A Late Bronze Age Ringwork, Pits and Later Features at Thrapston, Northamptonshire

by

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with contributions by Janet Ambers, Robert Berstan, Stephanie Dudd, Richard Evershed, Steve Ford, Sheila Hamilton-Dyer, Dennis Jackson and John Letts

SUMMARY

An excavation by Thames Valley Archaeological Services on land to the south of Huntingdon Road, Thrapston, examined part of a late Bronze Age circular enclosure ditch with some evidence of an internal bank. Radiocarbon dating indicates that the ditch was dug during the first quarter of the 1st millennium BC. The feature has been interpreted as a mini-hillfort or elite residence of a type particular to eastern England. The largest pottery collection in the county for this period was recovered, together with an important assemblage of animal bone. Late Bronze Age and late Iron Age pits were found both inside and outside the circuit of the ditch and a number of late Iron Age working hollows were also discovered. Medieval ridge and furrow overlay the Prehistoric deposits and some modern quarrying and pit digging had disturbed parts of the site.

INTRODUCTION

An archaeological excavation was carried out as a result of a planned housing development east of the town of Thrapston, on land south of the A604 Huntingdon Road and north of the A14 (TL 0030 7815) (Fig 1). The site lies on a relatively high point overlooking the Nene Valley to the west, at a height of approximately 61m above Ordnance Datum. Previously, a number of Roman coins were found in the field to the south of the development (Jackson 1996) and it had been suggested that this may be the site of a Roman shrine. The Northamptonshire Archaeology Unit excavated some trial trenches in the same field in advance of the construction of services for the new A14 in 1990 (Cadman 1991). These found no evidence for Roman buildings but one of them did cut across an enclosure ditch previously recognised on aerial photographs. A small amount of pottery indicated that the ditch was likely to be Iron Age in date. An evaluation carried out in 1991 (Jackson 1996) examined part of the enclosure ditch and located a number of other archaeological deposits. Nine trenches 1.6m wide and typically 20m long were dug across the development site. Those north of the enclosure did not locate archaeological features, although a few weathered Iron Age pot sherds and some Roman and early Medieval pottery were recovered from unstratified contexts. The enclosure ditch was found to contain earlier Iron Age pottery. A pitted area noted within the enclosure was thought to be the result of post-Medieval quarrying.

The excavation was commissioned by David Wilson Homes Ltd and carried out to a specification agreed with Northamptonshire Heritage. It took place during August and September 1997. The archive is to be deposited with the Northamptonshire Museum Service. The site code is HRT97/51.

THE EXCAVATION (Figs 2–4)

The total area of the development was *c.* 3.8 hectares but the area of the excavation, located in the southern part of the site, was 105m by 32m (3360m^2). Topsoil and overburden were stripped from the excavated area using a 360° tracked machine fitted with a toothless grading bucket. Archaeological and

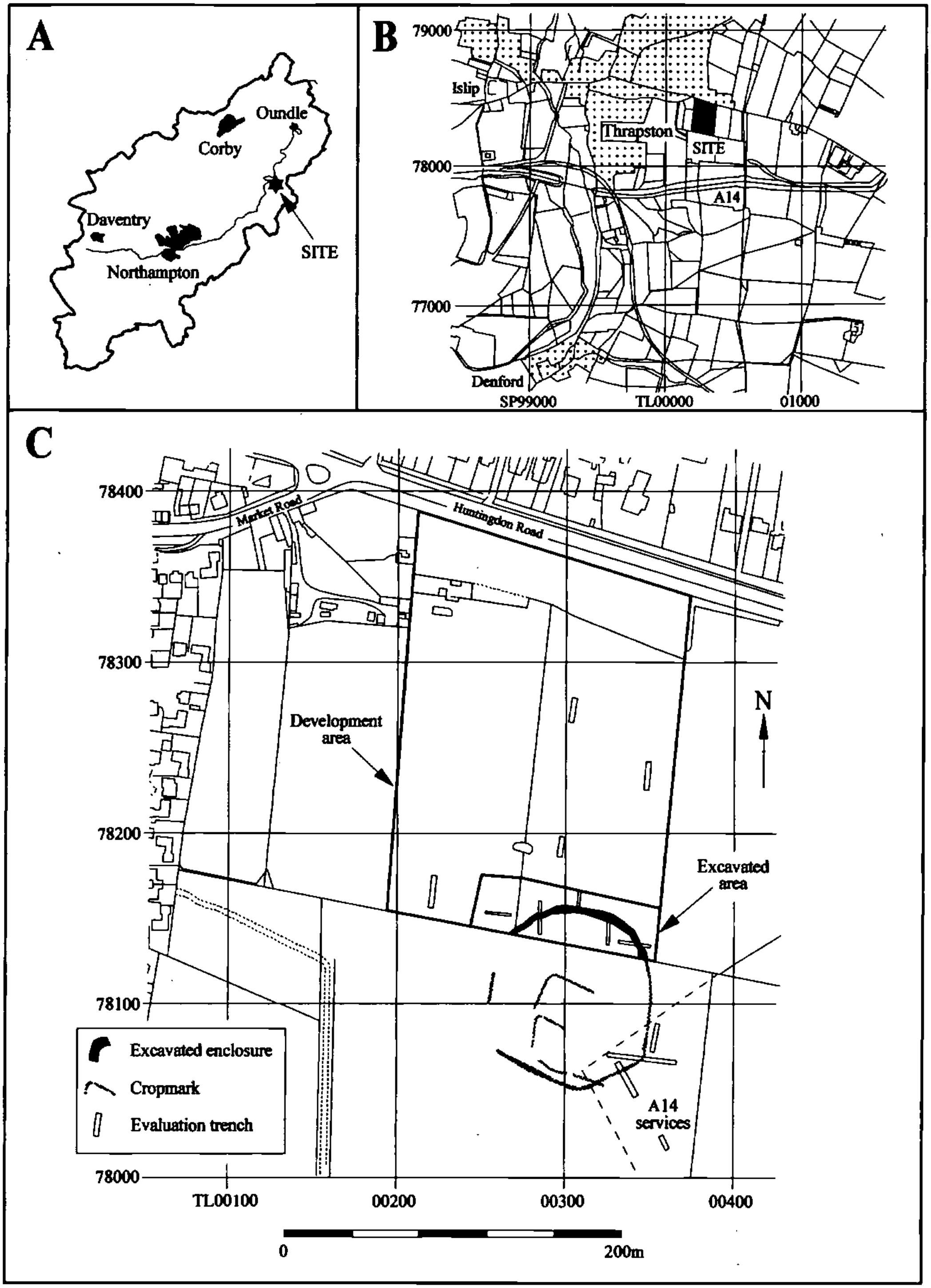

Fig 1 Location of site A) within the county and B) within Thrapston; C) precise location of the site showing cropmarks, evaluation trenches and the excavated part of the enclosure.

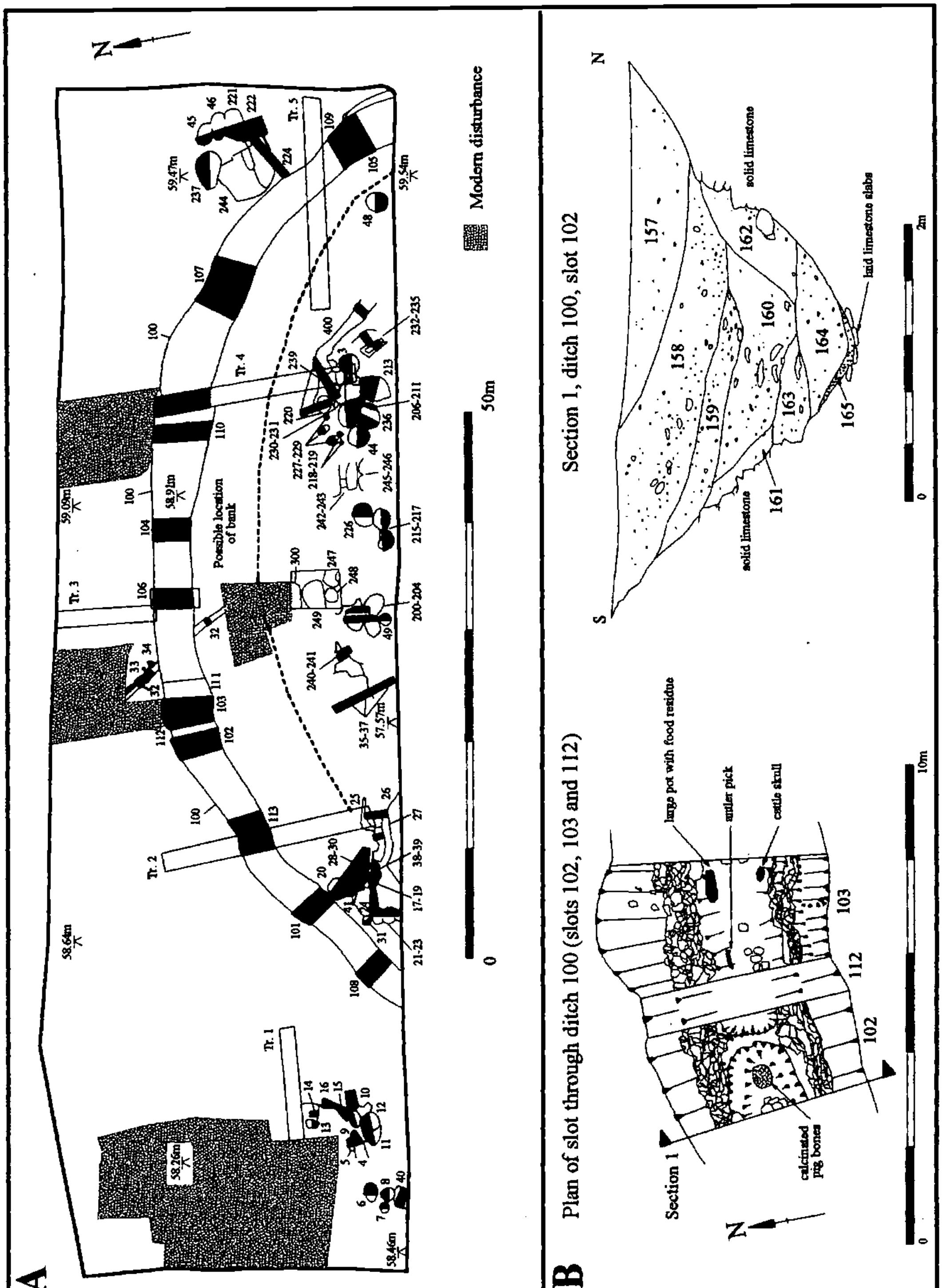

Fig 2 A) Plan of excavated features B) detailed plan of slot through ditch 100 and section of the same.

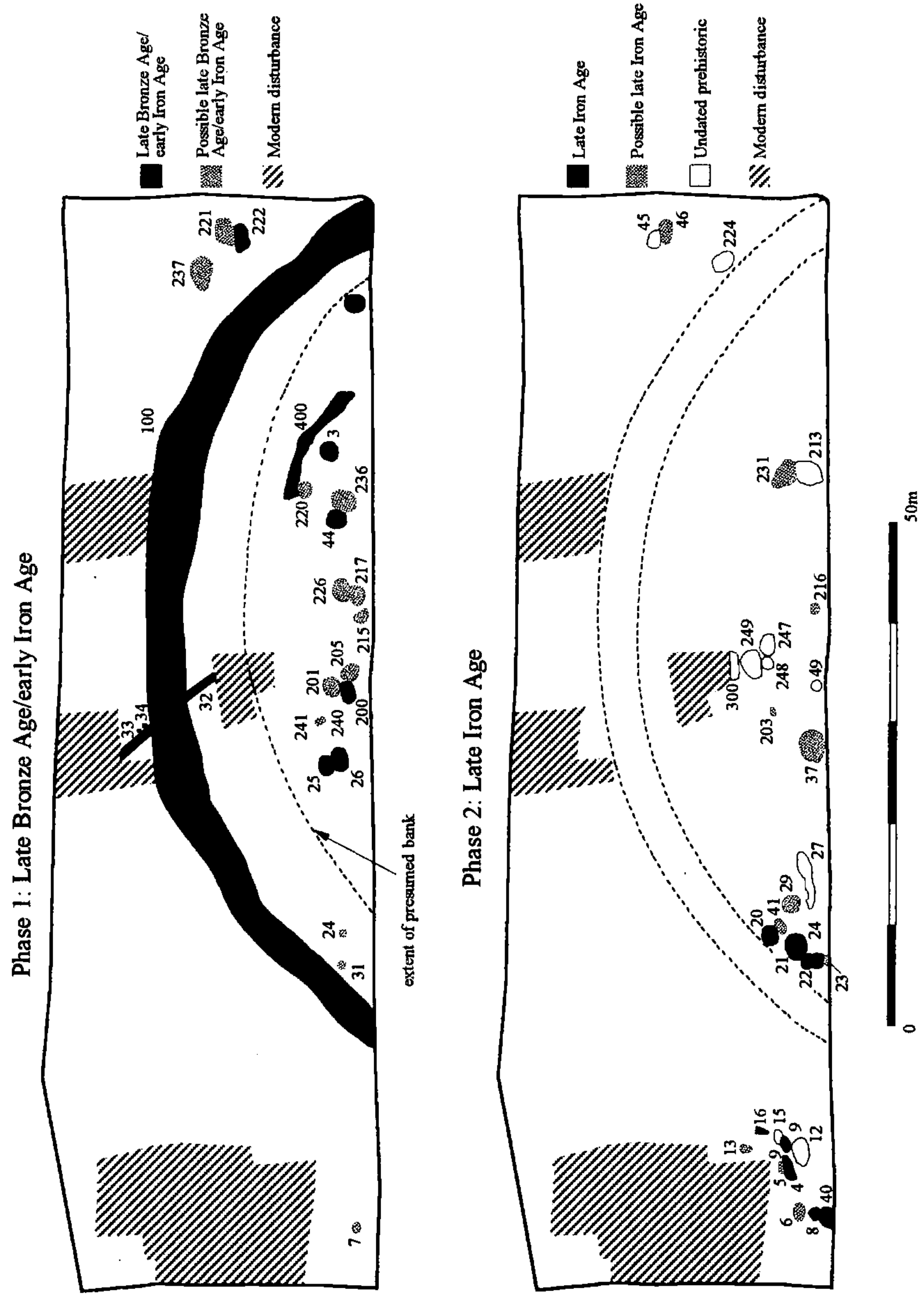

Fig 3 Phase plans of the site.

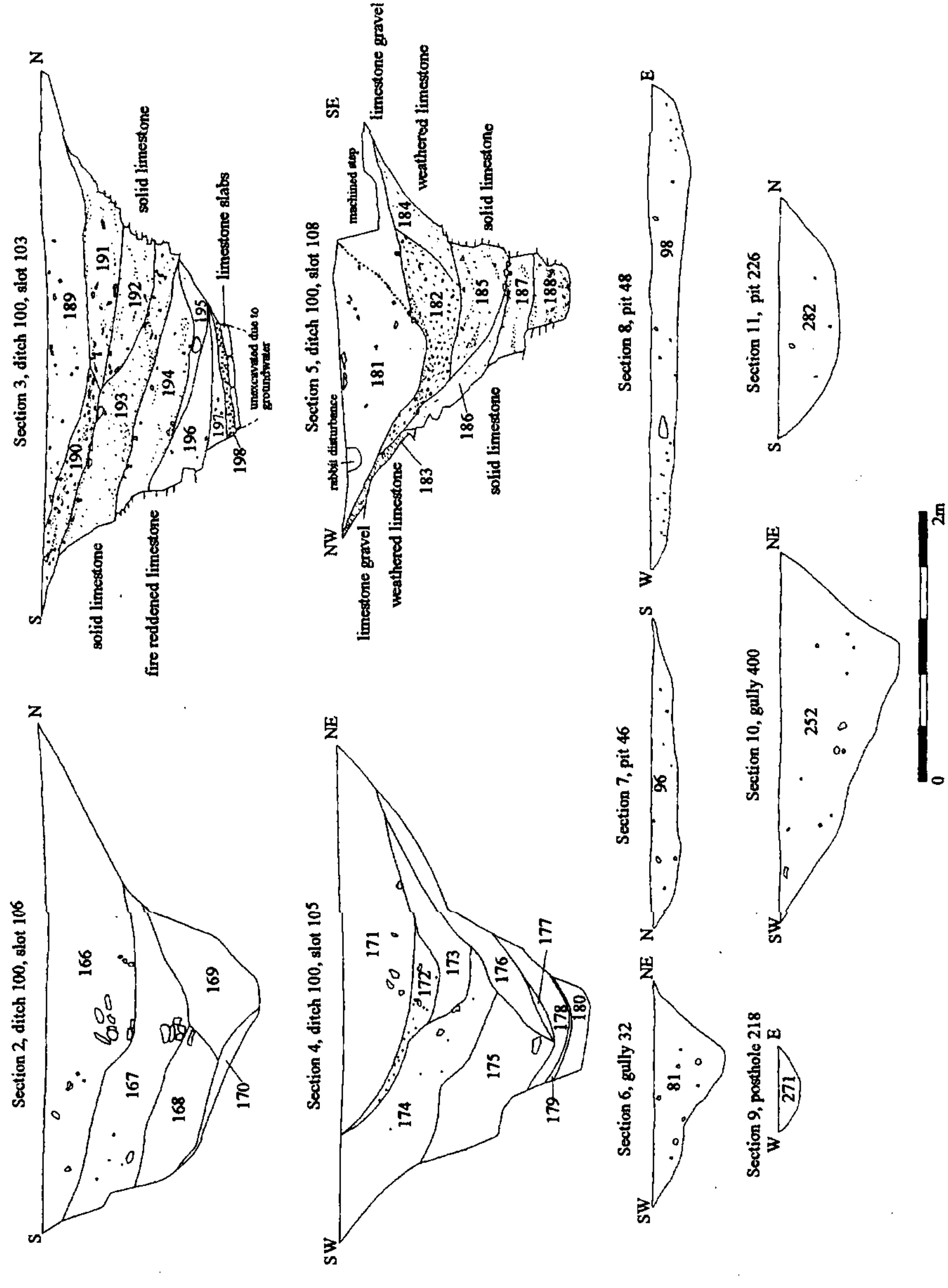

Fig 4 Selected sections.

potential archaeological features were then cleaned by hand, excavated and recorded. A JCB-type machine was deployed at a later stage of the excavation to remove Medieval plough soil which was encountered in furrows crossing the site from north to south. With the agreement of the County Council's Archaeological Officer, a number of ditch sections were machine excavated in order to enhance the quantity of ceramic and faunal evidence. On-site dry sieving took place to aid the recovery of small artefacts and ecofacts and a metal detector was used to assist in the recovery of small metal artefacts. Bulk soil samples from selected features and contexts were taken for wet sieving and flotation for charred plant remains.

At the time of excavation the site was pasture with some upstanding ridge and furrow. The observed geology was gravel overlying a band of limestone and below this oolitic clay was noted in places. Three main types of feature were encountered: an enclosure ditch; a number of pits and working hollows located both inside and outside the ditch; and a number of postholes.

ENCLOSURE DITCH 100

The northern arc of the enclosure ditch had been located by the earlier evaluation (Jackson 1996) and the remaining four fifths of the enclosure currently lie under pasture in the field to the south. The stretch of the ditch revealed by this excavation was nearly 100m long, ranging in width from 3.40m to 4.10m, and in depth from 1.50m to 1.90m. The ditch was given a group number (100) and slots excavated across it were assigned individual numbers (101–113). Four 2m wide slots were hand dug through the ditch (101–104). The top fill of a 4m wide slot (106) was removed by machine and the remaining fills were excavated by hand. A further eight 1.60m wide slots were machine excavated in order to maximise the artefactual evidence and to increase the quantity of bone recovered so that a statistically meaningful analysis could be conducted (105, 107–13). In all 24.80m of the ditch was examined during the excavation and a further 3.20m had been examined during the evaluation. This constitutes a 27% sample of the enclosure ditch within the development area. Pottery and radiocarbon dating (below) suggested that the ditch belonged to Phase 1; late Bronze Age/early Iron Age.

The ditch was cut through limestone and had a V-shaped profile, the inner face of which was consistently steeper. Pottery and animal bone were recovered from all slots through the ditch. Of particular note is a near complete vessel from slot 103 (197) which appears to have been purposefully broken when placed within the newly cut ditch. This deposition marked a gang junction, together with the cremated remains of a pig roast. Similarly, a pair of antlers and some skull fragments seem to have been deliberately placed within the fill of slot 101.

A band of relatively undisturbed naturally-deposited gravel, between 6m and 7m wide, was immediately within the circuit of the ditch. This had been cut into, in places, by both Medieval furrows and modern features. It is reasonable to conclude that this area was the location of a now destroyed bank, contemporary with the ditch. A linear feature (32), cut by the enclosure ditch (100), crossed the otherwise sterile area that would have been occupied by the bank. This gully, although it contained no dating evidence, must predate the enclosure. Two postholes (33 and 34) may be associated with the gully, although they too produced no dating evidence.

A curvilinear feature (400) immediately behind the location of the presumed bank is interpreted as a revetment gully, which would have served as a footing trench for timber uprights to retain the bank.

PITS

A total of 63 pits were excavated, both inside and outside the circuit of the enclosure ditch. Pottery and animal bone were recovered from most of the pit fills. The pits took two forms, rounded and bowl-shaped or shallow and irregularly shaped, and ranged in diameter from less than 1m to over 3m. In general, Phase 1 pits (late Bronze Age/early Iron Age) were typically the former, while Phase 2 pits (late Iron Age) tended to be the latter. At the south-western edge, within the enclosure, a group of pits occupied the zone interpreted as the location of the bank. These pits are of late Iron Age date and suggest that the bank had been destroyed by the 1st century BC.

POSTHOLES

Ten postholes were within the circuit of the enclosure ditch. Where enough evidence has been recovered, they date to the late Iron Age. The postholes do not form patterns representative of structures or appear to be part of a linear boundary.

OTHER FEATURES

Four areas of modern disturbance were encountered on the site, three of which proved to be late 19th/early 20th century quarries. Modern refuse, including machine-fabricated bottles, was found in these areas. The fourth area, located to the north-west of the site, was clearly a recent machine cut. Local farmers reported that this spot was used for the disposal of diseased animals and it was consequently not excavated. At the time of the excavation, eight machine-dug test pits were opened by geologists to the north of the excavated area. These were monitored by archaeological staff but no archaeological features or deposits were seen within them.

THE FINDS

THE PREHISTORIC POTTERY
by Dennis Jackson

A total of 1140 sherds (12.87kgs) of pottery was recovered from the site. In addition there are a considerable number of fragments and tiny sherds that have not been included in this report. The

Table 1: Quantification of the pottery by phase, weight and number

Context	LBA–EIA (Phase I) No/wt (gms)	LIA–early Roman (Phase II) No/wt (gms)	Uncertain IA No/wt (gms)
Enclosure ditch	595/7670	–/–	–/–
Other features	102/772	247/4374	91/643
Unstratified	64/636	32/212	9/34
Total	761/9078	279/4586	100/677

Table 2: Quantity and percentage of shell type from the enclosure ditch

Fabric	Number	Weight (gms.)	% by number	% by weight
SH 1	38	408	6.4	5.3
SH 2	36	464	6.1	6.1
SH 3	107	979	18.1	12.8
SH 4	282	4257	47.7	55.9
SH 5	82	1104	13.8	14.6
SH 6	46	402	7.8	5.3

assemblage is of two main phases: the pottery found in the fill of the enclosure ditch dates to the late Bronze Age/early Iron Age (Phase I); and much of the pottery from the pits or quarries, found both within and around the enclosure, dates to the late Iron Age/early Roman period (Phase II). A small number of Medieval or post-Medieval sherds were recovered from the topsoil. Selected sherds are reproduced in Figures 5 and 6.

There is no evidence of a middle Iron Age phase on the site and many of the sherds listed as uncertain may belong to the earlier period.

METHOD OF ANALYSIS

The pottery was analysed in accordance with recently published guidelines (PCRG 1997). Priority was given to the analysis and quantification of the fabrics and colour/firing conditions of the pottery from the enclosure ditch. The latter was important in assigning the body sherds from features, other than the enclosure ditch, to phase.

LATE BRONZE AGE/EARLY IRON AGE POTTERY

The diagnostic pottery found in the fill of the enclosure ditch appears all to be of a late Bronze Age/early Iron Age type. Most of the pottery is soft (can be lightly scratched with the finger nail) and the majority is moderately weathered. Some residues or sooting survive on a small number of sherds.

FABRICS

Shell is the dominant inclusion in over 99% of the pottery from this phase. There are two small flint-gritted sherds from the enclosure ditch, as well as one coarse sherd tempered with quartz, and one containing fine quartz and iron stone. Some shell-tempered sherds contain limestone or quartz, but iron-stone or grog inclusions are rare. After a preliminary examination of the pottery the following six variations in the quantity and density of the shell were recorded:

SH 1. Rare fine shell
SH 2. Sparse fine shell
SH 3. Sparse medium shell (size generally up to 1mm but some pieces up to 3mm)
SH 4. Moderate medium shell
SH 5. Common coarse shell (greater density; shell up to 3mm)
SH 6. Common very coarse shell (largest pieces over 3mm)

There is no clear division between the fabric types above, but it is clear that most of the finer wares (bowls?) were in Fabrics 1–3 and particularly the latter. This is shown by the higher percentage by weight of sherds in Fabric SH 3. A further shell variation containing common (or abundant) fine to medium particles is mainly confined to the late Iron Age material from this site.

SOURCES

The clay and shell used in the manufacture of the pottery would have been readily available in the locality. Shelly beds occur in the Great Oolite Limestone which outcrops in the neighbourhood and clay occurs along the sides of the Nene Valley to the west.

PROFILE

The percentage of rim or diagnostic body sherds is small and it was possible to reconstruct only one complete profile. This was an open bowl (Fig 5.27) of common form found unstratified in the interior of the enclosure. It is not easy to define jar and bowl forms but most, if not all, of the fine wares probably derive from bowls. There are no sharply carinated sherds in the assemblage but there are two body sherds with a weakly carinated shoulder.

RIM FORMS

The rim sherds came from a minimum of 29 vessels. The most common is of simple form and comes from bipartite vessels with a near upright or inturned upper wall. In addition to the four illustrated examples there are five small, but similar, rims (31% in total). Tall flaring rims occur in the assemblage, as do vessels with a sharp internal angle at the neck. Decoration on the outer rim is common on probable jar forms.

VESSEL SIZE

The majority of the sherds are from relatively thin-walled vessels (under 10mm), but the small number of rims and lack of curvature among the body sherds may suggest that large vessels are common in the assemblage. Many sherds from a vessel (Fig 6.28) with a rim diameter of 510mm were found in the lower fills of the enclosure ditch 100 (slot 103, 195). Only parts of the rim and shoulder profile can be reconstructed but over 70% of the rim was recovered. This may have been a special vessel; the interior was smooth and black and there are traces of residue or sooting both internally and externally. Two other rim sherds came from vessels with rim diameters in excess of 300mm but most were too small to reliably estimate the diameter.

COLOUR AND FIRING CONDITION

The differing colours of the pottery presumably reflects the stacking positions and conditions during firing. A high number of sherds have reduced colours internally and others were reduced at the rim only.

The number and percentage of sherds of Type 2 has distorted the analysis, as 143 sherds came from the wide mouthed vessel described above. Nevertheless, this type is fairly common on other local sites of this period, whereas Type 4 occurs mainly in the latest Iron Age period.

SURFACE FINISH

The fine wares may have been burnished or smoothed originally but the surfaces in general are smooth and not harsh. Where the internal surface has been carefully smoothed the shell is depressed and less obvious.

DECORATION

Body decoration in the form of zoned panels, herringbone patterns and grooved lines with dots, occurs on seven sherds from a minimum of five vessels. Two of these sherds retain traces of white inlay. Four other sherds have single rows of diagonal incisions on the body of the pot but the position of this decoration is not clear. There is one example of a decorated neck cordon. Rim ornamentation is common but is confined to incisions along the outer edge rather than the top.

CONTEXTS

With the exception of a single sherd, all the decorated sherds came from the upper levels of the enclosure ditch. The quantity of pottery, particularly from the lower layers, is small, however, and it is uncertain if the stratigraphical position of the sherds has any chronological significance.

PREVIOUS WORK

A quantity of pottery was recovered from the middle layers of the enclosure ditch during the evaluation of the site (Jackson 1992). A total of eleven rim sherds were found, including four decorated along the outer edge and one from a carinated bowl. There was also one decorated body sherd. The pottery came from a layer of dark loam thought to have been a rubbish deposit.

TYPOLOGICAL AFFINITIES

The pottery from Thrapston compares most closely with the material from Fengate, Peterborough (Hawkes and Fell 1943) which lies some 30km to the north-east. Parallels can also be found amongst the pottery from sites such as Knights Farm, Berkshire (Bradley *et al.* 1980) and Dunstan Park, Thatcham, Berkshire (Morris and Mepham 1995), as well as other sites in southern England. Decorated pottery which is infilled with white inlay occurs in late Bronze Age/early Iron Age sites elsewhere. The only other examples from Northamptonshire are single sherds from Brafield and Cogenhoe, near Northampton (Knight 1984, figs 8, 2 and 6). To the north-east it occurs at both Vicarage Farm, Fengate (Pryor 1974) and other Fenland sites such as Billingborough Fen (Chowne 1978, fig 7, 22) and West Deeping (D Knight pers. comm.). It is more common to the south and has been found on the Chilterns at Chinnor, Oxfordshire (Richardson and Young 1951) and in particular on sites in Wessex and the Thames Valley.

Pottery broadly dating to this period has been found on four

Table 3: Colour variations amongst the pottery from the enclosure ditch (irregularly-fired pieces not included)

Type	Description	No.	%
1	Both the inner and outer face dark grey or black (reduced)	132	22.3
2	Outer face oxidised colours (orange, reds and brown) Inner face reduced	325	56.6
3	Oxidised internally and externally	112	15.9
4	Outer face reduced, inner face oxidised	6	1.0

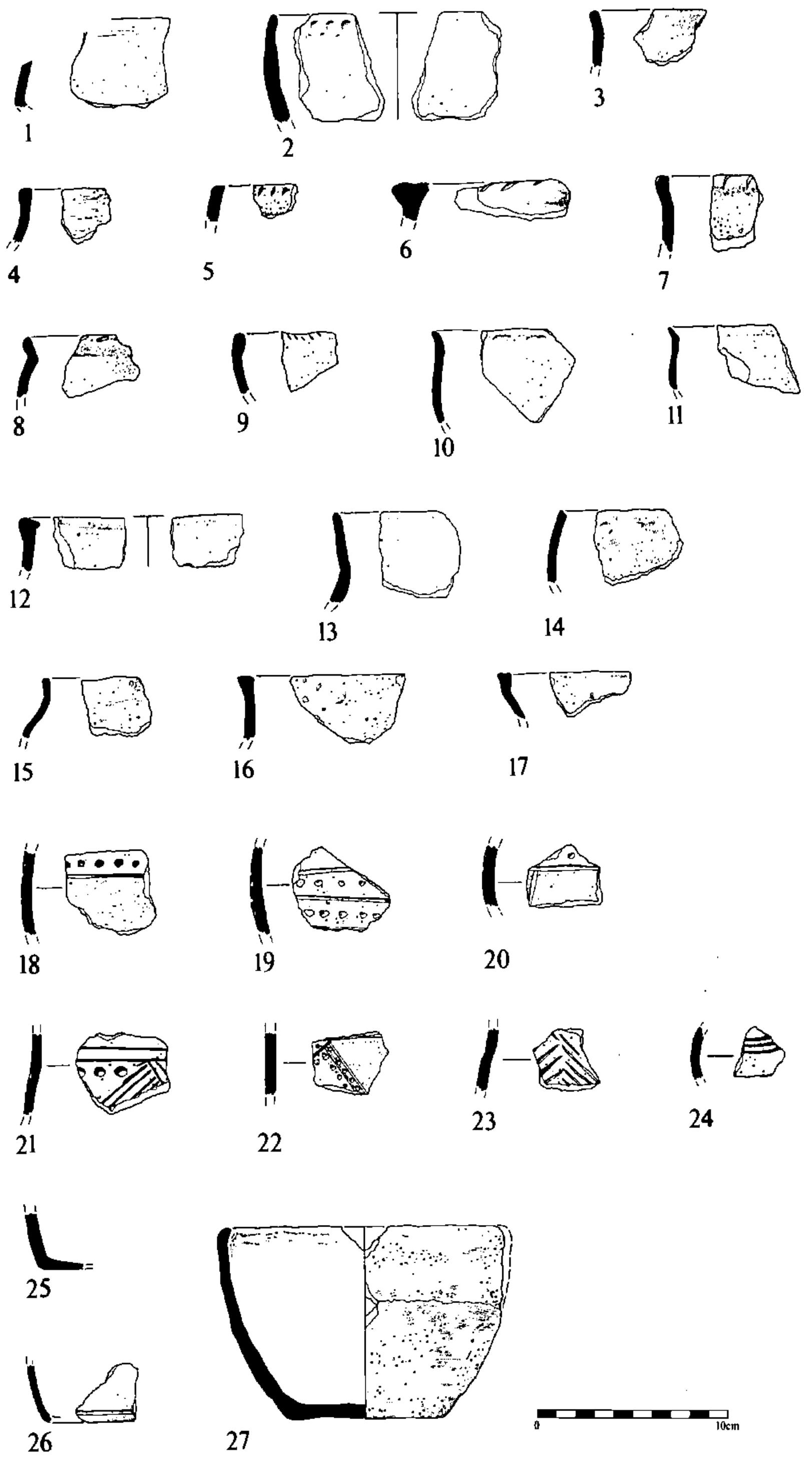

Fig 5 Pottery (see text for details, scale 1:4).

other sites in Northamptonshire, namely from the hillfort at Borough Hill, Daventry (Jackson and Knight 1995), from a pit alignment at Briar Hill, Northampton (Jackson 1974), and from sites at Oakley and Corby in north Northamptonshire (Jackson 1982). There are two radiocarbon dates from Oakley suggesting the site dates to a period between the 8th and 5th centuries bc.

Pottery with oxidised external surfaces and black or dark grey internal surfaces is a feature of the material from the four sites mentioned above. Rim sherds decorated on the outer edge also occur at Borough Hill (op. cit.) and Briar Hill. (op. cit.). There are two vessels from Thrapston worthy of further comment: the large wide-mouthed vessel from the enclosure ditch 100 (slot 103, 195) is unusual in the period but examples are known from Staple Howe, Yorkshire (Brewster 1963, fig 35, 4 and fig 53, 1) and Dunstan Park, Thatcham (Morris and Mepham 1995, fig 39, 15). The other unusual vessel is a very thin-walled bowl which may have been an import. Basically grey in colour it is tempered with fine quartz and ironstone and superficially resembles Roman grey ware. Two rim sherds from the same vessel were found; one in the lower fill of the enclosure ditch and the other unstratified in the interior.

The pottery from Thrapston is likely to predate the large assemblages of early Iron Age pottery found at Gretton, Northamptonshire (Jackson and Knight 1995) and at Brafield (unpublished in Northampton Museum). The site at Gretton is only 19km north-west of Thrapston, but in general the profiles of the pottery from Gretton are more angular and they lack the decoration found on the Thrapston material. There are four radiocarbon dates from Gretton, two centred on the mid 5th century bc and two centred in the early 3rd century bc.

FINAL REMARKS

The pottery from Thrapston is most likely to date somewhere between the 9th and 6th centuries bc, ie the late Bronze Age/early Iron Age. The assemblage is significant both because it is the largest of this period from Northamptonshire and because known sites of this date are uncommon in the region.

LATE IRON AGE/EARLY ROMAN POTTERY

All the late Iron Age/early Roman pottery came from features or layers located within and around the enclosure ditch.

FABRIC AND FORM

The fabrics are typical of the period and include shelly and grog-tempered wares as well as very hard pottery tempered with sparse quartz. The few rim sherds in the assemblage derive from storage and channel rim jars as well as carinated bowls.

COMMENT

Pottery of this type is common on sites in the Middle Nene area and in Northamptonshire in general and dates mostly to the 1st century BC.

ILLUSTRATED POTTERY

5.1 Fabric 3. Colour type 2. Ditch 100, slot 102 (158).
5.2 Fabric 2. Colour type 1. Ditch 100, slot 110 (0.5–0.8m)
5.3 Fabric 3. Colour type 1. Ditch 100, slot 108 (188).
5.4 Fabric 3. Colour type 3. Ditch 100, slot 103 (197).
5.5 Fabric 3. Colour type 3. Ditch 100, slot 107.
5.6 Jar? Fabric 4. Colour type 4. Ditch 100, slot 103 (194).
5.7 Fabric 4. Colour type 1. Pit 3 (266).
5.8 Fabric 3. Colour type 1. Ditch 100, slot 104 (1052).
5.9 Fabric 2. Colour type 1. Machined surface.
5.10 Bowl. Fabric 2. Colour type 1. Pit 3 (266).
5.11 Bowl. Quartz and ironstone inclusions. Grey/buff. Ditch 100, slot 102 (164).
5.12 Fabric 3. Colour type 3. Ditch 100, slot 103 (196).
5.13 Fabric 1. Colour type 3 Ditch 100, slot 110.
5.14 Fabric 4. Colour type 1. Ditch 100, slot 104 (1052).
5.15 Fabric 3. Colour type 1. Ditch 100, slot 104 (1052).
5.16 Fabric 4. Colour type 3. Machined surface.
5.17 Dish. Fabric 4. Colour type 4. Ditch 100, slot 104 (1050).
5.18 Body sherd decorated with grooved lines and dots. Fabric 2. Colour type 2. Ditch 100, slot 102 (158).
5.19 Body sherd decorated with grooved lines and dots. White inlay surviving in dots. Fabric 3. Colour type 1. Ditch 100, slot 102 (158).
5.20 Body sherd decorated with grooved lines and dots. Fabric 3. Colour type 1. Ditch 100, slot 102 (158).
5.21 Body sherd decorated with grooved lines and dots. Fabric 3. Colour type 4. Ditch 100, slot 109.
5.22 Body sherd decorated with narrow grooved lines and small dots retaining white inlay. Fabric 3. Colour type 1. Ditch 100, slot 102 (158).
5.23 Body sherd decorated with shallow grooves forming a herringbone pattern. Fabric 3. Colour type 2. Ditch 100, slot 109.
5.24 Body sherd decorated with three grooved lines. Colour type 4. Ditch 100, slot 103 (193).
5.25 Base sherd with shell, ironstone and quartz inclusions. Colour type 4. Ditch 100, slot 110.
5.26 Body sherd with grooved line just above the base. Fabric 2 Colour type 1. Ditch 100, slot 103 (194).
5.27 Bowl. Fabric 5. Colour variable. Machined surface, site grid 130E/50N.
6.28 Large vessel. 70% of rim recovered. Fabric 4. Colour type 2. Ditch 100, slot 103 (195).

ANIMAL BONE
by Sheila Hamilton-Dyer

The bulk of the bone comes from sections of the enclosure ditch, dated to the late Bronze Age. A number of smaller features, mainly pits and working hollows, were also excavated and bone was recovered from several.

METHODOLOGY

The bones were identified using the reference collections of the author. Details of each bone, or group of fragments, were computer recorded for analysis and archive. Recently broken fragments were joined and recorded as single bones where possible. Bones not attributable to taxa have been divided into horse/cattle/red deer size (coded LAR) and sheep/pig size (SAR). Some fragments could not be assigned even to this level and have been recorded as mammal only (MAM). Measurements

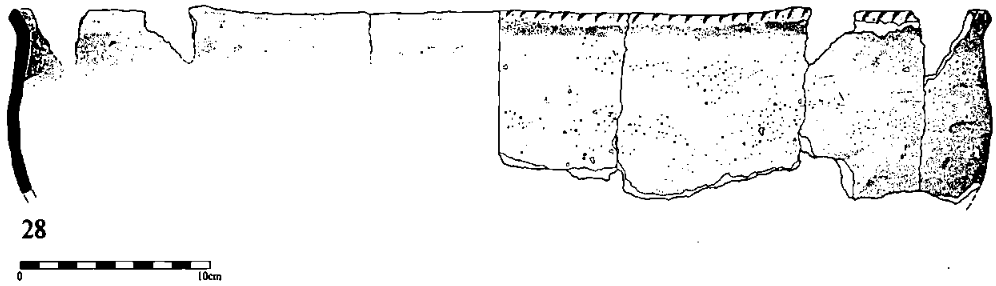

Fig 6 Pottery (see text for details, scale 1:4).

follow von den Driesch (1976) and are in millimetres unless otherwise stated. Withers height estimations of the domestic ungulates are based on factors recommended by von den Driesch and Boessneck (1974).

RESULTS

A total of 613 bones was available for analysis. The majority, 497 bones, are from the enclosure ditch, 100. All other contexts together, including unstratified and post-Medieval, contributed just 116 bones from 40 contexts. The condition of the bones is variable but is generally good. Gnawing and charring was occasionally observed throughout and a group of bones from slot 102 was calcined. In total nine animal taxa are present, together with a single human tooth. The identified taxa are horse, cattle, sheep, goat, pig, red deer, dog, rabbit, and field vole. The majority of the identified bones are of cattle. Sheep and pig are in equal second place, horse and deer are less frequent and other species are rare.

All of the measured bones are from the enclosure ditch and, given the very small samples from the variety of other contexts, the remainder of this report details the findings from this feature. At a general level, bone from the other contexts is comparable with material from elsewhere but is not helpful in the interpretation of period or economy at this site.

Enclosure ditch 100

The overall species representation is as indicated above; cattle bones number 103, with a further 53 bones of pig and 50 of sheep/goat. Horse numbers 17 bones, eleven of these from slot 112. There are also ten antlers and other remains of red deer, four bones each of dog and rabbit, a vole bone, and a human tooth. Three of the sheep/goat bones are definitely of goat while five are of sheep; the remainder are indeterminate (Boessneck 1969; Payne 1985). Fragments which could not be identified to species are in the expected proportions of the identified bones of these size classes, with an additional 66 fragments which could not be divided. Several bones exhibited recent breaks and it is likely that some of the smaller unidentified pieces are from other bones, but which could not be joined to any of these. Some of the other unidentified bones are of ribs and vertebrae. Although some could be identified to species, these have all been grouped together to avoid the identification bias produced by size and preservation differences. In addition to the dog bones, 44 of the other bones had been gnawed, indicating that some of the remains had been exposed long enough for dogs to gnaw before being finally disposed of and buried in the ditch.

The rabbit bones, three in slot 101 (150) and another in slot 108 (188), must be intrusive, as this species was not introduced until the late 11th century AD. As the animal burrows, it is possible that some of the deposits in the contexts have suffered disturbance and mixing. There are, however, no other unusual bones in the collection and disturbance of the bone assemblage is probably minimal.

Butchery marks are present on some bones. These are largely made by knives on cattle and some pig bones. One cattle phalanx shows evidence of skinning and a pig jaw had been axially split with an axe or cleaver.

Measurements were few but typical of Prehistoric material. In slot 112 (197) a complete cattle femur was broken during recovery but was reconstructable and gives an estimated withers height of 1.11m. Also in this fill were several horse bones from more than one animal. Two complete metatarsi give estimated withers heights of 1.247m and 1.023m. Both are within the range of the small pony-sized horses of the Prehistoric period.

Measurements of cattle distal humerus give trochlear widths of 55.1mm, 59.7mm, 64.7mm, and 65.0mm. Other measurements are available in the archive. In addition to the more general information obtained from the assemblage there are some specific items of interest. In slot 101 a pair of antlers had been placed across each other in ditch fill 150/152 (other fragments proved to be of cow and are probably not related to this special deposit). The antlers have a three-tine crown and had been naturally shed from a twelve-point stag over five years old and have a burr circumference of 210mm. A definite antler pick was recovered from slot 103, fill 197. This was considerably battered round the burr from use, and the bez and trez tines had been removed to make a brow-tine pick. Heat damage and colouration indicates the probable method of weakening the tines. Similar tools are described and illustrated by Serjeantson and Gardiner (1995) for finds from Stonehenge, and Clutton-Brock (1984) for material from Grimes Graves and Durrington Walls. Another, single, shed antler was found in slot 103 (194) but there was no indication of deliberate placement or of usage. In fill 193 of the same slot a human tooth was recovered. As this is quite decayed on the oral surface it may have been shed or extracted rather than representing a burial.

Fill 165 of slot 102 contained many small fragments of calcined bone, at first sight resembling material from a cremation. Many fragments were too small and damaged for identification. Analysis revealed that most of the others were from pig foot ends and skull fragments. Unburnt bones in this context are mainly of cattle. Head and foot bones are usually thought of as waste but in the case of pig all parts of the animal can be readily used for food and, therefore, these need not represent disposal of waste. A possible alternative explanation is that these were remnants of a roast, left in, or fallen into, the embers. They could represent a ritual or a secular meal (see Organic Residue Analysis below).

DISCUSSION

It is worth noting the differences that can occur in small assemblages from deposits only a few metres apart; slots 102, 112 and 103 are contiguous yet contain differing proportions of the main species represented. This is particularly marked in fill 197, which contained mainly horse in slot 112 but cattle in slot 103. In the larger overall sample these inconsistencies are smoothed out, giving a more representative picture.

Many factors influence the composition of animal bone assemblages. It is difficult to distinguish between temporal, feature type and landscape influences in a small sample. Ditches frequently have large bones of large animals rather than the smaller bones of sheep and pig associated with domestic pits (Maltby 1985). Iron Age samples are usually high in sheep, while Bronze Age ones are often dominated by cattle. The local environment can also have a bearing, the downland of southern England is eminently suited to sheep and these dominate the major Iron Age assemblages, but lowland pasture and woodland is better suited to cattle and pig husbandry.

In this sample cattle is dominant, as expected, but the level of pig is comparatively high, equal with sheep. The amount of pig is notable, particularly as this is a ditch where the level might be expected to be low. While pig is frequently high in Neolithic deposits, often associated with ritual feasting, the amount is usually much reduced during the Bronze Age, with a corresponding increase in sheep. Pig is also unusually high at Runnymede Bridge where it is suggested that a combination of suitable environment and high status is the probable reason (Serjeantson 1996).

Although every effort was made to maximise the sample within the constraints of the investigation, this assemblage is still small in comparison with those for which substantial bone reports have been published. Interpretation must be cautious and limited but, as no other bone reports appear to have been published from similar sites in the area, it is a valid study for future reference.

BONE PIN
by Graham Hull

A bone pin was recovered from the middle fills of the enclosure ditch (slot 104, 1052) and is consequently very likely to be of late Bronze Age date. The object is smooth and tapers to a point at both ends (Fig. 7.1). It is 35mm long and has a diameter of 3.5mm at its thickest point. No examples with typological affinities have been found in the literature.

CHARRED PLANT REMAINS
by John Letts

Fifty-two flotation samples from the excavation were submitted for analysis. All of the samples were floated at the post-excavation stage and then re-floated in the laboratory over a 0.4mm sieve prior to analysis.

Nine of the samples contained neither wood charcoal nor charred seeds. Samples from ditch 100, slots 102-105 are all rich in charcoal and the remaining samples contained only residual amounts. Little of this charcoal is made up of fragments large enough to be easily identified. Samples from ditch 100, slots 101, 102 and 106, pits 43, 47, 48, 50 and 51 contained charred fragments or grains of cereal, but none of these specimens are preserved well enough to be identified even to genera. All of the charcoal-rich samples are derived from the late Bronze Age/early Iron Age enclosure ditch, but the few fragments and grains of cereal recovered were derived from the ditch as well as pits from other parts of the site. In summary, the samples contain almost nothing of archaeobotanical value and the simple presence of charred cereal is not surprising.

STRUCK FLINT
by Steve Ford

The small collection of 88 struck flints recovered during the course of the excavation is summarised below:

Type	Number
Flakes	49
Blades/narrow flakes	8
Cores	3
Narrow flake core	1
Core fragments	7
Spalls	15
Scrapers	3
Oblique arrowhead	1
Knife	1

The collection comprises material of at least two periods: Mesolithic or earlier Neolithic; and later Neolithic/early Bronze Age. The majority of the finds are in a fresh condition and usually made from a fine black flint from a cobble/pebble source, but also include pieces made of a more cherty material in greeny/brown or cream. A number of the pieces are patinated (blue or white) and some of the latter are rolled. In particular all three scrapers have a blue patina and are rolled. Some pieces are also burnt.

The collection includes a small number of blades and narrow flakes, which are of Mesolithic or possibly earlier Neolithic date, but no highly diagnostic pieces such as microliths were found. The later Neolithic/early Bronze Age is represented by an invasively flaked knife (Fig. 7.2) and an oblique arrowhead (Fig. 7.3). It is not clear how much of the remaining flintwork belongs to these two periods but there is no reason why the majority could not be contemporary with the main late Bronze Age/early Iron Age phase of the site (Ford *et al.* 1984). Nevertheless, the numbers of struck flints retrieved, in comparison to the quantity of pottery and faunal remains, is very low and, at best, flint usage and discard at the time of the digging of the enclosure was minimal.

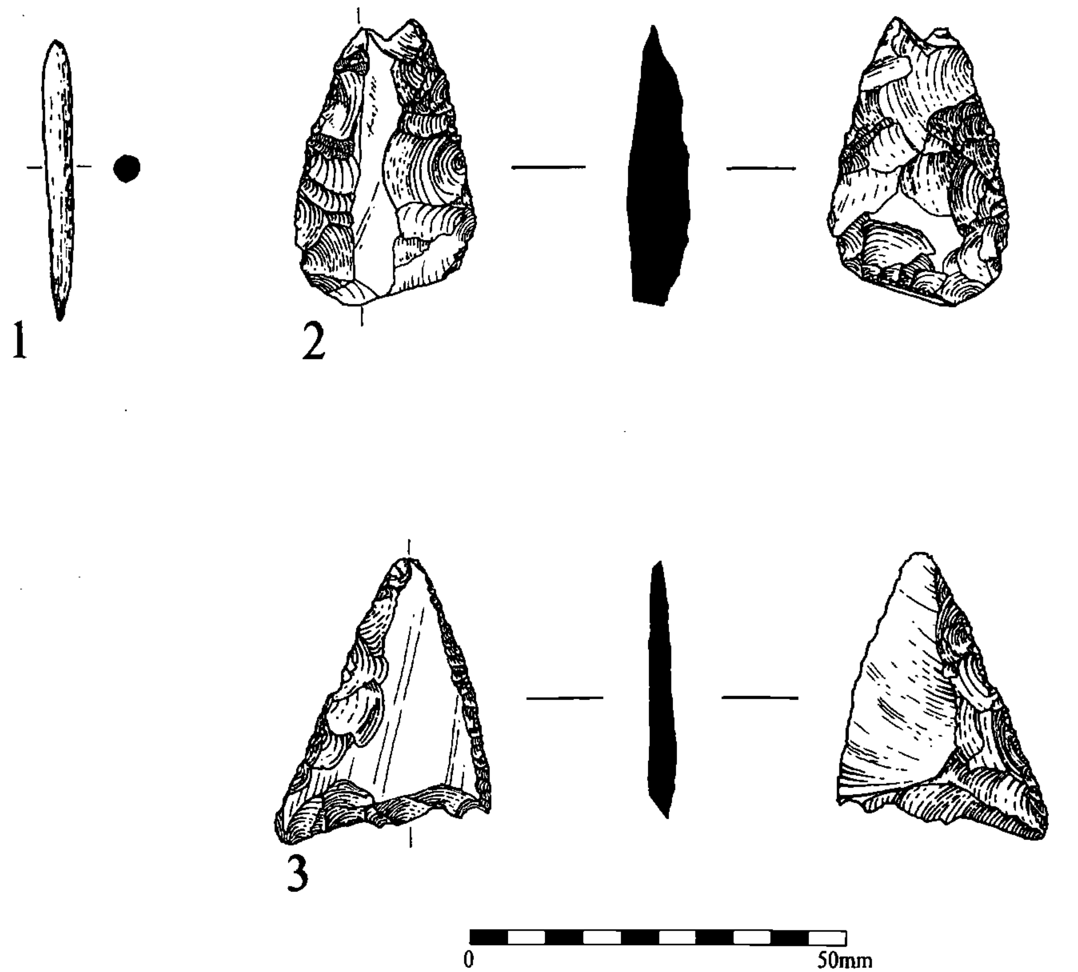

Fig 7 1) Bone pin from enclosure ditch 100 (slot 104, 1052) 2) invasively flaked knife (unstratified) 3) oblique arrowhead (239 (296)) (scale 1:1).

RADIOCARBON DATING
by Janet Ambers

Two animal bone samples with intact collagen were found to be suitable for radiocarbon dating. A pig lower mandible from the primary fill of the enclosure ditch (slot 102, 165) and one of a pair of red deer antlers placed approximately mid-way within the backfilled enclosure ditch (slot 101, 150/152) were submitted to the British Museum Department of Scientific Research. The results are quoted in the form recommended by Stuiver and Polach (1977) in uncalibrated years BP (before 1950) and corrected for measured isotopic variation, where possible errors quoted are the counting error for the sample combined with an estimate of the errors contributed by the modern and background samples. The estimate includes both counting and non-counting errors, the latter being computed from differences in the overall count-rates observed among the individual backgrounds and moderns.

The calibrated results were calculated using the curve of Pearson and Stuiver (1986) and the OxCal v2.18 calibration program. The result for the sample from the primary ditch fill (BM-3113) is virtually clear of the Iron Age calibration plateau, with a 68% confidence of the true figure being between 840 and 785 cal BC, and a 95% confidence that it is between 910 and 760 cal BC. The result from the sample from mid-way up the ditch (BM-3129) sits firmly in the Iron Age calibration plateau.

However, as sample BM–3113 stratigraphically predates sample BM–3129 the OxCal program can be used to constrain the calibration. The date ranges for BM–3129 at 68% confidence are 810–750, 680–660 or 630–600 cal BC and at 95% confidence are 810–750 or 700–540 cal BC.

BM–3113 pig mandible, slot 102, 165, $\delta^{13}C$ = -21.5‰. 2630 ± 50

BM–3129 red deer antler, slot 101, 150/152, $\delta^{13}C$ = -20.7‰. 2540 ± 35

ORGANIC RESIDUE ANALYSIS
by Stephanie Dudd, Robert Berstan and Richard Evershed

INTRODUCTION

Fats and waxes entrapped as absorbed or carbonised residues associated with ceramic vessels during the processing of natural materials in antiquity are surprisingly well protected from chemical decay and microbial attack (Heron and Evershed 1993) and can be retrieved and identified even after several thousands of years of burial. The application of modern analytical techniques enable even highly degraded remnants of natural commodities to be characterised and identified (Evershed *et al.* 1990, 1994, 1997). Often, data obtained from organic residue analysis provides the only evidence for the exploitation and processing of animal commodities or leafy vegetables, particularly at sites exhibiting a paucity of environmental evidence. To date the use of chemical analyses in the reconstruction of vessel use at various sites in the UK has enabled the identification of animal fats (Evershed *et al.* 1992; Needham and Evans 1987), beeswax (Charters *et al.* 1995; Needham and Evans 1987), birch bark tar (Charters *et al.* 1993a) and the epicuticular waxes of leafy vegetables (Charters *et al.* 1997; Evershed *et al.* 1991, 1992, 1994).

The identification of ancient commodities based on lipid residues in pottery is inevitably complicated by the degradative processes occurring during vessel use and burial. However, reliable identifications can be made based on the structures of individual components and comparison of lipid profiles with modern reference samples and degraded materials produced in laboratory simulation experiments (Evershed *et al.* 1995a; Dudd *et al.* 1998). Degraded animal fats are by far the most commonly identified residues found in association with pottery vessels, and are characterised by a readily recognisable distribution of free fatty acids, monoacylglycerols, diacylglycerols and intact triacylglycerols. However, identification of the particular type of animal from which the fat is derived is much less straightforward and complicated to some extent by chemical and microbiological alteration (Evershed *et al.* 1992; Dudd *et al.* 1998). To date, distinctions have been made based primarily upon the distributions of free fatty acids present (Needham and Evans 1987; Rottländer 1990), however, new approaches are required in order to make unambiguous distinctions between remnant fats derived from different animal species.

For example, the use of stable isotopes in archaeology was first explored by Morton and Schwarcz (1988) who investigated the bulk $\delta^{13}C$ and $\delta^{15}N$ values of organic residues thought to originate from the C_4 cereal Maize. Hastorf and DeNiro (1985) and Sherriff *et al.* (1995) also used stable isotope measurements to characterise prehistoric carbonised plant and animal remains, respectively. However, the first application of compound- specific stable carbon isotope measurements to archaeological samples was reported by Evershed *et al.* (1994). The $\delta^{13}C$ values obtained for individual components in solvent extracts of pottery vessels from the Raunds area project, Northamptonshire, confirmed the lipids being investigated were from C_3 origin. The distributions of components were consistent with the lipids in the potsherds having derived from *Brassica* species, such as cabbage. We have recently developed this approach further, and by utilising fundamental differences in the stable carbon isotope composition of the fatty acid component of the adipose fat in the major domesticates, have been able to make clear distinctions between remnant fats of different origins in archaeological ceramics (Evershed *et al.* 1997; Dudd and Evershed 1998; Mottram *et al.* in press). These differences in stable isotope values were paralleled by differences in fatty acid composition, although the former were deemed to be diagenetically more robust.

AIMS AND OBJECTIVES

The initial objective of this investigation is to screen the sherds to determine the presence (or absence) of organic residues. Where residues are detected, further analyses comprising a combination of criteria will be considered in the determination of origin, including the characterisation of solvent extractable lipid components by high temperature gas chromatography (HTGC) and GC-mass spectrometry (GC-MS). Where applicable extracts will be submitted to compound-specific stable carbon isotope analysis to measure $\delta^{13}C$ values of the major *n*-alkanoic acids.

ANALYTICAL METHODS

Lipid analyses were performed using our established protocols which are described in detail in earlier publications (Evershed *et al.* 1990; Charters *et al.* 1993b). Briefly, analyses proceeded as follows:

Solvent extraction of lipid residues
Lipid analyses of potsherds have been performed using our established protocol, whereby approximately 2gm samples were taken and their surfaces cleaned using a modelling drill to remove any exogenous lipids (eg soil or finger lipids due to handling). The samples were then ground to a fine powder, accurately weighed and a known amount (20μg) of internal standard (*n*-tetratriacontane) added. The lipids were extracted with a mixture of chloroform and methanol (2:1 v/v). Following separation from the ground potsherd the solvent was evaporated under a gentle stream of nitrogen to obtain the total lipid extract (TLE). Portions (generally one fifth aliquots) of the extracts were then trimethylsilylated and submitted directly to analysis by gas chromatography (GC). Where necessary combined gas chromatography/mass spectrometry (GC/MS) analyses were also performed on trimethylsilylated aliquots of the lipid extracts to enable the elucidation of structures of components not identifiable on the basis of GC retention time alone.

Preparation of methyl ester derivatives (FAME)
FAME were prepared by reaction with BF_3-methanol (14% w/v; 2 ml; B-1252; Sigma-Aldrich, Gillingham, UK) at 70°C for 1 hour. The methyl ester derivatives were extracted with diethyl ether and the solvent removed under nitrogen. FAME were re-dissolved into hexane for analysis by GC and gas chromatography-combustion-isotope ratio mass spectrometry (GC-C-IRMS).

SAMPLES

Three samples were submitted for organic residue analysis from the excavation at Huntingdon Road, Thrapston. The sherds included one rim and two body sherds from the same vessel; a wide-mouthed receptacle with a carbonised surface residue. There were traces of residue or sooting both internally or externally. The near-complete vessel was recovered from ditch 100, slot 103 (195) and is believed to have been purposefully broken when placed in the ditch. The remains of a pig roast were also deposited nearby, in the ditch. A single radiocarbon date for the pig jaw dated its time of death between 920 and 760 BC, corresponding to the late Bronze Age. The sherds were labelled Thrap 1, 2 and 3, corresponding to body, rim and body sherds, respectively.

RESULTS

GC analyses were performed on the solvent extracts of a sub-sample of each potsherd. The lipid content per gram of powdered sherd was very low ($<40\mu g\ g^{-1}$) in all three samples analysed (Table 4), since potsherds of similar age from other sites in the UK have yielded residues in several hundreds of micrograms. There is evidence to show that the vessel originally contained animal fats, although the remains are highly degraded. The majority of the remaining lipid is present as free fatty acids which comprise abundant $C_{16:0}$ and $C_{18:0}$ components, commonly seen in animal fats. There are also minor amounts of unsaturated C_{18} fatty acids present. Thrap 2 is somewhat better preserved than 1 and 3, with trace amounts of free fatty acids, mono-, di- and triacylglycerols present. These components are characteristic of degraded animal fats, since the free fatty aids, mono- and diacylglycerols result from hydrolysis of the intact triacylglycerols which are present in fresh animal fats. The ratio of $C_{16:0}$ and $C_{18:0}$ fatty acids is similar in both residues, however, due to the highly degraded nature of the residues it is not advisable to rely on this ratio as a criteria for identifying the origin of the animal fat.

The remnant fats from Thrapston 2 and 3 were prepared as FAME and stable carbon isotope ratios were obtained for the two major fatty acid components present. Figure 8 shows a plot of the $\delta^{13}C$ values obtained for the two Thrapston extracts compared with data obtained for a range of modern reference fats. The data obtained for the modern samples has been corrected for the effect of the burning of fossil fuels on $\delta^{13}C$ values of atmospheric CO_2 since the Industrial Revolution. The plot shows that the remnant fats from the Thrapston vessel plot closely together corresponding to the theoretical mixing lines between the reference ruminant and non-ruminant adipose fats. Although the data could indicate that the vessel has been used in the processing of a mixture of fats from different sources, another possibility is that the vessel contains non-ruminant (eg porcine) fats from animals which have had a predominantly herbivorous diet or whey as a by-product of dairying, or a mixture of the two (Jarrige 1980). Such a mixed diet would have the effect of altering the isotopic composition of the animals depot fats.

CONCLUSIONS

Due to the extremely poor preservation of the remnant fats in this vessel, much of the diagnostic distributional information has been lost and the chemical information we have been able to retrieve is fragmentary. However, the residues present appear to derive from an animal fat origin and are similar in character in both sherds 2 and 3. The isotopic data indicates that the residues do not derive from dairy residues. However, whether they derive from ruminant or non-ruminant adipose, or a mixture of the two, is unclear.

CONCLUDING DISCUSSION

Two main phases of activity were identified on the site, late Bronze Age and late Iron Age. There was no evidence of middle Iron Age occupation although a single linear feature, probably a gully, predated the enclosure ditch. Roman artefactual evidence was minimal and the Saxon period was not represented. Medieval activity appeared to be confined to ridge and furrow that overlay the Iron Age deposits. Modern activity was represented by quarrying and an animal burial pit to the north and west of the enclosure ditch.

LATE BRONZE AGE

An eastern England Prehistoric, regional monument group recognised by Champion (1980), Bradley (1984), Adkins and Needham (1985), and reiterated by Cunliffe (1995), is characterised by circular, ditched enclosures, some of which have two concentric ditches. They are further characterised as appearing strongly defended and having a diameter of between 50m and 100m. The ditch at Thrapston is likely to be between 110m and 120m in diameter, and the depth of the ditch, at about 1.8m, is consist-

Table 4: Lipid content in Thrapston sherds

Sample		Lipid content ($\mu g\ g^{-1}$)	Description of lipid content
THRAP 1	HRT 97/51 ditch 100, slot 103 (197 1/3)	trace	-
THRAP 2	HRT 97/51 ditch 100, slot 103 (197 2/3)	29	Degraded animal fat
THRAP 3	HRT 97/51 ditch 100, slot 103 (197 3/3)	38	Free fatty acids alone

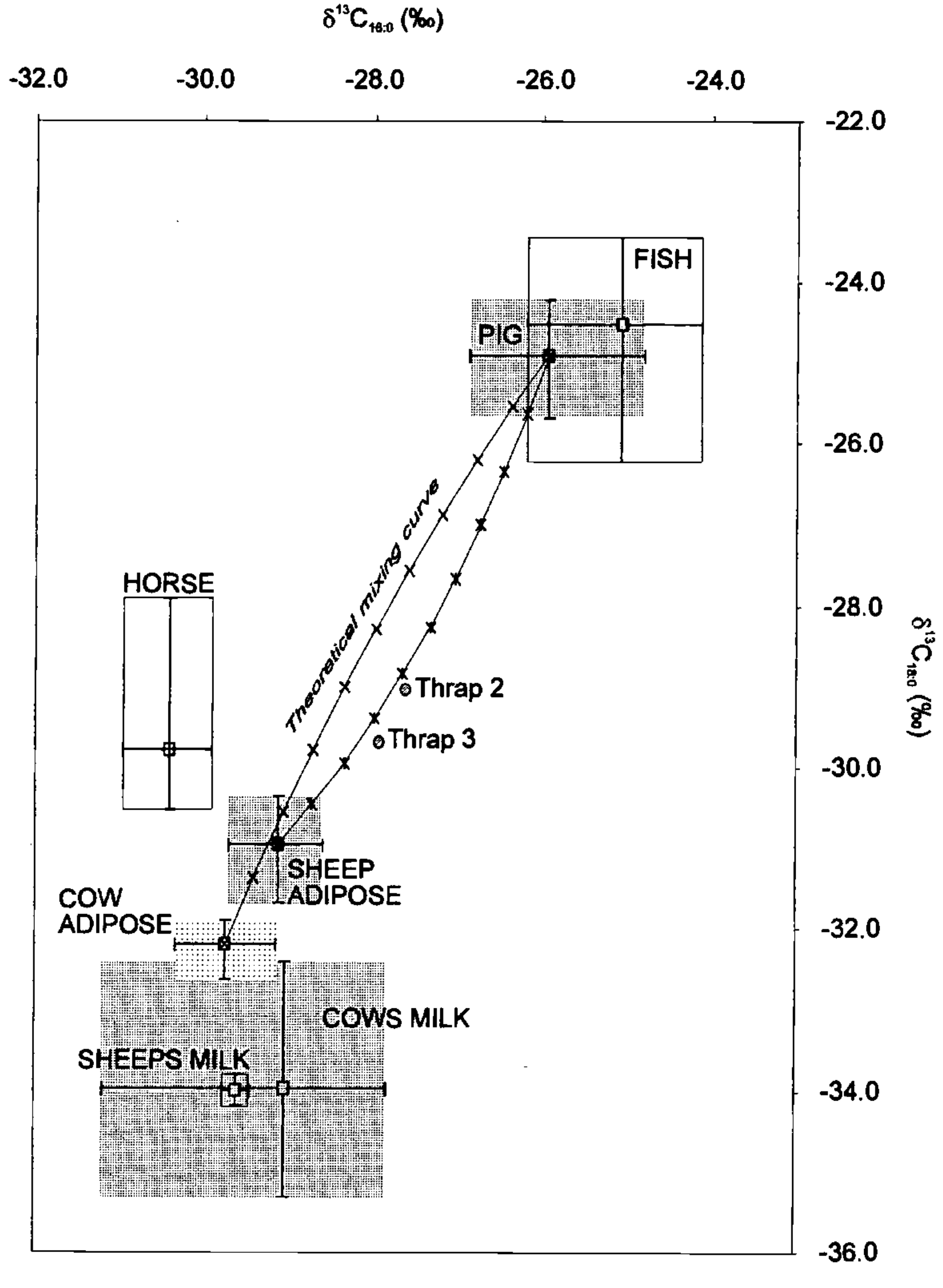

Fig 8 Plot of the $\delta^{13}C$ values of the fatty acid methyl esters prepared from lipid extracts from the Thrapston extracts (circles). The mixing curves have been calculated (Woodbury *et al.* 1995) to illustrate the $\delta^{13}C$ values which would result from the mixing of ovine and porcine (∗) and bovine and porcine (x) fats in the vessels. The rectangular fields encompass the ranges for reference animal fats with the ranges crossing at the arithmetic mean.

ent with other sites of the period and region. The relatively small size of the enclosures in comparison to the hillforts of Wessex has led Bradley (1984) to dismiss the practical defensive capability of the mini-hillfort. The enclosure ditch and bank may, therefore, be not only a physical but also a symbolic barrier in the landscape. The most fully excavated of these sites show the presence of a single, central round house of at least 12m in diameter. The aerial photographs of the Thrapston enclosure hint at the presence of internal features. The monument at Thrapston lies between the southern sites of Queen Mary's Hospital, Carshalton, Surrey (Adkins and Needham 1985; Bruce and Giorgi 1994; Jackson *et al.* 1997), the North and South Rings, Mucking, Essex (Jones and Bond 1980; Bond 1988), the sites at Springfield Lyons, Essex (Brown 1996), West Harling, Norfolk (Clark and Fell 1953), Highstead and Mill Hill, Deal, Kent (Champion 1980), the re-dated Rams Hill (Bradley and Ellison 1975, Needham and Ambers 1994) and the sole northern site at Thwing, East Yorkshire (Manby 1980). These monuments have been interpreted as either 'mini-hillforts' (Adkins and Needham 1985) or as aristocratic residences (Cunliffe 1995); Bradley prefers the term 'ringwork' (pers. comm). The enclosure at Thrapston appears to belong to this regional tradition of circular defended enclosures of the late Bronze Age. The calibrated radiocarbon dates from the above sites fall broadly within the band of 1100–800 BC. The two calibrated radiocarbon dates from Thrapston have been dated to between 910 and 760 BC and 810–750 or 700–540 BC at a probability level of 95% (BM–3113 and BM–3129). The later figure may well be the result of the vagaries of the calibration curve and a reasonable interpretation of the radiocarbon dating from Thrapston, based on pottery and monument typology, is that the ditch was dug and then became partially filled between the early 10th and mid 8th centuries BC. Hill (1995) has noted that similar ringworks in Cambridgeshire and Norfolk appear to be middle Iron Age in date and others, such as Wandlebury, may be early Iron Age. There appears to be a continuity of circular monuments in eastern England throughout the 1st millennium BC.

An unusually large vessel with traces of carbonised food residues was discovered within an excavated segment of the ditch (Figs 2 and 6.28). It appears to have been deliberately broken and may form a structured deposit at a gang junction together with burnt and unburnt animal bone deposited nearby. The cremated animal bone includes that of pig, interpreted as possibly the remnants of a roast. Analysis of the residue adhering to the pot indicates that a non-ruminant, probably pig, was cooked in this vessel. This may be compared to the pig bone at Runnymede Bridge which is suggested to be indicative of high-status food consumption (Serjeantson 1996). The nature and location of these deposits at Thrapston have important parallels with the sites at Thwing (Manby 1980) and at Rams Hill (Bradley and Ellison 1975), where animal burials at breaks in the enclosure were observed. Bradley (1984) sees the deposition of cattle and pig bones at the terminals of the inner ditch at Thwing as evidence for the special role of feasting at such sites.

Other special deposits at Thrapston were a pair of naturally shed, red deer antlers, which had been placed across each other within the partially backfilled enclosure ditch. An antler pick was found at the base of the ditch. A single human tooth was also recovered from the enclosure ditch. In contrast to the sites at Mucking, Highstead, Carshalton and Deal, which appear to have been engaged in metal production (Bradley 1984), there is no evidence of metalworking at Thrapston. This may be a consequence of the current partial excavation of the enclosure or it may have a more significant explanation but this cannot be established without examining the remainder of the site.

Evidence that the excavation of the ditch was conducted in stages, possibly by separate work gangs, is typical of many Prehistoric monuments and it is noteworthy that the location of a gang break in the ditch was marked with what seems to be a deliberate destruction/consumption ceremony. It is also of interest that the Mean Sherd Weights (MSW) of late Bronze Age pottery in the enclosure ditch is 12.89gms whereas for the pits at Thrapston it is 7.57gms. This may indicate a different depositional practice between these two feature types. Needham (1993) has shown that foundation or event marking deposits seem to be a recurrent event at late Bronze Age sites, both enclosed, as discussed above, and unenclosed such as Runnymede. Recent excavations near the Carshalton ringwork found placed deposits from the late Bronze Age including a deer skull with antlers and cremated animal bones (Procter 1999). A middle Bronze Age field ditch at Isleworth, similarly has evidence of placed pottery deposits at the terminus of a ditch (Hull 1999)

The relative rarity of late Bronze Age ringworks and the evidence of placed deposits may indicate that the Thrapston enclosure could have been associated with a local elite and/or have had a ritual function. Needham (1993) suggests that ringworks from this monument type may have served as compounds for important persons or families. Future archaeological investigation of the remainder of the monument, particularly of the central area, should provide a better understanding of the function of this earthwork and aid in interpretting the social and economic significance of ringworks both locally and regionally.

LATE IRON AGE

Late Iron Age activity on the site was represented by a number of poorly defined, shallow and irregular pits and some roughly bowl-shaped pits, that in general, respected the enclosure ditch and the area of the likely bank. The group of late Iron Age pits just inside the enclosure at the western side suggested that here, at least, the bank had been entirely destroyed by that time. It would seem from this evidence that the ditch and bank were still earthworks by the 1st century BC. Late Iron Age pottery was recovered from some of the highest ditch fills in some of the evaluation trenches (Jackson 1996).

The term 'working hollows' has been applied to shallow, amorphous, features of principally late Iron Age date, some of which were found at Thrapston. Bradley (1978) suggests that they may have been used as threshing floors, that they may be borrow pits for material used in cob construction, or that they may be connected with marling. Little evidence for crop processing from charred plant remains was recovered at Thrapston.

Imported Gallo-Belgic pottery was recovered from the excavation and this, combined with the evidence provided by coins found in the field to the south, may suggest that some activity was occurring near the site in the Roman period, although no structural evidence was identified.

MEDIEVAL AND LATER

Medieval ridge and furrow, running north to south, was visible as earthworks at the time of the excavation. The headland crossed the site parallel to the southern hedge line of the excavated area and to the north of the site. A few unstratified sherds of Medieval pottery were recovered from the machined topsoil and subsoil of the site.

Post-Medieval activity seems to have been confined to agriculture and quarrying. This quarrying occurred mainly to the north of the enclosure ditch and was for the extraction of the local limestone type cornbrash which is used as a building material in Thrapston. This quarrying, on the basis of the glass refuse, occurred in the late 19th/early 20th centuries. A large rectilinear feature to the north-west of the site was not excavated as local information suggested that this was a burial pit for diseased animals dug by machine in the later part of this century.

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