds; 15g) and Early Iron Age (2 sherds; 4g) pottery was recovered from two of the postholes.

Three metres to the south of structure N, four-post structure Q comprised postholes ranging from 0.31m to 0.42m in diameter and 0.1m to 0.21m in depth, giving the structure dimensions of 2m square. Three of the postholes contained typical gravelly fills, but posthole 680 contained evidence of post packing and a central post-pipe. Small quantities of burnt flint were recovered from the two southern postholes but the group was otherwise devoid of any artefactual evidence.

Further south, structure R was constructed from up to six posts, although it is unclear whether features 667 and 643, located along the western and eastern sides respectively, were actually components of this structure or part of the general scatter of undated features in the vicinity. The postholes varied slightly in shape and size, the smallest measuring 0.31m in length, 0.26m in width and 0.18m in depth, the largest 0.48m in diameter and 0.26m deep. All were filled by typically homogeneous silty gravel deposits and although four of the six features contained burnt flint, none of them produced any dating evidence.

Two possible post-built racks, Y and Z, lay to the east of structure R (Fig. 32). Rack Y comprised two pairs of postholes 2.2m apart, and in each pair, one posthole was larger than the other. The larger postholes (509, 554) had diameters of 0.75m and 0.54m respectively. Posthole 509 was 0.27m deep, while posthole 554 was 0.14m deep. The smaller features (1285, 1288) averaged 0.27m in diameter, and were 0.07m and 0.14m deep respectively. Posthole 509 contained three sherds (13g) of Late Bronze Age pottery.

Rack Z, which was perpendicular to rack Y, was similarly constructed, however there were three postholes at its southern end, rather than two. The largest posthole (552) was 0.34m in diameter, and 0.17m deep. The remaining postholes varied between 0.16m and 0.22m in diameter and 0.05m and 0.14m in depth. No dating evidence was recovered from this stryucture.

To the south-east of structure R, a further post-built structure (S) was identified. This comprised five postholes varying in size from 0.24 to 0.37m in diameter and between 0.06m and 0.2m in depth. The structure was slightly elongated, measuring 2m in length and 1.6m in width. Four of the component features contained typically gravelly fills, the other (posthole 940) contained a dark, carbon-rich deposit. Burnt flint was recovered from three features in this group, whilst small quantities of charcoal and hammerscale were also present. Posthole 999 also produced a fragment of daub.

Towards the eastern side of the enclosure was four-post structure T (Fig. 33). It was approximately 1.8m square and comprised four small postholes, all slightly oval in shape and no more than 0.32m in length or 0.2m in depth. Three of the postholes contained unremarkable silty gravel fills, but posthole 1035 was filled by a darker deposit which produced seven sherds (8g) of Early Iron Age pottery and a quantity of burnt flint.

Possible six-post structure L lay to the south of T and comprised a square, 1.7m in width and length, made up of four postholes, 0.21m to 0.3m in diameter and 0.15m to 0.17m in depth. Adjacent to each of the northernmost two postholes was a further posthole, set at an angle of approximately 45 degrees. These two postholes were 0.25m in diameter and noticeably deeper than those of the main square part of the structure, both measuring 0.25m in depth. All were relatively steep-sided with rounded bases and all contained a single fill of grey-brown silty gravel. In total, 20 sherds (119g) of Late Bronze Age pottery was recovered from the structure, 17 sherds (101g) of which were found in the outer two postholes. In addition, the north-easternmost two features contained small quantities of burnt flint. Although the recovery of exclusively Late Bronze Age pottery suggests a similar date for the structure, its form and location within the enclosure implies an Early Iron Age origin.

The pits

Pit group U, comprising six features, lay inside the southern entrance to the enclosure (see Fig. 26). Pits 785, 872 and 952 were all circular and ranged in diameter from 0.85m to 1m, and in depth from 0.34 to 0.4m. Pit 785 (Fig. 38) contained two dark brown silty gravel fills, the earliest of which produced 99 sherds (359g) of Early Iron Age pottery, the majority of which originated from a single cooking pot, as well as burnt flint. The later fill also contained burnt flint and produced 22 sherds (110g) of Early Iron Age pottery. A small near-complete sarsen saddle quern was also recovered from this deposit.

Pits 872 and 952 contained similar dark deposits, from which small quantities of Late Bronze Age/Early Iron Age (2 sherds/4g) and Early Iron Age (4 sherds/15g) pottery were recovered. In addition, pit 872 also contained burnt flint and a single struck flint flake. A shallow lens of silt overlay the main deposit in pit 952. To the west, pit 975 contained a single fill of red-brown sandy silty gravel from which 91 fragments of triangular clay weights, representing at least three individual objects, were recovered. To the east, pit 961 yielded four sherds (10g) of pottery, possibly dating to the Late Bronze Age/Early Iron Age period, and a single sherd (4g) dated more confidently to the Late Bronze Age.

Pit 493 (Figs 26 and 41, section 19) was situated in the south-western corner of the enclosure. It was almost circular and approximately 0.9m in diameter, with a maximum depth of 0.3m. It contained six separate deposits, the earliest of which represented gravel collapsed from the eastern side of the feature. This was overlain by three separate deposits, the earliest and latest of which comprised mainly clay mixed with burnt flint and charcoal, and a deposit of charcoal-rich silt containing lumps of fired clay and burnt flint in between. These deposits were sealed by a further deposit of dark charcoal-rich silt, containing a concentration of burnt flint, which was partially overlain by a deposit of redeposited gravel, perhaps collapsed from the western side of the feature.

Artefactual material recovered from the deposits within pit 493 included a single chip of worked flint and a quantity of hammerscale, as well as 116 sherds (1.047kg) of Early Iron Age pottery. The pit also contained small quantities of Late Bronze Age/Early Iron Age and possibly Late Bronze Age residual pottery. The pit was also found to be rich in charred plant remains, with high levels of cereal grains, including emmer/spelt wheat and barley, hazelnut shell and, interestingly, black mustard seeds.

Nearby, pit 423 (Figs 26 and 39 and Fig. 41, section 18) was circular, 0.75m in diameter, a maximum of 0.2m deep and had a shallow rounded profile. It was lined with orange clay, over which lay a mixed deposit of silty clay, containing charcoal and fired clay. A deposit of clay, similar to that lining the pit, partially overlay the mixed material, and this was in turn sealed by a deposit representing the final silting of the feature. A total of 73 sherds (315g) of Early/Middle Iron Age pottery was recovered from the latest fill, which also contained a small quantity of burnt flint. A sample of burnt food residue was recovered from one of the pot sherds and was subject to radiocarbon dating. This provided a date range of *410–350 cal BC (74% probability)* or *300–230 cal BC (21% probability; OxA–12643)*, suggesting that this feature may be associated with the latest activity within the enclosure.

Approximately 16m to the north of the southern enclosure entrance was a group of three intercutting pits. Pits 585 and 587 were presumed to be oval in shape, pit 585 measuring 1.6m by 1m and 0.23m deep, whilst pit 587 was over 2m long, 1.7m wide and 0.4m deep. Both were filled by similar dark orange-brown silty gravel fills. A small quantity of burnt flint and two fragments of smelting slag were recovered from pit 587, together with a single sherd (21g) of Late Bronze Age pottery. The pottery is believed to be residual, due to the presence of the slag and its similarity to other macroscopic residues dated to this period, and therefore this feature may belong to the Early Iron Age phase. The third pit in the group was not excavated.

Other activity within the enclosure (Fig. 26)

Posthole 488 cut one of the central postholes of post alignment E. It was filled by a single carbon-rich deposit which contained quantities of burnt flint and hammerscale, as well as four sherds (27g) of Early Iron Age pottery. A sample of the fill was taken for plant macrofossil analysis and found to contain emmer/spelt wheat and barley remains.

Adjacent to the northern boundary of the site, 8m to the south-east of roundhouse B was a small, circular pit, 220. It had a concave profile and was 0.5m in diameter and a maximum of 0.22m in depth. It contained a single carbon-rich fill, from which a very small amount (3g) of cremated human bone was recovered. Although it contained no pottery, a concentration of burnt flint, as well as a very small quantity of hammerscale was recovered from this feature.

Elsewhere within the enclosure, a small number of other unremarkable isolated features were identified, all of which contained one or two sherds of pottery dated to this period. Of these, postholes 498 and 1102 were randomly selected to provide samples for plant macrofossil analysis. Posthole 1102 was found to be rich in emmer and spelt wheat remains, and also contained barley and oats. Emmer/spelt wheat and barley remains were recovered from the sample taken from posthole 498, although in much lesser quantities.

Posthole 322 contained fragments of slag from which a sample of charcoal was recovered for radiocarbon dating. This provided a date range of 760–380 cal BC (GrA-24524). Posthole 614, situated towards the central part of the site, contained remnant packing material comprising clay and flint gravel. A single sherd (24g) of a possible Middle Bronze Age urn was recovered from the post-pipe, but it is likely that this material is residual in nature.

Activity outside the enclosure

Towards the western side of the site was a scatter of features, including pits and postholes. Most of these features were undated, however two contained Early Iron Age pottery. Within the group it was possible to define three pairs of similar postholes. Posthole 070 contained possible organic material and a post-pipe was evident in posthole 267. Six sherds (46g) of Late Bronze Age/Early Iron Age pottery was recovered from posthole 564, whilst posthole 562 produced a single sherd (4g) of Early Iron Age material. In addition, four of these features were found to contain small quantities of burnt flint.

Pit 820 lay 3.5m to the east of the eastern side of the enclosure ditch. It was circular in shape, 0.7m in diameter and 0.29m deep. It contained four fragments of daub and a single piece of slag, identified as that from a smelting furnace. Two pairs of postholes were identified to the north-east of pit 820. Collectively, they produced four sherds (21g) of Early Iron Age pottery, as well as a single sherd (15g) of residual Late Bronze Age material. In addition, posthole 865 retained evidence of a post-pipe.

To the east, pit 1456 lay adjacent to Late Bronze Age pits 1465 and 1262. Its dark fill was noticeably different to those of the earlier pits and produced five sherds (14g) of Early Iron Age material.

To the south-east of pit 1456 was irregularly-shaped pit 796 (Fig. 41, section 20), which was 1.3m long and a maximum of 0.6m wide. It contained three closely spaced postholes, set within the light gravel fill of the larger feature. The packing material yielded 13 sherds (124g) of Early Iron Age pottery and a single fragment of daub.

Further to the south-east was pit 104, containing three separate fills, the earliest two of which comprised redeposited natural gravel, overlain by a further deposit which represented the final silting of the feature. The secondary fill contained two sherds (2g) of Early Iron Age pottery, as well as a small quantity of burnt flint and two struck flint flakes.

Period 5: Romano-British

A number of features representing activity dated to the Roman period were identified in the central and eastern parts of the site (Fig. 42).

The ditches

Ditch 5298 crossed the site on a north-north-east/south-south-west alignment, towards the eastern end of the site, where it cut across the Late Bronze Age roundhouse D. It varied in size and shape along its length, ranging from 0.35m to 0.9m in width, and 0.07m and 0.23m in depth. In places it was steep-sided with a flat base, and in others it had a generally shallow rounded profile. Towards its northern end, evidence of a recut (5150) was revealed (Fig. 43; section 21). The ditch was filled by a single deposit comprising silty gravel which graduated in colour from almost black at its northern end, to mid grey-brown further south. Finds within the ditch were sparse, comprising a single fragment (82g) of Roman *tegula,* a sherd (6g) of residual Late Bronze Age pottery, and a quantity of burnt flint.

A series of broadly contemporary features were identified adjacent to the southern half of ditch 5298. Ditch 5304 formed a deeper spur off the main ditch. It was 0.45m deep and filled by a series of deposits representing episodes of silting and final back-filling.

Further south, it is possible that shallow gully 5302 was originally associated with ditch 5298, however a large pit (1652) and the recutting of the main ditch has removed any evidence of a relationship. At its western end, however, gully 5302 cut into a 10m-long feature, 5300, possibly a short ditch. This feature measured up to 0.32m in depth and had a rounded V-shaped profile. It was filled by a single deposit of silty gravel containing frequent flint nodules but was almost completely devoid of any artefactual material.

A broader feature of similar nature, ditch 5292, lay immediately adjacent to the western side of ditch 5300. It was 8.2m long, up to 1.8m wide, and 0.53m deep, with a broad V-shape profile (Fig. 43, section 22). It contained three fills, representing episodes of slumping and silting, which collectively produced 14 sherds (150g) of Romano-British pottery, two fragments of daub, a struck flint flake and a quantity of burnt flint. The secondary fill also yielded a copper-alloy plate brooch, probably dated to the mid 1st century AD.

The quarry pits and associated activity

Three probable quarry pits, two of which were intercutting, were identified towards the southern periphery of the site. Pit 1345 was almost rectangular in shape, 4.5m long, 1.6m wide and up to 0.25m deep. It contained a single dark brown gravelly fill which was found to be relatively artefact rich. Finds included 97 sherds (683g) of Roman pottery, 12 fragments of daub and a quantity of burnt flint, as well as a residual fragment of a prehistoric red sandstone saddle quern and a fragment of Roman whetstone.

Approximately 18m south-west of pit 1345 were intercutting quarry pits 1408 and 1441 (Fig. 43, section 23). The earliest pit, 1408, was 2.3m long, 2.1m wide and irregular in shape. It was up to 0.4m deep and largely filled by a homogeneous silty gravel fill. It was cut along its southern side by pit 1441 which was almost circular, 1.6m in diameter and with an irregular base, raised in the centre. Evidence of impressed marks of shoe heels was found in one of the multiple deposits filling this pit, which produced quantities of burnt flint and hammerscale, as well as two pieces of worked flint and a single sherd (5g) of Roman pottery. A thin layer of charcoal covered both of the pits and into this was set a circular deposit of fired red clay. A single iron nail was recovered from the layer of charcoal and a single sherd (4g) of Roman pottery was recovered from the fired clay. Both pits were sealed by a deposit of silty gravel, which was devoid of any artefactual material.

A scatter of further unremarkable features, including irregularly shaped pits, as well as a number of postholes, was identified in the vicinity of the quarry pits. Although only one contained Roman pottery, it is presumed that the remainder are also associated with this phase of activity. A number of these features contained dark fills and a small number contained quantities of burnt flint and/or charcoal, whilst one produced a small quantity of hammerscale.

Other pits

Five more regularly shaped pits of Roman date were identified. These comprised a group of three intercutting pits and a pair of adjacent features.

The intercutting pits were located just inside the eastern side of the Early Iron Age enclosure. Of these, the outer two both cut the central one. All three features were filled by ubiquitous gravel fills and collectively they produced a small quantity of burnt flint, two fragments of fired clay and 6 sherds (30g) of Roman pottery.

Adjacent to the western side of the northernmost exposed length of ditch 5298, and apparently respecting that feature, were a pair of circular pits of similar size. Both contained similar very dark, almost black charcoal-rich silty gravel deposits. Whilst pit 928 produced a single iron nail and two sherds (109g) of Roman pottery, 930 was found to be significantly more artefact rich. Single fragments of Roman sandstone roofing tile, a redeposited quern or rubber stone and an indeterminate burnt stone object were recovered along with fragments of daub and 28 sherds (303g) of Roman pottery.

Period 6: Post-medieval/modern

Two irregularly-shaped areas of probable shallow quarrying were found in close proximity in the eastern part of the site, close to the southern periphery. Two larger areas of quarrying were also revealed in the south-western corner of the site (Fig. 6).

Sinuous ditch 5147 was aligned parallel to the Roman ditch 5298. It cut through the post-medieval/modern quarry pits, described above, and also roundhouse D.

Undated features

A large proportion (60%) of features contained no dateable artefactual material. In many cases it has been possible to identify which phase of activity they may be associated with, however, a small number could not be ascribed to a particular period and remain undated. The most conspicuous of these features is ditch 032 at the western end of the site. It was aligned similarly to the Roman ditch 5298 and hence, the later ditch 5147, and it appeared that its southern limit was a product of truncation, rather than an intentional terminus. It was generally straight but varied in width from 0.3m in the north to 0.94m towards its southern end. Its depth was also variable along its length, ranging from 0.09m to 0.28m.

It is possible that this feature may have been Late Bronze Age in date, demarcating the eastern limit of the Late Bronze Age pits in the western part of the site, however in the absence of any artefactual evidence, this remains speculative.

Tree-throw pits

A significant number of tree-throw pits were identified within the site, mostly concentrated in areas outside the foci of the settlement activity, however no evidence for the secondary use of the tree-throw hollows was found, although a small number did contain small quantities, usually one or two sherds, of pottery ranging from Late Bronze Age to Roman in date, which may be indicative of when the trees or shrubs fell or were removed.

Radiocarbon Dating

by Alex Bayliss, Mark Brett, Mark Collard, John Meadows, Chris Bronk Ramsey, and Hans van der Plicht

Twenty-eight radiocarbon measurements were obtained from samples at Hartshill Copse. Six further samples failed to produce results because of technical difficulties at the dating laboratories. The samples were processed during 2003 and 2004 at the Rijksuniversiteit Groningen and the Oxford Radiocarbon Accelerator Unit, according to methods outlined in Aerts-Bijma *et al* (1997; 2001), Lanting *et al* (2001), van der Plicht *et al* (2000), Bronk Ramsey and Hedges 1997, and Hedges *et al* (1989).

Results and Calibration

The results are conventional radiocarbon ages (Stuiver and Polach 1977) and are given in Table X1.

Simple calibrations of the results are given in Table X1, and in outline in Figures X1 and X2. All have been calculated using the calibration curve of Stuiver *et al* (1998) and the computer program OxCal (v3.5) (Bronk Ramsey 1995). Date ranges cited in the text are those at 95% confidence unless otherwise specified. Ranges quoted in italics are *posterior density estimates* derived from mathematical modelling of archaeological problems (see below). Ranges quoted in plain type have been calculated by the maximum intercept method (Stuiver and Reimer 1986). All other ranges are derived from the probability method (Stuiver and Reimer 1993).

Methodological Approach

A Bayesian approach has been adopted to the interpretation of this site's chronology (Buck *et al* 1996). Although simple calibrated dates accurately estimate the ages of individual samples, this is not usually what archaeologists really wish to know. It is the dates of archaeological events represented by those samples that are of interest. At Hartshill, it is the chronology of the use of the settlement and ceramics that is under consideration, not the dates of individual sherds or macrofossils. The estimated dates of this activity can be improved by combining archaeological phasing with the radiocarbon measurements.

Methodology is now available to produce realistic estimates of the dates of archaeological interest, by explicitly combining relative and absolute dating evidence. It should be emphasised that the *posterior density estimates* produced by this modelling are not absolute, and could change if further data become available.

The technique used is a form of Markov Chain Monte Carlo sampling, and has been applied using the program OxCal v3.5 (http://www.rlaha.ox.ac.uk/), which uses a mixture of the Metropolis-Hastings algorithm and the more specific Gibbs sampler (Gilks *et al* 1996; Gelfand and Smith 1990). Details of the algorithms employed by this program are in Bronk Ramsey (1995; 1998; 2001). The algorithm used in the models described below can be derived from the structures shown in Figures X1 and X2.

Objectives of dating programme

The aims of the dating programme were:

- to determine whether the settlement inside the enclosure was contemporary or successive to that outside
- to determine the duration of the settlement and whether it was a continuous phase of activity
- to date the ceramic sequence
- to date the cremation within the eastern entrance to the enclosure, to provide an indication of the date when the enclosure was established
- to validate the accuracy of the dating of cremated bone, by submitting replicate samples of charred plant macrofossils from the same context

Archaeological interpretation

The earliest dated activity on the site is represented by cremation 446. The four measurements are statistically consistent (Ward and Wilson 1978; T'=4.5; T'(5%)=7.8; v=3), so a weighted mean can be taken before calibration. This is 2989±17BP, which calibrates to cal BC 1320–1120 (Fig X1; cremation 446). The consistency of these results suggests that the cremated bone measurements are accurate.

Two roundhouses in the south-eastern corner of the site produced substantial quantities of late Bronze Age pottery. Charred plant macrofossils from three postholes in each structure were submitted for dating. All ten results are statistically consistent (T'=7.2; T'(5%)=16.9; v=9), suggesting that the buildings were used for a relatively short period of time. The consistency of the results from different postholes around the circuits of each structure suggests that these macrofossils derive from the occupation of the structures and are not intrusive. All six dated postholes also contained hammerscale (see Young above).

The model for the chronology of these roundhouses (Fig X1) suggests that roundhouse C was constructed in *1130–920 cal BC (start C)* and abandoned in *1000–790 cal BC (end C)*. Roundhouse D was constructed in *1200–910 cal BC (start D)* and abandoned in *990 - 730 cal BC (end D)*. Inspection of Figure X1, however, demonstrates that these estimated dates have long tails of low probability. This is due to the small number of measurements within each phase, and so is a reflection of statistical uncertainty rather than reality (two further samples from these structures failed to produce results). In this case, the ranges at 68% probability may be informative. They suggest that roundhouse C was in use between *1030–940 cal BC (start C)* and *970–880 cal BC (end C)*, and roundhouse D between *1060–940 cal BC (start D)* and *960–840 cal BC (end D;* all at *68% probability)*. All samples appear to date to the 10th century cal BC.

Three samples of carbonised residues adhering to ceramic sherds were submitted from pit group V (Fig X1). These pits also fall into the late Bronze Age, but appear to be later than roundhouses C and D. All three sherds are in flint-tempered fabrics (see Morris above).

Nine samples were dated from seven features relating to roundhouse B (and a further three samples failed). These suggest (Fig X2) that the building was constructed in *680–410 cal BC (start B)* and abandoned in *390–200 cal BC (end B)*. Again, Figure 2 demonstrates that these estimated dates have long tails of low probability due to the small number of measurements. The ranges at 68% probability may again be informative. These suggest that the structure was built in *550–430 cal BC (start B)* and abandoned in *390–320 cal BC (end B;* all at *68% probability)*.

Two further samples from within the enclosure were dated (Fig X2). Both features are broadly contemporary with the occupation of roundhouse B. Posthole 322 contained waste from iron smelting, and produced a date of *cal BC 550–360 (93% probability; GrA-24524)*. Another sample from this feature failed to produce a result. The final silting of pit 423 is dated by a carbonised residue adhering to sherd 2582 (fabric QI1; see Morris above), one of 63 sherds of the same vessel from context 425. This sherd dates to *cal BC 410–350 (74% probability)* or *cal BC 300–230 (21% probability; OxA-12643).*

Table X1: Radiocarbon results

Laboratory Code	Context	Material	δ13 C (‰)	Radiocarbon Age (BP)	Calibrated Date Range (95% confidence)
GrA-23638	[448] 27i, from cremation 446.	calcined bone (structural carbonate)		3070±50	1440–1130 cal BC
OxA-12731	[448] 27ii, replicate of GrA-23638.	calcined bone (structural carbonate)		2979±30	1370–1090 cal BC
GrA-23746	[448] 27iii, from cremation 446.	charcoal, *Quercus* sp. sapwood	-26.6	2945±35	1300–1010 cal BC
OxA-12578	[448] 27iv, from cremation 446.	charcoal, *Corylus avellana*	-24.1	3002±32	1380–1120 cal BC
GrA-23701	[1236] 126ii, from fill of posthole 1235 (roundhouse C).	carbonised cereal, *Triticum* sp.	-25.7	2835±40	1130–890 cal BC
OxA-12581	[1236] 126i, from fill of posthole 1235 (roundhouse C).	carbonised cereal, *Triticum* sp.	-23.6	2817±32	1050–890 cal BC
OxA-12582	[1272] 90i, from fill of posthole 1241 (roundhouse C).	carbonised cereal, *Triticum* sp.	-22.4	2827±32	1050–900 cal BC
GrA-23750	[1272] 90ii, from fill of posthole 1241 (roundhouse C).	charcoal, *Corylus/Alnus* sp.	-25.6	2780±35	1010–830 cal BC
GrA-24695	[1224] 86i, fill of posthole 1223 (roundhouse C).	emmer/spelt	-23.7	2800±50	1110–820 cal BC
GrA-24659	[1626] 166ii, from fill of posthole 1436 (roundhouse D).	carbonised cereal, *Hordeum* sp.	-21.3	2860±45	1210–900 cal BC
OxA-12583	[1383] 114ii, from fill of posthole 1382 (inside roundhouse D).	carbonised cereal, *Hordeum* sp.	-23.5	2848±31	1130–910 cal BC
GrA-23710	[1383] 114i, from fill of posthole 1382 (inside roundhouse D).	carbonised cereal, *Triticum* sp.	-24.8	2785±40	1020–830 cal BC
OxA-12584	[1440] 125i from fill of posthole 1439 (roundhouse D).	carbonised cereal, *Triticum* sp.	-21.6	2780±32	1010–830 cal BC
GrA-	[1440] 125ii, from fill of posthole	charcoal, *Crataegus* sp.	-	2765±35	1000–820 cal BC

23751	1439 (roundhouse D).		26.2		
OxA-12640	[639], from primary fill of pit 638 (pit group V).	internal carbonised residue on sherd 2217.	-26.1	2618±33	830–760 cal BC
OxA-12641	[069], from fill of pit 068 (pit group V).	internal carbonised residue on sherd 2342.	-27.5	2729±34	970–800 cal BC
OxA-12642	[089], from fill of pit 1715 (pit group V).	internal carbonised residue on sherd 2172.	-26.5	2579±34	810–590 cal BC
GrA-23749	[788] 71ii, from fill of posthole 402 (roundhouse B).	charcoal, *Corylus avellana*	-25.4	2475±35	790–400 cal BC
OxA-12580	[788] 71i, from fill of posthole 402 (roundhouse B).	charcoal, *Crataegus* sp.	-26.1	2405±31	760–390 cal BC
GrA-24522	[735] 66ii, from fill of posthole 394 (roundhouse B).	charcoal, *Quercus* sp. sapwood	-25.1	2440±50	790–390 cal BC
OxA-13032	[395] 65i, from fill of posthole 394 (roundhouse B).	charcoal, *Quercus* sp. sapwood	-25.7	2413±37	760–390 cal BC
GrA-24663	[634] 57ii, fill of posthole 357 (roundhouse B).	charcoal, *Prunus spinosa*	-24.1	2385±45	760–380 cal BC
GrA-24526	[878] 75ii, fill of posthole 299 (roundhouse B).	charcoal, *Crataegus* sp.	-27.8	2350±45	520–260 cal BC
OxA-12579	[657] 61ii, from final fill of posthole 379 (roundhouse B).	carbonised cereal, *Triticum* sp.	-23.4	2271±32	400–200 cal BC
GrA-23747	[657] 61i, from final fill of posthole 379 (roundhouse B).	carbonised hazelnut nutshell	-22.7	2255±35	400–200 cal BC
OxA-12968	[1126] 81i, from postpit 1125 (roundhouse B).	carbonised cereal, *Hordeum* sp.	-21.9	2265±29	400–200 cal BC
GrA-24524	[323] 21ii, from posthole 322 (inside enclosure).	charcoal, *Prunus spinosa*	-25.3	2375±45	760–380 cal BC
OxA-12643	[425], from final fill of pit 423 (inside enclosure).	internal carbonised residue on sherd 2581.	-26.5	2293±34	410–210 cal BC

Prehistoric Pottery by Elaine L. Morris

Introduction

A total of 2074 sherds (16,675g) of handmade, prehistoric pottery was recovered. This assemblage is dominated by post-Deverel-Rimbury, undecorated Late Bronze Age pottery and Early Iron Age pottery. In addition, there are single sherds, or one or two features with pottery, dating to the Late Neolithic/Early Bronze Age, Middle Bronze Age, Late Bronze Age/Early Iron Age, and Early/Middle Iron Age.

Condition

The assemblage varies from large individual sherds weighing up to 114g to very small sherds of 1g or less, but the mean sherd weight of 8g is a good reflection of the small sherd size overall. A significant number of Late Bronze Age sherds (8% of the assemblage) are missing one surface, and these derive mainly from the postholes of roundhouse C.

An unusual aspect about this assemblage is the oddly coloured, slightly bloated, cracked and crazed effect visible on many Late Bronze Age sherds from features located to the east of the site, including roundhouse C. Some sherds are affected all over with this condition, while others have only limited areas affected. The unusual colour is a peculiar pale grey, not particularly common among Late Bronze Age pottery, which is usually medium to dark grey, black, orange, pale orange, or buff in colour. The combination of bloating, cracking and pale grey colour all over the sherds, including the surfaces and broken edges, suggests that this pottery may have been re-fired to a higher temperature, after its original hardening in a bonfire or clamp. This effect could represent the accidental or purposeful burning of the roundhouse with the household pots still inside it. Such an event has been interpreted for similar deposits of distorted pottery recovered from an Early Iron Age post-built roundhouse at Brighton Hill South (Morris 1992).

In an effort to address issues of taphonomy, the impact of modern agriculture and a lengthy period of exposure following topsoil stripping on condition, average sherd weight was compared to relative feature depth. Figures were calculated separately for features such as postholes and stakeholes, where the nature of such features might limit the size of sherds deposited within. Mean sherd weight was compared between deposits grouped as uppermost or single fills of pits or linear features (971 sherds), as secondary fills of pits or linear features (151 sherds); and as postholes or stakeholes. The results indicate that there is no significant variations between the material as grouped, suggesting that there is no link between feature depth relative to the surface and the condition of the pottery. Average sherd weight for upper of single features was 8.4g and for lower fills 8g. The mean weight of pottery from stakeholes/postholes was only slightly smaller at 7.6g, indicating that the degree of fragmentation was relatively constant across the site and its various feature types.

Analytical Methodology

The assemblage was examined using a binocular microscope at x10 power and each sherd assigned to a fabric group based on the dominant inclusion present, and to a fabric type based on definable variation within that group. The pottery was recorded by number of sherds and weight of sherds for each fabric type by context, and by the different featured sherds representing a vessel or groups of sherds in a context. In addition, wall thickness ranges, the presence of any surface treatments, the visual effects of firing conditions and any evidence of use were recorded. The diameter of vessel rims and bases in centimetres and percentage of rim or base present were indicated where possible.

This methodology follows the guidelines for analysis and publication recommended by the Prehistoric Ceramics Research Group (PCRG 1995, appendices 1-8) but also contains modifications based on evidence from published assemblages within the Berkshire region for the fabric type codes (Bradley *et al.* 1980; Hall 1992, 63-4).

Fabrics

A total of seven fabric groups and 27 fabric types have been defined for the later prehistoric pottery assemblage (Table P.1), excluding a single sherd of earlier prehistoric pottery. Samples from 20 sherds were thin-sectioned, and these are described in detail. Fabric types F99 and Q99 were assigned to sherds which were too small to determine a detailed fabric type but appeared to be dominated by flint temper or quartz respectively.

Late Neolithic/Early Bronze Age (2500-1800 BC)

A single, small, abraded, fine grog-tempered body sherd (1g) might have belonged to this period. It was recovered from a pit assigned to the Roman period.

Middle and Middle/Late Bronze Age (1500-1100/1000 BC)

There is only one fabric which could be dated to the Middle Bronze Age: fabric F1. It has a very high density of well-sorted, crushed, burnt flint typical of Middle Bronze Age bucket and barrel urns in central southern England. The clay matrix has a small amount of medium-grained quartz sand in it, unlike the Late Bronze Age fabrics in this assemblage. The single, abraded bodysherd found in this fabric type was recovered from posthole 614 located within the Early Iron Age enclosure and derives from a thick-walled vessel (13mm).

There are three fabrics (F2, F7, F8) which may belong to a period of transition between the Middle Bronze Age and the Late Bronze Age. In fabric F8, the frequency of inclusions is similar to Middle Bronze Age fabric F1, and the clay matrix also contains a small amount of medium quartz sand. However, the small size of the vessel, its ovoid profile with rounded, incurving rim and thin walls, are more typical of Late Bronze Age jars. Therefore, this fabric may well represent a ceramic transition from the Middle to Late Bronze Age, a period which is being recognised as having distinctive, definable characteristics within central southern England (Morris, in prep.). The single vessel made from this fabric accompanied the cremation within pit 446. Sherds from this vessel are completely oxidised, suggesting that is was located within or near the funeral pyre, or had been quickly manufactured, as full oxidisation is not common within the assemblage as a whole.

Fabric F7 was defined for a single sherd, from posthole 830, a feature also within the enclosure. This fabric is very well-tempered and the clay matrix also contains medium grains of quartz similar to fabric F1.

A small number of sherds assigned to fabric F2 have a high density of inclusions (25%). These sherds, found in pit 86 west of the enclosure, may also belong to the ceramic transition from the Middle to Late Bronze Age because the majority of F2 sherds have fewer flint temper fragments (≤ 20%) and are clearly of a Late Bronze Age vessel form.

Post-Deverel-Rimbury Late Bronze Age (1200-900 BC)

This period is defined generally as the Post-Deverel-Rimbury, undecorated phase of the Late Bronze Age in southern England and is characterised by assemblages containing ovoid jars, shouldered jars, bipartite/angular bowls and hemispherical bowls (Barrett 1980; Bradley *et al*. 1980; Hall 1992; Bradley and Hall 1992a) which have extremely infrequent decoration within sizeable assemblages. The fabrics, which range from coarsewares to finewares among these form types, are overwhelmingly dominated by flint-tempered recipes; only two sherds made from fabric Q2 for different burnish bowls were found in roundhouse C and a nearby feature, pit 199.

This assemblage also shows various densities and sizes of flint temper added to extremely fine quartz-bearing, slightly micaceous clay matrices. There are coarsewares (F2, F5, FI1), intermediate wares (F6, FI3) and finewares (F3, F4, FI2). All of the flint-tempered Late Bronze Age plain assemblage fabrics could have been made from local resources.

Late Bronze Age/Early Iron Age (900/800-600 BC)

This ceramic period, described variously as the decorated phase of the later Bronze Age (Barrett 1980), the Early Iron Age (Davies 1981b, 100-11) or the Earliest Iron Age (L. Brown 2000, 80) is hardly represented at all. It represents the gradual technological transition from flint-tempered jars and bowls and fineware, silty fabric bowls to a mixture of flint-tempered and quartz sand, decorated jars and bowls.

There are no medium to coarse-grained, sandy clay matrix fabrics with significant amounts of added flint temper in this assemblage, but there are two fabrics which are both sandy and bear flint temper: QF1, which has a medium-grained glauconitic sandy clay matrix with a sparse amount of flint temper, and QF2, which is a medium to coarse-grained sandy clay matrix with a sparse flint temper. However, neither of these has featured sherds as chronological indicators; both fabrics are infrequent and only occur as bodysherds.

Curiously, there are several fineware fabrics which can be assigned to this period as well as the next ceramic phase. Fabric Q4, in particular, may belong to this period since it was used to make a decorated jar of Early All Cannings Cross style (Fig. 48, 45). One of the fineware fabrics, QM1, appears to be similar to the fine clay matrices used to make the Late Bronze Age flint-tempered fabrics when viewed macroscopically, but it is different due to the presence of a small amount of glauconite pellets (confirmed by petrological examination in thin section) also appearing naturally in the matrix along with the fine quartz and mica. The very small quantity of pellets suggests that this fabric may derive from one of several local sources possibly Reading Beds. QM1 fabric is quite special; 11 out of the 33 sherds of this fabric are burnished on both surfaces, and 20 sherds have vessel wall thickness of less than 7mm. The QM1 fabric sherds were mainly recovered from features located within the enclosure, and in particular from postholes and pits associated with roundhouse B, while the two vessels made from Q4 derive from other features in the enclosure.

Early to Middle Iron Age (600-300/200 BC)

The majority of the sandy fabrics and the sandy with iron oxide fabrics were used during this period. The main characteristics are the presence of round-profile jars (Fig. 48, 52) and round-profile bowls (Fig. 48, 50), and the use of an iron-enriched slipped surface treatment onto one round-shouldered jar which was also decorated with finger-tip impressions on both the rim and the shoulder (Fig. 48, 46 a/b; fabric QI1) and simple impressed decoration in a cluster of dots on one round-shoulder bowl (Fig. 48, 48; Q5), in addition to the ubiquitous ovoid jars (Fig. 48, 49; QI3) of the first millennium BC. The recovery of these fabrics in association with sherds made from fabrics Q4 and QM1 indicates that all of the sandy and iron-rich sandy fabrics could easily have been used to make vessels for several centuries. The length of this period appears to extend for at least 300 years from the radiocarbon date of 410-210 cal BC for pit 423 which had a single ovoid-profile jar of QI1 fabric.

Later Prehistoric Pottery Manufacture and Resource Procurement

A significant contrast is present between the flint-tempered fabrics (F and FI groups) and the coarse to medium-grained quartz sand fabrics (Q, QI and QF groups). The flint-tempered fabrics have very fine quartz sand naturally occurring in the clay matrices, not coarse or medium-grained quartz. This is a significant technological shift, moving from the use of flint temper within very fine sandy clays to significantly sandier clays that required no temper.

During the phase when flint-tempered wares were current, at least two different clay deposits were being used to make the vessels: one iron-rich, nearly mica-free, very fine sandy clay (FI group) and the other slightly iron-bearing, micaceous, very fine sandy clay (F group). Of course, it is not possible to prove that the potters were aware of these differences but it may represent either a chronological variation, with the fine sandy clay deposit being used up (or becoming inaccessible), or a cultural variation, with different (but contemporary) potters choosing different clay sources from near the settlement. The presence of both fabric groups in roundhouses C and D (Table P.2) favours contemporary use of these sources. The presence of very similar vessels of different fabrics showing subtle differences (e.g. Fig. 46, 6, 16), and of different vessel types of the same fabric showing surprising similarities (e.g. Figs 46, 16; and 47, 40), also suggests different potters using different fabric types. Domestic (or household) production is the most likely for this period (Peacock 1982, 13-17) but it may be that only a single potter was making vessels for the immediate community at any one time, i.e. local production for local consumption, rather than trade (Morris 1994a, 374-5). A larger sample of Late Bronze Age pottery with more complete vessels would be required to determine confidently an individual potter's manufacturing trademarks within an assemblage.

The site lies in an area of Tertiary/Eocene deposits including Barton, Bracklesham, and Bagshot Beds, London Clay, Oldhaven, Blackheath, Woolwich, and Reading Beds, and also Chalk (Geological Survey Sheet 268). For the purposes of material resource procurement, the term 'local' is defined as being within 7km of the site. This approach has been shown to be appropriate for investigating local pottery production and for suggesting which pots in an assemblage might be vessels acquired through trade or exchange during the later prehistoric period (Arnold 1985, 35-60; Morris 1994a, 1994b; Morris and Woodward 2003). Many of these geological beds contain fine clays and sandy clays which would not be inappropriate as possible sources for the very fine sand, or silty clay matrices in the majority of the excavated fabrics, while the flint temper could have derived from the Upper Chalk deposits of flint nodules or from flint pebble beds frequently mentioned in detailed descriptions of the Eocene deposits (Osborne White 1907; Sherlock 1960).

However, several of the sandy fabrics (Q2, Q3, QF1) and at least one of the organic-tempered fabrics (V1) have significant quantities of glauconite occurring naturally with the quartz grains. In particular, fabric Q2 is extremely rich with glauconite pellets. The closest possible geological sources for such a density of these inclusions are Upper Greensand and Gault deposits, and the nearest outcrops are located more than 10km to the south of the site in the Beacon Hill area, and also further to the west in Wiltshire. Therefore, it is more likely that the pots made from these fabrics were being manufactured elsewhere, and that the occupants of the site were trading for these vessels. During the Iron Age in central-southern England, pots made from various glauconitic sandy fabrics were traded widely (Cunliffe 1984, 244-59; Morris 1991a, 1991b, 1995). The low quantity of glauconite in fabrics Q4, Q7, QI2 and QM1 means that these may have been derived from local Reading Beds. Therefore, the majority of the assemblage could have been made from local resources but a significant part was not likely to have been made locally. The quantity of these possible traded wares increased from virtually none within the Late Bronze Age plainware assemblage (0.1%) to 13% of the Early and Middle Iron Age assemblage.

Fabric descriptions

Flint-tempered group

<u>F1: coarse to intermediate, heavily flint-tempered fabric (Middle Bronze Age)</u>

A flint-tempered fabric containing an abundant amount (40% concentration) of moderately to well-sorted, crushed, calcined flint measuring $\leq$ 3mm across which is very angular to angular in shape in a dense, slightly sandy clay matrix containing a sparse amount (3-5%) of medium-grained, rounded to subrounded quartz measuring $\leq$ 0.5mm across; this is a well-tempered fabric which may be classified as a coarseware due to the high density of inclusions or as an intermediate ware due to the moderately to well-sorted nature of the inclusions.

<u>F2: variable, coarse, flint-tempered fabric (Late Bronze Age)</u>

A flint-tempered fabric containing a moderate to common amount (15-25% highly variable concentration) of poorly-sorted crushed, calcined flint measuring ≤ 7mm across which is very angular to angular in shape in a dense, very fine sandy clay matrix containing a common amount (20-25%) of subangular to subrounded quartz grains and possible glittering mica or silt measuring ≤ 0.1mm. There is the possibility that some examples of this fabric type may have iron oxides occurring naturally in the clay matrix but these are infrequent or difficult to identify without the use of scientific analysis. This is a tempered fabric and may be classified as a coarseware due to the density and poor sorting of the flint inclusions. In one thin section, there is a 20% concentration of very fine or finer, subrounded to angular, naturally-occurring quartz grains measuring ≤ 0.2mm across in the clay matrix along with threads of muscovite mica measuring ≤ 0.3mm long and 5% rounded iron oxides, < 0.5mm across, and a 10-15 % concentration of poorly-sorted, angular flint fragments, ≤ 5mm across. This fabric is similar to fabric F4 but has not only less frequent but also less well-sorted flint temper.

F3: fine, probably flint-tempered fabric (Late Bronze Age)

A very fine fabric containing a sparse amount (5-7%) of fine, well-sorted crushed, angular, calcined flint measuring ≤ 2mm across, with the majority less than 0.5mm across, and a sparse amount of (5%) of iron oxides in a dense, very fine sandy clay matrix containing a common amount (20-25%) of subangular to subrounded quartz grains and glittering mica measuring ≤ 0.1mm as described for F2 above; the iron oxides present are not always visible in hand specimen; it is possible that this is not a deliberately tempered fabric, despite the angular shapes of the flint fragments due to the infrequency of the pieces and therefore the fabric could be coded as a quartz sand fabric type and dated to the Late Bronze Age/Early Iron Age but its association only with flint-tempered fabrics suggests otherwise.

F4: intermediate to fine, flint-tempered fabric (Late Bronze Age)

A moderate to common amount (15-20% concentration) of crushed, angular, well-sorted, calcined flint measuring ≤ 3mm across with the majority ≤ 2mm, in a dense, very fine sandy clay matrix containing a common amount (25-30%) of subangular to subrounded quartz grains and possible mica or silt measuring ≤ 0.1mm as described for F2 above; the sorting, size range and density of the flint temper suggests that this may be classified as an intermediate to fineware fabric. In one thin section, there is a 30% concentration of very fine to fine, subrounded to angular, naturally-occurring quartz grains measuring < 0.2mm across in the clay matrix along with threads of muscovite mica measuring < 0.2mm long and 3% rounded fragments of iron oxides as well as smears of iron oxides through the clay, and a 20% concentration of well-sorted, angular flint measuring ≤ 2mm across. This fabric is very similar to fabric F2 but has finer, better sorted, flint temper.

F5: very coarse, flint-tempered fabric (Late Bronze Age)

A harsh, very porous, loosely-structured fabric containing a common to very common amount (20-25%) of crushed, angular, poorly-sorted, calcined flint measuring ≤ 7mm across and a sparse to moderate amount (7-10%) of vesicles which are likely to represent burnt out organic matter measuring ≤ 10mm in a dense, very fine, sandy clay matrix identical to the fine sandy clay matrices of fabrics F2-F4 described above; it is likely that the organic matter is added temper but this is not completely certain; the variable shapes of the vesicles may suggest specific types of plants with further appropriate analysis; the presence of organic matter in this fabric is different from all other fabrics in the assemblage and may suggest that the material is not specifically used to make portable ceramic vessels but could be fired clay material used to line pits.

F6: intermediate, flint-tempered fabric (Late Bronze Age)

A well-tempered fabric containing a common amount (20-25%) of crushed, angular, moderately-sorted, calcined flint measuring $\leq$ 4mm across, with the majority $\leq$ 2mm, in a very fine, sandy clay matrix identical to the sandy clay matrices of F2-F5 described above.

F7: intermediate to fine, flint-tempered, sandy fabric (Middle/Late Bronze Age)

A very well-tempered fabric containing an abundant amount (30-40%) of crushed, angular, well-sorted, calcined flint measuring $\leq$ 3mm across with the majority measuring $\leq$ 1mm in a sandy clay matrix containing a 5-7% concentration of well-sorted, medium-grained, rounded to subrounded quartz grains measuring $\leq$ 0.5mm across; the sandy clay matrix of this fabric is similar to the Middle Bronze Age fabric F1 as is the density of the flint temper; the size range of temper could be described as flint 'dust' particles from the remnants of crushing flint for temper; there is only one sherd made from this fabric in the assemblage.

F8: intermediate, flint-tempered, sandy fabric (Middle/Late Bronze Age)

A well-tempered fabric containing a common amount (20-25%) of crushed, angular, moderately-sorted, calcined flint measuring $\leq$ 4mm across with the majority $\leq$ 2mm, in a sandy clay matrix containing a 5-7% concentration of well-sorted, medium-grained, rounded to subrounded quartz grains measuring $\leq$ 0.5mm across; the sandy clay matrix of this fabric is similar to the Middle Bronze Age fabric F1 and the flint-temper size and density are similar to Late Bronze Age fabric F6.

Flint-tempered and iron oxide-rich group

FI1: coarse, flint-tempered, iron rich fabric (Late Bronze Age)

A very iron-rich, flint-tempered fabric containing a moderate amount (10-15%) of very angular, very poorly sorted, crushed, calcined flint measuring $\leq$ 7mm across with the majority $\leq$ 4mm, a moderate to common amount (15-20%) of rounded iron oxides also measuring $\leq$ 7mm across with the majority, however, measuring $\leq$ 2mm, and a rare to sparse amount (2-3%) of fine sand or silt-sized, subrounded quartz grains; the iron oxides are likely to be naturally-occurring in this clay matrix but the flint was added as temper. In one thin section, there is a 30-40% concentration of fine to finer, subrounded to angular quartz sand measuring < 3mm across, very rare pieces of biotite mica < 0.3mm long, and a 10-15% concentration of rounded iron oxides measuring $\leq$ 5mm across, and a 15% concentration of angular flint measuring < 6mm across. Therefore, it is difficult to identify in hand specimen even with a binocular microscope at x10 power the very fine quartz grains in this fabric. It is unlikely that the clay matrix of this fabric is related to the clay matrix of F2 or F4 due to the significant concentration of large rounded fragments of iron oxides, although the density and fine texture of the quartz grains and the presence of large pieces of flint temper are similar technologically to fabric F2.

FI2: fine, flint-tempered, iron rich fabric (Late Bronze Age)

A very iron-rich, flint-tempered fabric containing a sparse to moderate amount (7-10%) of crushed, angular, moderately to well-sorted, calcined flint measuring $\leq$ 3mm across with the majority $\leq$ 1.5mm, a moderate amount (15%) of iron oxides measuring $\leq$ 2mm across, or simply as amorphous smears in the clay, a moderate amount (10%) of subrounded, very fine quartz grains measuring $\leq$ 0.1mm across and <1% organic matter which is naturally occurring in the clay matrix; it is possible that there is either silt-sized quartz or glittering mica also in this fabric; it may be that this fabric is simply a variant of fabric F3 with more iron oxides and more flint; the density and sorting of flint and the fineness of the clay matrix suggest that is a fine to intermediate ware fabric.

FI3: intermediate flint-tempered, iron-rich fabric (Late Bronze Age/?Early Iron Age)

An iron-rich, flint-tempered fabric containing a common amount (20-25%) of well-sorted, crushed, angular calcined flint measuring ≤ 2mm across, a moderate amount (15%) of iron oxides measuring ≤ 2mm across, or simply as amorphous smears in the clay, and a moderate amount (10%) of subrounded, very fine quartz grains measuring ≤ 0.1mm across which is the same clay matrix as found in FI2; there are few sherds in this fabric and all but one could be Late Bronze Age in date.

Grog-tempered group

G1: fine, grog-tempered fabric (Late Neolithic/Early Bronze Age)

A fine, soft fabric containing a common to very common amount (25-30%) of well-sorted, angular grog tempers measuring ≤ 1mm across; single sherd.

Quartz sand group

Q2: medium grained, glauconitic sandy fabric (Late Bronze Age to Early Iron Age)

A very common to abundant amount (30-40%) of very well-sorted, subrounded to rounded quartz grains and glauconite pellets measuring ≤ 0.5mm across, and a rare amount (1% or less) of larger grains and pellets between 0.5-1.0mm across; in addition, there are very rare to sparse (< 1-3%), subangular to angular fragments of flint measuring from 1-3mm across and 1% organic matter measuring up to 5mm, both of which may be naturally occurring detritus; there appear to be equivalent amounts of glauconite and quartz in this fabric. In one thin section, there is an abundance (more than 50%) of subrounded to rounded quartz grains and glauconite pellets measuring ≤ 0.6mm with the majority ≤ 0.4mm. There are virtually ten pellets of glauconite to every grain of quartz. In addition, there are rare threads of mica and a single large piece of ferruginous glauconitic sandstone measuring 2mm across.

Q3: medium to fine-grained, glauconitic, iron-rich sandy fabric (Early Iron Age)

A common amount (20-25%) of very well-sorted, subrounded to rounded quartz grains and glauconite pellets measuring ≤ 0.5mm across and a 5-10% concentration of rounded, loosely-structured iron oxide clusters measuring < 2mm across. In one thin section there is a very common to abundant amount (30-40%) of well-sorted, subrounded to subangular quartz grains and subrounded to rounded glauconite pellets measuring ≤ 0.5mm and usually ≤ 0.3mm. In addition, there is a rare to sparse amount (1-3%) of iron oxides including a single large fragment of ferruginous glauconitic sandstone measuring 2.5mm across. There are approximately three quartz grains for every glauconite pellet which, along with the lesser density of these inclusions, suggests that this fabric, while similar in many respects, is not the same fabric as Q2.

Q4: fine-grained, slightly glauconitic, iron-rich, sandy fabric with sparse flint (Late Bronze Age/Early Iron Age)

A moderate amount (15%) of well-sorted, subrounded to rounded quartz grains with some glauconite pellets, the majority measuring ≤ 0.3mm across but with rare grains and pellets measuring between 0.5-1mm, and a rare amount of organic matter and flint detritus as observed in fabric Q2. In thin section, there is a common amount (25%) of very fine/silt-sized, generally very well sorted, subangular to subrounded quartz grains measuring ≤ 0.1mm across and rare (1%) larger, rounded grains up to 0.8mm, < 1% rounded pellets of glauconite ≤ 0.3mm, a sparse amount (7%) of iron oxides including ferruginous siltstones measuring between 0.8-1mm, a sparse amount of angular, burnt flint ≤ 0.8mm and threads of mica.

Q5: medium to coarse-grained sandy fabric (Late Bronze Age/Early Iron Age to Early Iron Age)

An abundant amount (40%) of well-sorted, subrounded to rounded quartz sand grains measuring up to < 1mm across with the majority ≤ 0.8mm with a rare amounts (1-2%) of detritus which appears most often to be subrounded flint measuring up to 4mm and rare (1%), rounded pieces of iron oxide ≤ 2mm; one example also contained a sparse amount (5%) of naturally-occurring organic matter. In thin section, there is an abundant amount of subrounded to rounded quartz grains usually measuring ≤ 0.8mm across with the majority ≤ 0.3mm but single examples of quartz grains measuring 1mm and 2.5mm, however, indicate that this is definitely the coarsest quartz sand fabric in the group. In addition, there is a single angular flint fragment measuring 1.8mm across.

Q6: very fine, glauconitic, silty fabric (Late Bronze Age/Early Iron Age)

An extremely fine fabric containing an abundance (40%) of extremely fine, very well-sorted, subrounded to rounded quartz sand grains and glittering mica measuring ≤ 0.1mm and equally fine, black inclusions which are most likely to be glauconite, and 1-2% organic matter, ≤ 5mm across, 1% unidentified, angular rock detritus also ≤ 5mm and 1% rounded, possible clay pellets, ≤ 2mm across.

Q7: fine sandy and micaceous fabric (Late Bronze Age/Early Iron Age)

A similar quartz component to fabric Q4 above and QM1 below but also has a rare to sparse amount (1-5%) of subrounded to rounded quartz grains measuring ≤ 1mm, with the majority ≤ 0.5mm, and no glauconite pellets. In thin section this fabric appears to be identical to fabric Q4 but lacks any flint inclusions.

Quartz sand and flint-bearing group

QF1: medium-grained, sandy fabric with some flint (Late Bronze Age/Early Iron Age)

A sandy fabric containing a common to very common amount (20-25%) of well-sorted, quartz grains, the majority measuring ≤ 0.5mm across and with a rare amount up to 1mm, a sparse amount (7%) of moderately sorted, angular, burnt flint measuring ≤ 3mm across and a sparse amount (5-7%) of rounded iron oxides measuring up to 2mm. In thin section, this fabric is the same as fabric Q3, a medium-grained glauconite and quartz-bearing fabric, with the addition of a sparse amount (5%) of angular crushed burnt flint measuring ≤ 2mm across, a rare amount (1%) of iron oxides, and a single piece of ferruginous glauconitic sandstone.

QF2: coarse sandy, iron-rich fabric with some flint (Iron Age)

A coarse-grained fabric containing a very common amount (35%) of rounded quartz grains measuring 1mm or less, with the majority measuring between 0.5-1.0mm across, a moderate amount (15%) of rounded, loosely-structured iron oxides (some of which are now only represented by vesicles) and a sparse amount (5-7%) of well-sorted, subangular to angular burnt flint measuring up to 2mm across. In thin section, there is a common to very common amount (25-30%) of quartz grains measuring < 1mm across but the majority range between 0.3-0.6mm and a single example 1.5mm, a sparse amount (3-5%) of angular, crushed burnt flint, a single siltstone measuring 1.5mm, and rare iron oxides.

Quartz sand and iron oxides group

QI1: medium-grained sandy, micaceous, and iron-rich fabric (Late Bronze Age/Early Iron Age to Middle Iron Age)

A sandy and iron-rich fabric containing a moderate amount (10-15%) of subrounded to rounded quartz grains, the majority measuring <0.3mm but a rare amount up to 1mm across, some glittering mica, a moderate amount (10-

15%) of moderately to well-sorted rounded iron oxides measuring < 2mm and rare (1-2%) amounts each of flint up to 10mm and organic matter up to 3mm (posthole fill 1670, Group 79, inside enclosure G). In thin section, there is common amount (20%) of subrounded to subangular, silt-sized quartz grains, ≤ 0.1mm across, with 1-2% larger rounded quartz up to 0.5mm, a sparse to moderate amount (7-10%) of iron oxides, a single piece of angular flint, and threads of mica. This fabric is clearly related to fabric Q4 due to the small size and density of the quartz and amount of iron oxides but also different because there are no pellets of glauconite and much less flint.

QI2: fine-grained, slightly glauconitic, iron-rich, sandy fabric (Early Iron Age)

A fine fabric containing a very common amount (35%) of fine quartz grains, glauconite pellets and glittering mica measuring all measuring ≤ 0.2mm across, a moderate amount (15%) of rounded iron oxides up to 2mm and a sparse amount (5%) of naturally-occurring organic matter. In thin section, there is a very common amount of pieces and spreads of iron oxides, a moderate amount of silt-sized or finer quartz grains, a rare amount (1%) of rounded glauconite pellets, ≤ 0.3mm across, and threads of mica. This fabric is related to Q4 due to the slight presence of glauconite but different due to the infrequency of the fine quartz grains and the abundance of iron oxides as pieces and spreads within the clay matrix.

QI3: very fine sandy, micaceous and iron-rich fabric (Early Iron Age)

An extremely fine fabric with an abundance (more than 50% concentration) of subrounded, fine quartz sand and silt, and glittering, fine, platey mica, all ≤ 0.2mm across and which are usually ≤ 0.1mm across but also having a moderate amount (15%) of rounded iron oxide fragments measuring < 2mm across. In thin section, there is an abundance (50%) of very fine quartz measuring ≤ 0.1mm across with rare (1%) grains up to 0.6mm, and a single angular flint fragment measuring 1mm and quantities of iron oxides and staining in the clay matrix.

Quartz sand and mica group

QM1: a very fine sandy and micaceous fabric (Late Bronze Age/Early Iron Age)

An extremely fine fabric containing an abundance (more than 50% concentration) of subrounded, fine quartz sand and silt, and glittering, fine, platey mica, all ≤ 0.2mm across and which are usually ≤ 0.1mm across, as well as a rare amount of subrounded to rounded glauconite grains measuring 0.1-0.2mm across; very similar but not the same as the clay matrix for fabrics F2, F3, and F4 due to the presence of the small amount of glauconite. In one thin section, there is a common amount (25%) of very fine, subangular to subrounded quartz grains measuring ≤ 0.1mm across with an additional 1% measuring up to 0.3mm and 1% rounded glauconite pellets measuring ≤ 0.2mm.

Organic-tempered group

V1: medium to fine-grained, glauconitic, organic-tempered, sandy fabric (Late Bronze Age/Early Iron Age)

An organic-tempered, sandy fabric containing a common amount (20%) of very well-sorted, subrounded to rounded quartz grains and glauconite pellets measuring ≤ 0.5mm across and a 5% concentration of rounded, loosely-structured iron oxide clusters measuring < 2mm across, with a moderate to common amount (15-20%) of organic matter which is both linear and angular in shape up to 20mm long with the majority ≤ 10mm; looks like fabric Q3 which has been tempered with a substantial amount of organic matter. In thin section, there is a 20-25% concentration of subrounded to rounded quartz grains and glauconite pellets measuring <0.4mm across, and a 15-20% concentration of irregular and linear vesicles and actual pieces of organic temper measuring at least 3mm, and occasional threads of mica and some iron oxides.

V2: very fine sandy and micaceous, organic-tempered fabric (Early to Middle Iron Age)
An organic-tempered, fine sandy fabric containing an abundance of very well-sorted, subrounded to rounded quartz grains and glittering mica measuring $\leq$ 0.2mm across and a moderate amount of organic matter measuring $\leq$ 0.8mm long.

Vessel Forms and Dating

A total of 20 rim types, three base types and two different types of shoulder profiles were identified among the later prehistoric pottery. There are 12 jar types (R1-R12) and eight bowl types (R20-R27) among these.

The nearly hooked rim ovoid jar (Fig. 44, 1) found with the Middle/Late Bronze Age cremation in pit 446 (Group 113) can be dated by association to 1320-1120 cal BC. Similar convex-profile, flint-tempered jars described as post-Deverel-Rimbury or Late Bronze Age types were used as cremation urns at Kimpton, Hampshire (Ellison 1981, Fig. 19, E4, E28; Davies 1981, Fig. 20, G3). This general jar type (R3; variants R5, R7), is also the most frequent form among the Late Bronze Age fabrics, with fewer far examples of shouldered jars (R2, R4, R12; Table P.3). There is quite a variety of rim types for coarse and fineware bowls (R20-R27). All of these vessel forms can be paralleled to types recovered at Aldermaston Wharf (Bradley *et al.* 1980, Figs 12-17), Rams Hill (Bradley and Ellison 1975, Fig. 3:5) and Reading Business Park (Hall 1992, Figs 41-3) in Berkshire, Eynsham Abbey in Oxfordshire (Barclay *et al.* 2001, Figs 14, 7-11 and 15, 20) and even some of the vessels within the lower deposits at Potterne in Wiltshire (Lawson 2000, Figs 61-2). The excavated plainware assemblage has been radiocarbon dated by associated carbonised grain and charcoals recovered from the postholes of roundhouses C (Fig. 46, 2-12) and D (Fig. 46, 15-17) to the ranges, for roundhouse C *1030-940 cal BC (start C)* and *970-880 cal BC (end C)* and for roundhouse D *1060-940 cal BC (start D)* and *960-840 cal BC (end D*; all at 68% probability).

The most distinctive and frequent vessel forms among the Early Iron Age to Middle Iron Age fabrics are the round-shouldered jar (Fig. 48, 46, 52) and the round-shouldered bowl (Fig. 48, 48, 50). These types can be classified as part of the All

Cannings Cross-Meon Hill style of central southern England (Cunliffe 1991, 71-2, Fig. A, 6), and were found on many sites in the area such as at Blewburton Hill (Bradford 1942, Fig. 1, 12, 15, 18, 23-4; Collins 1947, Fig. 8, 1-5; ibid. 1953, Fig. 11, 5-8), Lains Farm (Morris 1991b, Figs 8, 1, 3, 6; and 9, 35), Wittenham Clumps (Hingley 1980, Figs 8, 24; and 14, 93-4) and Wytham Hill (Mytum 1986, Fig. 3, 2, 4).

The ovoid jar form continues to be made and used well into the Early and Middle Iron Age periods, presumably due to its practical use as a simple jar and cooking pot. One example of this type bearing burnt residues on the interior was recovered from pit 425 and dated to 410-210 cal BC.

Flat base types B1 and B2 were made in two different ways, either beginning with a central disc and building the base angle by attaching a thick coil as the beginning of the vertical wall (Fig. 47, 20-1) or placing the first wall coil onto the disk itself, which forms the vertical part of the base angle (Fig. 46, 1, 10). Special characteristics of Late Bronze Age/Early Iron Age pottery manufacture in this area are the expanded base profile, type B3, or the variation with a curled edge or lipped effect to the base angle, type B2 (Bradley *et al.* 1980, Figs 14, 71a;. 15, 90c; and 33, 70a; Hall 1992, Figs 43, B2; 46, 76; and 47, 124, 129-31). Several also show additional crushed, burnt flint fragments pressed into the underside of the base (Fig. 46, 10). This special treatment may have been a practical measure to allow thick bases to dry more rapidly without sticking to a surface or may have been a cultural marker. These variations among flat bases only occur among the plain assemblage Late Bronze Age pottery. The Early to Middle Iron Age bases are invariably simply flat, with one unusual exception: a B1 base made from fabric type QM1 had additional quartz grains impressed into the underside.

Rim types: jars

<u>R1: upright, slightly flared, large vessel rim with interior curl</u> (Fig. 46, 3) (Late Bronze Age)

<u>R2: upright, simple, rounded rim with long neck, usually on shouldered jar; shoulder equivalent to A1</u> (Figs 46, 4, 11, 13, 17; and 47, 33) (Late Bronze Age)

<u>R3: incurving, rounded rim on ovoid, convex-profile jar</u> (Figs 46, 1, 5, 7-9, 12, 14; and 47, 22-3, 26, 34-5, 41) (Late Bronze Age)

<u>R4: upright, flat-topped rim with medium-length neck on large, shouldered jar; has flatter rim top edge and shorter neck than R2</u> (Fig. 46, 6) (Late Bronze Age)

R5: bevelled edge rim on straight to slightly ovoid, convex-profile jar (Figs 47, 24, 36-7; and 48, 49) (Early to Middle Iron Age)

R6: pronounced everted rim on necked jar; single example finely finished but coarse fabric (Fig. 45, 31) (Late Bronze Age)

R7: hooked rim ovoid, convex-profile jar (Fig. 47, 40) (Late Bronze Age)

R8: upright, rounded rim, on medium to long-necked, round- shouldered jar (Fig. 48, 46, 52) (Early/Middle Iron Age)

R9: upright, slightly flared, short, flat-topped rim from small, necked jar (Fig. 48, 54) (?Early Iron Age)

R10: flat-topped, upright but slightly everted rim with exterior overhang on swan-neck jar (Fig. 48, 56) (Early/Middle Iron Age)

R11: flat-topped, flared rim probably from necked jar (Fig. 47, 43) (Late Bronze Age)

R12: upright, rounded rim curled over inwards on medium to long-necked, shouldered jar; thick-walled, probably very large vessel (Fig. 46, 16)

Rim types: bowls

R20: upright, rounded rim on very short necked bowl with slack shoulder profile (Figs 46, 15; and 47, 29, 30) (Late Bronze Age)

R21: hemispherical bowl with flat-topped rim (Fig. 47, 27) (Late Bronze Age)

R22: conical bowl with flat-topped, flared rim (Fig. 47, 28) (Late Bronze Age)

R23: biconical-profile, shouldered bowl with upright rounded rim (Fig. 47, 32, 38) (Late Bronze Age)

R24: tripartite, carinated bowl with slightly flared, flat-topped rim (Fig. 47, 42) (Late Bronze Age)

R25: necked bowl with flared, rounded rim (Fig. 46, 18) (Late Bronze Age)

R26: necked, round-bodied bowl with slightly flared to upright rounded rim of medium length (Fig. 48, 48, 50) (Early/Middle Iron Age)

R27: slightly flared, flat-topped rim on uncertain profile bowl (Fig. 48, 53) (?Early/Middle Iron Age or earlier)

Base types

B1: flat base (Figs 46, 1, 10, 19; and 47, 21)

B2: curly edged, flat base (Fig. 47, 20)

B3: expanded, flat base (not illustrated)

Shoulder types

A1: obtuse-angle, shoulder sherd (Fig. 46, 2)

A2: softly rounded, shoulder sherd (Fig. 48, 55)

Decoration and Surface Treatment

None of the plainware Late Bronze Age flint-tempered vessels were decorated. Among the Early Iron Age pottery made from quartz sand fabrics, there are two shouldered vessels with finger-tip/nail impressions along the shoulder angle, one of which is made from a non-local fabric (Fig. 48, 51), and one with finger-tip/nail impressions somewhere along the wall. In all of these cases, the nail impression is clearly visible within the angled impression of the finger-tip. This technique contrasts with that utilised to create the finger-tip impressions along the rounded shoulder of Early Iron Age jar type R8 (Fig. 48, 46) and a second rounded shoulder jar (Fig. 48, 47), where the potter used the flat part of the finger to create the impression. This technique was also used on Early Iron Age vessels found at Wytham Hill (Mytum 1986, Fig. 44.3, .2, .4, .7). This vessel is also special due to the presence of finger-tip impression along the top/exterior of the rim creating a double-impressed decorated vessel.

There is a single example of a possible carinated, fineware bowl which may have been decorated with broad, tooled furrows on the upper part of the bowl (Fig. 48, 44). This vessel was very softly fired and has such a fine fabric (QM1) that much of the detail of the form, surface treatment and decoration is quite faint. Furrowed decorated on carinated, burnished bowls is a characteristic of the Late Bronze Age to Early Iron Age period in this region.

The most distinctive decoration within the assemblage are the designs made from two different motifs of tiny, impressed dots, one set located on a shouldered jar (Fig. 48, 45) and one set located on a round-bodied bowl (Fig. 48, 48). The fineware jar, possibly made from a local fabric, is in a linear design which almost looks like comb-impressed or rouletted dots, while that on the bowl, made from a non-local glauconitic sandy fabric, is in the form of a cluster. Both of these techniques were found on vessels recovered from Blewburton Hill (Collins 1947, Fig. 8, 2, 5).

There are five different types of surface treatments on vessels in this assemblage. The most common is wiping of surfaces (118 occurrences), with obvious finger-wiping rather than just general surface wiping being the most common variation. The best example of finger-wiping (Fig. 46, 6) shows different directions to the technique, horizontal on the interior and vertical on the exterior from lower vessel up to the shoulder zone. Wiping is a very common characteristic among Late Bronze Age assemblages and in particular plain assemblages. Burnishing is also an extremely common technique (107 occurrences) which is used on the exterior of fineware jars and on the interior and often exterior of many bowls. Sometimes it is only smoothing of surfaces rather than polishing to a high burnish which can be observed, but this is quite rare and suggests that potters were applying the extra effort required to make these effects very deliberately. There are also two different jars which had been red-slipped or red-finished. One of these is quite unusual because such an effect is not normally associated with finger-tip decoration (Fig. 48, 46), but rather with other forms of decoration such as linear incising or tooling such as found on furrowed bowls.

Later Prehistoric Ceramic Phasing

It is possible to identify four later prehistoric ceramic phases evident within this assemblage, two of them strongly represented and two of them very weakly present, if at all.

Ceramic Phase 1 (CP1) is the Middle Bronze Age to Late Middle Bronze Age period, dating from approximately the 14th to 11th century BC. This period is indicated by the single Middle Bronze Age jar or urn sherd made from fabric F1 and the ovoid vessel associated with a cremation (Fig. 46, 1), and possibly also by other sherds made from fabrics found in the next phase.

Ceramic Phase 2 (CP2) is the Post-Deverel-Rimbury Late Bronze Age period, dating from the 12th /11th-9th century BC. This period is represented by nearly all of the flint-tempered and flint-tempered with iron oxide fabrics used to make coarse and fineware jars and bowls (Figs 46, 2; and 47, 43) and by two sherds from non-local, glauconitic sandy fabric bowls. If these vessels are formally assigned to Barrett's classification scheme of Class I coarseware jars, Class II fineware jars, Class III coarseware bowls, Class IV fineware bowls, and Class V cups, a typical Late Bronze Age array of vessels is revealed: Class I – 30 vessels; Class II – 4; Class III – 1; Class IV – 7, and Class V – 1. A similar ratio of vessels was identified at Reading Business Park (Hall 1992, Table 10) and in pit clusters 2 and 3 at Aldermaston Wharf (Bradley *et al.* 1980, 253). The roundhouses C and D and their associated nearby pits including pit 1104, rich with pottery, and isolated pits 86, 638 and 27 also belong to this phase.

Ceramic Phase 3 (CP3) is the Late Bronze Age/Early Iron Age period, dating from approximately the 9th to 7th century BC. There is only a thin spread of possible candidates for this phase, in particular the Class II type fineware, shouldered jar with the linear stabbed motif which is burnished on the exterior (Fig. 48, 45) which was found in posthole 690 associated with the possible carinated, burnished bowl or jar with furrowed decoration (Fig. 48, 46). Typical key groups of potteryare missing, such as flint-tempered shouldered jars decorated with finger-tip impressions in association with fineware jars and biconical bowls with linear decoration, often infilled with white, chalk-like material. Examples of this ceramic phase were recovered at Knights Farm (Bradley *et al.* 1980, Figs 34-5), Dunston Park (Morris and Mepham 1995, Fig. 39; Morris 1995b, Fig. 42), Petters Sports Field (O'Connell 1986, Figs. 41-57) and, of course, at All Cannings Cross (Cunnington 1923), the pottery assemblage which became the type-site for this period. Even posthole 690 has only quartz sand fineware fabrics and so could be simply a special deposit of 7th century BC pottery with an iron knife, but without other stratified groups to compare it with from the site this is difficult to be certain. Some of the pottery recovered from roundhouse B may belong to this period while the rest is most similar to Ceramic Phase 4 pottery (see below). Various other features within the enclosure could belong to this period based on the presence of flint-tempered fabric sherds associated with quartz sand fabric sherds.

Ceramic Phase 4 (CP4) is the Early Iron Age and Early/Middle Iron Age, dated approximately to the 6th to 3rd century BC. This period is characterised by a dominance of quartz sand fabric, round-shouldered jars and bowls, often decorated with impressed dots (Fig. 48, 44, 54). In particular, pits 493 and 785 belong to this period and the range of vessels and fabric identified in each are extremely similar. Both pits have an R8 type fineware jar, the pit 493 example being red-finished on the exterior and finger-tip decorated, while the pit 785 example is burnished on the exterior and finger-tip decorated. Both pits also have a fabric Q5 bowl. The lower half of a quartz sand fabric cookpot found in pit 425 belongs to this period based on the radiocarbon dating of the burnt residue adhering to it. This ceramic phase would be contemporary with ceramic phases 1-3 at Danebury (Brown 2000).

Roundhouse B is unusual. There are abraded sherds of Late Bronze Age (CP2) and Late Bronze Age/Early Iron Age types (CP2-CP4) found in some of the postholes and Early to Middle Iron Age quartz sand fabric sherds in others (CP3/CP4) (Table P.4). The radiocarbon dates confirm that this structure may have been utilised over a long period from the 7th to 3rd century cal BC.

Importantly, there are no examples of typical Middle Iron Age pottery such as saucepan pots or globular bowls at this site, as are found at Southcote near Reading (Piggott and Seaby 1937), at Larkwhistle Farm near Brimpton (Hardy and Cropper 1999, Fig. 8), in the later phases at Blewburton Hill (Collins 1953, Figs 12-15) or in phase 5 occupation at Old Down Farm (Davies 1981b, Fig. 28).

Evidence of Use and Vessel Sizes

Evidence for four different types of use was identified from 39 sherds (Table P.5): 12 examples of interior abrasion from scraping or stirring, 1 example of possible limescale from boiling water, and 39 examples of the use of vessels as cookpots, from either burnt residues on the interior and soot on the exterior. Unfortunately very little of this evidence has come from sherds with diagnostic forms and therefore any changes in vessel use between the major ceramic phases or among the different major feature groups cannot be investigated. It is recommended that this assemblage of both plain Late Bronze Age pottery and Early to Middle Iron Age pottery should become part of a programme of absorbed lipid residue analysis or other form of use investigation as future research. In addition, a bodysherd from a burnished fineware jar (fabric QM1) from pit 297 at roundhouse B had been perforated after firing, most likely indicating a repair.

Table P.6 presents the data for vessel sizes by 2cm divisions. There are three peaks in the frequency of sizes present in the assemblage: at 10cm, between 14-16cm, and at 24cm. This tri-modal distribution of sizes may reflect the individual (12cm or less), family (14-20cm) and large group (22-8cm) processing and serving of food. Coarseware jars were probably used to store and process food, while fineware bowls with burnishing on one or both surfaces were probably for serving food. Some vessels undoubtedly had many uses and the presentation of food or display of food in burnished, fineware jars or decorated jars may have taken place. This assemblage is highly suitable for contributing towards a regional exploration of such functions during both the Late Bronze Age and the Early to Middle Iron Age, however, several jars that may have been quite large in size (more than 28cm) and were probably used to store food (e.g. Fig. 46, 16) were too fragmented to determine the vessel diameter. The presence of at least one very large, coarseware jar of Late Bronze Age date is represented by a B3 base, measuring 34cm in diameter, which was recovered from pit 199 beside roundhouse C. The rim was likely to have been greater than this diameter. The walls of the base are thick and there is no evidence of use on the sherd.

Fragmentation

The occasional presence of large joining sherds within different deposits in the same pit suggests that, for that pit, backfilling had been a single event. Early Iron Age pit 493 has joining sherds between deposits 1637 and 496, as well as between deposits 496 and 494. The Early to Middle Iron Age pit 785 has joining sherds between deposits 786 and 787. There are also joining sherds from different features; within roundhouse C.

Deposition

The Middle to Late Bronze Age pot recovered from cremation pit 446 is a curious mixture of both Middle Bronze Age and Late Bronze Age characteristics. The vessel itself is thin walled (5-7mm thick) and relatively small, with a base diameter of 10cm, and is a form which looks forward to the Late Bronze Age rather than the thick-walled, large vessels of the Middle Bronze Age. Its fabric, however, is coarse and heavily flint-tempered and looks back to the Middle Bronze Age. In addition, while a cremation was deposited in this pit (a Middle Bronze Age form of burial rite) the remains were placed in the pit rather than inside the vessel. This may also be symbolic of a transition period. Changes like these were noted at Twyford Down among the Late Bronze Age vessels discovered in pits near an Early Bronze Age ring ditch, which had been reused to receive Middle Bronze Age urns with cremated bones inside (Farwell 2000). The Late Bronze Age vessels were each placed in separate pits with no other cultural remains surviving, and are thought to symbolise burial rites of a previous era but without the bodily presence (Woodward and Seager Smith 2000).

Another interesting aspect of deposition at the site comes from the sherds found in the postholes of roundhouse C and in pit 1104 (Group 33). The postholes of roundhouse C contained a quarter of all the pottery recovered during the excavation (576 sherds, 5150g). Among these there are at least 287 sherds which display overfiring or refiring resulting in bloating of the sherds and alteration of the normal clay colours associated with typical pottery manufacture. The sherds were recovered from postholes 1241, 1237, 1227, 1233 and 1229, located at the rear of the structure and opposite the entrance. A variety of jars is represented among this altered group. This same phenomenon is present among the 210 sherds (2288g) recovered from pit 1104, with 39 sherds affected in this way. There is a strong possibility that some of the pottery which was overburnt or refired during the suggested conflagration of roundhouse C may have been deposited in this special pit. It is the pit with the greatest amount of pottery within the excavated area, and is the same plain assemblage phase of the Late Bronze Age as roundhouse C. However, as the bloated nature of the sherds and their unusual discolouration makes it impossible to determine any joining sherds between the roundhouse and the pit, these burnings could have been separate events.

If either roundhouse C and/or if the pots were deliberately burnt, then their deposition into the empty postholes could be interpreted as a special occurrence at the site. Had the posts been removed (and possibly reused elsewhere), the burning and deposition of the pots, possibly after a feasting event, could have provided closure, to indicate the end of the house. Interestingly, none of the bowl sherds show burning, only the jars.

With regard to the burnt sherds in pit 1104, it is the location of the pit cutting across post alignment F which is significant. The post alignment is possibly part of the Middle to Late Bronze Age activity in the area, and the reburnt sherds in this pit could symbolise the end of a landscape division or boundary and the opening up of this area to a new use. The use of burning to symbolise the transformation from one life to the next is embodied in the Middle Bronze Age cremation burial rite. Here it may have been used to symbolise the end of a house and/or of a boundary, and the beginning of a new use.

Spatial Distribution: Chronology, Function or Families

Roundhouse C (Fig. 46, 2-12) and pit 199 (Fig. 46, 13-14)

The large quantity of pottery recovered from roundhouse C is distinctive (Table P2). The most common fabric group among these sherds was the flint-tempered and iron oxide group (83.5%), with the flint-tempered group making up only 16.3% of the assemblage and a single sherd from the quartz group representing less than 0.2%. The vessel types are dominated by Class I ovoid and shouldered jars. Beside roundhouse C is pit 199, (69 sherds; 1166g). The fabric groups for this, however, is quite different, with 14.5% flint-tempered and iron oxide group, 84.1% flint-tempered and less than 0.1% quartz group sherds. This proportion of fabrics is more similar to roundhouse D described below.

The types of vessels found in the postholes of roundhouse C are a series of jar types, R1-R4, and two jars were burnished on the exterior and one is a fineware for a total of approximately 15 jars. There were also at least four bowls represented by single sherds, including the very thin-walled Q2 bowl sherd. The vessel forms for the smaller number of sherds in the pits include three coarse jars (R2, R3, A1) and four highly burnished bowls from sherds only, including one from a different Q2 bowl. Therefore, although the vessels are similar in range between these two neighbouring groups of features, their fabric proportions are not.

Roundhouse D (Fig. 46, 15-17)

Among 142 potsherds there is a great number of flint-tempered sherds (78.9%), with flint-tempered and iron oxides group much less (21.1%) and no quartz group sherds. Roundhouse D has two distinctive jars with identifiable forms (R2, R12) and also one from surface treatment of burnishing on the exterior as well as four bowls, three from burnished sherds and one also with form (R20). In addition, posthole 92 has sherds of F5 pottery which are more likely to have been pit-lining material. Both the range of vessels and the fabrics found in the roundhouse D postholes are more similar therefore to the pit cluster than to roundhouse C (above).

Pit 1104 (Fig. 47, 19-28)

Pit 1104 yielded 210 sherds (2288g), of which 69% are flint-tempered and 31% are flint-tempered and iron oxide fabrics. However, there are six identifiable jars, four R3, and one each R4 and R5 as well as five fineware burnished bowls including an R22 type and one coarseware R21 bowl made from fabric F2. Therefore, although the vessel types are more similar to roundhouse D, the vessel types are more similar to roundhouse *C.*

Western pit group: pit 86 (Fig. 47, 29-39), pit 638 (Fig. 47, 40), pit 661 and pit 27 (Fig. 47, 41)

A total of 201 sherds (2014g) of Late Bronze Age pottery was recovered from pit 86 to the west of the Early Iron Age enclosure. All of the pottery from this pit is flint-tempered, which makes it more similar to roundhouse D than roundhouse C. However, the range of forms is more similar to roundhouse *C.* with seven identifiable jars (one R2, two R3, one R4, two R5 and one R6) and at least six bowls including two R20 and two R23 types. The small amount of pottery from pit 638 is not necessarily suitable for comparison with any of the larger collections but there is a single jar rim type R7 and all of the pottery is flint-tempered. The small collection of pottery from pit 661 is also all flint-tempered, but this includes four bowls, including one each of R20 and R24 type. Another small collection recovered from pit 27 only has flint-tempered fabric types. However, there is a surprisingly wide range of vessel types: four fineware bowls, one fineware jar and one coarseware jar. Altogether, the pottery recovered from these four pits is made from only flint-tempered fabrics and therefore is more similar to the range of fabrics found in roundhouse D (78.9%) than roundhouse C (16.3%). It is tempting to suggest that there could have been a chronological change in the use of particular fabric groups between roundhouse C, and roundhouse D and the western pit group. However, the radiocarbon dating evidence does not support such an interpretation since the western pit group is dated later than the contemporary roundhouses C and D. It is more likely that different fabric groups represent different families, or the procurement of pottery from different potters.

Conclusions

The excavation provided an opportunity to examine a sizeable collection of Post-Deverel-Rimbury Late Bronze Age plain pottery recovered from two roundhouses and various pits, and a smaller (but equally interesting) collection of pottery broadly dated to the Early to Middle Iron Age from an enclosure containing one roundhouse, a hearth and several pits. The Late Bronze Age assemblage is similar to the assemblages recovered from many sites in the Reading area, while the Early to Middle Iron Age material is very similar to the Blewburton Hill assemblage. The condition of the pottery recovered from roundhouse C suggests that this structure burnt down with the pots still inside it. Only one sherd of pottery from the Late Bronze Age period could not have been made from local clays, while at least 15% (by sherd count) of the pottery from the Early to Middle Iron Age period derived from Upper Greensand/Gault deposits not found in the immediate area. This change towards procuring pottery from settlements at some distance, while continuing to make pottery locally, was typical of communities in central southern England at this time (Morris 1994a).

Table P.1: Quantification of later prehistoric pottery by fabric (weight in grammes)

Fabric Group	Fabric Type	Total Count	% by Count	Total Weight	% by Weight
Flint-tempered					
	F1	1	0.05	24	0.14
	F2	608	29.33	6680	40.06
	F3	50	2.41	206	1.24
	F4	98	4.73	940	5.64
	F5	19	0.92	215	1.29
	F6	7	0.34	24	0.14
	F7	1	0.05	8	0.05
	F8	77	3.71	378	2.27
	F99	50	2.41	15	0.09
F group sub-total		***911***	***43.95***	***8490***	***50.92***
Flint-tempered with iron oxide	FI1	578	27.88	4838	29.02
	FI2	29	1.4	164	0.98
	FI3	6	0.29	33	0.2
FI group sub-total		***613***	***29.57***	***5035***	***30.2***
Quartz sand	Q2	28	1.35	96	0.58
	Q3	25	1.21	151	0.91
	Q4	14	0.68	28	0.17
	Q5	45	2.17	179	1.07
	Q6	14	0.68	66	0.4
	Q7	5	0.24	11	0.07
	Q99	8	0.39	5	0.03
Q group sub-total		***139***	***6.71***	***536***	***3.21***
Quartz + flint	QF1	27	1.3	245	1.47
	QF2	6	0.29	46	0.28
QFgroup sub-total		***33***	***1.59***	***291***	***1.75***
Quartz + iron oxide	QI1	179	8.63	1378	8.26
	QI2	10	0.48	51	0.31
	QI3	31	1.5	259	1.55
QI group sub-total		***220***	***10.61***	***1688***	***10.12***
Quartz + mica	QM1	59	2.85	300	1.8
QM group sub-total		***59***	***2.85***	***300***	***1.8***
Organic tempered	V1	6	0.29	20	0.12
	V2	92	4.44	313	1.88
V group sub-total		***98***	***4.73***	***333***	***2***
Grand Total		**2073**	**-**	**16674**	**-**

Table P.2: Percentage of fabric groups for selected Late Bronze Age structures and features

Structure/Feature	Fabric Group			Count	Weight
	F	FI	Q		
Roundhouse C	16.3	83.5	0.2	576	5150
Pits 199	84.1	14.5	0.1	69	1166
Roundhouse D	78.9	21.1	-	142	1042
Pit 1104	69.0	31.0	-	210	2288
Pit 86	100	-	-	201	2014
Pit 638	100	-	-	9	189
Pit 661	100	-	-	31	172
Pit 27	100	-	-	19	164

Table P.3: Quantification of vessel form types to fabric types by number of records in database

Fabric Type	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R20	R21	R22	R23	R24	R25	R26	R27	R99	A1	A2	B1	B2	B3	B99	Dec. Body	Plain Body	Grand Total
F1																													1	1
F2	1	4	10	2	1	1	1					1		1								6		12	4		6		133	183
F3			1		1								1		1		3	2			1	2							18	30
F4			1							1			3			2						4		4					43	58
F5																													5	5
F6																													7	7
F7																													1	1
F8			1																					1					4	6
F99																													14	14
FI1		1	1	1	1																	5		1	4	1	4		38	57
FI2																													19	19
FI3											1												1						4	6
G1																													1	1
Q1																													1	1
Q2																				1		1							21	23
Q3									1																				14	15
Q4				1																	1							1	2	5
Q5									1										2				2	1					9	15
Q6								1															1						2	4
Q7			1																										1	2
Q99																													3	3
QF1		1																			1			1	1			1	17	22
QF2																													2	2
QI1			1					1																5	1			3	48	60
QI2																								1				1	5	7
QI3			1		1																	1		2					14	19
QM1	1																1							5			1	2	24	34
V1																											1		5	6
V2																					1		1	1					4	7
Total	2	6	17	4	4	1	1	2	2	1	1	1	4	1	1	2	4	2	2	1	4	19	5	34	10	1	12	8	460	612

Table P. 4: Quantification of later prehistoric pottery from roundhouse B features (count/weight in grammes)

Feature	**Fabric Types**														**Ceramic Phase**
	F2	F3	F4	FI1	FI2	FI3	Q2	Q3	Q5	QI1	QI2	QI3	QF1	QM1	
Posthole 402	1/6			1/6											2
Posthole 1123			1/1												2
Posthole 338														1/3	3/4
Posthole 351										1/1					3/4
Posthole 291													1/1		3/4
Pit 305	1/35	2/14					1/7				2/15			4/58	2-4
Posthole 293				3/8					1/5						2-4
Posthole 291		1/1													2
Pit 297							2/7	1/3		1/1			6/128	3/35	3/4
Posthole 230					1/1	1/11									2-4
Pit 215							2/10			1/20		1/1			3/4

Table P.5: Quantification of evidence of use by vessel type

	Vessel Form									
Evidence of Use	A1	A3	B1	R2	R3	R5	R8	R99	Body	TOTAL
Interior abrasion	1		1	1					9	12
?Limescale			1							1
Burnt residue/interior	1				2	1			21	25
Soot/exterior	1	2	1		1		1	1	4	11
Soot & burnt residue			1		1				1	3
Grand Total	3	2	4	1	4	1	1	1	34	52

Table P.6: Quantification of rim and base diameters in centimetres by form type

Form Type	Diameter														
	<10	10	12	14	16	18	20	22	24	26	28	30	32	34	TOTAL
Bases															
B1	7	5	4	1	1		2	1			1				22
B2		1	4	1		1									7
B3														1	1
Bases total	*7*	*6*	*8*	*2*	*1*	*1*	*2*	*1*	*0*	*0*	*1*	*0*	*0*	*1*	
Rims															
R2			1	1					1						3
R3		2		1	2	1			2						8
R4									1						1
R5					1	1									2
R6					1										1
R7									1						1
R8					1										1
R9	1														1
R20	1	1		1											3
R23									1						1
R24				1		1									2
R26		1													1
Rims total	*2*	*4*	*1*	*4*	*5*	*3*	*0*	*0*	*6*	*0*	*0*	*0*	*0*	*0*	

Roman and post-Roman pottery by E.R. McSloy

Roman pottery

Roman pottery amounting to 176 sherds (1536g) was recovered. The restricted size of this group precludes detailed analysis and the principal aim of this report is to characterise, principally in terms of overall composition, and chronological range.

The pottery was scanned by context, sorted macroscopically into fabric types and quantified by sherd count and weight. Fabrics were matched wherever possible against the National Roman Reference Collection (NRFC), (Tomber and Dore 1998). Unsourced fabrics are fully described below. Vessel form, based on a coded system combining generic vessel class and specific (usually rim) characteristics, was recorded according to 'incidence' per fabric.

Average sherd weight is 9g, which is a low figure for Roman material and suggestive of a fairly well broken-up, dispersed assemblage. No complete vessels were recovered and there are very few instances where vessel profiles can be reconstructed. Surface preservation is variable and certain slipped or colour-coated fabrics, samian and Oxfordshire red-slipped ware included, have suffered partial or complete loss of surfaces. Such deterioration would appear to be the result of burial conditions rather than through abrasion as the result of 'mechanical' processes.

Assemblage composition

Fabrics

Grog with quartz
Wheel made. Light brown surfaces with dark grey core. Hard with sandy feel and irregular fracture. Common moderately sorted quartz and in the range 0.2-0.4mm; common dark grey sub-angular grog in range 0.5-1mm.

Black sandy (BB imitations)
Wheel made. Dark grey throughout or with reddish brown core and margins. Hard with sandy feel and irregular fracture. Common moderately sorted quartz and in the range 0.1-0.4mm. Occasional red brown iron oxide 0.2-0.5mm.

Forms: Medium-sized necked jar with curved rim; Forms imitating Black-Burnished ware including everted-rim jars, plain-rimmed dishes and flanged conical bowls.

Black sandy with mica

Hand made. Dark grey surfaces, dark grey-brown core with paler grey margins. Fabric is hard with smooth feel and fine fracture. Abundant, well sorted fine quartz inclusions, predominantly in range 0.1-0.2mm). Rare black ?grog, 0.3-0.5mm. Abundant (gold) mica visible in surfaces and break in range 0.3-0.6mm.

Forms: oval fish dish with twin opposed handles (BB imitation).

Misc. greyware

Wheel made. Mid grey throughout or with surfaces, darker grey-brown margins and mid bluish grey core. Hard, with sandy feel and fine fracture. Common moderately sorted quartz and in the range 0.1-0.3mm, but with coarser versions in range 0.3-0.5mm . Occasional voids from ?calcareous inclusions or burnt-out organics. One sherd with thin white external slip.

Forms: medium or large necked jar with curved rim; narrow-necked jar with curved, square rim

Grogged greyware

Wheel made. Pale grey throughout. Hard, with sandy feel and irregular fracture. Common, moderately sorted quartz and in the range 0.1-0.3mm; common dark grey sub-angular dark grey grog. Occasional voids from ?calcareous inclusions or burnt-out organics. Possibly Savernake variant or Oxfordshire product.

Unsourced reduced wares together account for 78% of the total assemblage. Medium or coarser grewares dominate with forms restricted to necked jars. Decoration of any kind is rare, though significantly two jars in misc. greyware (pit fills 1346 and 931) feature paired shoulder grooves which are comparable to greyware jars from Ufton Nervet (Manning 1974, Fig 12.4). A proportion of the unsourced material consists of coarse black sandy wares, the forms of which imitate Dorset Black-Burnished Ware.

Of the regional imports Oxfordshire products dominate (Table RP1) and include greyware types matching Oxfordshire type series fabric R37 and (c.f. Booth 1997), as well as colour-coated finewares and whiteware mortaria. Dorset Black-Burnished Ware is present in small quantities, with forms restricted to a single everted rim jar.

Comparable published site assemblages with significant later Roman components are relatively few. Elements of the pottery assemblage draw comparison with sites in the upper Kennet Valley including Ufton Nervet (Manning 1974), Reading Business Park (Timby 1992, 82-7) and Pingewood (Mills 1993). Assemblages are dominated by sandy reduced wares, drawn from a mix of probable local sources as well as major regional producers with Oxfordshire most prominent. The imitation Dorset Black-Burnished component is noteworthy. This material is most likely local although a source further afield in Oxfordshire or possibly North Wiltshire is possible. Similar material is abundant in fourth-century AD contexts in Cirencester (Rigby 1986).

Chronology and discussion

The Roman pottery dates from the first to the mid-third/fourth centuries. The earliest material present is a sherd of a grog and quartz-tempered fabric from ditch fill 1141, which probably dates to the mid or late first century AD. Gaulish samian and Verulamium region whiteware are further indicative of Early Roman (*c*. AD 50-200) activity, although the quantities are tiny and such material may easily be residual.

Much of the pottery, including the probable local reduced wares are only broadly datable. However the presence of certain, better datable ware types or vessel forms suggest that the bulk of this material, including the larger groups from pit fill 1346, ditch fill 1549/1514 and pit fill 1694, dates to the Late Roman period after *c*. AD 240/250. Most significant in this respect are sherds of Oxfordshire red colour-coated ware and late forms of Dorset Black-Burnished Ware. There are no overt indications that activity extends to the 'Latest' Roman period after *c*. AD 350

It would appear from the nature of the archaeological features revealed that the area sampled is peripheral to a focus of activity. The pottery assemblage is dominated by utilitarian ware types and vessel forms, with few finewares or specialist products such as amphorae. The group is however too small to draw any firm conclusions as to the nature of the site or its relative status.

Medieval pottery

A very small quantity of medieval pottery was recovered (5 sherds, weighing 20g). Four sherds are unstratified. The remaining single sherd derives from pit fill 1346 and is sufficiently small to be considered an intrusion within this Roman-dated context

All sherds are of a similar quartz and (non-calcined) flint tempered fabric which compares to material abundant from excavations at Newbury (Vince *et al*. 1997). Such material, commonly referred to as 'Newbury A' type, is believed to originate from the Wiltshire Kennet valley and to date to the 11th to13th centuries.

Table RP1: Roman pottery fabrics

Source	Description	NRFC equiv.	Count	Weight (grams)
Local/unsourced	Grog with quartz	-	1	21
	Black sandy (BB imitations)	-	34	342
	Misc greyware	-	94	633
	Black sandy with mica	-	9	174
Regional imports	Savernake or ?Oxfordshire Grogged greyware	-	2	48
	Oxford greyware	-	16	121
	Oxford red colour-coated ware	OXF RS	8	46
	Oxford whiteware	OXF WHM	1	104
	Dorset Black-burnished ware	DOR BB	6	25
	?Verulamium region whiteware	VER WH	4	18
Continental imports	Central Gaulish Samian	LEZ SA	1	4

Metallurgical Residues by Dr. T.P. Young

Summary

Metallurgical residues from Hartshill Copse include a small number of macroscopic slags. These are dominated by slags from iron smelting. Slag morphology indicates smelting in a non-slag tapping furnace, probably with a shallow slag-pit. Chemical analysis of the slags suggests that they were produced from the smelting of an iron oxide-rich ore, perhaps a weathered sedimentary iron ore. Dating of features bearing a rich assemblage of smelting residues suggests smelting was undertaken at some point in the 6th–5th centuries BC. The small quantity of such slags retrieved strongly suggests that the smelting activity lay outside the excavated area.

Micro-residues, including both spheroidal and flake hammerscale, were recovered from a wide variety of contexts in the Early Iron Age enclosure (table M1; Fig. 53). Seventeen contexts from roundhouse B yielded hammerscale, but in very small quantities and not enough to suggest a direct relationship between the context and

metallurgical process. Larger quantities of scale derive from features to the south and east of the roundhouse. In all, nine contexts within the enclosure yielded in excess of 10 pieces of scale. A single sample from the enclosure ditch and two probable Early Iron Age contexts outside the enclosure also yielded more than 10 pieces of scale. Chemical analysis of spheroidal hammerscale from an assemblage yielding both macro and micro-residues is broadly similar in composition to the smelting slags, so an origin during bloomsmithing is likely.

Hammerscale was also recovered from almost all postholes within roundhouses C and D (dated to the 10th century BC), as well as structure A. Nine contexts within roundhouse D each yielded more than 150 pieces of hammerscale, as did one each from roundhouse C and structure A. In total, structure A yielded 344 pieces (at moderate densities of up to almost 4 pieces per litre of sample), roundhouse C yielded a total of approximately 780 pieces (at up to 2.3 pieces per litre), whereas roundhouse D yielded over 4500 pieces of hammerscale (including 1200 from the ash-filled pit 1373), with six samples from roundhouse D exceeding 10 pieces per litre of sample.

Samples of the two hammerscale classes from roundhouse D were subjected to chemical analysis. The flake hammerscale had a chemical composition similar to that of comparative material from other iron-working sites. In contrast, the spheroidal hammerscale composition was unlike the comparative material, but similar to the Iron Age material from the site interpreted as from bloomsmithing.

The micro-residue evidence for iron-making or iron-working is therefore apparently even stronger from roundhouses C and D than from roundhouse B. None of the contexts with extremely high hammerscale densities was amongst those dated by ^{14}C, but two of the dated contexts from roundhouse D yielded over 100 pieces of hammerscale. None of the contexts yielding hammerscale from roundhouses C and D or structure A yielded any macroscopic slag. There are therefore two possible interpretations of these data: firstly the assemblages can be taken at face value to suggest a phase of iron-working, and probably of iron-making, dating to about the 10th century BC, alternatively it is conceivable that the Late Bronze Age contexts have been contaminated by downward movement of hammerscale from a (now removed), overlying deposit, perhaps dating to the 6th-5th century BC iron-making phase. The abundance of the hammerscale in some of the Late Bronze Age contexts must be seen as a strong argument in favour of their genuine attribution to this period, but the extremely early date means that caution must still be exercised in accepting this interpretation, particularly in the lack of any macroscopic slag from demonstrably Late Bronze Age contexts.

In conclusion it is suggested that iron-making was certainly undertaken on the site in the 6th to 5th centuries BC. The focus of this smelting activity is unknown. The ore employed was probably an iron oxide-rich ore derived from the weathering of a sedimentary ironstone. Micro-residue evidence also suggests that iron-making was undertaken on the site some four hundred years earlier, but this is not yet supported by macroscopic slag or structural evidence.

Description

Macroscopic slags

Macroscopic slag weighing 2208g was recovered from nine individual contexts. In summary, the assemblage included at least six fragments believed to come from a non-slag tapping iron smelting furnace, together with two smithing hearth cakes. A coal/coke-fired piece which included shale fragments, recovered from the surface of Late Bronze Age pit 19, can be regarded as a modern intrusion and has been omitted from the descriptive catalogue, below.

A particularly important collection of both micro- and macro-residues was retrieved from posthole 322, contexts 422 and 323, within the Early Iron Age enclosure. This material included a large block of iron smelting slag, a second probably from iron smelting, together with a large collection of small debris including prills, flows, lining fragments and rusty slags. A radiocarbon determination obtained from charcoal associated with this material suggests a date of cal BC 550-360 (93% probability; GrA-24524).

EIA ditch 003, fill 005. The larger piece appears to be corrosion around a piece of iron, rather than slag. The smaller piece of slag is small nub of vesicular, dense slag, but is too small to be certain whether this piece of iron slag is derived from smelting or smithing.

EIA posthole 322, fill 323. Two broken slag pieces: first with flow lobes of dense in right angle between two original contact surfaces. Some slight lineation on the contact surfaces creates strong impression that these are charcoal/wood contacts, so that this is a piece of slag within a hearth rather than a runner. Such a form could be interpreted as forming close to the blowing wall, below the hotzone of a non-tapping iron smelting furnace. The other piece is a rusty slag, probably, but not certainly, from iron smelting. Finer-grained material from the same context is dominated by fired wall material, but also including some dense flow lobes of fayalitic slag. Material labelled from the equivalent context 422 (sample 23) comprises fired clay, prills and blebs as well as more corroded material. The entire assemblage is likely to have been derived from iron smelting.

EIA posthole 324, fill 325. A highly irregular crudely plano-convex slag cake. The lower part includes a lobe of flowed slag, but the upper part is dominated by melted wall material, with abundant gravelly inclusions and vitrified upper surface. A small plano-convex cake of this type is likely to be from blacksmithing.

EIA posthole 406, fill 407. Dense slag, locally with rusty surface. Includes small area of wall contact and interaction, suggesting orientation of the piece is approximately 100m along the wall, extending 55mm into furnace and up to 50mm thick. Upper (?) surface is irregularly broken; lower surface comprises impressions of large charcoal fragments. Charcoal ranges up to at least 40 x 40x 30mm. The most likely interpretation of this piece is that it derives from close to the blowing wall of a non-tapping iron smelting furnace. The open texture of the dense slag, with large charcoal voids and areas of wall attachment would be typical features of material from Irish sites recently examined by the author (particularly that at Tullyallen 6, unpublished).

EIA posthole 587, fill 588. Two small pieces of grey slag with large charcoal impressions. One of the pieces has some original lobate surface. These are almost certainly slags from within an iron smelting furnace.

RB pit 820, fill 821. A complexly lobed mass, probably from just in front of the burr area in a non-tapping iron smelting furnace. One side of the specimen shows slag with a coarsely equant texture, a common feature of the burr area (the zone of interaction between the iron-rich furnace contents and the wall immediately beneath the blow hole). The slag has flown around very large wood or charcoal pieces, ranging up to at least 80mm long.

LBA pit 1029, fill 1030. The larger slag piece is a small smithing cake with very fine charcoal impressions, the smaller slag piece is melted furnace/hearth wall. 25g of the sample comprises corroded iron pieces, including nails.

EIA ditch 1075, fill 1076. Large piece (90 x 80 x 55mm thick) of plano-convex slag cake. The piece is extremely dense, and has little internal vesicularity. The upper surface is marked by rather rusty impressions of small charcoal pieces. The upper part of the cake has a dense slag layer some 30mm thick, with an equant granular, crystalline texture distally, with a more radial, lath texture proximally, where the cake shows adhering altered lining. This burr region is marked by the development of flow lobes in the lower part of the cake. Suggesting a high mobility of slag close to the furnace wall. The lower surface shows flow lobes proximally, becoming replaced by charcoal impressions distally. This is a difficult slag piece to identify, with no certain indicators of origin. It shows some features which would be unusual an a plano-convex bloomsmithing cake, particularly the lack of a smooth upper surface and the presence of flow lobes, so an origin within a non-slag tapping smelting furnace appears likely, but is by no means certain.

Micro-residues

Recovery was variously by means of magnetic and visual sorting of soil sample residues. The microscopic residues hand picked as 'slag' are dominated by dark, vitreous, vesicular, non-magnetic material, which cannot be identified precisely by optical methods. It is likely indeed, that this class covers various types of material and that the majority of these materials are not of metallurgical origin. It may include some slag-like materials, particularly the dark glass, that may be derived from the melting of the lining of a furnace or hearth at temperatures in excess of about 1000 degrees C. Most of the material is probably highly coked organic matter, particularly wood charcoal, but possibly also including a small proportion of burnt bone.

Some non-magnetic slag-like materials are more certainly identified, and these are dominated by glassy materials, mainly of a pale colour, but there are also some darker crystalline non-magnetic slag particles which may be small fragments of iron-smelting slags. There are rare examples of large non-magnetic slag spheroids, and these are likely to be slag droplets from the base of an iron smelting furnace.

Amongst samples picked by magnet, the dominant materials are burnt stone (including flint and ironstone particles), fired clay and metallurgical residues, including small slag fragments and hammerscale. Only the hammerscale has been systematically quantified.

The quantity of hammerscale of both flake and spheroidal types is relatively small when the enormous quantities of such material generated by metallurgical processes are considered. In total 6144 fragments of flake hammerscale and 475 spheres were retrieved. The sampled spheroidal hammerscale from LBA contexts 1402/1667 had a size range of 100–1900µm, with a mean of 660µm, that from 1543/1669 had a range of 200–1000µm, with a mean of 480µm. The spheroidal hammerscale from other contexts appears broadly similar, although no detailed measurements of size distribution have been made. The one exception is the deposit rich in smelting debris 422/323 (Early Iron Age posthole fill) in which a proportion of significantly larger spheroids were present; it is possible these may have a separate origin with the smelting furnace.

Flake hammerscale assemblages were all rather degraded. It is possible however, that coarser materials were not retrieved by the sampling regime; the samples investigated were dominantly those from the 0.5mm to 1.0mm size fraction.

Distribution (Fig. 53)

The macroscopic slags were widely distributed across the site, with no clear focus.

Micro-residues, including both spheroidal and flake hammerscale, were recovered from a wide variety of contexts in the Early Iron Age enclosure (Table M1; Fig. 53). Seventeen contexts from roundhouse B yielded hammerscale, but in very small quantities (total 123 pieces, maximum density 1.9 pieces per litre of sample) and not enough to suggest a direct relationship between the context and metallurgical process. Only three of those contexts exceeded 10 pieces of scale. Larger quantities of scale derive from features to the south and east of the roundhouse. In all, nine contexts within the enclosure yielded in excess of 10 pieces of scale (total approximately 700 pieces); three of these, two postholes and a pit, each yielded more than 150 pieces of hammerscale, with scale density up to almost 10 pieces per litre of sample. A single sample from the enclosure ditch and two probable Early Iron Age contexts outside the enclosure also yielded more than 10 pieces of scale.

Hammerscale was also recovered from almost all postholes within roundhouses C and D (dated to the 10th century BC), as well as structure A. Nine contexts within roundhouse D yielded more than 150 pieces of hammerscale, as did one each from roundhouse C and structure A. The processing of the microresidue samples was variable and it cannot be guaranteed that full recovery of hammerscale from roundhouse C and D contexts was achieved. For this reason comparison of the hammerscale type ratios is slightly problematic. However, structure A yielded four assemblages of more than 10 pieces (total 344 pieces at densities of up to almost 4 pieces per litre of sample), with an overall flake:spheroidal hammerscale ratio of 43:1. Roundhouse C yielded a total of approximately 780 pieces, whereas roundhouse D yielded over 4500 pieces. The flake:spheroidal hammerscale ratios for these two roundhouses was approximately 10:1 and 12:1 respectively. The maximum densities of hammerscale was 2.3 pieces per litre in roundhouse C, but six samples from roundhouse D exceeded 10 pieces per litre of sample. The close association of hammerscale with roundhouse D is particularly noteworthy, and approximately 1150 pieces from the hearth is extremely significant.

One odd feature of the distribution of the hammerscale within roundhouses C and D is that apparent inhomogeneity of the posthole fills. The replicate samples from the two halves of the posthole often show strongly contrasting densities of hammerscale. One possible explanation for this might be that hammerscale is intrusive within quite small structures, such as worm holes, roots or mammal burrows, or due to differential recovery during sorting, more likely.

Investigation of the variation in the ratio of flake:spheroidal hammerscale across the site (Fig. 53, c and d; table M1) shows a rather variable pattern amongst the samples with only a small number of hammerscale pieces, however, the samples with more than 1 piece of hammerscale per litre of soil show a more structured pattern, with the samples with the highest density of hammerscale (particularly the eastern side of roundhouse D and posthole 322 in the enclosure) showing a slightly lower flake:spheroid ratio (range 8–14) than the samples with a slightly lower density (roundhouses B and C, structure A, enclosure ditch 746; typically 15 and above). This provides a suggestion that these samples with the moderate flake:spheroidal hammerscale ratio may be indicative of bloomsmithing residues. Samples with a higher ratio might be from blacksmithing.

Chemical analysis

Chemical analyses were undertaken by the laboratories of the School of Earth, Ocean and Planetary Science, Cardiff University. Major element analysis was undertaken using induction-coupled plasma optical emission spectrometry (ICP-OES) and trace elements by induction-coupled plasma mass spectrometry (ICP-MS). Unfortunately the system was not able to measure Si in the samples, and for some samples rich in magnetite the acid dissolution was incomplete and the iron measured is a minimum content.

Macroscopic slags

Five specimens of slags interpreted as smelting slags were analysed. The samples were derived from a Late Bronze Age treethrow fill 588, Early Iron Age posthole fills 323 and 407, Early Iron Age ditch fill 1076, and Roman pit fill 821. The chemical analyses are presented in Table M2. The analyses are all very similar, supporting the proposition that these are slags produced from a common process. Total iron, quoted as FeO varies from 62.8% to 74%. The slags are only moderately aluminous (Al_2O_3 varying from 3.2% to 4.4%), have low CaO (0.6% to 1.1%), low MgO (0.3% to 0.5%), moderate TiO_2 (0.2% to 0.3%) and moderate P_2O_5 (0.6% to 0.8%).

The trace element contents are also fairly tightly grouped. Elements worthy of comment include fairly low contents of Pb (7-10ppm), Ba (180-250ppm) and U (1.3-2.4ppm). Contents of some of the ‘immobile’ elements are moderate, with Y at 40-56ppm, Nb at 4.7-5.4ppm, Th at 3.1-3.8ppm and total rare earth elements (□REE) of 140-210ppm.

The upper-crust normalised (after Taylor and McLennan 1981) REE profiles are mainly humped, with Gd the most enriched (1.6 – 2.4 times upper crust). The heavy REE (HREE) are slightly less enriched (1.4 to 1.8 times upper crust for Lu, but slightly higher than the light REE (LREE) with 0.9 –1.4 times upper crust for La, with a very slight negative Ce anomaly.

In detail, the REE profiles show a spread from examples with a MREE 'hump' through to examples with depletion of the LREE, which imparts an overall slope to the profile. The sample from 1076 is the most humped, with those from 323, 821 and 407 showing slightly lower LREE values, but with that from 588 showing a marked slope down to the LREE. A degree of variability is to be expected, even within slags from a single smelt, because of the non-homogenous nature of slag in a non-tapping furnace.

Micro-residues

Three samples of micro-residues were selected for analysis, together with five samples of comparative material, since there are no published chemical analytical studies of hammerscale. For all of the samples the analytical technique required sample sizes greater than single particles. In order to attain a suitable bulk samples size the sample of spheroidal hammerscale from an Early Iron Age context contained eight spheroids from context 422, the sample of spheroidal hammerscale from Late Bronze Age contexts contained 33 spheroids from contexts 1402/1667 and 1543/1660, and the sample of flake hammerscale from Late Bronze Age contexts contained 23 pieces from contexts 1402/1667, 1543/1660 and 1425/1665. All the Late Bronze Age contexts from which the samples were drawn are postholes within roundhouse D.

The analyses of the two sets of spheroidal hammerscale are rather similar, and strongly dissimilar to the flake hammerscale. The flake hammerscale shows low concentrations of all elements (except iron).

The upper-crust normalised REE profile of the flake hammerscale is fairly flat, but those of the two spheroidal samples show relative deletion of the LREE, giving a profile close to that of the macroscopic smelting slags.

Comparative material

Hammerscale of each of the two classes was sampled from existing collections from two sites. Firstly the 4th-century AD smithy within the basilica at Caerwent, Gwent, context CWT2835 (more than 200μm fraction), and secondly material from an early medieval (probably 8th century) smithy at Abernant, Gwent, context ANC099A (1-2mm fraction of magnetic residues). In addition, magnetic spheroids produced in a corn-drying kiln in the Iron Age settlement of Bornish, South Uist (context 269, samples 5967 and 5991), were analysed as an example of non-metallurgical magnetic spheroids.

The flake hammerscale from Caerwent contains over 96% iron expressed as magnetite. For the Hartshill and Abernant specimens the laboratory reported problems in getting all the magnetite into solution, so those iron totals are too low. For other elements the flake hammerscale shows lower concentrations than found in the spheroidal hammerscale. The upper-crust normalised REE profiles for the samples from Abernant and Caerwent are approximately parallel, with the REE relatively enriched by 1.5 to 2 times in the spheroidal scale.

The material from the corn-drier at Bornish showed a surprisingly low iron content given its strongly magnetic properties. The material was markedly different from the iron-working residues in many aspects of its composition, and it will not be discussed further here.

Interpretation

Chemical analyses suggest that the macroscopic smelting slags were the product of smelting quite a rich iron ore. The contents of CaO and MgO are low, suggesting it was not a carbonate ore, The P_2O_5 is moderate, suggesting a sedimentary ore. The most likely solution is that the ore was a sedimentary iron oxide, probably goethite. Iron oxide pellets were present in the magnetic residues, suggesting they had been heated, so smelting of a highly weathered greensand is possible.

The chemical analyses of the micro-residues from the Late Bronze Age contexts leaves no room for doubt that they indeed from iron-making or working. The match between the REE profiles of the spheroidal hammerscale and the macroscopic slags suggests that they were likely to have been derived during bloomsmithing, and the expulsion of residual smelting slags from the raw bloom. Some spheroids may be produced in the smelting furnace too, but the context of much of the Hartshill material suggests against this.

Discussion

The volume of metallurgical residue from the site is very small, but indicates that both iron smelting and ironworking took place somewhere on the site. However, determination of the scale of that activity must await the discovery of its focus. The amount of iron smelting slag recovered represents the equivalent of perhaps one tenth of one smelt.

One of the most remarkable features of this site is the extremely widespread nature of the micro and macro-residues. The mechanism for their dispersal across the site from the original focus of activity remains unknown.

The iron smelting appears to be reasonably closely tied to the prehistoric structures recognised, with microscopic residues occurring widely in their postholes and macroscopic slags occurring within pits and postholes within the enclosure and within the fill of the enclosure. The small number of slag pieces does not permit much comment on the technology and scale of operation, but does point to the use of non-slag tapping furnaces. Such furnaces are widely presumed to have been in use in the Early Iron Age, but direct evidence for them has not generally been forthcoming in southern England. Identification of the ore involved in the smelting operation would be very important. The best known iron-smelting site in the area is the Saxon site at Ramsbury (Haslam 1980), some 27km further up the Kennet Valley, but still within a broadly similar geological setting.

Until recently it had been assumed that most of the iron being employed in Early Iron Age Wessex was sourced from outside the region (e.g. Ehrenreich 1994), but a number of smelting sites within the area are now being recognised. The technology of iron smelting appears to be very close to that on several unpublished sites of this period in Ireland for which the author has undertaken review of the metallurgical residues.

Certain Late Bronze Age contexts appear to have yielded a hammerscale assemblage broadly comparable with that from the Early Iron Age contexts. The extremely early date of this material is remarkable. Iron smelting of 10th century BC has not been recognised elsewhere in western Europe, although the process may have been undertaken in Eastern Europe at this time (Pleiner 2000). Iron artefacts became relatively widespread in Britain in the latest Bronze Age ‘Llyn Fawr Phase’, usually attributed to a period around the 8th century BC, but there is so far little evidence for smelting sites or slags before the 6th century BC. If the hammerscale from roundhouses C and D is genuinely of the 10th-century BC, then it is a remarkable discovery.

Table M1: catalogue of hammerscale (Shaded = C14 dated contexts)

Context	*sample*	*sph.*	*flk.*	*total*	*volume*	*Sph./10L*	*Flk./10L*	*Tot./10L*	*Flk./sph.*	*Fill of*
					Roundhouse A					
141, 177	3, 10	2	33	35	26	0.8	12.7	13.5	16.5	140
145, 176	4, 9	0	11	11	28	0.0	3.9	3.9	infinite	144
147, 179	5, 12	4	90	94	28	1.4	32.1	33.6	22.5	146
159, 183	6, 14	2	205	207	55	0.4	37.3	37.6	102.5	154
155, 205	19	0	4	4	10	0.0	4.0	4.0	infinite	154
165, 178	8, 11	0	1	1	24	0.0	0.4	0.4	infinite	164
Sub totals		*8*	*344*	*352*						
					Roundhouse D					
1371	113	2	54	56	10	2.0	54.0	56.0	27.0	1370
1374, 1644, 1669	112, 179, 192	50	1146	1196	110	4.5	104.2	108.7	22.9	1373
1383, 1664	114, 189	15	146	161	50	3.0	29.2	32.2	9.7	1382
1387, 1648	115, 183	0	21	21	20	0.0	10.5	10.5	infinite	1386
1397, 1631	169	0	18	18	10	0.0	18.0	18.0	infinite	1396
1400	116	0	2	2	10	0.0	2.0	2.0	infinite	1399
1402, 1667	117, 191	90	793	883	60	15.0	132.2	147.2	8.8	1401
1404, 1576	120, 163	5	79	84	30	1.7	26.3	28.0	15.8	1403
1412, 1575	121, 162	4	15	19	30	1.3	5.0	6.3	3.8	1411
1416, 1678	122, 193	4	19	23	20	2.0	9.5	11.5	4.8	1415
1425, 1665	123, 190	39	326	365	20	19.5	163.0	182.5	8.4	1424
1431, 1624	164	0	63	63	20	0.0	31.5	31.5	infinite	1430
1437, 1626	127, 166	8	117	125	20	4.0	58.5	62.5	14.6	1436
1440, 1663	125, 188	8	41	49	50	1.6	8.2	9.8	5.1	1439
1454, 1627	128, 167	1	2	3	20	0.5	1.0	1.5	2.0	1453
1460, 1681	132, 196	7	83	90	20	3.5	41.5	45.0	11.9	1459
1464	134	0	5	5	10	0.0	5.0	5.0	infinite	1463
1484, 1658	138, 185	8	175	183	20	4.0	87.5	91.5	21.9	1483
1489, 1649	139, 184	5	21	26	20	2.5	10.5	13.0	4.2	1488
1499	141	0	2	2	10	0.0	2.0	2.0	infinite	1498
1503	142	0	3	3	10	0.0	3.0	3.0	infinite	1502
1505, 1679	143, 194	14	154	168	20	7.0	77.0	84.0	11.0	1504
1510, 1680	144, 195	7	3	10	30	2.3	1.0	3.3	0.4	1509
1527, 1645	147, 180	17	228	245	20	8.5	114.0	122.5	13.4	1526
1529, 1646	148, 180	14	203	217	20	7.0	101.5	108.5	14.5	1528
1532	150	0	4	4	10	0.0	4.0	4.0	infinite	1531
1534, 1628	151,168	7	99	106	20	3.5	49.5	53.0	14.1	1533
1541	152	0	2	2	10	0.0	2.0	2.0	infinite	1540
1543, 1660	153, 186	17	190	207	20	8.5	95.0	103.5	11.2	1542
1545	155	2	15	17	10	2.0	15.0	17.0	7.5	1544
1563	157	0	1	1	10	0.0	1.0	1.0	infinite	1562
1568, 1574	160, 161	13	92	105	30	4.3	30.7	35.0	7.1	1564
1567, 1625	158, 165	3	74	77	20	1.5	37.0	38.5	24.7	1566
Sub totals		*340*	*4196*	*4536*						
					Roundhouse C					
200, 202, 204	16, 17, 18, 149, 154, 156, 159	39	604	643	280	1.4	21.6	23.0	15.5	199
1208, 1340	103, 105	2	1	3	20	1.0	0.5	1.5	0.5	1207
1210, 1341	106	1	6	7	10	1.0	6.0	7.0	6.0	1209
1214, 1297	98	0	1	1	20	0.0	0.5	0.5	infinite	1213
1295, 1296	93, 97	2	3	5	20	1.0	1.5	2.5	1.5	1213
1216, 1299	95, 99	1	4	5	20	0.5	2.0	2.5	4.0	1215
1218, 1300	96, 100	0	2	2	20	0.0	1.0	1.0	infinite	1217
1222, 1298	94	1	2	3	10	1.0	2.0	3.0	2.0	1221
1224, 1270	86, 87	2	3	5	20	1.0	1.5	2.5	1.5	1223
1228, 1271	85, 88	10	38	48	40	2.5	9.5	12.0	3.8	1227
1230	140	2	3	5	10	2.0	3.0	5.0	1.5	1229
1232, 1372	110, 111	3	4	7	20	1.5	2.0	3.5	1.3	1231
1234, 1354	108, 109	3	9	12	35	0.9	2.6	3.4	infinite	1233
1236, 1455	126, 129	1	5	6	20	0.5	2.5	3.0	5.0	1235
1238, 1458	130, 131	0	3	3	20	0.0	1.5	1.5	infinite	1237
1240, 1485	135, 136	0	2	2	80	0.0	0.3	0.3	infinite	1239
1242, 1272	89, 90	1	15	16	20	0.5	7.5	8.0	15.0	1241
1246, 1310	92, 102	1	0	1	20	0.5	0.0	0.5	0.0	1245
1518	146	4	0	4	10	4.0	0.0	4.0	0.0	1517
Sub totals		*73*	*705*	*778*						

Context	***sample***	***sph.***	***flk.***	***total***	***volume***	***Sph./10L***	***Flk./10L***	***Tot./10L***	***Flk./sph.***	***Fill of***
others outside encl to E										
1105	78	0	4	4	40	0.0	1.0	1.0	infinite	1104
1254	88	1	1	2	20	0.5	0.5	1.0	1.0	1253
1263	84	0	1	1	40	0.0	0.3	0.3	infinite	1262
		1	*6*	*7*						
Roundhouse B										
231, 426	22, 24	0	3	3	40	0.0	0.8	0.8	infinite	230
288	39	0	19	19	10	0.0	19.0	19.0	infinite	287
290, 516	34, 35	1	30	31	20	0.5	15.0	15.5	30.0	289
292, 449	28	1	8	9	20	0.5	4.0	4.5	8.0	291
300, 878	74, 75	0	1	1	25	0.0	0.4	0.4	infinite	299
302, 500	36, 37	1	1	2	33	0.6	0.3	0.9	0.5	301
343, 621	54, 55	1	1	2	18	0.6	0.6	1.1	1.0	342
358, 634	56, 57	0	1	1	25	0.0	0.4	0.4	infinite	357
380, 657	60, 61	1	8	9	45	0.6	1.8	2.4	3.0	379
395, 735	65, 66	0	1	1	20	0.0	0.5	0.5	infinite	394
401, 778	68, 69	0	1	1	20	0.0	0.5	0.5	infinite	400
403, 788	70,71	1	4	5	32	0.3	1.3	1.6	infinite	402
856	73	0	2	2	20	0.0	1.0	1.0	infinite	404
407, 542	48, 49	2	7	9	25	0.8	2.8	3.6	3.5	406
409, 505	41, 42	4	21	25	35	0.6	6.0	6.6	10.5	408
521	47	0	1	1	5	0.0	2.0	2.0	infinite	526
1126	81	1	1	2	40	0.3	0.3	0.5	1.0	1125
Sub totals		*13*	*110*	*123*						
Pit V area										
492	32	2	20	22	40	0.5	5.0	5.5	10.0	491
499, 1634	38, 172	0	126	126	45	0.0	28.0	28.0	infinite	498
514, 1635	45, 173	9	230	239	40	2.3	57.5	59.8	25.6	513
773, 1642	67, 177	0	2	2	40	0.0	0.5	0.5	infinite	772
Sub totals		*11*	*378*	*389*						
SE RH B										
221	20	0	4	4	20	0.0	2.0	2.0	infinite	220
323, 422	21, 23	13	180	193	20	6.5	90.0	96.5	13.8	322
Sub totals		*13*	*184*	*197*						
others in enclosure										
489, 1633	31, 171	2	12	14	45	0.4	2.7	3.1	6.0	488
504	46	0	26	26	8	0.0	32.5	32.5	infinite	493
679, 1640	176	1	20	21	20	0.5	10.0	10.5	20.0	677
941	76	0	2	2	10	0.0	2.0	2.0	infinite	940
976	82	1	8	9	40	0.3	2.0	2.3	8.0	975
1103, 1643	77, 178	2	32	34	20	1.0	16.0	17.0	16.0	1102
1119, 1121	79	0	10	10	40	0.0	2.5	2.5	infinite	1118
Sub totals		*6*	*110*	*116*						
enclosure ditch										
746	197	1	15	16	40	0.3	3.8	4.0	15.0	745
Far SW										
28, 1632	2, 179	5	9	14	15	3.3	6.0	9.3	1.8	27
ouside encl to W										
497, 1639	175	1	80	81	30	0.3	26.7	27.0	80.0	493
639	59	0	1	1	20	0.0	0.5	0.5	infinite	638
640	58	0	2	2	20	0.0	1.0	1.0	infinite	638
Sub totals		*1*	*83*	*84*						
Near pit Q in South										
1406	119	0	4	4	10	0.0	4.0	4.0	infinite	1405
1409	118	3	0	3	40	0.8	0.0	0.8	0.0	1441
Sub totals		*3*	*4*	*7*						
Totals:	***98 samples***	***475***	***6144***	***6619***						

Table M2a: Major elements by ICP-OES

	SiO2	Al2O3	FeO	Fe3O4	MnO	MgO	CaO	Na2O	K2O	TiO2	P2O5	total	total
												Fe as FeO	Fe as Fe3O4
Abernant flake	no data	1.04	59.96	64.40	0.03	0.16	0.25	1.73	0.14	0.13	0.18		68.06
Abernant spheroids	no data	2.35	37.18	39.93	0.27	0.35	0.47	1.57	0.43	0.24	0.42		46.03
Bornish spheroids	no data	9.14	6.33	6.80	0.17	4.28	8.70	1.88	2.07	0.75	1.90		35.69
Caerwent flake	no data	0.86	89.86	96.52	0.02	0.17	0.42	1.75	0.13	0.09	0.21		100.17
Caerwent spheroid	no data	1.74	56.42	60.60	0.03	0.37	0.65	1.67	0.41	0.15	0.23		65.85
hcb 1667-flake	no data	0.95	14.64	15.72	0.05	0.26	1.27	1.56	0.35	0.37	0.32		20.86
hcb 1667-spheroid	no data	1.18	46.83	50.30	0.04	0.24	0.64	4.08	0.20	0.26	0.48		57.43
hcb 422-spheroid	no data	3.27	67.93	72.97	1.31	0.54	0.74	1.57	0.03	0.31	1.22		81.96
323-sm	no data	3.87	62.80	67.45	1.01	0.49	0.64	1.68	1.07	0.25	0.73	74.58	
407-sm	no data	3.16	70.68	75.91	0.69	0.29	0.83	1.69	0.54	0.22	0.63	80.75	
588-sm	no data	3.51	64.19	68.94	0.93	0.45	0.63	1.67	0.48	0.27	0.65	74.76	
821-sm	no data	4.37	68.52	73.59	1.10	0.36	1.10	1.29	0.65	0.22	0.75	80.50	
1076-cake	no data	3.37	73.97	79.45	0.75	0.29	0.69	1.61	0.55	0.22	0.64	84.17	

Table M2b: Trace elements by ICP-MS

	V	Cr	Co	Ni	Cu	Ga	Rb	Sr	Y	Zr	Nb	Ba	Hf	Ta	Pb	Th	U
Abernant flake	19.2	29.4	28.0	75.9	22.8	4.2	3.0	15.8	5.6	188.1	3.4	135.5	5.1	0.3	25.1	1.3	0.4
Abernant spheroids	59.8	51.0	18.4	42.5	141.7	5.3	13.1	34.1	10.2	286.4	5.2	247.1	7.7	0.5	14.5	2.8	1.7
Bornish spheroids	78.4	69.7	13.8	75.0	58.4	11.8	25.8	849.6	16.8	541.7	8.9	418.8	14.2	0.8	22.1	3.4	4.1
Caerwent flake	16.7	17.7	12.7	74.5	72.8	5.0	2.1	52.3	4.4	130.1	2.3	145.6	3.6	0.2	7.2	1.0	0.5
Caerwent spheroid	25.4	21.0	11.6	119.3	29.2	5.7	11.3	154.1	9.0	187.3	3.4	219.7	5.2	0.3	11.2	1.8	0.7
hcb 1667-flake	43.1	77.3	41.4	181.6	185.9	5.6	6.6	74.9	5.9	696.1	9.6	488.6	20.0	0.9	37.5	2.2	0.5
hcb 1667-spheroid	42.6	47.5	33.3	110.4	21.9	4.7	35.0	33.0	37.9	357.5	12.0	281.6	4.3	0.8	16.0	3.6	0.9
hcb 422-spheroid	112.9	101.3	7.1	11.3	97.8	4.6	19.6	33.4	57.9	206.5	5.6	188.0	5.6	0.5	9.3	3.0	1.9
323-sm	85.8	71.7	5.4	36.4	33.0	4.7	39.8	37.0	56.8	198.6	5.4	250.5	5.3	0.4	9.9	3.4	2.4
407-sm	69.5	80.7	3.4	31.2	35.4	4.2	22.1	36.9	39.6	217.3	5.0	179.2	5.7	0.4	8.7	3.8	1.3
588-sm	83.9	64.4	5.7	3.8	20.4	4.4	17.8	27.7	45.1	199.3	5.2	157.8	5.5	0.4	8.3	3.1	1.6
821-sm	62.8	79.6	5.9	11.2	57.1	4.2	23.1	46.5	50.1	150.9	4.5	183.5	4.1	0.3	7.2	3.7	1.3
1076-cake	69.3	79.2	9.0	20.4	40.9	4.1	21.9	43.0	43.1	211.2	4.7	179.5	5.7	0.4	8.7	3.5	1.5

Table M2c: REE by ICP-MS

	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Total REE	Total REE no La
Abernant flake		8.8	1.3	5.1	1.2	0.3	1.2	0.2	0.9	0.2	0.5	0.1	0.5	0.1		20.1
Abernant spheroids		14.2	1.8	6.8	1.8	0.4	1.9	0.3	1.6	0.3	0.9	0.1	0.9	0.1		31.0
Bornish spheroids		47.7	5.5	19.8	3.8	1.0	3.5	0.5	2.6	0.5	1.4	0.2	1.5	0.2		88.3
Caerwent flake		7.7	0.9	3.4	0.8	0.2	0.8	0.1	0.7	0.1	0.3	0.0	0.3	0.1		15.4
Caerwent spheroid		15.5	2.0	7.4	1.6	0.4	1.7	0.2	1.4	0.3	0.7	0.1	0.6	0.1		31.9
hcb 1667-flake		14.0	1.3	4.2	0.8	0.2	0.9	0.1	0.7	0.2	0.5	0.1	0.4	0.1		23.4
hcb 1667-spheroid	18.2	38.8	5.3	21.3	5.5	1.9	6.1	1.0	6.3	1.3	3.4	0.5	3.4	0.5	113.3	95.2
hcb 422-spheroid	25.5	50.0	5.8	22.8	5.7	1.3	6.8	1.2	7.6	1.7	4.8	0.7	5.0	0.8	139.7	114.2
323-sm	41.6	78.6	9.7	37.9	8.8	2.1	9.2	1.4	8.1	1.6	4.2	0.6	4.0	0.6	208.4	166.8
407-sm		47.8	7.3	26.9	6.1	1.3	5.9	0.9	5.2	1.0	2.8	0.4	2.8	0.4		109.0
588-sm	27.7	52.2	6.3	24.6	5.9	1.4	6.3	1.0	6.1	1.3	3.6	0.5	3.7	0.6	141.1	113.3
821-sm	37.8	66.9	9.3	35.0	7.8	1.8	7.6	1.2	6.7	1.3	3.6	0.5	3.5	0.5	183.6	145.8
1076-cake		69.6	9.3	34.8	7.5	1.7	7.5	1.1	6.1	1.2	3.1	0.4	3.0	0.5		145.8

The Worked Stone by Fiona Roe

A total of 11 utilized pieces of stone were recovered. There are five objects from later prehistoric contexts, and a further two of probable prehistoric date from Roman contexts. The Roman finds consist of one whetstone and a fragment of roofing tile. Two pieces of burnt stone complete the assemblage. A catalogue of worked stone objects is presented below (Nos. 5-7 and 13-16).

Later prehistoric worked stone

Sarsen appears to have been used throughout the later prehistoric lifetime of the settlement, with finds of four saddle querns and one hammerstone. It was available locally, since blocks of sarsen were common in the Plateau Gravel between the rivers Pang and Kennet (Blake 1903, 68). However, this source may only have supplied pieces suitable for relatively small saddle querns. The grinding surface of **5** (Fig. 50.5) was carefully prepared by pecking, but was barely large enough to be very effective. A maximum breadth of only 145 mm was achieved by working the grinding surface diagonally across the cobble. Saddle quern **6** (Fig 50.6) appears to be the re-used part of a slightly larger quern, since the underside also has a worked surface that has been pecked and then worn smooth

The somewhat meager supply of sarsen may explain the use of Upper Old Red Sandstone for saddle quern **7** (Fig. 50.7), despite a source area some 108 km (67 miles) west from Upper Bucklebury. Quern **7**, though fragmentary is clearly part of a saddle quern and as such is a residual find within its Roman period context (931). Saddle querns made from this sandstone could be up to 560 mm in length, as demonstrated by a complete Iron Age example from Salmonsbury, Gloucestershire (Dunning 1976 & Cheltenham Museum), and so would have been much more effective for grinding corn.

Fragments of iron rich sandstone or carstone from a Roman pit 930, may also be the remains of a prehistoric quern or rubber. This Tertiary sandstone could again have been collected from the Plateau Gravel in the area (Blake 1903, 64).

A little burnt stone was also recorded, from the fill of Early Iron Age stake hole 978 and probably redeposited from Roman pit fill 931. Broken quern fragments were often reused in this way, and sarsen saddle quern fragment **12** is severely fire-cracked.

Romano-British worked stone

Only two pieces of Roman-British worked stone were found. Whetstone fragment **17** is of Kentish Rag, with a probable source around Maidstone in Kent. A small slab of Lower Old Red Sandstone from pit fill 931 is probably part of a roofing tile. The source for this is probably the Brownstones of the Forest of Dean.

Discussion

Sarsen was in widespread use in the area for saddle querns and other implements from Neolithic times onwards. A fairly early local occurrence (of possible late Neolithic or early Bronze Age date) was at Post Down Farm near Lambourn, where a sarsen saddle quern and two rubbers were found in a pit (Gaffney & Tingle 1989, 82). Worked sarsen came from late Deverel Rimbury contexts at Pingewood (Johnstone & Bowden 1985 and Reading Museum). There were finds from Late Bronze Age contexts at Reading Business Park (Moore & Jennings 1992, 94; Roe in prep (a)), while at Dunston Park, Thatcham, two sarsen quern fragments were found in early Iron Age contexts (Fitzpatrick *et al.*, 1995, 77). It is possible that over the centuries the supply of good, usable sarsen blocks began to run out, and an alternative was cobbles of quartzite, which could also have been obtained from the gravels (Blake 1903, 64). Here the excavations in 2001produced evidence that these were used for small saddle querns and a rubber which came from Late Bronze/Early Iron Age and Iron Age contexts (Cotswold Archaeology, in prep). They cannot have been entirely satisfactory for corn grinding. Finds of Tertiary ironstone usually present difficulties of interpretation, because the stone tends to be friable, and working traces do not survive well, although unworked fragments are often found. There is some evidence that it was utilised, for instance at Reading Business Park (Roe in prep (a)) and Aldermaston Wharf (Bradley *et al.* 1980, 245).

Those occupying the settlement here were not alone in looking for alternative materials that would be superior to the stone available locally. At Reading Business Park two greensand saddle querns had been brought down the river Thames from near Abingdon (Roe 2003). At Knight's Farm, Burghfield, a quern was made of gabbro brought from Shropshire (Bradley *et al.* 1980, 255), while at Aldermaston Wharf a piece of worked stone was made from syenite with a source still to be determined. Quern fragments of Old Red Sandstone were also reported from Aldermaston Wharf (*op cit.*, 245). Further prehistoric sites with Old Red Sandstone quern fragments include the Eton Rowing Lake, where it occurred in both late Bronze/early Iron Age and middle Iron Age contexts (Roe in prep (a)). On the former Berkshire Downs, an Old Red Sandstone quern fragment was found in a pit on a late Bronze/early Iron Age site at Tower Hill, Ashbury, Oxfordshire (Roe in prep (b)), while another fragment came from a middle Iron Age pit at Segsbury Camp, Oxfordshire (Roe in prep (c)). Thus it can be seen that the later prehistoric worked stone from this site fits into a wider pattern of stone utilisation, in which the local materials were put to use as far as possible, while a few other varieties of stone, and especially Old Red Sandstone, were sometimes imported from far outside the region.

The two pieces of stone from Roman contexts also fit into a wider pattern of stone utilisation. Whetstones of Kentish Rag are common generally on Roman sites, and one was found, for example, at Thames Valley Park, Reading (Barnes *et al.* 1997, 47). Roofing tiles of Old Red Sandstone from the Forest of Dean have also been found quite widely in the area, despite the distance from the source area. A number of these roofing tiles were found at Aldermaston Wharf (Cowell *et al.* 1978, 22), and they are also known from Silchester (Fulford & Timby 2000, 99).

Catalogue

5 EIA posthole fill 657. Fig 50.5. Sarsen. Small saddle quern, made from boulder with part of original surface, one end broken off. Concave grinding surface prepared by pecking, worked diagonally to maximise grinding surface. Some chipping into shape round edge, some wear on under surface; 243 x 145 x 77mm, 4kg

6 EIA pit fill 783. Fig 50.6. Sarsen. Saddle quern, part of edge missing, slightly burnt, utilised on two surfaces, one has concave grinding surface worn smooth, underside also has grinding surface, which was pecked and then worn smooth; 290 x 175 x 53mm, 4.250kg

7 RB pit fill 1346. Fig 50.7. Upper Old Red Sandstone. Fragment of saddle quern, probably redeposited from prehistoric occupation, concave grinding surface worn smooth, underside unmodified; 165 x 97 x 75mm, 1.100kg

13 LBA posthole fill 662. *Not illustrated*. Sarsen. Small fragment with a flat, polished surface, probably edge of saddle quern or part of rubber; 85.5 x 46 x 34mm, 145g

14 EIA pit fill 953. *Not illustrated.* Sarsen. Hammerstone, battered all round edge; 75 x 65.5 x 39mm, 320g

15 RB pit fill 931. *Not illustrated.* Carstone (iron sandstone), probably Tertiary. Three fragments, now without working traces, but a possible prehistoric quern or rubber material. 1.190kg

16 RB pit fill 1346. *Not illustrated*. Kentish rag. Whetstone fragment, rod type, well worn; 49 x 28.5 x 14 mm, 22g

Worked Flint by E.R. McSloy

Quantity and provenance

The worked flint was scanned by context and recorded according to class and removal form/size. Other attributes recorded include raw material (colour and probable source), patina, degree of cortex present, hammer mode if determinable and whether burnt.

A total of 83 pieces of worked flint were recovered from 52 contexts, of which 17 pieces were retrieved from soil sample residues. The worked flint occurs predominantly as single pieces per context or in small groups of two or three pieces. A group of ten flakes from a pit fill 744 (pit cluster U) is exceptional. Pieces with secondary working are restricted to five pieces classifiable only as ‘retouched flakes’. The remaining material comprises flakes/chips, shatter pieces, cores and two large trimmed nodules which perhaps represents building stone of Romano-British or later date.

Condition is generally good with very little edge damage or ‘rolling’ evident. The cluster of flakes from pit group U, appears very fresh, suggestive of deposition soon after ‘manufacture’. Re-fitting material was not identified, although a group of three flakes from a Late Bronze Age pit (context 019) almost certainly come from a common core or nodule.

Raw Material and Process

A large proportion (74%) of the flint removal retains areas of cortex, with approximately 12% being fully cortical. The worked flint is predominantly unpatinated with only two flakes exhibiting mottled pale grey discolouration. The bulk of material is dark or mid grey coloured, with a very few pieces pale grey or brown. Cortex, where observed, together with the small size of most removals and the colour, suggests that most or all raw material was procured locally from the plateau gravels. Much of the utilised flint is of poor quality, often granular in texture and in some instances frost-damaged. Two flakes were burnt.

Technology

Un-retouched flakes, chips (here defined as removals under 10mm in length) and shatter pieces make up approximately 94% of the assemblage. Two cores are present, both of multi-platform type with multiple flake scars. Flake removals are predominantly of ‘squat’ proportions with length to breadth ratio close to 1:1. A small number of longer ‘blade-like flakes’ are present, however such removals would appear to be unintentional and in most instances flaking appears generally crude and ‘haphazard’, with no clear intent to guide removal shape by using existing flake scars. Hinge fractures occur with some frequency and at least two flakes/core fragments exhibit multiple incipient bulbs of percussion caused by repeated blows. Striking platforms are typically broad, always un-prepared and on occasion located on areas of cortex. Broad platforms, clear points of percussion and pronounced bulbs indicate that flaking utilising a ‘hard’ (stone) hammer was usual. Perhaps significantly, a hammerstone of sarsen is among the worked stone artefacts from the site (Roe, below).

Distribution

There are no striking tendencies evident from the spatial plotting of this material and no clear correlation between chronology and occurrence (table *). Despite 100% sampling of features in post-built structures A to D there is no apparent relationship between the identified buildings and lithics use. The comparatively large group of worked flint from pit cluster U is noteworthy, though perhaps not unusually so when considered that this a group of relatively large features which produced large quantities of other artefactual material including burnt flint, pottery and fired clay.

Discussion

As previously noted, there are no diagnostic tools present in this group and an assessment of dating can only be made with reference to observed technology. Other attributes, such as condition and the homogeneity or otherwise of raw material can also be significant, helping in the assessment of residuality.

In broad terms the worked flint corresponds to prevailing technologies favoured from the Late Neolithic onwards and characterised by multi-platform cores and shorter, broader flake removals. Certain aspects of the assemblage are consistent with ‘metal age’ flintworking (Ford *et al*. 1984, 157-73; Humphrey 2003, 17-23). Characteristics outlined above including absence of definable tools, the seemingly uncontrolled nature of the flaking, where the desired product is sharp edges for use as impromptu cutting implements, and the variable quality of the raw material, all encourage a later prehistoric dating. In all probability the larger part of the flintwork is contemporary with the Late Bronze Age and Early Iron Age pottery from the site.

There is no evidence for decreased use or incidence of lithics in the Iron Age phases, although this is clearly the case for the Romano-British period.

Two trimmed flint nodules most likely represent building stone. Both derive from undated small pits/postholes, located close to the western edge of the site. The use of flint as building stone was common in the Roman, medieval and post-medieval/modern periods, particularly in areas where there was no ready source of more easily workable stone. A Romano-British date would seem to be most likely in this instance based on the proximity of the findspots to certain Romano-British features.

Table WF: worked flint distribution

Period	*Phase*	**Group**	**Spatial assoc.**	*Building stone*	*Chip*	*Core frag*	*Flake*	*Utilised flake*	*Retouched flake*	*Shatter piece*	**Total**
LBA	2a	67	J				1				**1**
	2b	60					1				**1**
	2d	8	E		1	1	2		1		**5**
	3a	32	C		3						**3**
	3c	42	D		1		1				**2**
	3c	45	D				1				**1**
	3c	47	D				1				**1**
	3e	2					3	1			**4**
	3e	88					3				**3**
	3e	89					1				**1**
	3f	130					1				**1**
	3f	134					1				**1**
	3f	135					1				**1**
	3g	85					1				**1**
	3g	152	T				6			4	**10**
	3h	33				1	1				**2**
	3h	40	C		1						**1**
	3j	189	A		2						**2**
	3l	160					1				**1**
Sub-total					*8*	*2*	*26*	*1*	*1*	*4*	*42*
LBA/EIA	4a	11	G						1		**1**
	4b	48	B		1		2				**3**
	4b	50	B		1		1				**2**
	4c	79					1				**1**
	4c	169					2				**2**
	4c	170					1				**1**
	4c	174					1			1	**2**
	4c	158	T				1		1		**2**
	4j	53	B		2						**2**
	5b	16	G				1				**1**
EIA	5cs	146					2				**2**
	5c	147			1						**1**
	5c	144	T				2		1		**3**
	5d	109					2				**2**
Sub-total					*5*		*16*		*3*	*1*	*25*
R-B	7a	24							1		**1**
R-B	7b	115	L							1	**1**
R-B	7d	57	L				1				**1**
R-B	7g	71								2	**2**
R-B	7g	63	Q				1				**1**
R-B	7h	74		1							**1**
R-B	7h	76		1							**1**
R-B	7j	102					3				**3**
R-B	7k	26	K				1				**1**
Sub total				*2*			*6*		*1*	*3*	*12*
Unph.	10	1					2			1	**3**
Sub-total							*3*			*1*	*2*
Totals				**2**	**13**	**2**	**51**	**1**	**5**	**9**	**83**

Burnt Flint by E.R. McSloy

Quantification and description

Burnt flint amounting to 32.604kg was hand-collected from the excavations. A further 41.467kg was recovered from soil samples. The burnt flint was weighed by context and scanned for worked material (see below).

The bulk of the burnt flint consists of fragments up to 40mm. Such material is fully calcined to universal white or pale grey colour with frequent surface crazing. The majority of fragments exhibit large surviving areas of cortex and it is highly probable that the raw material was obtained from the local plateau gravels. There is no evidence that the flint was 'prepared' prior to burning and the fracturing which has occurred appears to be as the result of or was subsequent to the act of burning.

Distribution

Burnt flint was recovered from 357 separate contexts and was abundant in all recognised prehistoric phases. The bulk of the burnt flint (88%) was recovered from pits and postholes, with 7% coming from ditches and the remainder from tree boles (4%) and hearths (1%).

Total weight per context has been mapped for this category of material (fig. 50). The largest concentrations of material are clearly those from Late Bronze Age structures C and D. Structure C was particularly productive of burnt flint, with material from associated post fills equivalent to in excess of a quarter the total amount from the entire site. In part this tendency may be accounted for by the excavation strategy, which ensured post-holes from all identified post-built roundhouses fully excavated and environmental samples taken. Of the identified post-built structures, structure A is clearly anomalous, producing only 4g of burnt flint.

Discussion

Large quantities of burnt flint are frequently a feature of sites of Middle Bronze Age to earlier Iron Age sites in the region and beyond. Direct inter-site comparisons are made problematical due to the differing excavation strategies which mean that burnt flint may not always be collected. The partially contemporary site at Dunston Park, Thatcham did produce comparably large quantities of burnt flint, including concentrations believed to represent 'burnt mounds' (Fitzpatrick *et al.,* 1995).

A use for burnt flint for which there is abundant evidence for from the present excavation is as a tempering material for pottery. The use of flint tempering would however appear to be largely confined to the Late Bronze Age assemblage (see Morris, above). The occurrence of material from all late prehistoric phases and its overall abundance suggests that use for pottery 'fillers' was not the sole or even primary mode of use for this material and neither can it be explained as the result of accidental burning. The apparent absence of other burnt stone such as quartzite cobbles, suggests that flint was selected for its particular qualities when heated, almost certainly superior retention of heat.

The most suitable rationale for the burnt flint from this site is as a means of cooking or heating food, with the heated stones placed in proximity to suitable pottery vessels. Interpretation as communal cooking places has been proposed in connection with burnt mound features, mainly composed of burnt flint, and predominantly of Middle Bronze Age (Hodder and Barfield 1991). Direct relationships between burnt mounds and post-built structures have been demonstrated at Middle Bronze Age sites at a South Lodge, Wilts (Barrett *et al*. 1991, 161) and Bestwall, Dorset (Ladle and Woodward 2003, 265-77), where they are interpreted as debris from major episodes of cooking. At Bestwall much of the burnt flint and quantities of Deverel-Rimbury pottery found in association were thought to relate to the final demolition and abandonment of the structure and possibly to represent an episode of feasting at this time (Ladle and Woodward 2003, 265-77),.

Culinary use would accord with the results of the spatial analysis from Hartshill and the apparent association of burnt flint material with the post-built structures of presumed domestic use. The virtual absence of burnt flint from Structure A is noteworthy as this was excavated/sampled in the same manner, is contiguous with structures C and D and would appear to be broadly contemporary. The unusual form of this structure and dearth of artefactual material other than iron hammerscale encourages interpretation of this structure as for specialist use.

Roundhouse C, the structure which produced the greatest abundance of burnt flint, also produced an unusually large quantity of burnt pottery and the greatest concentrations of charcoal. An absence in any great quantity of burnt daub may indicate that the artefactual material from this structure relates to its final use, rather than to its accidental destruction by fire. The temptation is to see such material as the remains of feasting associated with the demolition of this structure.

Table BF: burnt flint distribution

Period	*Spatial*	**Total weight(g)**	**%total**
MBA	Cremation P	**27**	**0.04**
LBA	Structure A Structure C Structure D Post alignment E Other	**4** **20254** **8693** **1728** **10831**	
Sub total		*41510*	**56.04**
LBA-EIA/EMIA	Enclosure ditch G Structure B Four-posters F Pit group T Hearth U Other	**728** **7463** **580** **5245** **8** **15091**	
Sub total		29115	**39.31**
Roman	all	**2324**	**3.14**
Post-med	all	**98**	**0.13**
Unphased	all	**997**	**1.4**
Total		**74071**	

Fired or Burnt Clay by E.R. McSloy and Elaine L. Morris

Fired or burnt clay amounting to 877 fragments, weighing some 8501g were recovered from 43 contexts. The clay was assigned to fabric type and where possible according to object class. The bulk of fragments, described as fully amorphous or preserving of a single smoothed face, could not be classified.

Fabric 1

Colour variable, most often light brown surfaces and with mid-grey core. Fabric is dense and soft with a soapy feel and fine fracture. Inclusions are poorly sorted comprising rare, angular calcined flint fragments (1-5mm). Abundant white mica visible in surfaces and break. Petrographic examination revealed an abundant amount (50%) of fine, subrounded to subangular, quartz grains measuring $\leq$ 0.2 mm, with the majority being silt-sized grains (<0.05mm), 1% coarse, rounded to subrounded, quartz grains measuring between 0.8-1.0 mm and numerous threads of mica within swirls of iron-rich clay. This fabric, which is poorly-wedged due to the presence of these swirls of iron-rich clay, is most similar to pottery fabrics QI1 and QI3.

Fabric 2

Grey or light brown surfaces and with mid-grey core. Fabric is soft with a soapy feel and fine fracture. Common linear voids (2-4mm) to surfaces from burnt-out organic matter. Abundant white mica visible in surfaces and break. Petrographic examination revealed an abundant amount (50%) of very fine, subrounded to subangular, silt-sized quartz grains measuring $\leq$ 0.1 mm, 1-2% equally fine iron oxides and a few mica threads.

Five samples of fired clay were submitted for thin sectioning and petrological analysis. Two fabrics could be distinguished. Both have clay matrices containing abundant amounts of extremely fine quartz sand, with fired clay fabric 1 bearing iron oxide fragments and swirls and 1% additional very large quartz grains. Fired clay fabric 2 has a small amount of iron oxide fragments and better sorted quartz grains, compared to fabric 1. Quantities of rare calcined flint noted in the hand specimen for fabric 1, were not observed in the thin-section slide. Fired clay fabric 1 is virtually identical to pottery fabrics QI1 and QI3 which suggests that these pottery fabrics could be combined in future work on pottery from this area. It is most likely that both fired clay fabrics were selected from local deposits to make these objects, with fabrics which are un-tempered and require little technical knowledge for their manufacture.

Spindlewhorl

1 EIA fill 729 of enclosure ditch. Fig 49.1. Complete fired clay spindlewhorl of bi-conical form. Fabric is red-brown and inclusionless. Weight 65g; Diam. 50mm; thickness 31mm. Diam. of perforation is 4.6mm.

A single spindlewhorl of bi-conical form (Fig 49.1), was recovered from the eastern arm of enclosure G. The form of this item is paralleled by finds from Late Bronze Age to Early Iron Age contexts at Aldermaston Wharf (Bradley, *et al.* 1980, fig. 20, 6-7) and Runnymede Bridge (Needham and Longley 1980, 411). Continuance of the bi-conical form in to the Middle and late Iron Age is suggested by finds at Danebury

(Poole 1991, fig. 7.43) and other sites, although other forms appear to be more the norm.

Pyramidal form weights

2 LBA pit fill 1105. Fig 49.2. Apex fragment from pyramidal weight with partially surviving perpendicular-aligned perforation. Three further unfeatured fragments. Fabric 1. Well smoothed exterior surfaces. Diam. of perforation approx. 20mm. Thin section sample 1.

3 LBA posthole fill 1404, roundhouse D. Fig 49.3. Apex fragment from pyramidal weight with portion of perpendicular-aligned perforation. Fabric 1. Well smoothed exterior surfaces. Diam. of perforation approx. 20mm. Thin section sample 2.

9 LBA pit fill 1568, roundhouse D. *Not illustrated*. Fragment (?base) from from probable pyramidal weight. Fabric 2. Well smoothed exterior surfaces. Max surviving length 46mm. Thin section sample 3

10 EIA posthole fill 1643. *Not illustrated*. Curving fragment (?base) from from probable pyramidal weight. Fabric 2. Well smoothed exterior surface. Max surviving length 40mm.

11 EIA; pit fill 492. *Not illustrated.* Four fragments (base and lower portions) of probable pyramidal weight. Fabric 2. Well smoothed exterior surfaces. Max surviving length 45mm.

12 LBA pit fill 1704. *Not illustrated*. Two fragments, each with one curving face, from probable pyramidal weight. Fabric 2. Well smoothed exterior surfaces. Max surviving length 42mm.

Fragments from two weights can be ascribed to this class of object with confidence (Fig 49.2 and 49.3. Further examples of pyramidal weight from four contexts can be postulated, although all are highly fragmentary. All share characteristics of dense, slightly micaceous fabric (Fabrics 1 and 2) and well smoothed external surfaces.

Significantly four of the six probable pyramidal for weights derive from LBA phase of activity in the eastern part of the site and associated with roundhouses C and D.

Pyramidal weights with horizontal perforations are known in the region from Runnymede Bridge (Needham and Longley 1980, 411) and Aldermaston Wharf (Bradley *et al.* 1980, fig. 19, 6). The type is seen as a development within the Late Bronze Age of cylindrical form weights known from Middle to Bronze Age contexts.

This is best demonstrated at Mucking, Essex (Jones and Bond 1980, 471-82), where the two types were recovered in sequence.

Use as weights with vertical (warp-weighted) looms is often assumed for this class of object and for later, Iron Age, triangular weights (below). The presence of a spindlewhorl (above) provides supporting evidence for the textiles working on the site at least in the Early Iron Age. Charred flax seeds from Late Bronze Age Roundhouse C (Carruthers, this report) are further evidence of cloth working. Significantly large numbers of clay weights, together with some spindlewhorls have been noted previously on low lying sites on gravels in the Kennet and upper Thames valleys (Bradley *et al.* 1980). Bradley also notes that such finds are largely absent from the better drained, higher sites of the downs. The evidence at Hartshill Copse, a site sitting on plateau gravels, but with a high 'perched' water table, suggests a situation similar to the low-lying sites, although it is unclear whether this is in any way due to environmental factors.

Triangular form weights

4 EIA fill 976 of pit cluster 'U'. Fig 49.4. Approximately 90 fragments (2701g) representing at least three clay weights of triangular form with each corner perforated. Fabric 3. Thickness 45-60mm. Diam. of perforations approx 10-12mm. Thin section sample 4.

Weights of triangular form (Fig 49.4) are known from a single feature within pit cluster U, (Group 158), located within the Early Iron Age ditched enclosure. The fired clay from this feature is highly fragmented, although at least three separate weights can be distinguished.

Clay weights of this form are widely known in the region and beyond. An Iron Age date is assumed and supported in this instance by a mix of Early and Middle Iron Age dated pottery from the same context.

'Clay pit lining'

Relatively small amounts (640g)of this material characterised by a single smoothed surface, thick, lumpy texture with sparse poorly sorted flint temper and, frequently, a layered texture, was recovered. Such material was first recognised at Reading

Business Park (Bradley and Hall 1992), where, as the name implies, it was considered to be the lining of storage pits and presumed to be fired *in situ*. Significantly, in this instance, all derives from features of the Late Bronze Age Settlement, with the bulk coming from pits or post-holes associated with Structures C and D.

Miscellaneous

The bulk of the fired/burnt clay consists of amorphous, un-facetted nodules or fragments with a single smoothed face. This material most likely represents a mix of fragmented fired clay objects as well as accidentally burnt structural daub and possibly clay lining materials from various 'pyrotechnic installations'. A single sample from pit fill 154 was selected for thin sectioning for the purposes of comparison. Results indicated that the fired clay was untempered and similar to fabric 2, above.

A small number of fragments from Late Bronze Age dated pit 1673 preserved the impressions of two rods/wattles and almost certainly represents burnt wall daub. The remainder of the fired/burnt clay consists of, formless lumps for which no function can be assigned. Typically 'fabric' is soft, friable and less dense compared to clay weight fabrics 1 and 2, though similar to fabric 3, which is characterised by organic inclusions.

Daub-like material was rarely present in any of the identified structures, and the overall pattern of distribution is most consistent with secondary disposal rather than *in situ* destruction debris. The total absence of burnt clay from roundhouse C is at variance with the large quantities of burnt flint and 're-fired' pottery and may indicate that this material relates to the use of the building rather than its destruction.

Metal objects by E.R. McSloy

Metal items presented here are limited to objects of certain prehistoric date and a brooch of Roman date, which is of intrinsic interest. A full catalogue has been prepared for inclusion within the site archive to include fragmentary iron objects and nails which in nearly all instances occurred with pottery of Roman date.

Metal artefacts were assessed by a specialist conservator (Esther Cameron). Items were x-rayed to clarify form and composition and where appropriate items were stabilised and/or cleaned. Conservation treatment to clarify construction and assist in illustration included selective cleaning and reconstruction of iron knife 8 and cleaning and chemical stabilization of brooch **17**. An attempt was also made to identify traces of mineral preserved organic material adhering to the tang of iron knife **8**.

Iron Knife

8 EIA posthole fill 1671, four-post structure P. Fig 51.8. Iron with traces of mineral preserved organic to area of tang identified as horn. Fragmentary, with tip absent. Back is angled downwards from tang and curved (concave). Cutting edge curved (convex). Overall length 134 mm. Blade width (max) 29mm.

An Early Iron Age date for iron knife 8 (Fig. 51.8) is suggested by pottery found in association with it. A close parallel for the form of this item, characterised by upturned tip and curving edge, is from Ashville, Abingdon (Parrington 1978 fig. 58), where an Early Iron Age date is also suggested by associated ceramics. Finds from Danebury, Hants (Cunliffe and Poole 1991, No. 2.226), Hod Hill, Dorset and London (Manning 1985, Q66-71; Manning 1985, Q75) indicate that this blade form continues throughout the Iron Age and even into the early Roman period. The longevity of this form of knife and popularity of curved blades overall is no doubt due to the efficiency of the blade shape which permits continuous contact during the slicing action. The small size of this knife and of its class in general makes it suitable for a variety of domestic tasks.

Local manufacture for this item would seem to be likely, given the abundance of evidence for ironworking, which includes smithing, from the site (Young, this report). This being the case, it can probably be assumed that the horn used for the handle was also supplied from local herds. In the absence of any bone from the site, this is very slight but significant evidence of a pastoral economy, supported, it would seem by the dearth of evidence for processing of cereals (Carruthers, below).

Brooch

17 RB ditch fill 1513. *Not illustrated*. Copper alloy plate brooch. White metal plating to face and decoration consisting of lines of punched dots. Form is of a disc with lobed lateral arms. Central roundel, with moulded cable decorated ring and central iron pin retaining a fragmentary dished setting. Outer edges are fragmentary but probably lobed, defined by the edges of four outer countersunk roundels. Most complete of these is perforated. Simple lugged hinge to rear retains fragmentary iron pin. Overall length 38mm.

Classification of brooch No. 17 is not straightforward, but it is probably an example of the ‘early plate brooch’ class, which date to the middle years of the first century AD (Hattatt 1985). Condition of this piece is extremely poor with considerable damage to the outer edges making the exact form uncertain. This item belongs to a loosely allied group of brooches, seemingly quite rare in Britain which share characteristics of thin plate, central stud, simple lugged hinge and decorative elements which include patterns of punched dots and dished settings for bone or possibly enamel. Brooches belonging to this class would appear to be largely confined to central and southern England, with closest parallels known from Stotfold, Beds (McSloy forthcoming), Northamptonshire, and Blandford, Dorset (Hattatt 1985, Nos. 512-3).

Cremated Bone byJacqueline I. McKinley

Introduction

Cremated bone from two Middle-Late Bronze Age contexts, representing the eastern and western halves of a single fill from grave 446, was analysed. Fragments of a vessel, abundant fuel ash and occasional fragment of burnt stone were also recovered from the grave, which lay between the terminals of an Iron Age enclosure ditch, though the association was probably fortuitous.

Methods

Osteological analysis followed the writer's standard procedure for the examination of cremated bone (McKinley 1994a, 5-21; 2000). Age was assessed from the stage of skeletal and tooth development (Beek 1983; Scheuer and Black 2000), and the general degree of age-related changes to the bone (Buikstra and Ubelaker 1994). Sex was ascertained from the sexually dimorphic traits of the skeleton (*ibid.*).

Results

The grave survived to a depth of 0.18m but is recorded as having been heavily truncated. The presece of cremated bone in the upper part of the deposit increases the likelihood that some material was lost to from the grave fill. The pottery recovered from the fill was fragmentary which may be indicative of disturbance, though it is possible that it may have been in this condition at the time of deposition.

The bone is slightly eroded in appearance and although trabecular bone is represented, it is predominantly in the form of articular surfaces of the long bones rather than in elements of axial skeleton. A relatively small proportion of the bone was identified to skeletal element (*c*. 18% by weight), this is largely due to the high degree of fragmentation with only *c*. 22% being recovered from the 10mm sieve fraction.

The total weight of 871.5g of bone represents the remains of a young-mature adult (*c*. 20-40 yr.), probably female. No pathological lesions were observed and no pyre goods were recovered.

The surviving bone was uniformly white in colour, indicative of full oxidation (Holden *et al.* 1995a and b). The weight of bone recovered represents *c*. 55% of the average weight of bone expected from an adult cremation (McKinley 1993) and lies at the upper end of the average range recorded from contemporaneous cremation cemeteries (McKinley 1997*,* 142).

It has already been observed that the average size of bone fragments was relatively small (*c.* 45% being between 2-5mm) and the maximum fragment, at 35mm is also small. There are a number of factors which may affect the size of cremated bone fragments, the majority of which are exclusive of any deliberate human action other than that of cremation itself (McKinley 1994b). If, as appears to be the case, deposit 447/448 was undisturbed other than for the recorded truncation of the upper levels, the level of fragmentation is greater than is normally observed. The apparent additional fragmentation of bone is likely to have been linked to some variation in the mortuary practice involving either deliberate breakage or increased incidental fragmentation related to, for example, the mode of collection of bone from the pyre site for burial. Skeletal elements from all areas are represented within both halves of the deposit with no clear bias towards the inclusion of certain skeletal elements. The assemblage includes many of the small bones of the hands and numerous tooth roots. These elements are relatively common in Bronze Age burials and may reflect a collection procedure which included raking-off the upper levels of the burnt-out pyre to recover bones rather than hand collection of individual fragments from the surface, thereby enhancing the chance of recovering such small bones. If, in this case, the raking was undertaken in a more robust fashion that usual, or the site was trampled during the procedure, it will have lead to increased fragmentation of the bone. Alternatively, the presence of the smashed vessel could indicate that the remains of the burial were not *in situ* and that the bone, together with the vessel may have been subject to disturbance or redeposition.

In excavation both halves of the deposit were described as identical, apparently comprising a mixed deposit of bone and fuel ash. The majority of the bone lay in the western half of the grave (*c*. 77%), however, illustrating the deposit was far from homogeneous. The true position of the pyre debris in relationship to the bone remains unclear. Pyre debris is routinely recovered from cremation graves and although predominantly deposited after the burial was made, it may also have been added to the grave prior to the burial or more than one deposit may have been made (McKinley 1997). The inclusion of pyre debris is the grave fill indicate the proximity of the pyre site to the place of burial.

The Charred Plant Remains by Wendy J. Carruthers

Methodology

Samples were taken from a wide range of features, including postholes, pits and hearths. Samples volume ranged from 4 to 120 litres, with most in the 20 to 40 litre range.

The samples were processed on site using standard methods of flotation. A 250 micron mesh was used to collect the flot and 1mm was used to retain the residue. The large, gravelly residues were dried and sorted by eye. A number of residues were found to contain hazelnut shell fragments, demonstrating the value of this method.

The dried flots and hand-recovered charred material from the residues were assessed by the author, who also scanned three residues under the microscope, as a check on the efficacy of recovery. These residues were found to be almost wholly free of charcoal, indicating that the flotation had been successful.

Flots from 217 samples were assessed. Of these, only four samples were found to contain high concentrations of charred plant remains, with 17 others producing smaller amounts of material. In total, 23 samples were selected for full analysis on the basis of the quantity of charred plant remains present or intrinsic archaeobotanical interest. The sparse remains present in 35 other samples have been summarised in Table cp 1.

Results

Notes on identification: Barley

Only hulled barley was positively identified from this site, and since twisted lateral grains were observed, this is likely to be hulled 6-row barley (*Hordeum vulgare* L. emend.). Naked barley can be difficult to identify unless well-preserved grain is present, and silt encrustation on many of the cereals caused problems. Naked barley was recovered from the nearby Late Bronze Age site of Aldermaston Wharf (Bradley et al, 1980), but is generally not common in southern England after the Middle Bronze Age.

Cf. Black mustard (Brassica cf. nigra)

Two samples from pit 493 produced frequent brassica seeds, a few of which were fused together. Seeds from some genera of this family are difficult to identify to species level as the size, shape and seed coat cell structure are very similar in several taxa. These seeds are often put into a general grouping of *Brassica/Sinapis* sp., which includes native species such as black mustard and charlock, as well as species that were probably introduced such as turnip, cabbage and rape. On close examination, however, minor differences in the seed size and reticulate patterning on the seed coat can be seen (see Bergren, 1981). Some of the seeds from these samples were well-preserved, and were found to possess characteristics which were much closer to black mustard (*B. nigra*) than any of the other possibilities. These characters include a smaller seed size than the other taxa and a deep, thick-walled reticulate pattern on the seed coat.

Chenopodiaceae

Chenopodiaceae seeds were not sorted, since it was impossible to determine whether they were charred or not without breaking each seed open. Most (but not all) of the Chenopodiaceae seeds that were broken open were found to be uncharred, and were almost certainly modern. The omission of this taxon from the species list is not particularly problematic, since the plants represented, (orache, fat hen etc.) are common, widespread weeds of cultivated and waste places.

Composition

The results of the analysis have been presented in Table cp 1. Nomenclature and much of the habitat information has been taken from Stace (1997).

The site as a whole produced notably low concentrations of charred plant remains. Only 14 samples produced more than one charred fragment per litre (fpl), and only five of these produced densities of over 10 fpl. Because the state of preservation of the cereals was not particularly bad, and because cereal processing waste was scarce (see discussion below), this absence of charred cereal remains around much of the site is considered to be a genuine and important observation, rather than the result of poor conditions of preservation. The significance of this is discussed in more detail below.

Apart from the three productive features (7 samples), the low concentrations of charred plant remains (all less than 5 fpl) present in the samples suggest that the material derived from domestic waste being trampled, blown and generally spread around the site. Cereal grains were the main components (15 out of 15 samples), but small numbers of weed seeds (14/15), a little chaff (9/15) and some non-arable waste such as hazelnut shell and fruit seeds (8/15) were also present.

Crop plants

Emmer/spelt wheat (*Triticum dicoccum/spelta*) was present in twenty-one of the twenty-three samples, compared with barley which was present in twenty samples. Ratios of hulled wheats to barley were 9 : 1 both for the 13 Late Bronze Age samples and 10 Early Iron Age samples. However, when the large grain deposits in LBA pit 199 and EIA posthole 1102 are discounted, hulled wheats and barley were present in similar proportions, with perhaps some increase in wheat at the expense of barley through time.

Of the hulled wheats, spelt wheat was positively identified from well-preserved glume bases much more frequently than emmer, and more often in the Early Iron Age samples than the Late Bronze Age samples. There is a taphonomic problem with comparisons of this type, however, since spelt glume bases are less delicate than emmer ones. Also, chaff was generally more frequent in the later samples, particularly in EIA posthole 1102 158). This latter point could, in itself, indicate a move towards the use (or cultivation of) more arable crops in the later phase, but the data is too insubstantial to address this issue. A more obvious difference between the earlier and later dated samples was the occurrence of 15 free-threshing wheat grains in 5 of the 9 later samples but only one possible rachis fragment in the 14 Late Bronze Age samples.

As noted above, hulled six-row barley (*Hordeum vulgare*) was identified amongst the better-preserved grains but no naked barley was positively identified. If barley was used predominantly for animal fodder, it is likely that the concentration of charred barley grossly under-represents the actual amount of this cereal cultivated, since fodder crops are less likely to become preserved by charring during crop processing.

However, small amounts of fodder crops are perhaps more likely to be burnt amongst waste bedding and spread around a site where livestock is important, and the widespread but low occurrence of barley on this site fits in with this pattern.

One or two oat grains (*Avena* sp.) and oat/chess grains (*Avena/Bromus* sp.) were recovered from the samples, but they were so few in number that they were probably from wild rather than cultivated oats. The number of samples producing oats rose from 2 out of a total of 14 Late Bronze Age samples to 4 out of 9 Early Iron Age samples, so it is possible that some oats were being grown in the later period. However, since more of the later samples were productive it is difficult to make this sort of comparisons.

Two samples from EIA pit 493 produced a total of 150 seeds of *Brassica* cf. *nigra*. A few of the seeds were fused together in pairs, suggesting that they may have been charred whilst still in the pod. The seeds were well-enough preserved to be tentatively identified to species level (see *Notes on Identification* above). Black mustard is a native species which is found in hedgerows and wasteground today. Its seeds are the most pungent of the various species of brassica that have been used to make mustard. Consumption of its leaves and seeds is documented by Greek and Roman writers. Mustard can also be used medicinally, both externally as poultices, and internally. Brassicas also produce oil from their seeds. Because of difficulties in identifying brassica seeds, this species has not been recorded from many archaeobotanical assemblages, although seeds identified as *Brassica/Sinapis* sp. are commonly recovered from sites of most periods. There are published records from Britain for the medieval period (Newcastle Quayside, Nicholson & Hall, 1988) but none from the prehistoric period to the authors knowledge.

Wild food taxa

Considering how scarce charred plant remains were on this site and how rarely fruit remains become charred, the number of fruit and nut remains in the samples was notably large. Eleven samples produced hazelnut shell (*Corylus avellana*) fragments, and of these, LBA pit 1104 and, especially, EIA pit 493 produced significantly greater quantities. Three samples, from LBA pit 199, LBA pit 1104 and LBA posthole 1235 produced sloe stones (*Prunus spinosa*). Samples from LBA pit 1104 and LBA posthole 1235 contained hawthorn seeds (*Crataegus monogyna*). Charred elderberry seeds (*Sambucus nigra*) were retrieved from LBA pit 89, EIA pit 491 and EIA posthole 379 and charred bramble (*Rubus* sect. *Glandulosus*) seed from EIA pit 491. In addition one fragment of acorn cup was recovered (*Quercus* sp.) from LBA posthole 1382.

Non-food taxa

Charred flax seeds occurred in LBA pit 203 and LBA posthole 1237, features associated with roundhouse C. Flax is grown for the production of linen cloth and whilst the presence of seeds in such small quantities does not indicate that clothworking was taking place in this building, it does demonstrate that the fibre plant was being cultivated and possibly processed in the vicinity.

In addition to hedgerow fruit and nuts, a number of the wild plants that were represented in the 'weed' assemblages may have some 'economic' value for medicinal purposes, dyeplants or as vegetables (table cp 1). Mallow (*Malva* sp.) leaves and seeds, for example, have been eaten in the past (Mabey 1972). Elderberries, sloes and bramble seeds can be used for dying cloth.

Chronological patterning: summary

Late Bronze Age

Emmer (probably) and spelt were the major cereals throughout this phase, although hulled 6-row barley may have been equally as important for fodder. Flax was being grown and hedgerow fruits and nuts occur in significant quantities.

Early Iron Age

Bread-type wheat began is first apparent in Early Iron Age dated features. Some oats may have started to have been grown, probably also primarily for fodder. Mustard may have added spice to the diet. Hedgerow fruits and nuts, particularly hazelnut, continue to be significant.

Because of differences in the concentrations of material from the early to the later period it is difficult to compare low numbers of weed taxa. However, most of the sedge and spike-rush nutlets came from the later period (15 seeds in Early Iron Age compared with 3 Late Bronze Age seeds). This could indicate increased cultivation of wetter soils, or increased use of hay from marshy areas. More data is required, however, to support this suggestion.

Spatial distribution

No particular pattern of distribution of charred plant material around the site was noted, even though samples were assessed from all areas of the excavated area. The three features that produced the five productive assemblages (c.25 to over 200 fpl), EIA pit 493, EIA posthole 1102 and LBA pit 199, were spread across the site, from the western side of the enclosure to roundhouse C on the eastern limit of the trench. It is notable that all three features were deeper, multi-layered features rather than single-filled scoops. Although this could suggest that better conditions of preservation had led to more charred plant remains being recovered, it could equally be the case that deeper types of features were used to deposit this sort of burnt waste, since the upper levels of pit 493 (5th fill 494; *c*. 26 fpl) produced just as high a concentration of material as the lower levels (2nd fill 1639; *c*. 27 fpl).

Preservation and taphonomy

Whilst the primary objective of analysis of charred plant remains reconstruction of the economy of the site, taphonomy and the impact of truncation and topsoil stripping were also considered. Particular attention was paid to the state of preservation of the charred plant assemblages in order to determine whether they had been affected by exposure of the site prior to excavation. Since the entire site had been treated in the same way, no comparisons could be made to ‘control’ samples (i.e. from an un-stripped area). Instead, broad comparisons between shallow and deep features were attempted, as outlined below. Although useful to a certain extent, these do not provide an insight into the effects of topsoil stripping and abandonment.

Comparisons were attempted between the charred plant assemblages in shallow and deep features (minimum feature depth for ‘deep features’ was 250mm) using two rough measures of state of preservation:

- Density of charred plant remains
- Visual comparison of surface abrasion and fragmentation of an upper and lower fill of pit EIA 493

These factors are only rough guides to the state of preservation, since the preservation of plant material by charring is very unpredictable, and it can be affected by a wide range of events and situations. Density of remains, in particular, will obviously depend on the types of waste that were being deposited in the features, and this could relate to feature depth. In addition, the division of features into deep and shallow is somewhat arbitrary. An attempt at using a comparison of the percentages of indeterminate cereals as a measure of state of preservation had to be abandoned because too few (three out of twenty-three) of the fully analysed samples were derived from shallow features.

The following results were obtained:

- 17% of the deep features produced enough charred material to be recommended for further analaysis (categories A or B in the assessment report), compared with 6% of the shallow features. However, sample sizes were on average considerably smaller for the shallow features, as might be expected (15 litres compared with 27 litres), so this could account for the difference in recovery. [So few of the fully analysed samples were from shallow deposits (three out of twenty-three) that a comparison of ‘fragments per litre’ was not thought to be useful].
- No visual differences between the charred plant remains in samples 33 (5th fill) and 175 (2nd fill) could be seen. The remains in the upper sample, 33 were not so encrusted with silt as those in 175. This could relate to processing methods rather than taphonomy, as changes to the amount of rinsing of the flot that took place were made during the excavations. Apart from this, surface abrasion and pitting was the same in both samples and the percentage of

cereal grains that were too poorly preserved to be identified to genus level was very similar (56% in the upper sample compared with 50%).

These investigations, therefore, have produced no conclusive evidence to suggest that the charred plant assemblages suffered due to stripping of the site. The presence of abundant roots and modern seeds in the flots, however, certainly made the processing more difficult and possibly less efficient. In addition, if modern charred material had been spread around the site or if vegetation had been burnt on site, some intrusive remains could have become incorporated into the archaeological deposits which would have caused problems. There was no evidence that this had happened, but the possibility should be borne in mind.

Discussion

Economy and resource exploitation

The range of weed taxa and number of weed seeds were surprisingly small on this site, suggesting that cereal processing had already removed many of the weed seeds prior to the remains being burnt and scattered around the site. This suggestion is also borne out by the scarcity of chaff fragments in all of the samples except those from EIA posthole 1102. It is likely, then, that the cereals had been brought to the site and stored as semi-cleaned spikelets. The early stages of processing may have been carried out close to the point of production, perhaps some distance away if the grain had been traded rather than grown locally. In these early stages, the ears would have been broken into spikelets, and the large straw and weed seed heads would have been removed by raking and coarse sieving. Small weed seeds and chaff fragments such as rachis segments would have been removed by sieving and winnowing. The semi-clean spikelets could then have been transported, perhaps traded, and stored on the site. The final removal of grain from the husks could have been carried out on a day-to-day basis, producing low levels of glume bases and a few larger weed seeds.

In damp climates such as in Britain the principal cereals for human consumption, hulled wheats, would probably have been stored in spikelet form or as whole ears, in order to protect them for as long as possible from spoilage by insects, fungal attack or sprouting under damp conditions (Hillman 1981). When required for cooking, small amounts of spikelets or ears would have been processed piecemeal, producing small quantities of chaff, arable weed seeds and spilt or unthreshed grain. This waste would probably have been thrown onto a nearby hearth, or possibly sometimes collected and fed to animals. Since grain is more likely to survive charring than chaff (Boardman & Jones, 1990), the burnt waste from this type of small-scale day-to-day processing is likely to be dominated by cereal grains.

The three features that produced more concentrated charred assemblages included two grain-rich pits, pit 199, associated with LBA roundhouse C (ratio of grain to chaff to weed seeds = 160:1:1; total remains = 1960) and EIA pit 493 (Ch:W = 80:1:3; T = 1599), and a more chaff-rich posthole, EIA pit 1102 (Ch:W = 127:26:1; T = 2920). These deposits may represent accidentally burnt deposits of processed grain mixed with crop processing waste, or, in the case of 1102 in particular, burnt stored spikelets. In none of the samples were weed seeds particularly frequent, so semi-cleaned spikelets are more likely than whole ears of wheat (which are accompanied by more weed contaminants; Stevens, 2003). Not included in these statistics are the fairly large amount of hazelnut shell fragments (*Corylus avellana;* 137 fragments) and the 150 cf. black mustard seeds (*Brassica* cf. *nigra*) in pit 493 which are discussed further below. Remains from these additional food plants indicate that other types of burnt waste were being deposited in the pit, or perhaps all thrown onto the same hearth at different times.

There were no indications from the weed species whether or not the crops had been grown locally on the fairly poor, gravelly, acidic soils. Some damp ground taxa were present, such as spike-rush (*Eleocharis* subg. *Palutres*) and mash bedstraw (*Galium palustre*), but it is not certain that these had been growing as arable weeds since other types of waste were clearly present in the samples. It is possible that some of the grassland and marsh plants had been introduced amongst waste hay. More arable weeds characteristic of acidic soils such as corn spurrey might, perhaps, have been expected if the grain was locally grown. It is, of course, difficult to argue a case using negative data, especially if small weed seeds such as corn spurrey could already have been removed from the crop by partial processing. On balance, however, the scarcity of charred cereal remains on the site as a whole, the low diversity and scarcity of arable weed seeds and the paucity of chaff fragments all suggest that the site was primarily pastoral in character. Whether cereals were being traded in spikelet form, or whether small scale arable cultivation was taking place nearby cannot easily be determined from these samples. What does seem clear is that cereals were not being grown on a large scale, or being processed in the vicinity of the site. It is unfortunate that no deposits suitable for pollen analysis were found locally.

The importance of wild food resources to early prehistoric people who had not fully established arable agriculture as a major part of their food economy is generally accepted, as discussed by Moffett *et al* (1989). It seems likely that, even on later prehistoric settlement sites, where arable cultivation was small-scale (or perhaps not practised at all), wild plant resources would continue to be important. Fruits and nuts provide a free and fairly dependable source of food and, if plentiful enough, they can be preserved for much of the year by drying. In fact, some of the more astringent fruits such as sloes and elderberries can be made to taste much more pleasant by drying (Wiltshire 1995), and it may have been during this process that the remains became charred at Hartshill Copse. In times of hardship, even acorns can be ground into flour to make gruel or bread if the toxins are removed by boiling (Schneider, 1990).

Analysis of the charcoal (Gale, below) has shown that mixed oak woodland appears to have been readily available nearby to serve as a source of fuel. There were no signs that this situation changed through time, so it is likely that woodland margin and/or hedgerow fruits and nuts would have grown fairly close to the site throughout the Late Bronze Age to Early Iron Age periods. Most of the species listed above were also recorded as charcoal.

Non-food resources

The occurrence of charred flax (*Linum usitatissimum*) seeds in two pits from roundhouse C is interesting. Since there is no requirement for fire at any stage in the processing of flax, is rarely encountered among charred plant assemblages and the true importance of this crop may be unappreciated. Further evidence for clothworking on the site exists in the form of a spindlewhorl and probably loomweight fragments (McSloy above). Bradley *et al* (1980) noted that several of the low lying sites on gravels in the Kennet Valley and Thames Valley have also produced large numbers of loomweights and some spindlewhorls, but these artefacts were absent from the drier sites on the Downs. The site at Hartshill Copse is situated on a ridge of plateau gravel above the Kennet Valley and is therefore neither low-lying valley or well-drained upland.

Flax remains are frequently recovered from waterlogged deposits, since processing the crop for fibres (in particular the 'retting' stage) requires large amounts of water. Archaeobotanical records of this crop plant are most often Saxon in date, but a number of Late Bronze Age sites such as Potterne, Wiltshire (Carruthers, 2000) and Hallshill, Northumberland (van der Veen 1992) have also produced flax remains. Flax requires moist soils to grow well, since it has a shallow root run. Although the seeds can be used for oil and can be consumed for medicinal purposes, plants producing linseed these days are usually grown in warmer climates. The fibre crop cultivar of flax, however, is better suited to cool, moist climates such as in Britain (de Rougemont, 1989). The perched water table withint the clayey 'hoggin'-type gravels on part of the Hartshill Copse site to the north-east may have made the soils suitably moist for the cultivation of this crop.

Comparisons with other sites in the area

Both the Thames Valley and Kennet Valley have produced a large number of settlement sites dated to the Middle Bronze Age and later periods. Two contrasting Late Bronze Age sites studied by Bradley *et al* (1980) on the Kennet floodplain, Aldermaston and Knight's Farm, produced very different quantities of charred cereal remains, leading to the suggestion that at Aldermaston arable crops were a very important part of the economy, whilst Knight's Farm was pastoral in nature. Although both were situated close to land subject to flooding, the difference was thought to lie in the stony character of the subsoil at Knight's Farm, as opposed to the free-working good soil at Aldermaston. It is also interesting to note that despite the abundance of cereals at Aldermaston, there was no evidence that crop processing was taking place on site.

The gravelly soil at Hartshill Copse is subject to seasonal waterlogging due to a perched water table in places (Mark Brett, pers. comm.), and may not have been ideally suited for arable cultivation, although an area of freer-draining, fine gravel on which the settlements were located, may have provided localised opportunity. Other Late Bronze Age sites in the Kennet Valley that have produced very little evidence for cereal cultivation are Anslow's Cottages and Field Farm at Burghfield (Carruthers, 1992), and Riseley Farm, Swallowfield (Carruthers, 1991-3), although Field Farm and Riseley Farm were primarily ritual in nature. The site at Anslow's Cottages was too low lying and subject to flooding to have been suitable for cereal cultivation.

There is some evidence to suggest that intensity of Late Bronze Age settlement in the area of the Thames and Kennet Valleys encouraged specialist site use (Bradley *et al.* 1980). The exposed location and relatively poor soils at Hartshill Copse mean that the site was not ideally suited to arable use. Evidence in support of this from Late Bronze Age features is the overall scarcity of chaff and other indications that cereal processing was carried out at some distance away. The relative abundance of non-cultivated but edible taxa, may also be significant in this respect, suggesting that diet was frequently supplemented by 'wild food', most likely from the surrounding woodland. Slight evidence for textile production in the form of linen cloth and (possibly) metalworking might be seen as indications of specialism in the Late Bronze Age period. However the most likely primary means of support for this site was through pastoralism. It is unfortunate in this instance that this cannot be verified due to the absence of surviving animal bone.

Although there are some differences in the cultivated species present in the Early Iron Age period when compared to the Late Bronze Age, there is still apparent a dearth of direct evidence for cereals processing. The chaff-rich EIA posthole 1102 is exceptional in this respect, however continuance of a largely pastoral-based economy would seem to be most likely. Also in common with the earlier period, wild food continues to be exploited, indicating that woodland remained important as a resource. There is also in the Early Iron Age clear evidence for specialist use, as a site concerned with iron production.

Table cp 1 : Charred Plant remains

Sample Context Period	16 200 LBA	149 200 LBA	156 200 LBA	17 202 LBA	18 204 LBA	154 204 LBA	159 204 LBA
Taxa **Feature type**	**P199**						
Cereals :							
Triticum aestivum-type (bread-type free threshing wheat grain)							
Triticum dicoccum/spelta (emmer/spelt wheat grain)	1115	9	4	9		1	1
Triticum sp. (wheat grain NFI)							
Hordeum sp. (hulled barley grain)	66	2	3	11		8	
Hordeum sp. (barley grain)						2	5
Avena sp. (wild/cultivated oat grain)	3						
Avena/Bromus sp. (oat/chess grain)		1					1
Indeterminate cereals	718	4	5	12	1	5	
Chaff :							
Triticum sp. (free-threshing wheat rachis frag.)						1	
Triticum spelta L. (spelt glume base)							
Triticum spelta L. (spelt spikelet fork)	2						
Triticum cf. *dicoccum* (cf.emmer glume base)	5						
Triticum dicoccum / spelta (emmer / spelt glume base)		1		2		2	
Triticum dicoccum / spelta (emmer / spelt spikelet fork)				1			
Hordeum sp. (barley rachis frag.)	4						
Cereal-size culm base							
Weeds :							
Ranunculus repens/acris/bulbosus (buttercup achene) DG				1			
Papaver dubium L. (long-headed poppy seed) AYD							
Urtica dioica L. (stinging nettle achene) CDn							
Cf. *Quercus* sp. (acorn cup fragment) HSW							
Corylus avellana L. (hazel nut shell frag.) HSW*				10			
Persicaria maculosa/lapathifolia (redshank/pale persicaria) CD							
Polygonum aviculare L. (knotgrass achene) CD							
Fallopia convolvulus (L.) A.Love (black-bindweed achene) AD			1				
Rumex acetosella agg. (sheep's sorrel achene) EGa					1		
Rumex sp. (dock achene) CDG		1	1	2			
Malva sp. (mallow nutlet) DG		1					
Brassica/Sinapis sp. (mustard, charlock etc. seed) CD*						1	
Prunus spinosa L. (sloe stone) HSW*			2				
Rubus sect. *Glandulosa* (bramble seed) DHSW*							
Crataegus monogyna Jacq. (hawthorn seed) HSW*							
Trifolium/Lotus sp. (clover/trefoil) DG	1			1			
Vicia/Lathyrus sp. (c.2mm, small seeded weed vetch/tare) CDG		1	1				1
Linum usitatissimum L. (cultivated flax seed) *							1
Ajuga reptans L. (bugle nutlet) WGdH							
Galeopsis tetrahit L. (common hemp-nettle nutlet) ADWod							
Galium aparine L. (cleavers) CDH				1			
Galium palustre L. (common marsh-bedstraw) GdPMF					3		
Plantago laceolata L.(ribwort plantain) Go				1			
Odontites verna/Euphrasia sp. (red bartsia/eyebright) CD	1						
Sambucus nigra L. (elder seed) HSW*							
Lapsana communis L. (nipplewort achene) DHWo							
Tripleurospermum inodorum (L.)Schultz-Bip. (scentless mayweed achene) CD							
Eleocharis subg. *Palustres* (spike-rush nutlet) MPd							
Carex sp. (trigonous sedge nutlet) MPd	1				1		
Carex sp. (lenticular sedge nutlet) MPd							
Bromus sect. *Bromus* (chess caryopsis) ADG	11					2	
Poaceae (small seeded grass caryopsis) CDG				1	1		
Arrhenatherum elatius var. *bulbosum* (Willd.) (onion couch grass tuber) DG							
Tuber *cf. Ranunculus ficaria* type							
Total charred remains:	**1927**	**20**	**17**	**52**	**7**	**23**	**9**
Sample size:	**30**	**40**	**10**	**120**	**30**	**10**	**40**
Fragments per litre:	**64.2**	**0.5**	**1.7**	**0.4**	**0.2**	**2.3**	**0.2**

Sample Context **Period**	**2** **28** **LBA**	**78** **1105** ***LBA***	**130** **1238** **LBA**	**131** **1458** **LBA**	**89** **1242** **LBA**	**129** **1455** **LBA**	**189** **1664** **LBA**
Taxa Feature type	**P1104**	**PH1237**		**P27**	**PH 1241**	**PH 1235**	**PH 1382**
Cereals :							
Triticum aestivum-type (bread-type wheat grain)							
Triticum dicoccum/spelta (emmer/spelt wheat grain)	1	2	2	4		1	1
Triticum sp. (wheat grain NFI)							
Hordeum sp. (hulled barley grain)		38	1	1	2		
Hordeum sp. (barley grain)						11	
Avena sp. (wild/cultivated oat grain)					1		
Avena/Bromus sp. (oat/chess grain)					2		
Indeterminate cereals		27		2	2	17	4
Chaff :							
Triticum sp. (free-threshing wheat rachis frag.)							
Triticum spelta L. (spelt glume base)				4	1	4	
Triticum spelta L. (spelt spikelet fork)							
Triticum cf. *dicoccum* (cf.emmer glume base)						2	
Triticum dicoccum / spelta (emmer / spelt glume base)	1		4	2	9	6	
Triticum dicoccum / spelta (emmer / spelt spikelet fork)				1			
Hordeum sp. (barley rachis frag.)							
Cereal-size culm base							
Weeds :							
Ranunculus repens/acris/bulbosus (buttercup achene) DG							
Papaver dubium L. (long-headed poppy seed) AYD	1						
Urtica dioica L. (stinging nettle achene) CDn							
Cf. *Quercus* sp. (acorn cup fragment) HSW							1
Corylus avellana L. (hazel nut shell frag.) HSW*	1	21	5	1			
Persicaria maculosa/lapathifolia (redshank/pale persicaria) CD						1	
Polygonum aviculare L. (knotgrass achene) CD	1	1					
Fallopia convolvulus (L.) A.Love (black-bindweed achene) AD	1						
Rumex acetosella agg. (sheep's sorrel achene) EGa							
Rumex sp. (dock achene) CDG	3	1		1			
Malva sp. (mallow nutlet) DG							
Brassica/Sinapis sp. (mustard, charlock etc. seed) CD*							
Prunus spinosa L. (sloe stone) HSW*		1				Cf.1	
Rubus sect. *Glandulosa* (bramble seed) DHSW*							
Crataegus monogyna Jacq. (hawthorn seed) HSW*		1					
Trifolium/Lotus sp. (clover/trefoil) DG	1		1				
Vicia/Lathyrus sp. (c.2mm, small seeded weed vetch/tare) CDG	1					1	2
Linum usitatissimum L. (cultivated flax seed) *				Cf.1			
Ajuga reptans L. (bugle nutlet) WGdH	1						
Galeopsis tetrahit L. (common hemp-nettle nutlet) ADWod		1					
Galium aparine L. (cleavers) CDH					1		
Galium palustre L. (common marsh-bedstraw) GdPMF		3		1			
Plantago laceolata L.(ribwort plantain) Go	2	1					
Odontites verna/Euphrasia sp. (red bartsia/eyebright) CD							
Sambucus nigra L. (elder seed) HSW*	7						
Lapsana communis L. (nipplewort achene) DHWo					1		
Tripleurospermum inodorum (L.)Schultz-Bip. (scentless mayweed achene) CD							
Eleocharis subg. *Palustres* (spike-rush nutlet) MPd		1					
Carex sp. (trigonous sedge nutlet) MPd	1						
Carex sp. (lenticular sedge nutlet) MPd							
Bromus sect. *Bromus* (chess caryopsis) ADG					3	1	

Poaceae (small seeded grass caryopsis) CDG		2	2	1	1		
Arrhenatherum elatius var. *bulbosum* (Willd.) (onion couch grass tuber) DG							
Tuber *cf. Ranunculus ficaria* type				1			
Total charred remains:	**22**	**101**	**15**	**22**	**21**	**45**	**8**
Sample size:	**5**	**40**	**10**	**10**	**10**	**10**	**20**
Fragments per litre:	**4.4**	**2.5**	**1.5**	**2.2**	**2.1**	**4.5**	**0.4**

Sample Context Period	32 492 EIA	61 657 EIA	77 1103 EIA	178 1643 EIA	172 1634 EIA	33 494 EIA	175 1639 EIA	171 1633 EIA7	173 1635 EIA7	Assess. Sample (35 samp.)
Taxa **Feature type**	**P491**	**PH379**	**PH1102**		**PH498**	**P493**		**P488**	**P513**	
Cereals :										
Triticum aestivum-type (bread-type free threshing wheat grain)				Cf.2	Cf.1		10	Cf.1	Cf.1	1
Triticum dicoccum/spelta (emmer/spelt wheat grain)	8	1	40	1316	2	161	131	4	2	17
Triticum sp. (wheat grain NFI)							17			
Hordeum sp. (hulled barley grain)			6	74		28	73			
Hordeum sp. (barley grain)	2			13	1	173	83	2	1	13
Avena sp. (wild/cultivated oat grain)		1		1		4	2			1
Avena/Bromus sp. (oat/chess grain)				1			2			1
Indeterminate cereals	25	3	29	930	1	474+	322	3	4	37
Chaff :										
Triticum sp. (free-threshing wheat rachis frag.)										
Triticum spelta L. (spelt glume base)			67	135			6	1		2
Triticum spelta L. (spelt spikelet fork)			1	22						
Triticum cf. *dicoccum* (cf.emmer glume base)										
Triticum dicoccum / spelta (emmer / spelt glume base)	5		115	80			8	2	2	3
Triticum dicoccum / spelta (emmer / spelt spikelet fork)			34	31						
Hordeum sp. (barley rachis frag.)				4		1				
Cereal-size culm base									1	
Weeds :										
Ranunculus repens/acris/bulbosus (buttercup achene) DG						1				
Urtica dioica L. (stinging nettle achene) CDn						1				
Cf. *Quercus* sp. (cf, acorn cupule frag.) HSW										3
Corylus avellana L. (hazel nut shell frag.) HSW*	6		1			105	26		1	
*Persicaria maculosa/*lapathifolia (redshank/pale persicaria) CD										1
Polygonum aviculare L. (knotgrass achene) CD	3						2			
*Fallopia convolvulus (*L.) A.Love (black-bindweed achene) AD	3	1				1				3
Rumex sp. (dock achene) CDG	2	1	1			1	1			1
Malva sp. (mallow nutlet) DG	1									
Brassica cf. nigra (cf. black mustard seed) CD*						59	91			
Prunus spinosa L. (sloe stone) HSW*										
Rubus sect. *Glandulosa* (bramble seed) HSW*	1									
Crataegus monogyna Jacq. (hawthorn seed) HSW*										1
Trifolium/Lotus sp. (clover/trefoil) DG		1								
Vicia/Lathyrus sp. (c.2mm, small seeded weed vetch/tare) CDG			1	3			1			1
Linum usitatissimum L. (cultivated flax seed) *										
Galium aparine L. (cleavers) CDH	4			2		2	5			
Galium palustre L. (common marsh-bedstraw) GdPMF										3
Plantago laceolata L.(ribwort plantain) Go									1	2
Odontites verna/Euphrasia sp. (red bartsia/eyebright) CD	1									
Sambucus nigra L. (elder seed frag.) HSW*	1	1								1
Lapsana communis L. (nipplewort achene) DHWo										
Tripleurospermum inodorum (L.)Schultz-Bip. (scentless mayweed achene) CD								1		
Eleocharis subg. *Palustres* (spike-rush			1			1	2			

nutlet) MPd										
Carex sp. (trigonous sedge nutlet) MPd						8	2			
Carex sp. (lenticular sedge nutlet) MPd				1						
Bromus sect. *Bromus* (chess caryopsis) ADG	1			10		1	15		1	3
Poaceae (small seeded grass caryopsis) CDG	3					1	1			1
Arrhenatherum elatius var. *bulbosum* (Willd.) (onion couch grass tuber) DG									1	
Tubers cf. *Ranunculus ficaria* type	2									
Total charred remains:	**69**	**10**	**296**	**2625**	**5**	**1022**	**800**	**14**	**15**	**95**
Sample size:	**40**	**30**	**10**	**10**	**30**	**40**	**30**	**20**	**30**	**2526**
Fragments per litre:	**1.7**	**0.3**	**29.6**	**262.5**	**0.2**	**25.6**	**26.7**	**0.7**	**0.5**	**0.04**

KEY: Feature types : P = pit; PH = posthole

Habitat Preferences : A = arable; C = cultivated; D = distubed/waste; E = heath; G = grassland; H = hedgerow; M = marsh/bog; R = rivers/ditches/ponds; S = scrub; W = woods; Y = waysides/hedgerows; a = acidic soils; c = calcareous soils; n = nutrient-rich soils; o = open ground; d = damp soils; * = plant of economic value

The Charcoal by Rowena Gale

Introduction

This report includes the analysis of charcoal from the Middle Bronze Age to Roman occupation of the site. The charcoal was recovered mainly from postholes and pits and represents domestic and industrial hearth debris, pyre fuel and possibly structural elements. Some 23 samples were selected for analysis as follows:

Middle Bronze Age: 2 samples (cremation P)
Late Bronze Age: 16 samples (roundhouses C and D, post alignment E, pits 27 and 638)
Early to Middle Iron Age: 3 samples (roundhouse B)
Roman: 2 samples (pits)

The aim of the study was to identify and compare the types of fuel used for each activity and to evaluate spatial and temporal differences across the site. Although the charcoal was too comminuted to assess whether fuel was procured from managed woodland, the data obtained indicated the character of local woodland and probable species dominance.

Methods

Bulk soil samples were processed by flotation and sieving using 1mm and 0.5mm meshes. The resulting flots and residues were scanned under low magnification (by Wendy Carruthers) and the charcoal separated from plant macrofossils. The preservation of the charcoal was reasonably good although it was mostly very fragmented and some was partially vitrified (a condition brought about by exposure to temperatures exceeding 800^{o}C, when cell structure is lost and the charcoal takes on a glassy appearance). Intact radial segments of roundwood were rare. Charcoal fragments measuring >2mm in radial cross-section were considered for species identification. The large volume of charcoal from pit 1441 was 10% sub-sampled.

The charcoal was prepared using standard methods (Gale and Cutler 2000, 11-13) and examined using incident light on a Nikon Labophot-2 microscope at magnifications up to x400. The anatomical structures were matched to reference slides of modern wood. When possible, the maturity of the wood was assessed (i.e. heartwood/ sapwood).

Results

The taxa identified are presented in Table 1. Classification follows that of *Flora Europaea* (Tutin, Heywood *et al* 1964-80). Group names are given when anatomical differences between related genera are too slight to allow secure identification to genus level. These include members of the Pomoideae (*Crataegus, Malus, Pyrus* and *Sorbus*) and Leguminosae (*Ulex* and *Cytisus*). When a genus is represented by a single species in the British flora this 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 wood features, 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 or groups of taxa:

Aceraceae. *Acer campestre* L., field maple
Aquifoliaceae. *Ilex aquifolium* L., holly
Betulaceae. *Alnus glutinosa* (L.) Gaertner, European alder; *Betula* spp., birch
Corylaceae. *Corylus avellana* L., hazel
Fagaceae. *Quercus* sp., oak
Leguminosae. *Cytisus scoparius* (L.) Link, broom or *Ulex* sp., gorse
Oleaceae. *Fraxinus excelsior* L., ash
Rosaceae. Subfamilies:
Pomoideae, which includes *Crataegus* sp., hawthorn; *Malus* sp., apple;
Pyrus sp., pear; *Sorbus* spp., rowan, service tree and whitebeam. These taxa are anatomically similar; one or more taxa may be represented in the charcoal.
Prunoideae. *Prunus spinosa* L., blackthorn.

The Middle Bronze Age cremation

Charcoal associated with cremation pit 446 (samples 26 and 27) was sparse. This material almost certainly represents pyre fuel, although artefactual origins, e.g., the burnt remains of the funeral bier or wooden grave goods, may also be relevant. The taxa identified included oak (*Quercus* sp.), hazel (*Corylus avellana*), alder (*Alnus glutinosa*) and ash (*Fraxinus excelsior*).

Pyre construction also involves large quantities of fuel. The cremation of an adult human body requires 300-500 kg of timber (McKinley 1994). Evidence from the cremation burial pit 466 suggests that the pyre was constructed mainly from oak, although other species also appear to have been incorporated. Although the site at Hartshill Copse was selected for the burial, the location of the cremation pyre is unknown.

Late Bronze Age features

Charcoal was examined from five postholes of Roundhouse C, distributed fairly evenly around the perimeter of the structure. Postholes 1209 and 1215 (both Group 33) were sited either side, and close to, the entrance porch. Both included large quantities of fragmented charcoal. The charcoal from the primary and secondary fills of 1209 was predominantly oak (*Quercus* sp.), from large-wood, and indicated slow-moderate growth rates; some fragments were partially vitrified. In addition, small quantities of ash (*Fraxinus excelsior*), blackthorn (*Prunus spinosa*), the hawthorn/ *Sorbus* group (Pomoideae) and maple (*Acer campestre*) were also present. There was no evidence from this pit to suggest taphonomic differences in preservation. Context 1299 (Group 33) consisted entirely of oak (*Quercus* sp.) from large-wood of moderate growth. The remaining postholes, 1245 (Group 32), 1239 (Group 36) and 1233 (Group 33), were aligned along the back of the structure and, although oak (*Quercus* sp.) was common to each, there was a greater diversity of taxa, including maple (*Acer campestre*), alder (*Alnus glutinosa*), birch (*Betula* sp.), hazel (*Corylus avellana*), ash (*Fraxinus excelsior*), the hawthorn/ *Sorbus* group (Pomoideae) and blackthorn (*Prunus spinosa*) (see Table 1).

Roundhouse D charcoal was examined from postholes1401 and 1382 (both Group 44), sited inside and opposite the entrance, and 1403 (Group 44) and 1461 (Group 47), on the left side and back walls. Although the samples were smaller than those from roundhouse C it was evident that a much smaller ratio of oak (*Quercus* sp.) was included in the fuel and more use made of other species such as maple (*Acer campestre*), hazel (*Corylus avellana*), ash (*Fraxinus excelsior*), the hawthorn/ *Sorbus* group (Pomoideae), blackthorn (*Prunus spinosa*), birch (*Betula* sp.) and gorse (*Ulex* sp.) or broom (*Cytisus* sp.). There were no obvious distinction in species content between the four postholes.

An east-west alignment of substantial posts (E) was located at the northern corner of the site. Charcoal was examined from posthole 488 (Group 147), one of a pair of posts in the centre of the feature, and identified as oak (*Quercus* sp.), from large-wood, ash (*Fraxinus excelsior*) and alder (*Alnus glutinosa*). The origin of the charcoal is unknown.

Samples 2 and 170 were examined from pit 027 (Group 89), located south-west of the enclosure. The taxa identified included alder (*Alnus glutinosa*), hazel (*Corylus avellana*), ash (*Fraxinus excelsior*) (probably roundwood), holly (*Ilex aquifolium*), the hawthorn/ *Sorbus* group (Pomoideae) and oak (*Quercus* sp.). Charcoal from the fill of pit 638 (Group 5), sited west of the enclosure, was less frequent but included maple (*Acer campestre*), hazel (*Corylus avellana*), ash (*Fraxinus excelsior*), blackthorn (*Prunus spinosa*) and oak (*Quercus* sp.). The origin of the charcoal from pits 027 and 638 is unknown. Dumps of fuel waste seem most likely although distinct differences in species content between the southern and western pits suggests debris from different types of activities or use.

Early-Middle Iron Age features

All samples relating to this phase of activity derive from contexts associated with roundhouse B. Charcoal was examined from postholes 299 (Group 58), on the southern side of the entrance, 408 (Group 49) and to the right of the entrance, and 394 (Group 50) in the back wall. The samples were fairly large but the charcoal very comminuted. Charcoal from the fills of postholes 394 and 408 was identified as oak

(*Quercus* sp.) from large-wood, whereas that from the fill of 299 included, in addition to oak (*Quercus* sp.), hazel (*Corylus avellana*), the hawthorn/ *Sorbus* group (Pomoideae) and blackthorn (*Prunus spinosa*). Charcoal from these probably derived from domestic hearths. The abundance of oak charcoal in postholes 394 and 408 could, however, represent the remains of the posts themselves, especially if the bases of the posts had been charred (as a preservative measure) prior to their insertion in the soil. It may also be significant that some fragments from these postholes were partially vitrified.

Roman features

Charcoal was examined from contiguous pits 1441 (Group 71) and 1475 (Group 76). A very large quantity of charcoal was recovered from pit 1441 and a representative subsample was identified as oak (*Quercus* sp.) from large-wood, including both slow- and fast-grown wood. This charcoal was poorly preserved and partially vitrified. A somewhat smaller quantity was available from pit 1475 but this also consisted entirely of oak (*Quercus* sp.). Although the origin of this material is unknown, the selective use of oak suggests an association with a specific, possibly industrial, activity that was based in this part of the site.

Discussion

Charcoal was recovered from a large number of features, although frequently in small quantities, very comminuted and sometimes poorly preserved. There did not appear to be any taphonomic reason for the condition of the charcoal. Twenty-three samples were selected for full analysis.

Evidence for use

The small quantity of charcoal associated with Middle Bronze Age cremation 446 almost certainly represents pyre debris. Most of this material probably derived from the construction of the pyre, which seems to have been built from large billets or cordwood from fairly mature oak (*Quercus* sp.) and also incorporated ash (*Fraxinus excelsior*), alder (*Alnus glutinosa*) and hazel (*Corylus avellana*). The shrubbier species may have been used as kindling. Artefactual remains from the funeral bier or wooden grave goods may also have contributed to the pyre debris. There is some evidence from Bronze Age cremation sites elsewhere in Britain to suggest that the exclusive use of a specific wood (especially oak) for pyre construction was associated with primary cremation burials or with cremations of significant status. Examples of this practice were recorded Barrow Hills, Radley, Oxfordshire (Thompson 1999), at Westhampnett, West Sussex (Gale, forthcoming), an unurned cremation at Brackmills Link Road, Northampton (Gale, unpub [a]), at Gayhurst Barrow Cemetery, Buckinghamshire (Gale, unpub [b]) and the extensive Bronze Age cemetery at Eye Kettleby, Leicestershire (Gale, unpub [c]). Although this practice appears to be related to status, gender or age, it may be purely ritualistic (Smith 2002, 48-49) but more evidence is required to test the veracity of this hypothesis. Based on these suggestions it seems unlikely that the isolated cremation burial at Hartshill Copse fits into the category of high status.

Quantities of iron hammerscale associated with roundhouses C and D may indicate a direct or indirect association between these structures and metal-working activity. Much larger quantities of charcoal were recovered from postholes from roundhouse C.

Marked differences in the taxa identified from deposits from the front and back of roundhouse C might be interpreted as evidence for dedicated areas within the roundhouse for specific industrial processes: near the entrance was mainly oak (*Quercus* sp.) charcoal fuel, while fuel from a wider range of taxa, including oak (*Quercus* sp.), maple (*Acer campestre*), alder (*Alnus glutinosa*), birch (*Betula* sp.), hazel (*Corylus avellana*), ash (*Fraxinus excelsior*), the hawthorn/ *Sorbus* group (Pomoideae) and blackthorn (*Prunus spinosa*), was recorded from features to the rear. It is however equally likely that the charcoal relates to domestic occupation, with variation in taxa explicable in terms of temporal differences in the use or supply of fuel, or with some material such as that from posthole 1215 (Group 33) having a structural origin, i.e., an oak post.

The fuel debris from postholes in roundhouse D was more uniform in character and, although less abundant than the deposits from the adjacent structure, suggested that a high oak content in the fuel was either less important or not achievable.

Charcoal recovered from postholes associated with Early-Middle Iron Age roundhouse B almost certainly derived from hearth debris. Evidence from posthole 299 (Group 58) attested to the use of firewood collected from mixed deciduous woodland including oak (*Quercus* sp.), the hawthorn/ *Sorbus* group (Pomoideae), blackthorn (*Prunus spinosa*) and hazel (*Corylus avellana*). The origin of charcoal from postholes 394 and 408, however, is more ambiguous since these relatively large samples of charcoal consisted entirely of oak (*Quercus* sp.). Although hearth debris can not be ruled out, it is also feasible that the charcoal derived from structural components, either from remnants surviving from the charred bases of posts (a method used to protect the wood from decay) or from posts burnt *in-situ.*

The small sample of charcoal from post alignment E, included oak (*Quercus* sp.), ash (*Fraxinus excelsior*) and birch (*Betula* sp.). Pits 027 (Group 89) and 638 (Group 5) contained a wider range of taxa including oak (*Quercus* sp.), birch (*Betula* sp.), hazel (*Corylus avellana*), ash (*Fraxinus excelsior*), holly (*Ilex aquifolium*), the hawthorn/ *Sorbus* group (Pomoideae) and blackthorn (*Prunus spinosa*). The origin of the charcoal from these isolated Late Bronze Age deposits is of unknown, although derivation from domestic fuel debris might be assumed.

Charcoal deposits from Roman pits 1409 (Group 71) and 1476 (Group 76) were remarkable both for the quantity recovered and the exclusive use of oak (*Quercus* sp.) fuel. By implication, the selective use of oak fuel suggests its use for a specific, possibly industrial, purpose.

The procurement of fuel

At least three different types of fuel have been identified in this study, i.e., for a cremation pyre, for possible metal-working, and domestic hearths, and supplies for each would have been drawn from the local environment. The charcoal examined was mostly too comminuted to assess origins from managed woodland although a high percentage of the oak included heartwood and appeared to have originated from large-wood, i.e., wide poles, billets or cordwood. The growth rates observed in some of the larger pieces of oak from postholes 1209 and 1215 relating to roundhouse C demonstrated slow-moderate growth. Oaks sited in open land or in sparse woodland grow significantly faster than those in dense woodland or in heavy shade. The evidence suggests that oak fuel was collected from trees in woodland rather than at field margins or isolated specimens. Overall, the availability and supply of fuel appears to have relatively stable from the Middle Bronze Age to the Early/Middle Iron Age. Perhaps significantly, oak charcoal including some relatively fast-grown wood was recorded from Roman pit 1441. Depending on the prevailing edaphic and climatic conditions, oak trees in managed woodland tend to grow faster than those growing in unmanaged woodland, although even when managed, the growth rate slows down in older tree or as conditions become more competitive (Edlin 1926, 23; Morgan 1982; Rackham 1986).

Charcoal deposits from contexts perhaps associated with the possible iron-working were examined from roundhouses C and D, as well as samples from the fills of pits 1441 (Group 71) and 1475 (Group 76), provisionally attributed as industrial debris. In order to sustain the requisite temperatures for both metal smelting and smithing, charcoal fuel would have been essential (Horne 1982). Metal-workers at Hartshill Copse (perhaps also working as charcoal-burners) appear to have exploited local oak as the preferred fuel. If, as possibly suggested by the deposits in roundhouse C, different types (species) of fuel were used for specific industrial processes, it would have been necessary to set up separate and dedicated charcoal clamps/ pits for fuel production. The siting of the settlement on the higher ground could, in part, be related to access to suitable fuel reserves.

Fuel residues from posthole 299 (Group 75) in roundhouse B were attributed to domestic fuel debris and indicated that firewood was gathered from a range of species including oak large-wood, hazel, the hawthorn/ Sorbus group and blackthorn.

Environmental evidence

The range of taxa identified from the charcoal is typical of well-drained acidic soils and included woodland trees such as oak, ash, birch and holly and shrubby species such as hazel, blackthorn, hawthorn and/ or related genera and gorse or broom.

Although the charcoal was too fragmented to provide evidence of woodland management, nearly all the oak identified from the charcoal deposits appeared to have derived from large-wood. By implication, trees of some maturity grew at, or close to, the site, probably in fairly dense or competitive woodland, as suggested by the frequency of oak in the samples and the slow-moderate growth rates recorded.

Comparative evidence from other sites in the region

Charcoal analyses for contemporary sites in the Kennet valley include Anslow's Cottages and Field Farm at Burghfield, Berkshire, and Riseley Farm, Swallowfield, Berkshire, all of which were located south-east of the river. The taxa identified at Riseley Farm included maple (*Acer campestre*), alder (*Alnus glutinosa*), hazel (*Corylus avellana*), ash (*Fraxinus excelsior*), holly (*Ilex aquifolium*), the hawthorn/ *Sorbus* group (Pomoideae), blackthorn (*Prunus spinosa*), oak (*Quercus* sp.), willow (*Salix* sp.) or poplar (*Populus* sp.), elder (*Sambucus* sp.) and purging buckthorn (*Rhamnus cathartica*) (Gale 1991-3, microfiche M2:E13-F9). This site also provided comparable evidence for the selective use of oak fuel for metal-working in the Middle Bronze Age and a similar preference was recorded from deposits from a Middle Iron Age industrial hearth of unknown function.

At Field Farm, a number of Middle Bronze Age cremation burials and graves were excavated. Charcoal was associated with a number of these and, although most contained multiple species, an urned cremation burial suggested the single use of oak (*Quercus* sp.) for pyre construction (Gale 1992, 65-68). The adjacent site at Anslow's Cottages indicated the use of firewood collected from maple (*Acer campestre*), alder (*Alnus glutinosa*), hazel (*Corylus avellana*), ash (*Fraxinus excelsior*), the hawthorn/ *Sorbus* group (Pomoideae), blackthorn (*Prunus spinosa*), oak (*Quercus* sp.) and willow (*Salix* sp.) or poplar (*Populus* sp.) (Gale 1992, 158-159).

Despite the predominance of arable and pastoral farming in this well populated part of the Kennet valley, evidence from Bronze Age fuel-based industrial activities at Hartshill Copse and Risely Farm suggests that these areas, at least, were still sufficiently wooded at this time to support metal-working and possibly other crafts.

Conclusion

Environmental evidence obtained from late prehistoric charcoal deposits at Hartshill Copse suggests that the landscape during this period supported a diverse range of trees and shrubs, e.g., oak (*Quercus* sp.), maple (*Acer campestre*), alder (*Alnus glutinosa*), hazel (*Corylus avellana*), birch (*Betula* sp.), ash (*Fraxinus excelsior*), holly (*Ilex aquifolium*), the hawthorn/ *Sorbus* group (Pomoideae), blackthorn (*Prunus spinosa*) and gorse (*Ulex* sp.) or broom (*Cytisus* sp.).

Fuel deposits, potentially associated with possible metal-working activities in or around the Late Bronze Age roundhouses C and D implied a strong preference for oak, although other species were also used. Spatial differences in species contents between contexts at the front and rear of roundhouse C may have related to specific industrial processes, although other factors, such as structural remains, are also considered. The function of roundhouse B (Early to Middle Iron Age) appears to have been largely domestic and associated fuel deposits indicated the use of firewood from mixed species, although large quantities of oak charcoal recovered from two postholes is provisionally attributed to structural remains. Oak also predominated in the deposit of pyre fuel in the Middle Bronze Age cremation.

Charcoal of unknown origin collected from two isolated Late Bronze Age pits and a single pit associated with pit alignment E, which is of similar date.

Large volumes of charcoal (identified as exclusively oak and, by implication, probably industrial in origin) were recovered from two of Roman date pits on the southern boundary. Charcoal from these features included relatively fast-grown wood which may be indicative of managed woodland.

The consistent use of oak fuel fromMiddle Bronze Age to Early/Middle Iron Age periods, including for possible industrial purposes, indicated that access to maturing oak trees was maintained. Although the character and distribution of local woodlands is unknown, the slow-moderate growth rates recorded from much of the oak wood was indicative of stressed environmental conditions, such as those experienced in fairly dense stands of trees or those on poor soils. It was not possible to assess evidence of woodland management from the charcoal available. Cross correlation with evidence from contemporary sites located on the southern side of the river Kennet indicated the use of similar species, with the same bias towards oak for industrial purposes.

Table c1. Charcoal from Late Bronze Age and Early to Middle Iron Age features.

Key. h = heartwood; r = roundwood (diameter: <20mm); s = sapwood

The number of fragments identified is indicated

Context	Sample	Description	*Acer*	*Alnus*	*Betula*	*Corylus*	*Fraxinus*	*Ilex*	Pomoidea e	*Prun us*	*Quercus*	*Ulex/ Cytisus*
Middle Bronze Age												
Cremation pit 466												
447	26	Group 113: fill of pit 466. ?Pyre fuel	-	1	-	-	-	-	-	-	13h, 4s	-
448	27		-	-	-	1	1	-	-	-	10h, 3s	-
Late Bronze Age												
Roundhouse C												
1246	92	Group 32 :fill of PH 1245	-	-	-	1	-	-	-	-	16h, 42s	-
1310	102		3	1	-	4	1	-	1	-	2s	-
1341	106	Group 32: primary fill of PH 1209	4	-	-	-	-	-	1	1	49h, 9s	-
1234	108	Group 33: fill of PH 1233	1	1	21	-	-	-	-	1	2h	-
1299	99	Group 33: fill of PH 1215	-	-	-	-	-	-	-	-	93h, 23s	-
1329	104	Group 33: fill of PH 1209	1	-	-	-	1	-	1	-	32h, 7s	-
1342	107	Group 33: secondary fill of PH 1209	-	-	-	-	-	-	-	-	18h, 8s	-
1240	135	Group 36: fill of PH 1239	-	10	-	3	1	-	4	-	22h	-
Roundhouse D												
1402	117	Group 44: fill of PH 1401	1	-	-	1	7r	-	1	-	3h	1
1404	120	Group 44: fill of PH 1403	1	-	-	16	-	-	-	1	2, 1s	-
1664	189	Group 44: fill of PH 1382	4	-	4	1	5	-	1	-	1	-
1462	133	Group 47: fill of PH 1461	4	-	-	3	4	-	-	1	1, 2s	-
Post Alignment E												
1633	171	Group 147: fill of pit 488	-	-	3	-	6	-	-	-	18h	-
Pits												
28	2	Group 89: fill of pit 027	-	-	-	1	21r	3	12	-	2s	-
1632	170		1	-	-	3	17	-	1	-	3h, 4s	-
640	58	Group 5: fill of pit 638	2	-	1	2	1	-	-	1	6h, 2s	-

Context	Sample	Description	*Acer*	*Alnus*	*Betula*	*Corylus*	*Fraxinus*	*Ilex*	Pomoideae	*Prunus*	*Quercus*	*Ulex/ Cytisus*
Early to Middle Iron Age												
Roundhouse B												
395	65	Group 50: fill of PH 394	-	-	-	-	-	-	-	-	37	-
409	41	Group 49: fill of PH 408	-	-	-	-	-	-	-	-	104h	-
878	75	Group 58: fill of PH 299	-	-	-	5	-	-	16	6	3h	-
Roman												
Pits												
1409	118	Group 71: fill of pit 1441	-	-	-	-	-	-	-	-	87h, 3s	-
1476	2000.1	Group 76: fill of pit 1475	-	-	-	-	-	-	-	-	24h, 2s	-

DISCUSSION

General

The excavation identified settlement activity spanning a period from the Middle/Late Bronze Age to the Roman period. Within the ALSF excavation area this activity was clearly episodic, with distinct foci of intensive settlement occurring around the 10th and 5th centuries BC, and again in the Roman period. There is also evidence, in the form of residual Late Bronze Age/Early Iron Age pottery from a number of later features, that hints of at least limited continuity of settlement in the first half of the first millennium BC. The evidence from the earlier excavations on the quarry site to the north, although not analysed in detail at the time of writing, clearly demonstrated that occupation of the plateau did indeed shift around in later periods, but overall appeared to be continuous throughout the later prehistoric period, although of differing intensity.

It is also clear that activity associated with both of the main periods of prehistoric activity represented within the ALSF excavation area extended beyond the northern limit of the trench, and therefore that the excavated remains are best considered as a representative, though substantive, sample of these settlements.

The cremation

Cremation pit 446 may be placed in the latter part of the Middle Bronze Age by both radiocarbon dating and by the character of the pottery vessel within the grave. The fragmentary condition of the vessel associated with the burial is paralleled elsewhere, for example at Bromfield, Shropshire (Stanford 1982), and is suggestive of a funerary practice where the pot is broken at the funeral pyre and collected with the cremated remains for burial (Brück 2001, 152). It appeared to be the earliest feature excavated on the ALSF site; no other cremation burials were recorded and only one other sherd of Middle Bronze Age pottery was recovered, residual in a later feature.

However, evaluation of the quarry site in 1986 identified a group of badly truncated cremations *c*. 75m to the north-west of cremation (pit) (see above) 446 (Miles and Collard 1986). The pottery associated with these cremations was also identified as Middle to Late Bronze Age on the basis of the fragmentary remains recovered andit is likely that all of these cremations formed part of the same late Middle Bronze Age use of the plateau for the interment of cremations. No other cremations of this date were found during the extensive excavations on the rest of the quarry site.

Both cremation cemeteries and single cremation burials of a similar date have been identified in positions on higher ground overlooking local valleys, further east at Sulham (Shrubsole 1907), Shortheath Lane (Butterworth and Lobb 1992) and possibly at Tilehurst (Barrett 1973). Seemingly in common with the cremation burials here, these cemeteries appeared to be flat and unassociated with any visible monuments such as barrows (Lobb and Rose 1996). However, the nature of the cremation burial, and its location, seemingly within a gap in the circuit of the Early Iron Age enclosure, may suggest that burial was marked by a barrow, all trace of which has since vanished from the landscape (Early Iron Age Enclosure, below).

The post alignments

Parallels for the two long post alignments are rare in Britain, and unknown elsewhere on the continent. The only comparative examples of a contemporary date and scale have been identified at Barleycroft, Cambridgeshire (Evans and Knight 2001). There, the alignments comprised postholes of similar dimensions to the Bucklebury examples, averaging 0.2m in diameter, and these were set at regular intervals of between 0.5m and 1.1m (wider spacing than the Bucklebury postholes at 0.2m). The Barleycroft examples were of comparable length, between 77.5m and 129m. They formed regular straight lines and a number of the alignments intersected each other, but as at Bucklebury, it was not possible to determine with any confidence relationships between the alignments, or whether they represented successive or accumulative structures. Clear evidence for another post alignment of identical character was identified 250m to the north in an evaluation trench (Miles and Collard 1986). Unfortunately ploughing of the site over 25 years between the evaluation and the 2001 excavation of this area had removed all traces of this feature.

At Barleycroft, a number of the post alignments ended in a distinct T-shape. One explanation offered by Evans and Knight for such an arrangement was the existence of a revetment at the end of the post line, suggesting that the posts may have been set into turf banks. No similar features were observed here, but the southern end of alignment G apparently continued beyond the end of the closely spaced posts, its line marked first by the shallow linear gully 5294 running just east of the projected line of the post alignment, and then further to the south by postholes staggered across the same projected line (Fig. 7). These features may be indicative of the presence of a bank along the alignment, at least in this area, though the reason for the change in form from continuous post alignment to gully and intermittent posts cannot be readily explained.

Within each alignment the erection of the posts appears to have occurred as a single episode with no evidence for intercutting postholes, suggestive of incremental growth, nor for replacement of posts. It is clear that the alignments would have had the appearance of a near-complete screen of upright posts, and, if the posts used were not trimmed of branches and foliage during collection, the effect may well have been continuous. The posts of the alignments are unlikely to have been very long-lived in the exposed hilltop location, and the features would have all but disappeared once the posts decayed in the ground. However, if surrounded by an earthen bank, the posts would have survived as more permanent features of the landscape, which would have been visible during later phases of activity. In this regard the location of the Late Bronze Age settlement at the eastern end of the site, between the angle of the two intersecting alignments, may be pertinent, and the coincidence of the subsequent Early Iron Age ditch with the orientation of one of the alignments is discussed below.

Evans and Knight suggested that the posts themselves are not likely to have stood to a great height and, with the gaps between each timber, are unlikely to have fulfilled any ‘practical’ use. The Bucklebury examples, being more closely spaced, may have had a prosaic function as land divisions relating to stock management, as they would presented a substantial physical barrier to any stock. However, if as seems likely from the physical relationship of the two alignments, they were broadly if not exactly contemporary in construction, the acute angles formed at their intersection are difficult to explain functionally.

The shorter but seemingly more substantial post alignment E is clearly of a related form, although of distinctly different character to the longer post alignments. Alignment E was clearly not a fence or extensive land division. There is no evidence from the excavation that any specific activity was carried out in its immediate vicinity, although it did lie relatively close to the northern edge of the trench. The inclusion of burnt flint as the only artefct type within the fills of the postholes may be significant. A similarly sized alignment, interpreted as a screen, was found inside the Late Bronze Age North Ring enclosure at Mucking in Essex (Bond 1988), where it would appear to have been constructed to conceal the roundhouses behind it (Parker Pearson 2001). Clearly, the example at Bucklebury does not appear to have fulfilled the same function.

Evans and Knight (2001, pp?) suggest that the Barleycroft structures were meant to be visually impressive symbolic 'screens' of a monumental scale, possibly enclosing large areas of land and perhaps forming part of a vast ceremonial space. The Barleycroft alignments occur within a landscape relatively rich in funerary monuments including barrows, and a flat cemetery of eleven cremations was contained within the axis of two of the lines. There are clear parallels in that model for this site, and the association of the cremations and the post alignments from this excavation and the evaluation may support such a hypothesis.

Late Bronze Age settlement

There was no direct stratigraphic relationship between the two main post alignments and the Late Bronze Age settlement identified at the eastern edge of the site, and the pottery recovered from the features of both the alignments and the settlement dates both to the Late Bronze Age. The alignments therefore may have existed in some visible form at the time of the occupation of the settlement in the 10th century BC.

The placing of pit 1104is interesting, both in the range and quantity of artefactual material it contained and in its location in relation to the post alignment. It contained an unusually rich and diverse range of finds by comparison with other excavated features, including significant quantities of Late Bronze Age pottery, daub, other fired clay objects including a pyramidal clay weight, and burnt flint, as well as ecofactual material including charred plant remains (with a high proportion of hazelnut shell) and charcoal. The pottery was in the same fabric and of the same forms, and in the same burnt condition, as that recovered from roundhouse C. The material in this pit appears to has been deliberately selected for burial, an act that may be directly associated with the 'closure' of roundhouse C (described below) at the end of the settlement activity in this area. It would appear to have been deliberately placed in a gap within the earlier post alignment F, although it is of course possible that this was coincidental. The placing of the two houses of the settlement within the intersection of the axes of the alignments may also indicate contemporaneity, or visibility of earlier monuments.

Detailed evidence for the nature of the Late Bronze Age settlement is limited by the heavily truncated condition of the features and the complete absence of animal bone, but analysis of the recovered stratigraphic, artefactual and ecofactual evidence suggests an open settlement, possibly concerned primarily with specialised craft production and metalworking.

The settlement was represented principally by two roundhouses, C and D, towards the eastern end of the site. Together, these structures appear to fit a standard settlement model of a residential house with an associated ancillary building for storage and more specialised uses (e.g. Drewett 1982; Ellison 1987). No associated enclosure ditches were revealed around the structures. The siting of the settlement on the free-draining gravels towards the edge of the plateau may imply a degree of deliberate topographic selection. Conditions during the 2001–2 excavation demonstrated that the heavier gravels in a fine clayey matrix to the north of the ALSF site were slow to drain, and despite the discovery of many scattered late prehistoric features across those gravels, no evidence of dwellings, other than a much later medieval structure, was found on that part of the site.

Much has been written about the techniques employed in building roundhouses in this period (Moore and Jennings 1992, 121), and the two roundhouses fit established forms of Late Bronze Age construction. Roundhouse C survived as a single post-ring with a central post and a four-post porch facing east-south-east. Three further posts along its western side possibly represent replacements or augmentation to the ring. Roundhouse D appears to have comprised a double-ring construction, although both rings survive only partially. Slightly larger than C, its porch faces a more south-easterly direction. Again, there is limited evidence for repair, although not as extensive as in structure C. The lack of repair or reconstruction of the houses suggests a relatively limited life-span for this pair of structures, an interpretation confirmed by the radiocarbon dates.

At a more specific level, comparisons of the types and quantities of cultural material recovered from the two roundhouses appear to be indicative of the nature of use of both structures, as well as what may have happened to them at the end of their occupation.

Roundhouse C contained greater quantities of charred plant remains (including the large deposit of grain in an internal pit 199) and charcoal than roundhouse D, and there was a distinct difference in the relative quantities of types of wood used for fuel in each structure. In roundhouse C, oak was identified as the dominant fuel wood, whereas a greater variety of (?) taxa were used in roundhouse D. Intra-structure analysis demonstrated that the features associated with roundhouse D contained a uniform mix of charcoal from several species deposited evenly throughout the structure, whereas in roundhouse C, oak was predominant towards the front of the structure, and charcoal representing a mix of species was found in the features at the back, opposite the porch, perhaps suggesting a spatial arrangement of different types of activity within the structure (Gale, this report).

The most significant conclusion of the spatial analysis is derived from the metallurgical residues. The association of hammerscale from ironworking with structures securely dated to the 10th century BC is clearly of enormous potential significance.

The possibility that the hammerscale found in the samples from the Late Bronze Age structures is intrusive, having percolated down into the features from later activity in this exact area, should be considered. However, there are clear contrary arguments to that possibility. No other intrusive materials, artefacts, or ecofacts were apparent, as confirmed by the results of radiocarbon dating. There is no evidence in this part of the site in the form of features, deposits of materials or artefacts for anything other than occasional use of this area in later periods. The samples were recovered from the base of very truncated features and if the material were intrusive, it had migrated a considerable distance. Most conclusive, perhaps, is the quantity of material recovered and the make-up of the assemblage, reinforced by the clear differential spatial patterning of the hammerscale distributions across the three structures of this period.

Roundhouse D is a clear focus for these hammerscale residues and within it the ash-filled crescentic pit 1373, located close to the north-eastern wall, would appear to have received the debris from a smithing hearth. It contained almost 25% of the whole assemblage of hammerscale from the structure (1200 pieces of a total of 4500), as well as quantities of other burnt material. The dominance of oak in the charcoal assemblage in this structure may be related to its use as a fuel for the smithing process.

Although there is evidence that iron was manufactured and used in Britain from the 9th-7th centuries BC (Turnbull 1984, 279, quoted in Fitzpatrick 1995, 92), there is limited evidence for ironworking prior to the 7th century BC in Wessex and the Thames Valley (Fitzpatrick 1995, 92). Close to the site at Bucklebury, excavations at three locations, Cooper's Farm and Areas 1 and 2 at Dunston Park (Fig 4; Fitzpatrick 1995, 89-92; Wessex Archaeology 2000), have produced extensive evidence for Early Iron Age smithing dated to the 7th century BC, apparently using local ironstone concretions found within local greensand formations as an ore source (Wessex Archaeology 2000, 32-3). It is possible that this 7th-century BC activity downslope of Bucklebury represents a continuation of the ironworking tradition begun three centuries earlier on the hill above, perhaps using the same ore source.

The ceramic evidence also highlights a number of differences between the two roundhouses, not least in the quantities recovered from each. A total of 559 sherds came from roundhouse C, representing almost exactly one quarter of the total amount of pottery recovered from all phases of the ALSF site. This is in contrast to a total of just 34 sherds from roundhouse D.

The pottery recovered from roundhouse C was dominated by Class I ovoid and shouldered jars of coarse, flint-tempered, iron-rich fabrics, with little evidence of bowls, mostly recovered from features at the rear of the structure opposite the entrance. However, the pottery recovered from pit 199 in the northern part of the structure comprised mostly flint-tempered fabrics, more akin to those from roundhouse D. Also in contrast to the forms recovered from roundhouse C, those from roundhouse D were dominated by bowls rather than jars.

Considered collectively, the evidence therefore indicates that roundhouse C, with more domestic material, is more likely to have been a dwelling, whereas roundhouse D may have been a 'workshop' for a number of craft activities, including metalworking and textile production, the latter suggested by the recovery of clay weights from two postholes.

There is sufficient evidence from the two roundhouses to postulate what happened to these structures at the end of their occupation. The postholes associated with roundhouse D were filled by the ubiquitous silty gravel fills common across the whole site, and evidence of a post-pipe, and therefore probably of a post decaying *in situ*, was found in only one feature. This strongly suggests that the structural posts were removed, and the postholes silted up naturally; a process, given the fluid nature of the natural gravel matrix, that would probably have been fairly rapid.

Roundhouse C, in contrast, appears to have been subjected to (or the subject of) some sort of 'closure' rite. A large amount of burnt pottery was recovered from the postholes of the structure, mostly towards the rear of the house or its western side, as well as what may have been a complete burnt vessel in posthole 1241. Although many of the posthole fills were carbon-rich, it would appear that the structure did not burn downas there was no evidence for scorching of the natural gravels around the postholes, and those around the eastern part of the circuit appear to have silted up in a similar way to those in roundhouse D. It appears that the posts were removed and the postholes around the western part of the circuit were then filled with carbon-rich material recovered from an event that may have involved the burning of specially selected pots. The crescentic pit 199, outside the post ring but presumed to be within the structure of the roundhouse, was also filled with similar carbon-rich material, including substantial quantities of burnt flint. This appears to have been a ‘special’ deposition, in contrast to the clearly *in situ* accumulation of ashy material in the similar pit 1673 within the lifetime of roundhouse D. The final act in the ‘closure’ of the roundhouse may have been the deposition of the vessel in posthole 1241, which lies directly opposite the entrance to the structure.

Possible evidence of contemporary ‘closing’ acts have been highlighted by Brück (2001, 151-2), and have been identified at such places as Chalton, Hampshire (Cunliffe 1970), Trethellan Farm, Cornwall (Nowakowski 1991), and at Mile Oak, East Sussex (M. Russell, pers. comm.), where the roundhouse structure burnt down.

Semi-circular structure A was different to the roundhouses. It lay immediately adjacent to roundhouse C, but was completely devoid of pottery. This is notable, given the considerable amount of ceramic material recovered from the adjacent structure. It also contained little burnt flint, in comparison to roundhouses C and D, however, in common with these structures, it did contain quantities of charcoal and hammerscale, perhaps suggesting that it represents a working area, apparently open along the south-eastern side. Structures of a similar shape have been recorded at Reading Business Park, where Moore and Jennings likened them to examples found at Beedon Manor Farm, Berkshire (Richards 1984) and Farmoor, Oxfordshire (Lambrick and Robinson 1979), among (ha!) others.

Other activity associated with occupation of the Late Bronze Age roundhouses was mainly concentrated to the north of structure D. Here, many of the features were filled by dark deposits reminiscent of material derived from occupation or possibly from industrial activity, rather than the general silting as seen in other parts of the site, but there is little indication of the specific functions of these features. The possible small rectangular enclosure, X, could have fulfilled a number of functions, including that of a stock-holding pen. Its north-west/south-east alignment may be significant in the context of the increasing identification of similar alignments within field systems of the Late Bronze Age in the Thames Valley (Yates pers. comm.).

The charcoal remains attest to a landscape supporting a diverse range of trees and shrubs, specific types of which were used for both for fuel and for building (Gale, this report). Given the small numbers of cereal remains present, a partly pastoral economy, providing raw materials such as wool for the craft production, may have been practised on the plateau, which would have been generally less suitable for arable cultivation, although an area of free-draining gravel (heavier gravels mentioned above) covering approximately 3ha of the plateau around the settlement may have provided opportunity for arable cultivation and the field in which the excavation took place is the only area under arable cultivation on the plateau within the immediate area. However, due to the total lack of faunal remains as a result of the acidic nature of the natural gravels, this can only be postulated. Similarly, the lack of any molluscan evidence (for the same reason) diminishes the palaeoenvironmental record.

Crop types identified from the site were unremarkable and included emmer/spelt wheat, barley and oats, although the latter are believed to be of the wild variety, rather than cultivated. The nature of the remains and lack of processing waste indicates that the grain had undergone the early stages of processing, and had been brought to the site and stored in a semi-processed state (Carruthers, this report). The apparent lack of any substantial storage pits, such as those at Reading Business Park (Moore and Jennings 1992) or Aldermaston Wharf (Bradley *et al.* 1980), may be a result of truncation (seems doubtful) or it could indicate that grain was stored in above-ground structures, of which structure L may be an example. Post-built structures of a similar size and date have been identified at other sites, such as Winnall Down (Fasham 1985), Danebury (Cunliffe 1995) and Reading Business Park (Moore and Jennings 1992). Bronze Age artefacts associated with crop processing were scarce, represented only by the fragment of a saddle quern from pit 661, within the later (Early Iron Age) enclosure.

The radiocarbon dates suggest that the Late Bronze Age pits along the western edge of the site post-date the roundhouses by a century or so. Although relatively uninteresting in themselves, their date suggests that after the settlement at the eastern end of the site was abandoned, occupation may have continued elsewhere on the plateau.

Later Bronze Age settlement is well represented along the gravel terraces of the Kennet and its tributaries, and includes sites such as Aldermaston Wharf (Bradley *et al.* 1980), Knights Farm (ibid.), Pingewood (Johnston 1985) and Reading Business Park (Moore and Jennings 1992) among the better known. The results of investigations along the floor of the Kennet Valley attest to a landscape of intensive agricultural production together with a thriving bronze metalwork trade. Lobb and Rose (1996, 81) suggest that an increased pressure on land along the valley floor, through a combination of population increase and soil exhaustion, inevitably forced the populace up onto the poorer soils along the slopes of the valley and, ultimately, onto the plateaux above. The location and nature of the Late Bronze Age settlement at Bucklebury fits this model in terms of chronology but points to a more complex picture of the nature of the settlement on the plateau gravels in this period, with this site perhaps performing a specialised metalworking role within the settlement framework. Archaeological research in the Kennet Valley has been driven by reaction to development and gravel extraction along the valley floor, with a lack of opportunity for detailed investigation of the hilltops and plateaus (as above). This means that, at present, the site cannot be identified as either unique or typical within its Late Bronze Age context.

Early Iron Age settlement

The late prehistoric settlement progression excavated in the ALSF area fits a regional pattern, where Late Bronze Age open settlement was replaced by enclosed settlement in the Early Iron Age, as at Winnall Down, Hampshire (Fasham 1985), Gussage All Saints, Wiltshire (Wainwright 1979), and Old Down Farm, Hampshire (Davies 1981). At a more local level, Early Iron Age sites in particular are much less well-represented than Late Bronze Age sites in the archaeological record along the Kennet Valley (Lobb and Rose 1996).

In contrast to what appears to have been a largely technology-based economy in the Late Bronze Age period, when this part of the plateau was intensively reoccupied a few centuries later, probably around 500 BC, the artefactual and ecofactual evidence recovered indicates a much more diversified economy. While metalworking was still taking place, and smelting from ore had been added to the repertoire of the metalworkers on site, this apparently formed just one part of a number of economic activities on site, which included agriculture and textile production.

The excavated evidence suggests that activity associated with the Early Iron Age enclosure was more intensive than that associated with the Late Bronze Age settlement, although the full extent of both is not known. The length of time of both occupation phases is also uncertain, but the clearly defined framework of the radiocarbon dating, the absence of intrusive material beyond the 'brackets' of that dating, and the character of the pottery assemblages all suggest a relatively short-lived occupation in both cases, although the radiocarbon dating evidence does indicate that the intensive occupation of the site was longer-lived in the Iron Age than in the Bronze Age.

The distribution of features of Early Iron Age date within the excavated area is striking (Fig. 25), with only a handful of scattered features outside the limits of the ditched enclosure. No evidence for field boundaries or other types of land division was observed, a picture repeated in the data from the 2001 excavations to the north, where again, the only features of this date were scattered pits and postholes with no clear focus.

The enclosure

The siting of the Early Iron Age settlement may have been influenced by remains of earlier monuments then still visible in the landscape. The location of the Middle/Late Bronze Age cremation within a gap in the enclosure ditch may be coincidental, but alternatively if the burial had been marked by a barrow, this may have been incorporated into the enclosure circuit, perhaps as a symbolic act. On its south side the enclosure ditch followed closely the course of post alignment F, running parallel for much of its length. Again this may be chance, but if a bank did originally accompany the posts of the alignment, this may also have survived as a visible landscape feature at the time of the creation of the enclosure.

The enclosure ditch, even allowing for a high level of truncation, was not a very substantial feature, especially along its eastern side, although its appearance would presumably have been enhanced by the presence of an internal bank. To the west side the ditch (and presumed bank) was apparently placed very carefully to follow a significant contour on the break of slope; observation of its location during the excavation showed that it would have been effectively hidden from view as it was approached from this side, before appearing with its bank, when close by, as a striking feature on the edge of the plateau. Even so, it cannot be considered as defensive. There was no evidence at all for any structures for formal entrances or gates at the two entrances, and during excavation many difficulties were experienced from severe slumping of the very loose gravel sides of the ditch, a problem surely encountered by its original creators. To be effective as a defensive feature (or even simply as a barrier to stock) the ditch would have required emptying on a regular basis and this would have been a Sisyphean task. Furthermore, there was evidence of only a single episode of recutting around the ditch circuit. The ditch had no drainage function as the gravel in this area is exceptionally free-draining. The conclusion to be drawn is that its purpose was more to define spaces of 'inside' and 'outside' the enclosure (Parker Pearson 2001, 123), an interpretation reinforced by the distribution of the excavated features and zones of activity in this period. It is worthy of note that there were no clear depositions of groups of artefactual or other material within the excavated ditch sections, whether at termini or along the ditch lengths, and generally the excavated fills produced low densities of finds.

Settlement inside the enclosure

In plan, the excavated features within the enclosure showed clear zoning of activities, with a house presumably centrally placed (suggesting an enclosure of *c*. 1ha in extent). There were internal divisions marked by ditches or gullies, but there was also apparently evidence for division of activity zones by fences, for example the line of posts running north-west to south-east separating the zone of four-post structures and racks from roundhouse B (fig. 26). The generally low quantities of function-specific finds recovered only allows an impressionistic interpretation of the distribution of these finds and groups of features in the enclosure, but this does suggest a tripartite division within the excavated area between dwelling in the southern central area, storage in the south-western quadrant, and craft activities including textile production in the south-eastern corner.

The macroscopic and microscopic metallurgical residues indicate that both iron-smelting and iron-smithing were being carried out in this period, although the actual site of this work was not identified within the excavated area; it may have been carried out in the northern, unexcavated part of the enclosure.

The roundhouse has many more posts per ring than the Late Bronze Age examples C and D, and some were only 0.5m apart. The form, though, is comparable to the closest excavated Early Iron Age example at Dunston Park (Fitzpatrick 1995; Roundhouse 1128). The enhanced size of the post-pits on the porch front was also paralleled there. The distance in time between the occupation of these two discrete sites points to a long-lived local tradition.

Within roundhouse B the finds, mostly pottery, were concentrated in features on the southern side of the house. The only exception was posthole 379, placed directly opposite the entrance, which contained an almost complete saddle quern and quantities of pottery and burnt material. This general southerly distribution of artefactual reflects recorded distributions within Iron Age roundhouses elsewhere, including Dunston Park (Fitzpatrick 1995) and House 1, Claydon Pike, Lechlade (Allen *et al*. 1984, 94), and evidence for the differential deposition of pottery in the postholes in the south-eastern quadrants of roundhouses has been noted (Hill 1995, 21).

Overall the picture of the Early Iron Age settlement which emerges from the excavated evidence is of a small enclosed farmstead, with a probably with a pastoral base to the agricultural regime, although the absence of animal bone constrains this discussion. The introduction of bread-type wheats in this period should be noted, but evidence for the growing of cereals was very limited. The continued use of natural food resources, and the continued availability of suitable wood for fuel and structural timber, demonstrates a stability in the character of the local natural environment. A range of crafts including textile production and ironworking (both smelting and smithing) is represented.

The place of the Early Iron Age enclosure in the local settlement hierarchy is uncertain. The radiocarbon dates and the pottery assemblage confirm that it is later than the settlements and ironworking activity at Dunston Park and Cooper's Farm, which are dated to the 7th century BC. The most conspicuous local site of Iron Age form is the 'hillfort' at Ramsbury, *c.* 1.25km to the north-west, on the end of a spur of plateau gravel looking towards the Kennet valley. Although undated, this has been tentatively suggested to be the central elite centre for the ironworking sites at Dunston Park and Cooper's Farm (Lobb and Rose 1996, 85). The exact nature of the temporal, spatial and functional relationships of all these sites is one which requires more detailed exploration, particularly with the apparent introduction of ironworking technology to the area in the 10th century BC.

Romano-British

Activity dated to the Roman period within the ALSF area was confined to a zone within the southern and eastern part of the site. With the discovery during the evaluation of a number of Roman features close to the southern boundary of the quarry site (Miles and Collard 1986), and the recovery of three Roman 'urns' during gravel quarrying in the field immediately south of Hart's Hill Road, in 1888 (W. Berks SMR 10028) a focus of Roman activity, although of uncertain overall character, can be identified in this area. Ditch 5298 and the small paddock formed by the short lengths of ditch on its west side, were part of a more extensive rectilinear field system recorded in the excavations to the north in 2001-02 and the undated ditch parallel to 5298 in the north-western corner of the ALSF area is likely to be part of the same system. Other features were of disparate function, including gravel quarrying. The artefacts recovered form these features suggest the Roman period activity was long-lived, extending from the mid to late 1st century AD to around the mid 4th century, and the ALSF area features would appear to lie at the boundary between the settlement focus to the south and its associated field system extending across the plateau. During the 2001 excavation, one side of a presumed D-shaped enclosure was excavated and dated to the later first century AD. The relationship between this and the ALSF area features will be explored during analysis of the data from the 2001-02 excavations but it appears on the current evidence that there was a shift of settlement focus from the D-shaped enclosure to the southern edge of the plateau, perhaps in the early 2nd century AD. This would place the relocated settlement perhaps below the top of the plateau, at the springline junction between the Bagshot Beds and the London Clay, a favoured location for valley side settlement of this period in the Roman period (Lobb and Rose 1996, 89).

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