

A Romano-British site at Meppershall: investigations, 2001/2002

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SUMMARY

Following an initial evaluation, excavation of a site off High Street, Meppershall was undertaken in late 2001 and early 2002, prior to housing development. Investigations revealed mainly agricultural features of Roman date, including ditches, pits and postholes, and part of an enclosure ditch. Several small inter-cutting pits surrounded a spring in the centre of the excavation area. Samples taken from these pits revealed that the manufacture of bone plates or plaques was taking place on the site. Evidence for iron smithing was also identified. Although no buildings or other structural evidence were found during the excavation, from the number of features and quantity of pottery present it is likely that a farmstead lies in the immediate vicinity, probably on rising ground to the east of the site.

INTRODUCTION

In response to proposals for housing development, Archaeological Services & Consultancy (ASC) carried out an archaeological evaluation in October 2001 on the site of a derelict nursery on the south side of Meppershall High Street (Fig. 1). This revealed a concentration of Roman features in the central part of the site (King 2001). Based on the results of the evaluation, an area of c. 0.6 hectares was identified for excavation. This work was carried out by ASC between December 2001 and February 2002.

GEOLOGY AND TOPOGRAPHY

Meppershall is situated on a low-lying ridge in central Bedfordshire about 3km south-west of Shefford, between the rivers Hiz and Ivel. The village is a ribbon development extending for roughly 1.25km along the High Street. The land rises gradually from c. 70m OD at the north end of the village to c. 85m OD by the church, the highest part of the village. The site is located on the south side of the High Street. In its approximate centre a spring rises, surrounded by boggy ground. Immediately west of the excavation area, a small stream flows almost northward from the spring. The geology of the area is a mixture of Gault clay, boulder clay and decalcified boulder clay, with

chalk marl to the south. Surface deposits have been identified as belonging to the Evesham 3 Association (Soil Survey 1983, 411c). While most of the soils on the site are clayey, an area of sand was located towards the southern boundary.

ARCHAEOLOGICAL & HISTORICAL BACKGROUND

Little is known of prehistoric and Roman activity in the Meppershall area (Simco 1984, fig. 7; Dawson 2000, fig. 10.4). A Roman villa has been recorded at Shefford, 3km to the north (Scott 1992, BD26), and a number of sites are known to the south and south-west, but none have been recorded in the immediate area of Meppershall, between the rivers Hiz and Ivel. It has been suggested that most Romano-British sites were concentrated on the lighter soils of the river valleys, but evidence of Iron Age and Romano-British activity on the heavier soils is now coming to light in Bedfordshire, mainly through plough erosion (Clark & Dawson 1995, 62). Before the evaluation of this site, the only evidence for Iron Age or Roman activity in Meppershall comprised a few sherds of Iron Age and Roman pottery and a few Roman coins, discovered in gardens along the High Street (HER 16317, 16318).

During much of the post-medieval period a substantial house and gardens fronted onto the High Street to the west of the site, extending

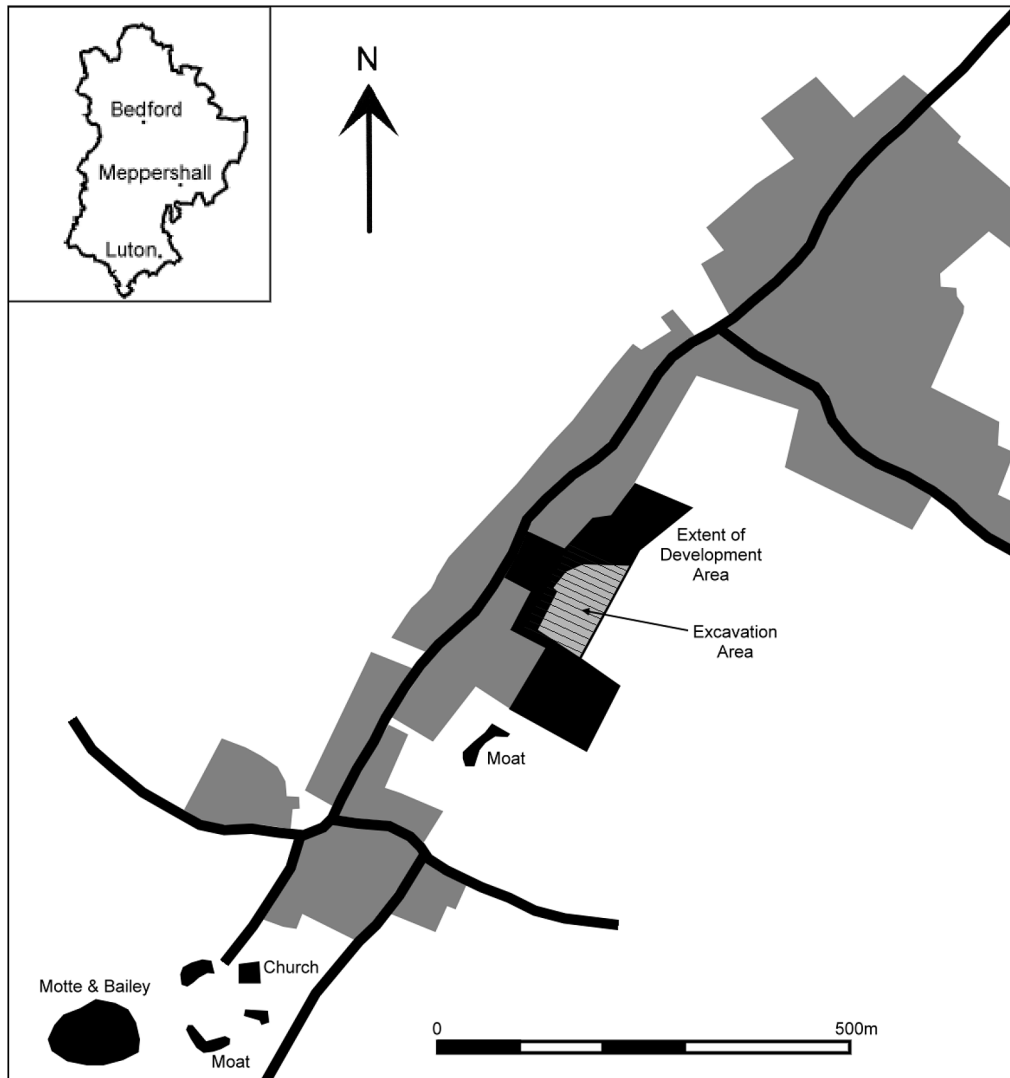


Figure 1: Site location

south-eastwards to the boggy area around the spring. The remainder of the site seems to have remained in agricultural use until the 20th century, when the nursery was established.

For the evaluation, eleven trial trenches were excavated across the proposed development area. Those at the north end of the site proved to be archaeologically sterile, while the trenches in the central and south-west parts of the site revealed a number of Roman ditches, and small pits or post-holes. The greatest concentration of features occurred in the central part of the site. Ceramic

evidence provided a date range for the site from the 1st to mid 4th centuries AD.

Aims & Methods

The aim of the project was to establish the date and character of the archaeological remains present, in order to provide a detailed archaeological record of the site prior to its destruction by the development. Particular attention was to be paid to the nature of the archaeological sequence and the spatial pattern of occupation on the site.



Figure 2: Overall site plan

The area designated for excavation measured c. 100 × 60m, and was located in the centre of the development area (Fig. 1). Modern structures, top-soil and overburden were mechanically removed to the top of the archaeological levels or natural deposits, whichever was encountered first. The site was then rapidly cleaned by hand to a level sufficient for a pre-excavation plan to be prepared. Subsequent hand excavation was carried out following a strategy agreed with CPM, the developer's archaeological consultants, and the County Archaeology Office.

THE ARCHAEOLOGICAL EVIDENCE

PHASING

The development of the site is described within a framework of four phases, ranging from the pre-Belgic Iron Age (Phase 1) to the late Roman or early Saxon (Phase 4). The phasing was arrived at by examination of the stratigraphic sequence, supplemented by dates obtained from analysis of the pottery. Numbers in square brackets are group feature numbers, allocated during the post-excavation process and shown on the accompanying figures.

Phase 1: pre-Belgic Iron Age (600–100BC)

The earliest evidence for activity on the site comprised an east-west ditch [8013], c. 0.48m deep and 1.4m wide (Fig. 3; Fig. 7, S1). The eastern end of this ditch became indistinct where it entered the spring area, while its western end extended beyond the excavated area. No specific function can be assigned to this feature but it is likely to be agricultural in origin. Though no dating evidence was recovered from the fill of the adjacent ditch [8015] it is likely to be of a similar date to [8013] because of its similar nature.

Phase 2: mid/late 1st to late 2nd century AD

Phase 2 (Fig. 4) represents the earliest substantial activity on the site. It is represented by a series of ditches aligned north-east to south-west [8002, 8003, 8006, 8043], to the south-east of which were a number of smaller linear features [8007, 8010, 8022, 8028, 8029, 8033, 8038], aligned either north-east to south-west or north-west to south-east. On the north-west side of the site, two apparently unconnected small ditches [8011, 8014] have been assigned to this phase on the basis of ceramic evidence.

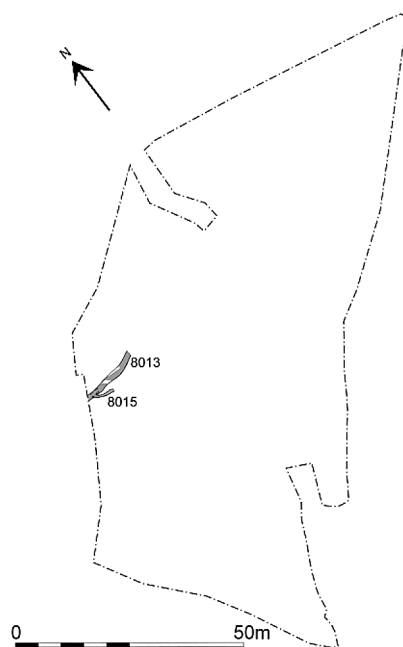


Figure 3: Phase 1 features

Ditches [8003] and [8043] were typically 1.5–1.8m wide and approaching 1.0m deep (Fig. 7, S2), and had been recut at least once during their lifetimes. Though now unconnected, they can be seen on plan to form part of a boundary or enclosure with [8002] and [8006], possibly the earliest phase of a farmstead, which appears to have lain to the east of the site. Pottery from the ditch fills indicates that they had gone out of use by the 4th century.

The small ditches to the south-east of this possible enclosure ditch were also fragmentary, truncated by later activity, but appeared to be on similar or perpendicular alignments. Insufficient of these features remained to allow their functions to be determined, but it seems likely that they either marked subdivisions of the enclosed area, or were part of a drainage system.

Phase 3: late 2nd to mid 4th century

During this period, the Phase 2 enclosure seems to have been replaced by a much more substantial enclosure ditch [8001] following a slightly different alignment to the south-east, and turning at right angles at its south end (Fig. 5). Within this enclosure a number of smaller ditches and gullies [e.g. 8020, 8021, 8025], some linked to [8001], and probably representing subdivisions of the

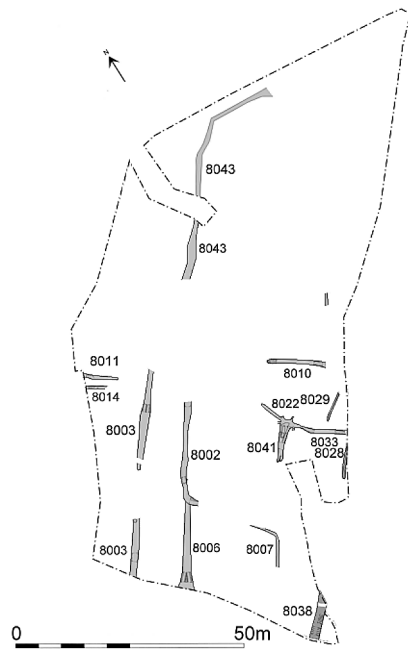


Figure 4: Phase 2 features

enclosure. Other linear features in this area [e.g. 8004, 8017, 8018], followed alignments apparently unrelated to the enclosure and its subdivisions, but appeared from the ceramic evidence to fall within the same date range.

Toward the south-west corner of the enclosure, [8027] (Fig. 7, S3), [8033] and [8035] were of particular note as they had vertical sides and flat bases. These features could represent slots for sleeper beams associated with buildings, though they do not form a recognisable building plan.

The most substantial feature revealed during the excavation, ditch [8001] was up to 1.0m in depth, and was orientated south-west to north-east. Ten sections were excavated along the length of the ditch. From these it was apparent that ditch [8001] had been recut several times (Fig. 7, S5 & 6). This amount of recutting probably indicates that the ditch was open and maintained for a significant period of time.

Other ditches assigned to this phase included [8004] and [8005], towards the western side of the site, and [8039], in the south corner of the site. Ditches [8004] (Fig. 8, S7) and [8005] were parallel, on a similar south-east to north-west alignment. Both terminated *c.*9.0m north-west of the south-western corner of the Phase 3 enclosure. Their rounded terminals were slightly intuned, the

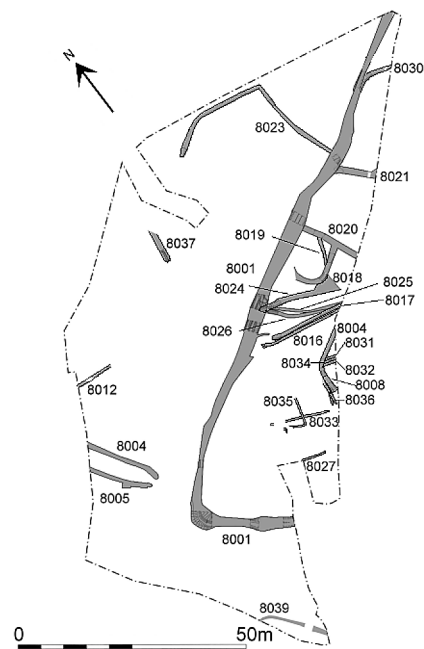


Figure 5: Phase 3 features

gap between them being *c.* 2.0m. It is possible that these ditches define the edges of a track leading away from the farmstead.

Phase 4 (mid 4th-century onwards)

Three small roughly circular pits [204, 210, 237] were identified in the vicinity of the spring in the centre of the excavated area (Fig. 6). These pits ranged from *c.* 0.9–1.6m in diameter, with a typical depth of 0.45m. The pits were intercutting, and it seems likely that digging them took place over a prolonged period. Analysis of environmental samples taken from these pits indicates that they were used to dispose of material from the manufacture of plates or plaques from horse ribs.

During the 4th century the site seems to have been less well maintained, and the area around the spring became increasingly boggy. Environmental analysis indicates that the spring was a managed feature throughout the Roman period, but as the ditches fell in to disuse during the second half of the 4th century the surrounding area became waterlogged. Sealing the pits was a 0.2m deep layer (Context 189/198) of dark greyish brown silty clay. This was directly below the topsoil and seems to have been laid down after the site was abandoned towards the end of the Roman period, possibly at a time when many of the ditches were

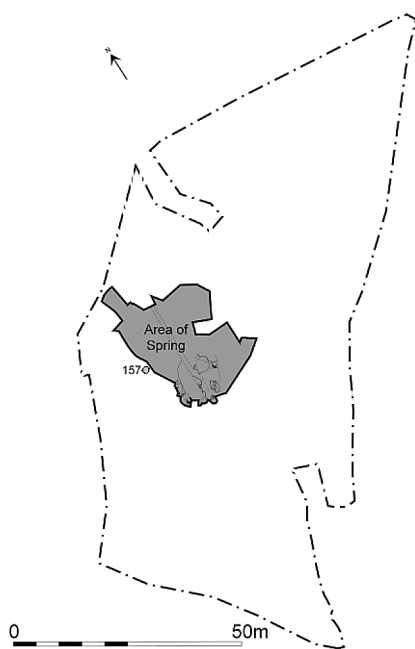


Figure 6: Phase 4 features

silting up and the ground was becoming more saturated.

The only feature of archaeological significance that might post-date the Roman period was Pit [157] (Fig. 8, S9) situated to the immediate west of the spring. This was roughly oval, measuring $1.60 \times 0.85\text{m}$, with a depth of 0.75m . A sample taken from the fill produced evidence for iron smithing, a small bone plate, waterlogged and part mineralised grape pips, blackberry seeds, legumes and the remains of small mammals, which may have fallen in when the pit was open. Sediment concretions in the sample and the part mineralised grape pips suggest that this feature may have been a cesspit, although it is located only about 10m from the spring. The grape pips are perhaps more consistent with a Roman context, but as so few early Saxon sites with waterlogged preservation have been excavated, an absence of the evidence is not indicative of the lack of availability of grapes in that period.

Two adjacent pits located in the north-west part of the site were each found to contain complete pig skeletons, and were originally assigned to Phase 4 by the excavator, on the evidence of pottery recovered from their fills. However, subsequent examination of the pig skeletons has revealed that the character of the bones suggests animals of a more recent date. As the pottery from these features is

all abraded and therefore probably residual, it is likely that these pits are of more recent date, possibly post-medieval. Consequently neither pit is shown on the Phase 4 plan (Fig. 6).

WATCHING BRIEF

During the construction of the estate a watching brief was maintained on areas of extensive ground disturbance. Four small pits or postholes and a shallow SE-NW orientated ditch or gully were observed close to High Street. No artefacts to date these features were recovered during the watching brief, but it is likely that they are contemporary with the features investigated during the excavation. The only other feature observed during the watching brief was a 0.6m wide ditch curving from north to south-west. This ditch was located towards the northern boundary of the excavated area (Fig. 2). The fill comprised dark grey silty clay. During the excavation this feature was masked by a layer of re-deposited subsoil, and was only seen when a new road corridor and service trench were cut.

THE POTTERY

A. R. Fawcett

A total of 2104 sherds weighing 39522g with a total r.e.v.e (estimated vessel equivalent, by rims) of 43.02 were recovered during the excavation. To enable comparison with sites of a similar nature in Bedfordshire and neighbouring counties, the fabric codes used (Table 1) are based upon those developed by Bedfordshire County Council (i.e. R22a) and those employed by Tomber and Dore (1998), and Going (1987).

Pottery form matches are utilised from a number of sites, principally the kiln site at Harrold (Brown 1994), Baldock (Stead & Rigby 1988), Chells (Waugh 1999), Verulamium (Wilson 1984) and Chelmsford (Going 1987). Other form matches (e.g. Thompson 1982) are also used where necessary. Unless specified below, all prefix form codes (i.e. G for jar) relate to the Going corpus (1987). All the pottery was examined at $\times 20$ magnification. Specific detail such as unsourced coarseware division and detailed fabric division is recorded in the site archive.

Overall the condition of the pottery may be described as being abraded to slightly abraded,

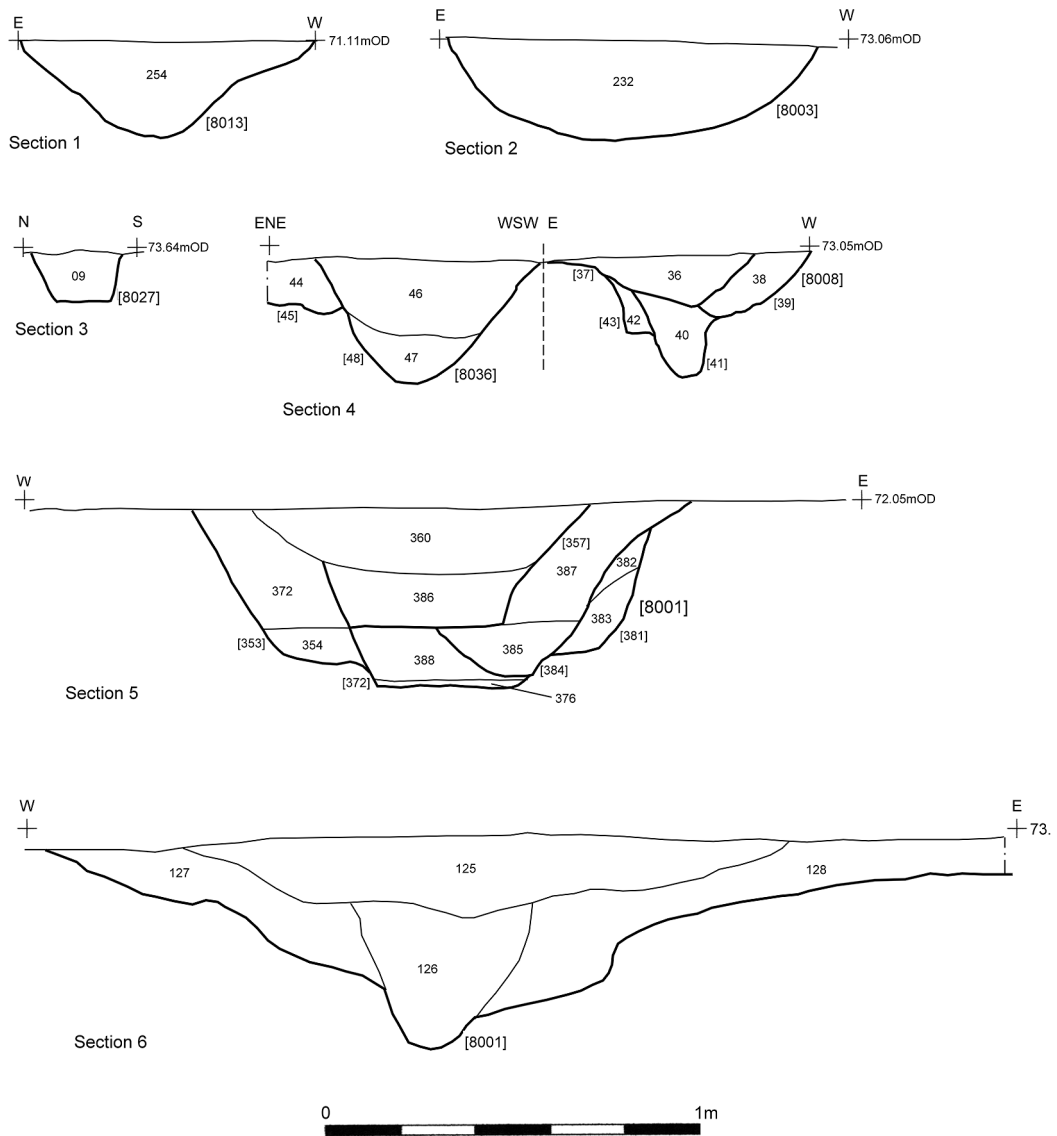


Figure 7: Sections 1–6

with a fairly high diagnostic survival rate. Therefore, most of the pottery is considered to be in its original place of deposition. However, some pottery deposits do contain mixed material from different periods within the Roman era: a typical example is pit 153. The ceramics are spread over a large number of contexts, many containing less than 20 sherds. Naturally, features containing fewer sherds are not considered to be well dated, especially in cases where there is a lack of

diagnostic data. A full catalogue of pottery is available within the site archive.

PHASE 1: PRE-BELGIC IRON AGE

This period is represented by a single context (254) containing distinct hand-made organic-based fabrics. A single upright rim was noted.

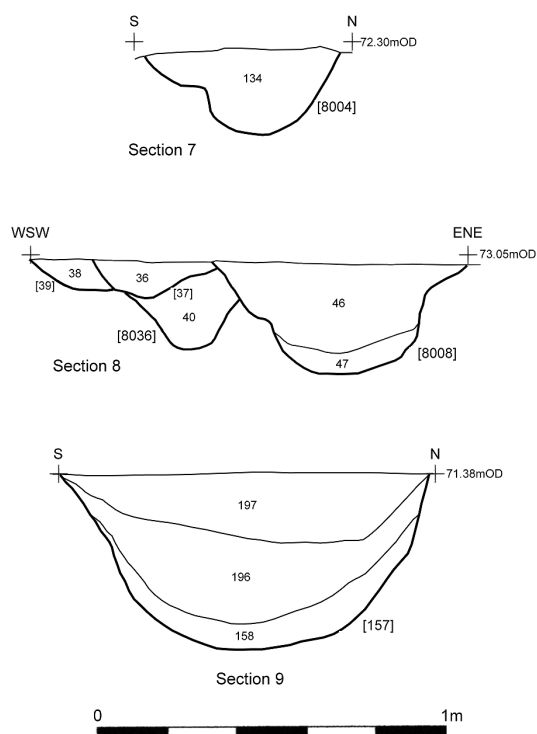


Figure 8: Sections 7-9

PHASE 2: MID/LATE 1ST TO LATE 2ND CENTURY AD

In the early part of this period (mid to late 1st century) the only non-local fabric originates from Verulamium, and the sherds are from a single bead-rimmed flagon. Although this example appears to have no direct match (Fig. 9.1), two-handled versions with a similar rim are dated to the Flavian period, and indeed the Cam 167b at Colchester is a good example (Symonds & Wade 1999, 474). Remaining fabrics correspond to local production, of which 77% by weight is represented by the Romanising fabric BSW. With the exception of two lid fragments and a beaker, all the identified forms are jars. Of note within the jar category are two globular lid-seated types (Fig. 9. 2 & 3), an everted squared and slightly undercut style (Fig. 9.4), two more globular forms with dish rims (Fig. 9. 5 & 6) and three that display a variety of cordon and bulge decoration (Fig. 9. 7-9).

The assemblage demonstrates a continuation of activity on the site into the later part of this period, though no large well-dated groups are present. A few non-diagnostic samian sherds are noted from

La Graufesenque in southern Gaul, after which the sourced coarse wares are characterised by VER WH, and LES FR. A C10 bowl is present in the latter fabric, which probably originates from the Hertfordshire-Essex border area. This period sees the introduction of the early HAR SH fabric, represented by G5 lid seated jars, as well as Hadham products; an early plain dish being the only form in the latter fabric. The two main unsourced fabric groups are UNS BW and GRS. Again, only jars occur within these fabrics: of interest is a type for which the only parallel can be found at Chells (Waugh 1999, no.119). It has a small beaded and rolled rim and displays a groove on its internal surface: rilling is also present on the body surface (Fig. 9.10).

There appears to be a slight intensification in land use towards the end of Phase 2 (early/mid to later 2nd century), demonstrated by an increase in the number of contexts containing ceramics. Nonetheless, the vast majority only contain between ten and sixteen sherds and must be considered as not well dated. However, at this time there is a distinct change in the economy of the site. Firstly there is an increase in the samian supply, spearheaded by the central Gaulish fabric LEZ SA 2 in the form of two Drg37 and an 18/31 or 31 type. Other samian fabrics in this phase originate from eastern Gaul (ARG SA and RHZ SA): again, the dominant form is the Drg37 bowl. The first Romano-British fine ware recorded on the site is COL CC. This fabric occurs in two different contexts and is represented by beaker body sherds.

The sourced coarseware category demonstrates not only an increase in number, but also a more varied geographical origin. The most common fabric on the site is VER WH, mainly represented by a selection of reed-rim bowls. An example of this style is found in enclosure ditch 8001, context 376, and has no direct match. It displays three grooves and four ridges on the rim (Fig. 9.11). Two jar forms are also present, one dish type and another similar to Ver 2260 (Wilson 1984).

HAR SH is the second largest sourced fabric group, containing a number of bead-rim jars and a single plain-rimmed dish. The Hadham kilns provide three fabrics, HAD OX, HAD RE 1 and 2. The only diagnostic forms, all well-documented jar types, are found in HAD RE 1. A single E2 bowl-jar form in BB1 fabric originates from Dorset. Finally, a small number of non-diagnostic sherds are sourced to the Cambridgeshire kilns at Horningsea.

Tomber & Dore 1998, & Going 1987	Beds CC type-series	Description
SOB GT	F06b	Southern British grog tempered ware
UNS FT	F01a	Unsources flint tempered ware
UNS SC	F30	Unsources grog and calcite ware
LGF SA	R01b	La Graufesenque samian ware (southern Gaul)
LEZ SA 1	R01a	Lezoux samian ware category 1 (central Gaul)
LEZ SA 2	R01a	Lezoux samian ware category 2 (central Gaul)
LMV SA	R01a	Les Martres-de-Veyre samian ware (central Gaul)
ARG SA	R01c	Argonne samian ware (eastern Gaul)
RHZ SA	R01c	Rheinzabern samian ware (eastern Gaul)
UNS EG	R01c	Unsources eastern Gaulish samian ware
COL CC	R04e	Colchester colour coated ware
LNV CC	R12b	Lower Nene Valley colour coated ware
NFO CC	–	New Forest colour coated ware
OXF RS	R11g	Oxford red/brown slipped ware
UNS CC	R38	Unsources colour coated ware
VER WS	R10c	Verulamium white slipped ware
UNS WS	R06h	Unsources white slipped ware
LNV WH	R12a	Lower Nene Valley white ware
OXF WH	R11e	Oxford white ware
VER WH	R03a	Verulamium region white ware
UNS WH	R03	Unsources white ware
HAD OX	R22a	Hadham oxidised ware
UNS OX	R05a	Unsources oxidised ware
LES FR	R37	London/Essex fine reduced ware
BSOUTH-WEST	R06f/09d	Black surfaced or Romanising grey wares
DOR BB 1	R07a	Dorset black burnished ware category 1
UNS BB	R07b	Unsources black burnished ware
GRF	R06c	Unsources fine sandy grey wares
GRS	R06b	Unsources sandy grey wares
GRS	R06e	Unsources sandy grey wares (calcareous)
HAD RE 1	R22b	Hadham reduced ware category 1
HAD RE 2	R22c	Hadham reduced ware category 2
HOR RE	–	Horningsea reduced ware
LNV CC	R06a	Lower Nene Valley reduced ware
PNK GT	R09e	Pink grog tempered ware
HAR SH 1	R13	'Harrold' shell tempered ware category 1

A = platter, B = dish, C = bowl, D = mortaria, E = bowl-jar, G = jar, H = beaker, J = flagon, K = Lid, Ste = Stevenage (Chells), Che = Chelmsford, GD = Great Dunmow, Ver = Verulamium, Bal = Baldock, Col = Colchester, Perrin = Dubrobriavae, Bro = Harrold, Tho = Thompson, Corp = Hadham Corpus, italics = unsure identification/date.

Table 1: Fabric codes

By far the largest unsourced group are UNS BW. However, the form types show no diversion from those already encountered, consisting of jars, a plain-rimmed dish and reed-rimmed bowl. The next largest fabric category is GRS, the only form present being a beaded dish. The remaining fabrics are UNS OX, represented by a Ver. 2075/8 beaker (Wilson 1984); BSW, containing a single beaker rim, and PNK GT, represented by a very abraded mortaria rim.

PHASE 3: LATE 2ND TO MID 4TH CENTURY

The ceramic evidence for the late 2nd to 3rd century seems to indicate a decrease in activity,

though in the absence of reliable dating tools the 3rd century is often hard to detect. Only eighteen sherds account for this period: as might be expected, little can be said about the range of fabrics present, though the period marks the introduction of LNV CC and Oxford products. All the illustrated examples come from the mixed deposit (155), which has a significant late 2nd to 3rd-century component. These examples have been chosen because they are unusual: they may not necessarily be from this period. Firstly in UNS OX is an unusual form, which could either be a narrow-necked jar or flagon. It displays a very flat rim with two grooves on the surface (Fig. 9.12). Next is a HAR SH St jar showing a very pointed upright rim, with a slight but sharp undercut: the

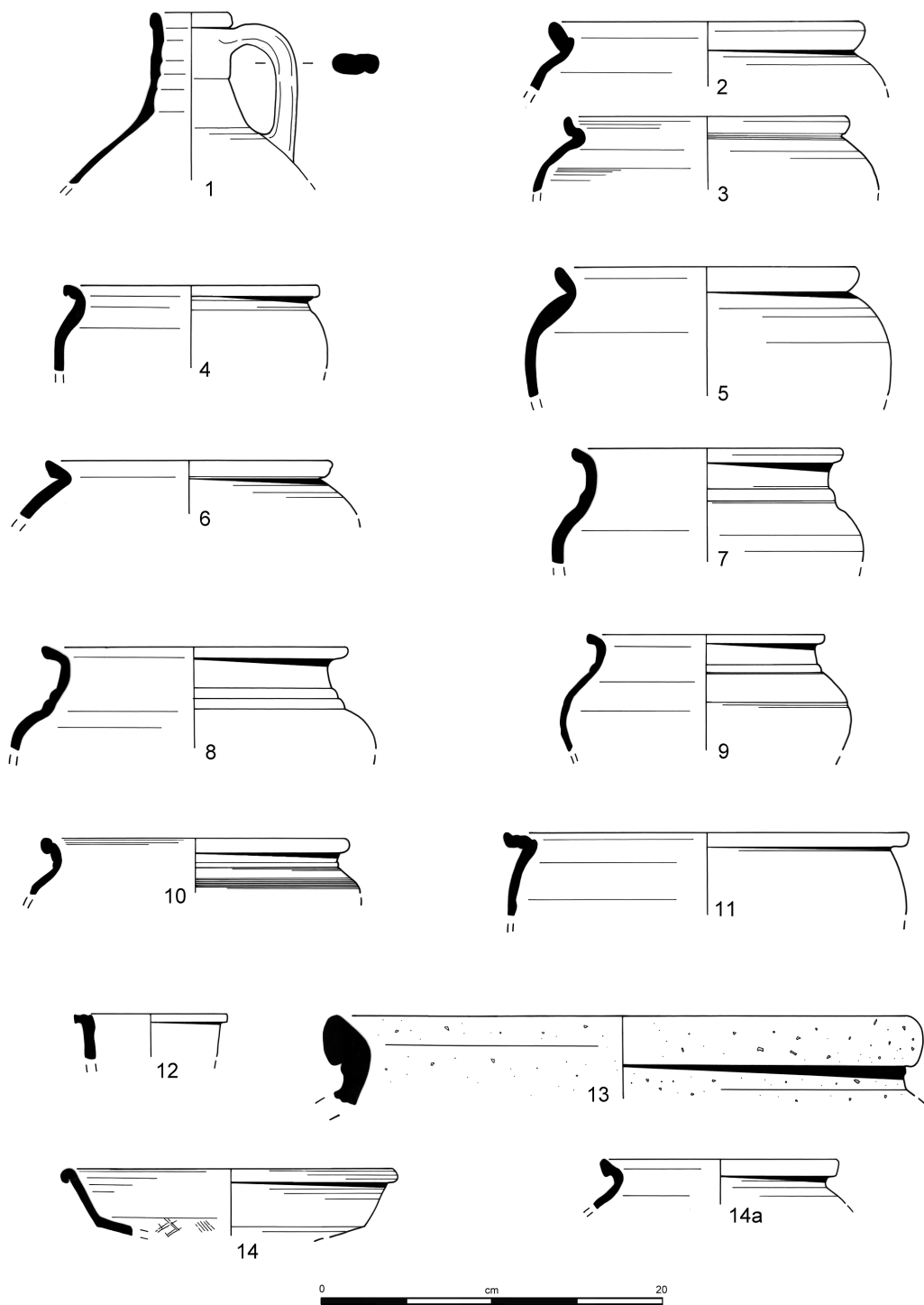


Figure 9: The pottery, 1-14a

fabric is light brown (Fig. 9.13). The last two forms are in GRS. The first is a dish in the style of Ver. 2551 (Wilson 1984). It has a rolled and undercut rim with lattice patterning on the inner base surface (Fig. 9.14). The second is a lid-seated jar with no match (Fig. 9.14a). This displays a slightly down-turned and undercut rim; and also a groove at the internal base of the rim.

The 4th century undoubtedly represents the main period of activity on the site: nineteen contexts are assigned to it. Generally the pottery is in a good state of preservation, with an average sherd weight of 18g and a reasonable diagnostic survival rate. Although no foreign imports are evident Romano-British fine wares are present, typically characterised in this phase by LNV CC and OXF RS (Table 2). A useful percentage comparison for LNV CC in this later period can be seen at Chells, Stevenage (Waugh 1999, 108) where the same order of sherd number and weight are respectively 4.93 and 4.82%.

Perhaps the most surprising fabric noted is NFO CC, all the sherds belonging to a single flask form (Fig. 10.15). This appears to have no direct match, although Fulford types 1.3/1.6 are similar (Fulford 1975). The surface has a metallic black colour coat (slip is dripped internally) with double groove decoration on top: the fabric is a very pale grey/white.

Of the sourced coarseware fabrics HAR SH 2 is the most prevalent, accounting for 40% by weight. In north Hertfordshire during the same period the normal fabric percentage (by weight) is just under 16% (Waugh 1999, 110). The form assemblage is almost entirely composed of jars, mostly with down-turned and hooked rims, the exception being a single bowl. A typical example equates to Brown 300 (1994): it displays fine rilling on a light brown surface (Fig. 10.16). None of the storage jar versions were large enough to identify beyond their general class.

The next largest providers to the site were the kilns at Hadham, who typically supplied bowl-jars, thick-rimmed jars, and plain and flanged rim dishes. Only one form merits further comment: an unusual jar in HAD RE 1, which is neck-less with a triangular thick rim in a burnished medium grey (Fig. 10.17).

A small number of DOR BB 1 sherds are present, accounting for three plain-rimmed dishes as well as a flanged type (Fig. 10.18). The latter has close matches at Verulamium (Wilson 1984, no. 2492) and Baldock (Stead & Rigby 1986, no. 734). It has a beaded flange and intersecting arc decoration.

The final sourced fabric (HOR RE) contains no diagnostic element. However this little understood industry is noted particularly for large jars with out-splayed and often bifid type rims.

Fabric	Sherd No	%	Weight	%	Rim eve	%
LNV CC	28	7%	470g	6%	2.88	23%
NFO CC	4	1%	123g	2%	1.00	8%
UNS CC	1	Pres	5g	Pres	–	–
OXF RS	18	4%	347g	5%	0.35	3%
OXF WS	2	Pres	56g	1%	0.07	1%
OXF WH*	1	–	43g	–	0.07	–
VER WH	1	Pres	4g	Pres	–	–
UNS WH	4	1%	32g	Pres	0.08	1%
HAD OX	24	6%	471g	6%	0.93	7%
UNS OX	7	2%	53g	1%	0.12	1%
BSW	3	1%	20g	Pres	–	–
UNS BB/BW	45	11%	763g	10%	0.63	5%
UNS BW St*	1	–	62g	–	–	–
DOR BB 1	17	4%	507g	7%	0.96	8%
GRF	4	1%	35g	Pres	0.11	1%
GRS	64	15%	996g	13%	1.41	11%
HAD RE 1	35	8%	436g	6%	0.53	4%
HAD RE 2	4	1%	110g	1%	0.06	Pres
HOR RE	7	2%	110g	1%	–	–
HAR SH 2	148	36%	3085g	40%	3.42	27%
HAR SH St*	12	–	740g	–	0.39	–
Totals	416		7623g		12.55	

* not used in percentage calculations.

Table 2: Summary of the 4th-century ceramic assemblage

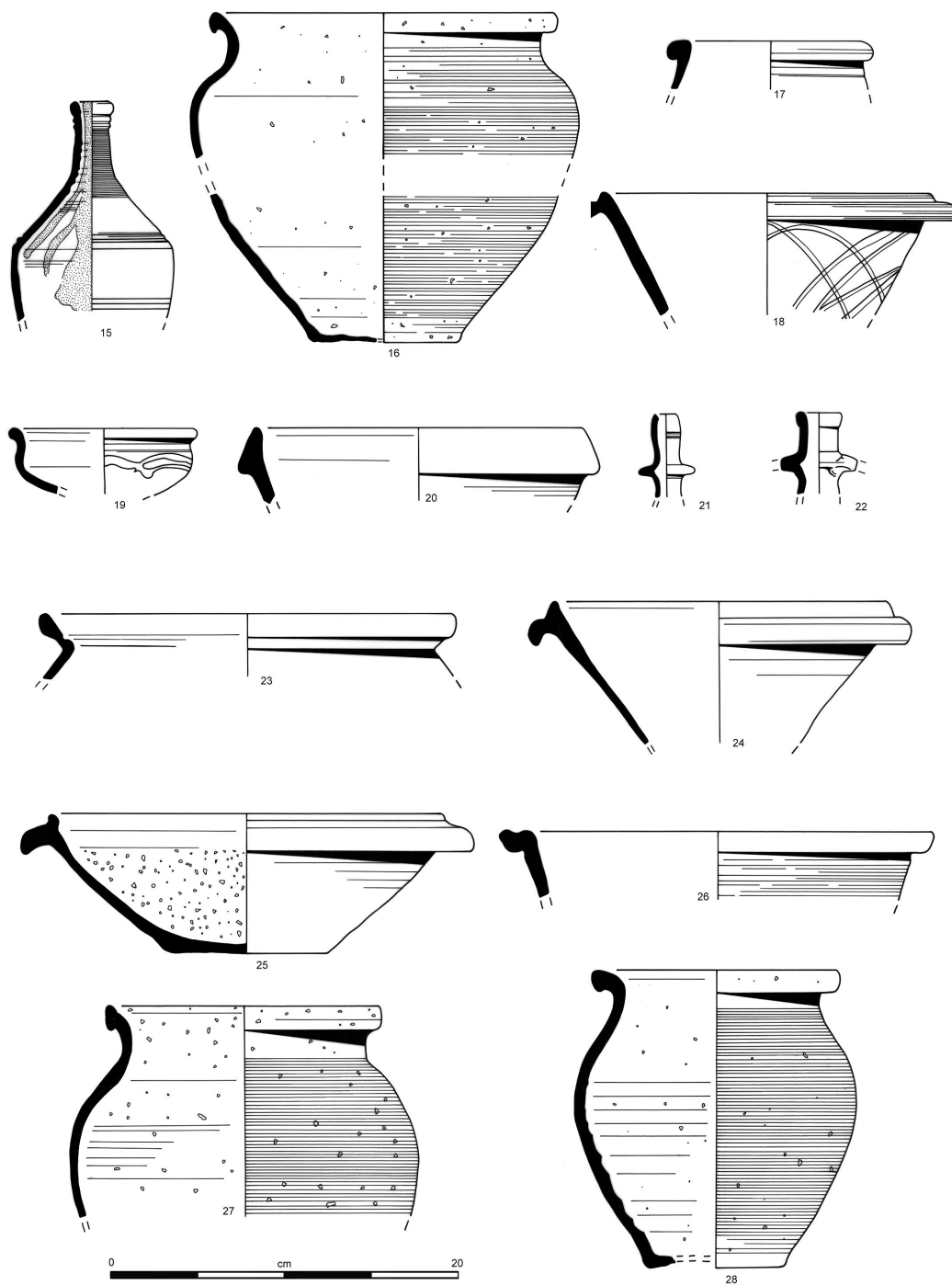


Figure 10: The pottery, 15–28

The LNV CC assemblage is made up mainly of plain and moulded rimmed dishes. Apart from a hemispherical bowl there are other interesting forms. First is a necked and everted rimmed bowl that shares some similarities with Perrin 269 (1999). It has a light brown colour coat with applied white slip decoration (Fig. 10.19). Next is a lid with no direct match (Fig. 10.20) in a coarse version of the fabric, with a very light brown colour coat. Two late flagon necks are also noted, again with no direct match: both have brown colour coats (Fig. 10, 21 & 22). The Oxford red/brown colour-coated fabric is represented by a bowl, a *mortaria* and a Drg36 copy: all the forms are well known. The other Oxford variants are represented by two *mortaria*.

In general the unsourced fabrics mimic the same form range as the sourced versions: plain and flanged rim dishes, bowl-jars and a range of jar types. GRS and UNS BW are the two most common fabrics. A single kind stands out in GRS, a lid-seated jar with a large, almost exaggerated dished rim: it also has an internal groove at the rim base (Fig. 10.23).

PHASE 4: MID 4TH CENTURY ONWARDS

This phase marks the end of the Roman ceramic sequence. Its date is based upon the UNS WS bowl (*below*) though the other diagnostic sherds, from context 134 (ditch 8004), follow a similar fabric pattern to those encountered in the previous phase. Of note amongst the form assemblage is a LNV CC deep bowl with a down-turned flange, and a black slightly metallic colour coat (Fig. 10.24). There is also a *mortaria* in OXF WS, which has a close parallel at Verulamium (Wilson 1984, 2625). Its flange has a slight groove on its lower part (Fig. 10.25). A bowl (Fig. 10.26) in UNS WS has a very thick and dished rim: the nearest match can be observed at Chells (Waugh 1999, no. 311). Finally there are two HAR SH 2 jars with down-turned and undercut rims and fine rilled surfaces (Fig. 10, 27 & 28). Close matches can be seen in the kiln *corpus* (Brown 1994, no. 302) and at Verulamium (Wilson 1984, no. 2194).

Pit [157] (context 158) contained three non-diagnostic hand-made body sherds with calcite and organic inclusions. Apart from their general appearance and mineral content, their association with late Roman ceramics perhaps indicates an early Saxon date. Only these three sherds identify

this feature as distinct from the other pits around the spring.

CONCLUSIONS

The examination of the pottery clearly indicates that the main activity on the site is Roman. It commences in the mid 1st century AD, and land use increases from around the early 2nd century to about AD190. There appears to be a 3rd century decline, but the most important and intense phase of occupation is the 4th century. Negligible site use also exists either side of the Roman period.

There is nothing within the ceramic assemblage that suggests high status activity: the samian and other fine wares could have easily been purchased at existing local market centres. Indeed most of the economic data suggests that local and nearby regional pottery industries were mostly utilised throughout the history of the site. This is particularly evident in the 4th century. The presence of fabric NFO CC runs contrary to this trend, though Dorset BB1 is fairly common and the presence of a single flask in the former fabric may be the result of 'piggyback' trade. A simpler reason for such a northerly outlier may be that it was a gift or personal possession, the contents of the vessel being the most important factor.

Examination of the form assemblage equally does not throw any light upon specialist areas of activity or status. Although flagons, beakers, bowls and *mortaria* are present they do not occur in unusual numbers. It is the jar that dominates alongside the plain-rimmed dish, the latter from the 2nd century onwards.

This is the first Roman site examined in the area, and in general the pottery indicates a standard rural economy. The absence of building materials suggests that these assemblages were on the periphery of the main focus of activity. At the time of writing (2003), the lack of quantified and phased ceramic data available in Bedfordshire hinders any accurate statement or comparison with other Bedfordshire sites at any time within the Roman period.

CATALOGUE (Figs 9 & 10)

Sherds have been selected for illustration using the following criteria:

(i) An unpublished or new form. (ii) A form whose date range has been modified due to the presence of a well-dated

stamp/stamp. (iii) Where there is no direct match or the match is not perfect.

Context 391, Ditch 8017 (Mid to late 1st century AD)

1. *VER WH J no direct match [possibly 2nd century intrusive]*
2. *BSOUTH-WEST G lid Bal 182 style (i)*
3. *BSOUTH-WEST G lid Bal 182 style (ii)*
4. *BSOUTH-WEST G no match*
5. *BSOUTH-WEST G Bal 330-452 style*
6. *BSOUTH-WEST G lid Bal 468 style*
7. *BSOUTH-WEST G Bal 321*
8. *BSOUTH-WEST G Bal 289/346 styles*
9. *BSOUTH-WEST G Bal 346 style*

Context 108, Ditch 8024 (Late 1st to early/mid 2nd century AD)

10. *GRS G style Chel 119*

Context 376, Ditch 8001 (Early to mid/late 2nd century)

11. *VER WH C reed rim no match*

Layer 155 (Mid 2nd to 4th century)

12. *UNS OX G/J no match*
13. *HAR SH St G no match*
14. *GRS B Ver 2551 style*
- 14a. *GRS G lid seated, no match*

Context 221, Ditch 220 (4th century)

15. *NFO CC Flask, no direct match. Pale grey/white fabric with some quartz and organic voids, metallic black colour coat; bead rim beneath double groove, double groove at base of neck and again at girth, spilt internal slip)*
16. *HAR SH G Bro 300*

Context 163, Ditch 162 (4th century)

17. *HAD RE 1 G Chells 9*
18. *DOR BB 1 B flanged Bal 734/Ver2492*

Context 023, Ditch 8001 (4th century)

19. *LNV CC C Perrin 269*

Context 125, Ditch 8001 (4th century)

20. *LNV CC Lid no match*

Layer 198 (Late 3rd–4th century)

21. *LNV CC J no direct match (i)*
22. *LNV CC J no direct match (ii)*

Unstratified (Late Roman)

23. *GRS G lid seated no match*

Context 134, Ditch 8004 (AD350–410)

24. *LNV CC B flanged Perrin 258/260 style*
25. *OXF WS D Ver 2625*

26. *UNS WS C Chells 311 style*

27. *HAR SH 2 G Bro 302 (i)*

28. *HAR SH 2 G Bro 302 (ii)*

OTHER FINDS

Bob Zeepvat

Excavations at Meppershall produced a small quantity of finds. Others were discovered in the course of metal detecting during topsoil stripping. A detailed catalogue is retained in the site archive: the following objects have been included in the final report either because of their significance for dating, or for intrinsic interest.

COINS

The excavation produced three coins. A further three coins, fused together, were recovered by metal detecting during topsoil stripping (Table 3). All were in a poor condition. Four of the coins appeared to be late 3rd-century radiate bronzes, the fifth was a late 16th–early 17th-century Nuremberg *jetton*, and the last was broken and illegible.

COPPER ALLOY

1 Brooch, pin and catch-plate missing. The spring has four coils. Plain bow, rounded Section. L. 43mm. This simple type of one-piece brooch, with 4-coil spring, internal chord and solid catch-plate is very common in Britain. Examples have been recorded at Baldock (Stead & Rigby 1986, 109, 15–22) and King Harry Lane (Stead & Rigby 1989, 88, A1–4), all dated before *c.* AD50.

Cont 291, SF3519: fill of Ditch 8001

2 Bracelet fragment, cable type, two circular-sectioned strands. Th. 3mm. Part of hooked terminal remains. Similar bracelets have been

No.	Description	Dia (mm)	Date [Feature]	Context	SF No.
1-3	Three coins corroded together. One is a radiate bronze	18, 18, 16	Late 3rd	u/s	3513
4	Worn: possibly radiate bronze	16	Late 3rd	073 [8018]	3514
5	Three fragments of badly corroded illegible coin	–	–	115 [116]	3516
6	Nuremberg <i>jetton</i> , Hans Krauwinkel	25	Late 16th–early 17th	u/s	3520

Table 3: Coin identification

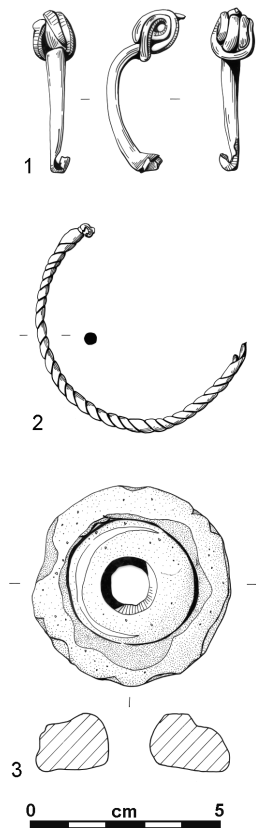


Figure 11: Finds of copper alloy (1, 2) and ceramic (3). Scale 1:2

found at Baldock (Stead & Rigby 1986, 127, 182) and Gorhambury (Neal *et al* 1990, 123, 80), in 3rd and 4th-century contexts respectively.
Cont. 221, SF3521: fill of Ditch 8004

IRON

Ironwork from the site consists almost entirely of nails and scrap, all of which is in a poor state of preservation. None appeared to be of intrinsic interest, or of use in interpreting the site. A full list is retained in the site archive.

CERAMIC

- 3 Spindle whorl. Base of pot, dia. 55mm, wt 45gm, black sandy, slightly micaceous fabric, approximating to fabric RO7B (see pottery report).
Cont. 369, SF3517: fill of Ditch 8001

STONE

Quern stones are commonly found on Roman rural sites. The millstone grit quern (4), probably originating from a quarry in the Peak district, is of a ubiquitous type. The beehive quern of Hertfordshire Puddingstone (5) is of a type largely limited to Hertfordshire, from where the stone is supposed to originate.

- 4 Fragment of rotary quern lower stone, Millstone grit. Th. 48mm, dia. 260mm.

Cont. 291, SF3518: fill of Ditch 8001

- 5 Upper stone of rotary beehive quern, Hertfordshire puddingstone. Dia. 270mm, height 90mm, tapered central hole 70–45mm. Similar examples have been recorded at Baldock (Stead & Rigby 1986, 180, 790–792). Possibly 1st century AD.

Unstratified: SF3515.

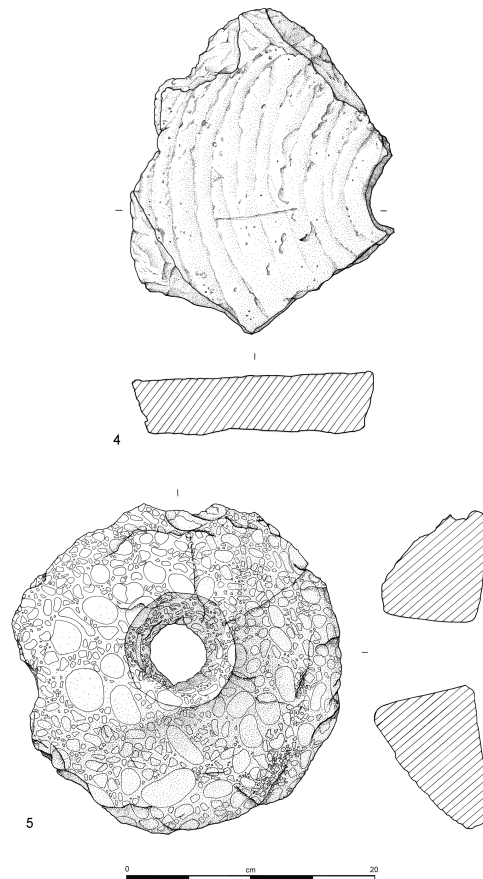


Figure 12: Finds of stone (4, 5). Scale 1:4

In addition to the above objects, the excavation produced several small fragments of millstone grit and lava, which probably came from querns.

TILE

A small assemblage of tile, amounting to *c.* 2.0kg, was recovered from the excavation. The assemblage was scanned visually to determine the range of tile types and fabrics present, and any other features such as glazing and nail holes. Much of the assemblage consisted of small undiagnostic fragments, in a range of fabrics typical of Roman tile (shelly, grogged, sandy). Peg tile of post-medieval or later date was present in three contexts (198, 239, 373).

ENVIRONMENTAL SAMPLING

James Rackham

INTRODUCTION

During excavations at Meppershall twenty-seven soil samples were collected from securely stratified features for environmental analysis. Most of the samples are assigned to Phase 3, which spans the late 3rd to 4th century and the 4th century AD. An assemblage of animal bone was recovered by hand from stratified excavated deposits. The samples were processed and assessed and the animal bone assessed and reported (Rackham 2003). Detailed studies were instituted on all the samples and the bone assemblage. Detailed catalogues and reports on the analysis of this material are retained in the site archive.

EVIDENCE FOR SMITHING

During the sample processing a magnet was run over the residue of all the samples and the magnetic fraction obtained in this way then checked for hammer-scale. These are tiny plates and spheroids of iron rich slag produced when hot iron is worked at the anvil, and when present in any quantity are positive evidence for iron smithing on the site. Almost all the samples taken from the southern half of the site produced some hammer-scale, while those in the north produced none. Concentrations are highest in the 4th-century pits around the spring and two Phase 3 ditches in the

south-west part of the site. Three of the Phase 4 pits also produced slag during excavation and from the samples, while two other features, pit [153] and enclosure ditch [8001], produced slag during excavation. None of these concentrations were high, but their distribution does suggest some limited smithing activity may have been taking place adjacent to the spring in the 4th century, and smithing may have been undertaken at the site in all phases.

EVIDENCE FOR BONE WORKING

Bone-working evidence was recovered from Phase 4 contexts in the southern part of the spring area, layer (198) and the fills of pits [204] and [210]. This comprised primarily sampled material from the pits (204 = 1480g; 210 = 662g), and excavated bone from layer 198. The assemblage comprises several hundred pieces of bone, consisting of strips or small plates, some with parallel grooves or ridges, and one with a ring and dot motif. The unusual aspect of this assemblage is that the plates are clearly made from horse ribs. In each context the worked pieces are accompanied by numerous fragments of horse rib, several of which are the proximal ends of the shaft with the mid and distal shafts (the straighter portion) of the rib sawn off. The use of a saw on the ribs at this date is a clear indication of craft work not butchery, and the small width of all the unfinished or discarded plates supports their derivation from the horse ribs rather than any other species. The mid and distal shaft of the rib has been sawn from the proximal end. Its edges have then been 'shaved' off and the two sides of the rib shaft then split apart. The internal cancellous tissue is then 'shaved' off and also sometimes the outer surface to make the basic strip approximately 10mm wide and perhaps 100mm long, although few of this length were recovered. No more than half a dozen fragments carry any decoration.

By analogy with other Roman sites (Crummy 1981, 1983) decorated strips of bone of the type recovered here were used as casings or inlays on wooden furniture such as caskets or boxes. In the Saxon and medieval periods cattle ribs are generally used. These are broader and allow the manufacture of much larger plates. The author is not aware of any other workshop of Roman or medieval date in this country that has been shown to use horse ribs for bone working. Since 95% of the bone working evidence was recovered from

soil sampling it is likely that these deposits must have contained considerably more material, but it is difficult to estimate the scale of production of such a workshop. Its location next to the spring suggests that water was an essential resource for the workshop, perhaps for soaking the ribs before working, but the occurrence of such a workshop on what appears to be a rural late Roman farmstead, rather than the more characteristic urban setting is also unusual. In addition to the ribs ten fragments of cancellous and cortical material from deer antler were recovered but no clear evidence of any antler objects or offcuts. While the antler fragments have not been specifically identified they almost certainly derive from red deer. Antler does not appear to have been an important material at the workshop and these fragments may derive from incidental use of antler. A considerable number of very small fragments of bone-working waste were not extracted (but were retained) from the <2mm residue. This is a positive indication that the bone working was carried on at this location since such small fragments are unlikely to be deposited away from the workshop. As such it is likely that there would have been a building in the immediate vicinity, but no evidence of buildings was located during the excavation.

ANIMAL BONE AND SHELL

Ninety-one contexts produced a total of 1540 hand-collected fragments of animal bone, weighing 41.321kg. Environmental sampling produced a further 2917 bone fragments weighing 5.675kg. The fragmentation level of the excavated bone is relatively low with an average fragment weight of 27g, while that of the sample bone is just under 2g per fragment. This discrepancy (Table 4) is entirely explained by the different efficiencies of recovery between hand collecting and sieving down to a mesh size of 2mm. These two assemblages are considered separately, except for the data on age at death. The detailed report and catalogue of animal bone and shell is retained in the site archive.

Most of the contexts that produced hand-collected bone (40% of the total) were related to the Phase 3 enclosure and associated features. The quantities of bone from the individual phases (Table 5) allow little or no analysis of evidence for changing husbandry during the occupation of the site, so detailed analysis was restricted to the Phase 3 3rd and 4th-century deposits. In these cattle

bones dominate, followed by sheep, horse, and pig. The fragmentation index (Rackham 1986a; Watson 1979) for each species (cattle 1.15: sheep/goat 1.15: pig 0.35: horse 1.78) suggests similar levels for cattle and sheep, higher fragmentation for pigs, and much lower for horse bones. This suggests that most horse bones probably entered the deposits as whole bones, perhaps as part of a carcass. The high fragmentation of the pig bones indicates that this species will be under-represented by simple bone counts, but this is unlikely to be of a sufficient scale to change their relatively low contribution at the site.

Fragment numbers indicate a ratio of 1:4:15 pig:sheep:cattle, while zone counts suggest a ratio of 1:15:63, which seriously reduces the contribution of pigs to the assemblage. As the pig bones are highly fragmented, this latter figure certainly under-represents the pig contribution. If the most frequent zone of any paired element is used (ignoring left or right side) then the ratio is 1:2:7, which markedly improves the contribution of pig. It is clear that cattle were economically the most important, with sheep three to four times less abundant and a very much smaller contributor to the meat diet, while pig appear to have made only a minor contribution. The five chicken bones and the presence of eggshell are testament to another minor contributor. There is no evidence that horse was eaten at the site. The only butchery other than the sawing of the ribs associated with the bone working is a chop mark on a complete tibia. Fragmentation is much lower than the other species and the bones are less gnawed: it is probable that many derive from re-worked horse burials disturbed as new ditches or pits were dug. Dog scavenging has impacted on the sheep bones to a greater degree than other species, such that their relative presence on the site may be underestimated. Not surprisingly a greater proportion of cattle bones carry evidence of butchery (twice the proportion of sheep bones) since cattle carcasses require more butchery to render the meat into manageable sized units.

Dogs are evident from their scavenging activities as well as their bones: small and medium sized dogs only are indicated. A single femur from a human baby was recovered from the upper fill (054) of ditch [8040] suggesting disposal of a body outside of a burial ground.

The two pig skeletons were recovered from adjacent pits (not shown on plan) in the north-west part of the site. The pits were clearly dug for the

Species	Hand collected	Samples	Bone working waste-collected	Bone working waste-sieved
Fragments				
Human	1			
Horse	32	4	65	70
Cattle	330	35		
Cattle size	254	55	14	1241
Sheep/goat	95	39		
Sheep	6			
Sheep size	46	76		
Pig	17	5		
Pig skeleton	2			
Dog	8	2		
Fox		2		
Deer				10
Chicken	5	2		
Snipe		1		
Thrush		2		
Bird indet.		2		
Eel		7		
Small fish, indet.		9		
Oyster		1		
Common mussel		4		
Unidentified	6	1376		
Total	800 + 2 skeletons	1622	79	1321
Individuals *				
Small carnivore		1		
Rabbit		1		
Rat		1		
House mouse		2		
Wood mouse		2		
Mouse		3		
Water vole		1		
Bank vole		2		
Field vole		9		
Vole		4		
Common shrew		3		
Lizard		1		
Great Crested newt		1		
Newt		3		
Frog or toad		26		

* no. of individuals based upon the sum of individuals in each sample- bones of small vertebrates were not counted individually.

Table 4: Frequency of each taxa in the hand-collected and sieved assemblages

Species	Phase			
	2	3	4	unphased
Human	1			
Horse	3	17	68	9
Cattle	32	185	25	77
Cattle size	22	124	44	75
Sheep/goat	14	44	6	22
Sheep	1	4	1	0
Sheep size	6	27	3	9
Pig	4	10	1	1
Pig skeleton	0	0	2	0
Dog	1	4	0	2
Chicken	0	4	0	0
Unidentified	0	1	1	0
Total	86	420	151	195

Table 5: Frequency of fragments of hand excavated bone by phase

disposal of these carcasses and their juxtaposition suggests that they may have been buried at the same time. Although these two pits were originally assigned to Phase 4, the character of the pig bones suggests animals of much more recent date than late Roman. Only very abraded pot was recovered from the fill of one of the pits and on this basis and the bones it is much more likely that these two burials are post-medieval in date.

We can consider the age at death of the cattle herd at the site, but the sample sizes for other taxa are too small. The post-cranial remains of cattle indicate a few calves were killed at the site, but most animals survived until their metapodial and phalangeal epiphyses had fused, perhaps in their third year an appropriate age for animals being slaughtered for meat and hides. The assemblage indicates that most of the bones could have derived from animals of this age, but that a few animals survived to adulthood. Dental analysis provides a different picture. Of the 22 jaws recorded, in five the third molar is either not formed or not erupted, indicating an age under 2–3 years; in four the tooth was erupted but had not undergone any appreciable wear indicating an age of about 2.5–3 years. In ten this tooth had reached Grant's (1982) wear stage 11 or 12, indicating adulthood, and in three it had reached stages 14–16, which represent elderly animals. Combining the epiphyseal and dental evidence the following is indicated: a small number of calves, a significant slaughter of animals at 2–3 years for meat and hides, the retention of a substantial proportion of the herd until adult, and a few animals being kept on until elderly.

Interestingly a number of these cattle are large. Withers or reconstructed shoulder heights calculated using factors in Prummel (1983) indicate a range of 1150–1280mm, with a mean of 1222mm. These are of similar size to cattle found in Colchester (Luff 1982), but suggest slightly larger animals than those from late Roman deposits at Causeway Lane, Leicester (Gidney 1994). One or two unmeasurable fragments indicate even larger animals. No characteristic 'Celtic shorthorns' were identified, though horn cores and skull fragments indicate smaller cattle were present. These larger cattle are a result of Roman introductions and breeding and indicate that the farmstead at Meppershall had benefited from these developments. Slightly expanded distal condyles on the metapodials of some of the cattle suggest that these beasts may have been draught animals. Five cattle bones show pathological features. Extra bone

growth is present around the distal articulation of a first phalanx and the proximal facet of a metatarsus: both could have been caused by the stresses of draught. Eburnation and pitting occurs on the posterior facet of a lumbar vertebra, and a femur head also shows eburnation of the facet. One fragment of frontal with the base of a 'healed' horn core suggests that the animal was polled artificially.

Much less can be deduced for other species. Sheep mandibles indicate the presence of immaturity, adult and very old animals. The size and gracility of some of the sheep bones indicate that these still include the relatively undeveloped native stock, although one or two unmeasurable fragments clearly derive from larger animals, perhaps rams. Four complete horse bones allow some assessment of these animals. A withers height range of 1328–1399mm is indicated on two metatarsi and two tibiae, with a mean of 1380mm, or approximately thirteen and a half hands. This is typical of Roman horses in Britain (Rackham 1995) and is similar to modern ponies. There is no evidence for any juvenile horses at the site, but the proximal end of one metacarpus shows the growth of bone around the joint consistent with spavin and one rib shows a healed fracture.

The soil samples have yielded a somewhat different bone assemblage, for reasons that have already been examined. One of the most dramatic results is that, in total, identified sheep (or goat) bones exceeded those of cattle. This contrasts markedly with the hand-collected assemblage and suggests that, owing to their gracility and the small size of many sheep bone fragments, hand collection has been heavily biased towards the cattle and horse bones. The fragmentation index of 1.15 for cattle and sheep reflects an unusually low level of fragmentation (0.5 to 0.7 is more typical for hand-collected assemblages) and together with the sample data suggests that the hand-collected bones do not reflect the material deposited on site. It may be that sheep bones were as abundant as cattle or nearly so, but most of the smaller identifiable fragments of sheep/goat bone were missed during excavation. This poses a problem and suggests that we cannot with any confidence estimate the relative proportions of these two species. Pig bones occur in five of the samples and horse bones in six, although two of the latter include the bone-working debris. Dog and fox bones were both found in one sample, as were probable chicken phalanges, and the deer antler fragments found have been noted above.

The samples have also produced a small number of bones from small wild species that were almost certainly exploited for food. These include part of a snipe bill, two bones of thrush family similar in size to a song thrush, two unidentifiable bird bones, seven eel vertebrae and nine small fish vertebrae, probably small freshwater taxa. A very small number of oyster and mussel shell fragments were recovered, and three samples produced bird eggshell, almost certainly chicken, with one fragment from a much thicker shelled species. While it is not impossible that the snipe and thrush are part of the natural death assemblage on the site, and the post-Roman spring may well have attracted both species, their contexts could readily indicate that they form part of the domestic food waste, as the other remains clearly do.

In contrast to the bones discussed above, the small mammal, reptile and amphibian remains do reflect the natural fauna of the site. A single rabbit bone is certainly intrusive but the remainder of the fauna is probably contemporary. One unusual element for a rural site is a single carpus of a rat. Unfortunately this bone is not readily identified to species (*i.e.* black or brown rat) and we cannot establish whether it is a contemporary black rat or a later intrusive brown rat bone. On the other hand, two finds of house mouse indicate contemporary Romano-British habitation or buildings on or near the site. The other taxa, wood mouse, field vole,

water vole, bank vole, common shrew, lizard, great crested newt, smooth or palmate newt, frogs and toads are not sufficiently restricted in range to afford a clear indication of the contemporary environment, but the suite generally reflects an open environment with perhaps the wood mouse, bank vole and the newts suggestive of scrub, hedgerows or woodland. The only other indicators of the contemporary environment are the snails. These are relatively rare, possibly a factor of the pH of the soils but the fill (432) of ditch [8023] contained shells which include taxa primarily of grassland habitats (Table 6) and other species typical of a damp ditch environment such as *Carychium* sp., *Lymnaea truncatula* and *Planorbis leucostoma*. In other samples, single shells or small groups reflect a variety of habitats but give little clue to the immediate environment. A single shell of *Hydrobia ventrosa* was found in the fill (016) of ditch [8008], a species associated with brackish water, but not uncommon in ditches.

CHARRED AND WATERLOGGED PLANT REMAINS John Giorgi

Identification

The charred plant remains (except charcoal) had already been sorted from all but a few exceptionally rich flots, the latter being divided by size

Feature	172	353	440	8001	8001	8008	8009	8023	8023	8036	8040
Context	173	354	439	126	425	016	005	432	430	014	060
Grassland/open country											
<i>Cecilioides acicula</i>			+	+				+			
<i>Pupilla muscorum</i>								+			
<i>Helicella</i> sp.								+			
<i>Vertigo pygmaea</i>								+			
<i>Vertigo</i> sp.		+									
<i>Vallonia costata</i>				+				+	+		
<i>Vallonia excentrica</i>								+			
Catholic											
<i>Tricia hispida</i>				+				+			
<i>Cochlicopa</i> sp.					+		+				
Shaded and woodland											
<i>Discus rotundatus</i>	+								+		+
<i>Retinella</i> sp.							+			+	
<i>Oxychilus</i> sp.							+	+			
<i>Carychium</i> sp.		+						+			
Damp ground and marsh											
<i>Lymnaea truncatula</i>								+			
<i>Planorbis leucostoma</i>								+			
Brackish water											
<i>Hydrobia ventrosa</i>						+					

Table 6: Snail taxa identified from the samples

through a stack of sieves for ease of sorting. A binocular microscope was used together with modern and charred reference material and reference manuals for the identification of the botanical material. All the sorted and identifiable charred plant items were counted except for material that was difficult to quantify (cereal fragments smaller than 2mm, nut shell and fruit stone fragments, stem and cereal awn fragments, charcoal and indeterminate items). Tables showing the results of detailed analysis of the charred plant remains and waterlogged plant remains are retained in the site archive. Taxonomic order follows *The Flora of the British Isles* (Clapham *et al* 1987) and the ecological information is also taken from this work. The charred and waterlogged plant remains are discussed separately.

Charred Plant Remains

All samples produced charred plant remains: a total of 4066 items were quantified. Item frequency and species diversity between the individual plant assemblages varied greatly, with most of the samples containing less than 100 quantified items. Two samples, both from Pit 270, contained just over 57% of all the quantified remains.

Cereals

Most of the plant assemblages consisted of a mix of cereal grains, chaff fragments and seeds of other plants, mainly weed seeds. Cereal grains accounted for 33% of the quantified remains, chaff fragments for 39% and seeds of other plants for 28%. The seeds of other plants were mainly from weeds, though there were also a few other food plants, for example pulses, fruit seeds and stones, and nutshell fragments. Very fragmented charcoal was present in all the samples and, although numerically generally much more abundant than the charred seed and cereal remains, only seven samples produced a charred flot greater than 50ml.

Cereals were well represented on the site, both by grains and by a slightly higher percentage of chaff fragments, though this does not take into account cereal grain fragments smaller than 2mm, which were not quantified. Cereal grains appeared in all the samples, though generally in low quantities, while 56% of the quantified grains came from pit 270. The grains were generally not well preserved and 66% could not be identified to species.

Most (82%) of the identifiable grains were wheat (*Triticum* spp.), followed by significantly smaller amounts of barley (*Hordeum sativum* –

11%) and oats (*Avena* spp. – 6%). There were also possible traces of rye (cf. *Secale cereale*), accounting for less than 1% of the quantified grains.

Chaff fragments were present in 22 samples, almost 76% of them coming from pit 270 and ditch [8023]. Most of the remaining samples contained only small numbers (20 items or less) of chaff fragments. Over 99.5% of the chaff came from wheat, mostly from hulled wheat in the form of glume bases and spikelet forks/bases. A very small number of barley rachis fragments and a few oat awns were also present. Other possible cereal residues present included very small quantities of rounded stem fragments. These may either be from cereal straw or large wild grasses, though it is not possible to distinguish between the two (van der Veen 1991, 353).

Wheat was identified in all but one sample on the basis of 373 grains and 1571 chaff fragments. The morphological characteristics of the well-preserved wheat grains showed the presence of the hulled wheat, spelt (*Triticum spelta*) (15% of the grains in 16 samples), and emmer (*T. dicoccum*) (5% of the wheat grains in 12 samples). Some of the hulled wheat grains could only be classified as either emmer or spelt. However, 69% of the wheat grains could not be reduced to species.

The presence of large quantities of diagnostic spelt chaff (mainly glume bases plus a smaller number of spikelet forks/ bases and occasional rachis fragments) showed the predominance of spelt wheat on the site. Only three possible emmer glume bases were identified in all the samples.

Forty-one free-threshing wheat grains also were present in eight samples, representing 11% of the wheat grains from the site. Eight wheat rachis fragments in two samples suggest that these grains were from hexaploid free-threshing bread wheat (*Triticum aestivum* s.l.).

Barley was represented in thirteen samples by forty-nine grains and seven rachis fragments. The well-preserved barley grains included some twisted and hulled grains, indicating that six-row hulled barley (*Hordeum vulgare*) was present. Twenty-nine oat grains from nine samples were counted, though the absence of oat floret bases made it impossible to establish whether these were wild (*Avena fatua*) or cultivated (*A. sativa*) oats. A small number of oat awn fragments were also present in the rich plant assemblages from pit 270. The four grains that were tentatively identified as rye were from Ditch 8004 (Context 060) and Ditch 8040 (Context 221).

The relative proportion of the cereals at the site with a predominance of spelt wheat reflects results from other Romano-British sites. Spelt wheat appears to be the main wheat grain being used by this period on rural and urban sites (Greig 1991), in both southern and northern England (van der Veen 1992). Emmer wheat, on the other hand, tends to decline in the Roman period with the emergence of spelt wheat, and it is possible that emmer was growing as a relic of previous harvests. Bread wheat is less common on Romano-British sites, and abundant at very few sites (Greig 1991, 309) though this cereal may be under-represented because it is a free-threshing grain.

Barley is also usually well represented on Romano-British sites, though this is certainly not the case at Meppershall. The tentative presence of rye corresponds to previous archaeobotanical research, which shows that it is only occasionally found on other Romano-British sites and never in large quantities, suggesting it was not an important crop in the Roman period. Oat grains are also only usually found in low numbers on Romano-British sites, and in this instance probably represent cereal weeds rather than crops. Indeed, historical evidence suggests that oats were better known in their wild form in the Roman period (Spurr 1986, 61).

Cereals may have had a number of uses; for bread, porridge, gruel and cakes (Wilson 1991, 234). Spelt wheat and barley were used for gruel, known as *puls* or *pulmentus*, which was roasted, pounded, and cooked in water to make porridge, similar to Italian *polenta* (Renfrew 1985, 22). Bread wheat may have been used for making light leavened bread known as *artophites*. Bread was also used in the preparation of other Roman dishes, as shown in the recipes of Apicius, while flour could have also been used for cakes (Wilson 1991, 234). Wheat was probably used exclusively for human food, while barley may also have been used for animal fodder, particularly for horses, and possibly brewing. No sprouted barley grains were found on the site to indicate the latter activity. A small number of the spelt wheat grains from pit 270 did show evidence of having germinated, though not in sufficient quantity to suggest deliberate germination for brewing.

Other Potential Economic Plants

Some of the other charred plant remains from the site may represent economic plants. Twenty-seven leguminous seeds were recovered from thirteen

contexts, including two tentative identifications of pea (cf. *Pisum sativum*) from ditch [8008] (Context 016), and pit [270]. Cultivated pulses are poorly represented as charred remains on Romano-British sites (Greig 1991, 311), peas being used for both human and as animal feed. However, most of the pulses were too poorly preserved or fragmentary to be identified: most could only be classified as vetch or vetchling/pea (*Vicia/Lathyrus/Pisum* spp.), and may represent weeds rather than a cultivated variety.

Wild fruits that may have been exploited as food included small amounts of hazelnut (*Corylus avellana*), represented by charred shell fragments in four samples, a single elder seed (*Sambucus nigra*), and a fruit stone fragment of *Prunus* sp.

Wild Plants

The other botanical material in the charred assemblages comprised seeds of wild plants, mainly weeds, which appeared in virtually every sample. However, species diversity and item frequency in the individual samples was not particularly high, with generally low numbers of seeds (51 or less) in all but the two samples from pit 270, which accounted for 65% of all quantified weed seeds from the site.

The wild plants represented consisted mainly of weeds of disturbed (including arable) ground and waste places, though most of these seeds could not be reduced to species, thereby limiting ecological interpretation because species within a genus may grow in significantly different habitats. However, the association of most of the charred weed seeds with cereal grains suggests that they are probably mainly cereal weeds, imported onto the site incidentally with the harvested grain rather than growing wild in the vicinity of the site.

The best represented species in terms of item frequency and occurrence were wild grasses, which accounted for almost 55% of the quantified weed seeds. Bromes (*Bromus* spp.) were particularly well represented, while rye-grass (*Lolium* spp.), rye-grass/fescue (*Lolium/Festuca* spp.) and poa (*Poa* spp.) were also identified, together with a large number of indeterminate grass seeds. Other well represented weeds were docks (*Rumex* spp.), including sheep's sorrel (*R. acetosella*), stinking mayweed (*Anthemis cotula*), medick/trefoil (*Medicago/Trifolium* spp.), sedges (*Carex* spp.) and buttercups (*Ranunculus acris/repens/bulbosus*). Other characteristic arable weeds appearing only occasionally and represented by

only small numbers of seeds included knotgrass (*Polygonum aviculare*), black bindweed (*Fallopia convulvulus*), cleavers (*Galium aparine*), goosefoots etc. (*Chenopodium* spp.) and scentless mayweed (*Tripleurospermum inodorum*).

A number of the plants in the assemblages are typical of grassland environments. These include the leguminous species medick/trefoil, while some of the wild grasses and buttercups may also grow in grassland habitats. Sedges also grow in wetland habitats, along with other more typical grassland species occasionally represented in the samples, including lesser stitchwort (*Stellaria gramineae*), ribwort (*Plantago lanceolata*) and self-heal (*Prunella vulgaris*). These plants could be interpreted as collected hay fodder residues, but their association with grains suggests that they are probably cereal weeds. Indeed, it has been suggested that the appearance of these grassland plants in charred cereal assemblages recorded on other Iron Age and Romano-British sites may be an indication of different levels of soil disturbance, and thus different arable weed communities compared to today (van der Veen 1992; Hillman 1984). For example, sedges and spike-rush (*Eleocharis* spp.), also identified at Meppershall, have been found in Roman granary deposits of spelt and bread/club wheat at South Shields (van der Veen 1992, 76). The significance of these wild plants with regard to aspects of crop husbandry is discussed below.

Crop Husbandry

Charred by-products from crop processing, particularly the weed seeds found in association with the cereals, may provide information on aspects of crop husbandry. Evidence from the Meppershall weed assemblage is limited because most of the weed seeds could not be reduced to species.

Arable weeds may provide an indication of the soil types being cultivated around a site. Stinking mayweed, which was well represented, is most frequently found on heavy clay and clay loam soils. There were virtually no other strong indicators of the range of soils being cultivated other than occasional records of sheep's sorrel, a plant that is common on acidic soils but infrequent on calcareous soils, and a single seed of annual knawel (*Scelaranthus annuus*) which is found on dry sandy and gravelly soils.

Spelt wheat, the main cereal at the site, is a particularly hardy grain and can grow in a wide range of both heavy and light soils. Barley can also grow in a range of soils, though it is best suited to light

loams. However, it cannot tolerate areas of poor drainage, or locations where the acidity is less than pH6 (Jones 1981, 105). Bread wheat is normally associated with deep clay loams and requires greater soil fertility than spelt (*ibid.*, 107). Rye may not have been intentionally cultivated at the site, but it can grow in poorer acidic soils.

Sowing times may be determined by examining the germinating times of arable weeds. Thus cleavers, an autumn germinating weed, which was identified in several samples, suggests the autumn sowing of cereals. This weed has been found together with the remains of spelt from other Romano-British sites (Hillman 1984). It does not exclude the possibility that some of the cereals at the site were sown in the spring; indeed, both barley and pulses are traditionally spring-sown.

Waterlogged Plant Remains

All the samples from the site contained varying amounts of 'waterlogged' seeds, and it is difficult to separate those remains that result from intrusive activity (with large amounts of rootlets in some samples) from seeds that may be contemporary with the sampled deposits. Only four samples with high item frequency and species diversity and the presence of insect remains were considered for analysis of their waterlogged plant remains. The remaining samples did show a consistency in the range of species represented as waterlogged material, with mainly elder and blackberry/raspberry (*Rubus fruticosus/idaeus*) seeds and to a lesser extent, nettles (*Urtica* spp.), goosefoots/oraches and black nightshade (*Solanum nigrum*). Interestingly, most of these species were well represented in the organic samples, while the fruit seeds are fairly robust and could be a reflection of differential preservation and survival, rather than representing intrusive material.

The four samples examined for waterlogged plant remains were from pit [259] (context 250), layer (198), and ditch [8001] (context 425) and ditch [8023] (context 430). The richest waterlogged plant assemblages were from pit [259] and layer 198, both of which were within the spring area. Both contained a large quantity of very fragmented wood, moss, and some thorns and bud fragments and a similar range of fruits and seeds from plants associated with a range of habitats.

Wetland plants, including aquatics, were well represented in these two samples, with particularly large numbers of *Apium* seeds, along with watercress (*Rorippa nasturtium-aquaticum*),

celery-leaved crowfoot (*Ranunculus sceleratus*), crowfoots (*R.* subgen. *Batrachium*), sedges, and rushes (*Juncus* spp.), the latter only being present in layer 198). There was also a wide range of plants of waste places and disturbed (including cultivated) ground. Well-represented species included goosefoots etc/oraches, docks, stinging nettle (*Urtica dioica*), small nettle (*U. urens*) and chickweed (*Stellaria media*: mainly in pit [259]), with occasional records of other weeds including *Polygonum* species, e.g. knotgrass (*P. aviculare*).

A small number of grassland plants were also represented in the two samples, with large numbers of self-heal (in pit [259]), buttercups, thistles (*Carduus/Cirsium* spp.), hawkbit (*Leontodon* spp.) and indeterminate grasses (in layer 198). While some of these plants may have been growing as arable weeds, there were few charred cereal remains in these two samples, so this range of plants may reflect a grassland habitat close by, or possibly the residues of hay fodder (c.f. Greig 1984). Finally, there was a shrub/hedgerow component to these two assemblages, with a good representation of both elder and blackberry/raspberry, and also occasional records of sloe/blackthorn (*Prunus spinosa*), hazel nutshell fragments and hawthorn (*Crataegus monogyna*: in layer 198).

The samples from ditches [8001] and [8023], both taken from the northern part of the site produced much smaller waterlogged plant assemblages in terms of both item frequency and species diversity. These consisted of mainly elder and blackberry/raspberry seeds and a range of plants of disturbed ground and waste places, particularly stinging nettle and henbane (*Hyoscyamus niger*), plus a small number of other weeds including dyer's rocket (*Reseda luteola*), thistles, fool's parsley (*Aethusa cynapium*) and chickweeds. Some of these may be arable weeds associated with the large quantity of charred plant remains present in both these samples. Only a small number of wetland plants were present, e.g. occasional records of hemlock (*Conium maculatum*) and sedges.

Another interesting find in the sample from Pit 157 was six uncharred grape seeds (*Vitis vinifera*). It is difficult to establish whether or not these seeds are intrusive, though the pit is located close to the spring area. Finds of grape seeds from numerous sites in Roman Britain, particularly from London, testify to the consumption of this fruit, though it is not possible to establish whether the grapes are from imported dried fruit or locally grown produce. Viticulture in Roman Britain has been

suggested on the basis of grape skins from Gloucester, and vine rods at Boxmoor villa, Hertfordshire (Renfrew 1985, 24), while excavations at Wollaston, Northamptonshire, have revealed possible evidence for an extensive Romano-British vineyard (Meadow 1996). Therefore, the cultivation of grapes on or near the site cannot be completely ruled out.

DISCUSSION

Although a small amount of Iron Age pottery was recovered from the site, it seems likely that its development commenced in the late 1st to early 2nd century AD. Though no structural remains were discovered during the excavation it appears that the site formed part of a small Romano-British farmstead, founded at this time. From the configuration of features revealed in the excavation, the farm was almost certainly located on the slightly higher ground to the south and east of the site, within the area defined by the two phases of enclosure ditch. From the ceramic evidence it seems likely that the site reached its peak during the 3rd and early to mid 4th centuries. During the second half of the 4th century the farmstead was abandoned, probably as ground conditions became wetter, owing to either climatic change or failure to maintain drainage systems. A significant finding from 4th-century contexts was evidence of bone working.

Ditches [8002], [8003], [8006] and [8043] appear to represent the earliest enclosure on the site, possibly dating from the late 1st or early 2nd century AD (Phase 2). With these are associated a number of linear features (e.g. [8010], [8022], [8028], [8029]), possibly representing activity within the enclosure. This pattern is repeated in Phase 3, with the cutting of enclosure ditch [8001], and ditches [8020], [8021], [8025] and [8026] to the east of it. Also part of this phase are several small linear features ([8020], [8021], [8025]) with almost vertical sides and flat bases, suggesting that they might have been sleeper beam slots. However, as no occupation surfaces or other structural evidence was identified in the vicinity this identification remains uncertain. While ditch [8001] was in use it seems to have been maintained, as successive re-cuts were identified. During the mid to late 4th century maintenance of the enclosure ditch seems to have ceased, and it was allowed to silt up, along with other ditches on

the site. As a result, the area around the spring seems to have rapidly become waterlogged.

The range of pottery recovered from the site shows that the settlement had trading links with other regions in Britain and abroad. Coarse wares were being brought in from the surrounding areas including production centres at Harrold to the north and Hadham in Hertfordshire. As one would expect the geographical sources of the Roman fine wares were much wider, and pottery from the Nene Valley, Oxfordshire and Hampshire areas has been identified. As on most Roman sites some Samian ware from Gaul was also present in the assemblage.

While excavations at Meppershall did not provide any direct (e.g. structural) evidence relating to the occupation of the site, they did reveal information regarding the economy of the site. It is clear that, in addition to farming, the site's inhabitants were also engaged in bone working. Evidence of iron-smithing, whether connected with agricultural activities or a totally separate enterprise, was also recognised.

BONE WORKING

Evidence was recovered from the 4th-century pits around the spring indicating that horse ribs were being sliced into small platelets, of which several hundred fragments were found. This is very unusual, and it is not clear what these platelets were being used for. Though a few fragments have incised parallel grooves or ridges, and one carries a ring and dot motif, most of the assemblage appears to comprise unused or unfinished strips of bone plate or off-cuts. The fact that the bones were worked with a saw, a blade that split the edges off the ribs and a tool that was used to shave down both faces of the plates implies a professional or semi-professional craftsman. The quantity of material from the samples, given that these represent only a small proportion of the deposits in the pits, suggests that the workshop functioned for some time, particularly since the level of discard of part worked material suggests that a very considerable number of successful plates must have been manufactured or the craftsman was a very poor apprentice! The large numbers of uncounted tiny fragments in the residue suggesting *in situ* waste and trampling is a good indication that the workshop was located adjacent to the pits and it seems probable that it was associated with a structure of

some sort. It is possible that decorated strips of bone of the type recovered here were used as casings or inlays on wooden furniture such as caskets or boxes (Crummy 1981, 1983). Boxes or furniture with casing or inlay are not cheap 'everyday' items, and if the craftsman was at the site to manufacture something for the occupants this suggests some social status. Pieces of bone inlay are not common finds and few waste assemblages such as this have been published. Unusually at Meppershall, the plates are made from horse rib. The plates were made from the mid and distal shafts (the straighter portion of the rib) with the proximal ends sawn off and discarded. The use of a saw on the ribs at this date is a clear indication of craftwork not butchery, and the narrowness of all the unfinished or discarded plates further shows that they derive from horse ribs rather than any other species. In the Saxon and medieval periods cattle ribs are generally used for plate making, as they are broader and allow the manufacture of much larger plates.

IRON SMITHING

Evidence for iron smithing in the form of hammer-scale was recovered from across the southern half of the site, the highest concentration coming from the features around the area of the spring. Hammer-scale comprises tiny plates and spheroids of iron rich slag produced when hot iron is worked at the anvil. Four of the late Roman pits and enclosure Ditch 8001 also produced iron slag. None of the concentrations are high, but their distribution does suggest that some limited smithing may have been taking place adjacent to the spring during the later part of the 4th century. It is also suggested that some itinerant smithing was taking place throughout the occupation of the site.

AGRICULTURE

The charred and waterlogged plant remains from the site provide both an insight into the arable agricultural economy of the site and the character of the local environment. Spelt wheat appears to have been the main cereal cultivated at the site, while bread wheat and barley appear to have been grown on a smaller scale; the oats were probably cereal weeds while little comment may be made on the few rye grains.

Other food plants included possible evidence for the cultivation of pea, while grapes may have been consumed, although the origin of this fruit as either imported dried fruit or locally cultivated fruit cannot be established. Some of the wild fruits, elder, blackberry/raspberry, hazel nut, sloe/blackthorn, represented by both charred and waterlogged plant remains, may have been gathered and consumed from time to time.

The composition of the individual charred plant assemblages is fairly similar, consisting mainly of the residues from the latter stages of crop processing, including both the by-products (from sieving and de-husking of the glume wheats) and products (accidentally charred grain). The nature and distribution of the larger charred plant assemblages does not show any significant variation. There is, however, a greater concentration and range of crop-processing waste in the central part of the site, adjacent to the spring area; while debris from only de-husking of the glume wheats (possibly from piecemeal processing of stored spikelets) occurs in the two rich charred plant assemblages from the northern part of the site and in the ditch fill to the east, in deposits assigned to the two previous phases of activity.

The cereal weeds provide little information on crop husbandry practices with some evidence for the cultivation of heavy clay soils and only extremely tentative evidence for the cultivation of sandy soils. There is also evidence to indicate the autumn sowing of at least some of the cereals. Finally, the waterlogged plant remains suggest a generally disturbed environment with indications of a shrub/hedgerow community and a wet habitat (including bodies of water, albeit possibly temporary) in the central part of the site. Whether or not some of these latter plants derive from deposits that post-date the use of the site is problematic. Since several of the pits in this area did not produce significant evidence for waterlogging (Rackham 2003), this suggests that during their use this area of the site was reasonably dry. Layer 198 sealed the pit fills, so it must at least post-date the pits and probably the Romano-British occupation of the site. Perhaps the lack of channelling of the water from the spring and the debris of occupation around it lead to the development of the marshy conditions evident from later deposits after occupation ceased. Only Ditch 8023 produced sufficient snails to allow any environmental reconstruction, and it is clear from this assemblage that the environment adjacent to the sampled ditch was

open grassland, accompanied by a fauna that might be expected in the ditch itself. A scatter of shade-loving taxa in other samples cannot be interpreted but is not inconsistent with what would be expected under hedges alongside the field ditches excavated.

The animal husbandry on the site appears to have been focused on cattle, although sheep may have been much more important than the hand-excavated bone assemblage suggests. Pig seems to have made the smallest contribution of the major farm animals except chickens, which are infrequent in both excavated and sampled assemblages. Some cattle were slaughtered at a 'prime age' for meat production, but apparently a fairly large proportion was kept until adult. This indicates other economic uses for the herd, probably included milking, breeding and draught. It is possible that the older profile suggested by the dental data reflects younger stock leaving the farm on the hoof for markets elsewhere. There is in fact no direct evidence for animal breeding at the site, other than the two piglet skeletons, which are certainly of much later date. The youngest beasts reflected in the assemblage are three cattle of about six months, not young enough to indicate breeding on site. Much of the bone debris derives from consumption and food waste, and has been butchered and subsequently scavenged after discard. Farm casualties, such as still-born calves or later deaths, were perhaps disposed of elsewhere. While the cattle show clear evidence for improvements over native stock, the sheep are still fairly small gracile animals. Some of the cattle were almost certainly used for ploughing or other draught, leading perhaps to the pathologies of the feet and hip that were noted. Other food items in the assemblage include oysters, mussels, hens' eggs, eels, possibly other small fish, snipe and thrush. There is no clear indication that the horse bones derive from food waste and these animals were probably used for riding or driving (alternatively as 'harness animals'). Horse ribs were also being used for bone working.

A few of the food items, such as oysters, mussels and possibly grapes, suggest trade, and presumably the products of the bone workshop were traded off site, along with the agricultural produce. The domestic character of much of the debris in the samples and the evidence for the bone workshop, and the latter stages of the crop processing in the samples near the spring indicate that at least in the mid-late 4th century the spring was a focus for

activity. This appears to have included craft and domestic activities and must have been associated with buildings on this part of the site. To the north-east of the site activities may have been more specifically related to agricultural activities and earlier stages in the crop processing cycle in an earlier phase, although domestic debris was entering these deposits also.

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BIBLIOGRAPHY

- Brown, A. 1994 'A Romano-British Shell Gritted Pottery and Tile Manufacturing Site at Harrold, Bedfordshire' *Bedfordshire Archaeol. J.* **21**, 19–107
- Cameron, R.A.D. & Redfern, M. 1976 *British Land Snails*. Linnean Soc. Synopses of the British Fauna **6**
- Clapham, A., Tutin, T. & Moore, D. 1987 *Flora of the British Isles*. 3rd edition. Cambridge University Press
- Clark, R. & Dawson, M. 1995 'The Prehistoric and Romano-British Landscape in Bedfordshire', in Holgate, R. (ed) *Chiltern Archaeology, Recent Work*. (Dunstable)
- Dawson, M. (ed.) 2000 *Prehistoric, Roman and Romano-British Landscapes of the Great Ouse Valley*. Coun. Brit. Archaeol. Res. Rep. **119** (York)
- Evans, J.G. 1972 *Lands Snails in Archaeology*. Academic Press
- Evans, J. 1991 'Some Notes on the Horningsea Roman Pottery', *J. Roman Pottery Studies* **4**, 33–43
- Fawcett, A.R. 2004 'The Roman Pottery' in Gardner, R. (in press) 'Archaeological investigations at 24 Friary Fields, Dunstable, Bedfordshire' *Bedfordshire Archaeology*
- Fawcett, A.R. 2004a 'The Roman Pottery' in Last, J. & McDonald, T. (forthcoming) *Thorley: a multi-period landscape in east Hertfordshire*. East Anglian Archaeol. Occ. Paper
- Fawcett, A.R. 2004b 'The Roman Pottery' in Ashworth (forthcoming) 'Excavations at Plextek in Great Chesterford, Essex', *Essex J. Archaeol. Hist*
- Fawcett, A.R. unpub. (a) *An Early Corpus and Distribution of Hadham Wares*
- Fawcett, A.R. unpub. (b) 'The Roman Pottery' in *Excavations at High Avenue, Letchworth, Herts*. Hertfordshire Archaeol. Trust Rep. ref. LET 3–99
- Fulford, M.G. 1975 *New Forest Roman Pottery: Manufacture and Distribution, with a Corpus of the Pottery Types*. Brit. Archaeol. Repts **17** (Oxford)
- Gidney, L.J. 1994 The Animal Bones from periods 1–6. Leicester, Causeway Lane Excavations 1991. *Durham Environmental Archaeology Report 26/94*
- Going, C.J. 1987 *The Mansio and Other Sites in the Southern Sector of Caesaromagus: The Roman Pottery*. Brit. Archaeol. Res. Rep. **62**, 3–120 (London)
- Grant, A. 1982 'The use of tooth wear as a guide to the age of domestic ungulates', in B. Wilson, C. Grigson & S. Payne (eds) *Ageing and sexing animal bones from archaeological sites*, Brit. Archaeol. Repts **109**, 91–108 (Oxford)
- Greig, J. 1991 'The British Isles', in W. van Zeist, K. Wasylikowa & K-E. Behre (eds) *Progress in Old World Palaeoethnobotany*, 229–334 (Rotterdam)
- Hillman, G. 1981 'Reconstructing crop husbandry practices from charred remains of crops', in R. Mercer (ed.) *Farming Practice in British Prehistory*, 123–162. Edinburgh University Press (Edinburgh)
- Hillman, G. 1984 'Interpretation of archaeological plant remains: the application of ethnographic models from Turkey', in W. van Zeist & W.A. Casparie (eds), *Plants and Ancient Man*, 1–41. Balkema (Rotterdam)
- Jones, M. 1981 'The Development of Crop Husbandry', in M. Jones & G. Dimbleby (eds) *The Environment of Man: the Iron Age to the Anglo-Saxon Period*. Brit. Archaeol. Repts **87**, 95–127 (Oxford)
- King, N. 2001 *An Archaeological Evaluation of Land at Meppershall Bedfordshire* (ASC. rep. LMB01/2)
- Luff, R-M. 1982 *A Zooarchaeological study of the Roman North-Western Provinces*, Brit. Archaeol. Repts **137** (Oxford)
- Meadows, I. 1996 Wollaston: the Nene Valley, a British Moselle?, *Current Archaeology* **150**, 212–15
- Morris, J. 1977 *Domesday Book: Bedfordshire*. Phillimore (Chichester)
- Neal, D.S., Wardle, A. & Hunn, J. 1990 *Excavation of the Iron Age, Roman and medieval settlement at Gorhambury, St. Albans*. HBMC Report Series **14** (London)
- Perrin, J.R. 1999 'Roman Pottery from Excavations at and near to the Roman Small Town of Durobrivae, Water Newton, Cambridgeshire, 1956–58', *J. Roman Pottery Studies* **8**, 78–129
- Prummel, W. 1983 *Excavations at Dorestad 2. Early Medieval Dorestad an archaeozoological study*. Nederlandse Oudheden 11, ROB.
- Rackham, D.J. 1986 'A comparison of methods of age determination from the mandibular dentition of an archaeological sample of cattle', in In E. Cruwys and R.A. Foley (eds) *Teeth and Anthropology*. Brit. Archaeol. Repts **S291**, 149–168
- Rackham, D.J. 1986a 'Assessing the relative frequencies of species by the application of a stochastic model to a

- zoarchaeological database', in L.H. van Wijngaarden-Bakker (eds) *Database Management and Zooarchaeology*, PACT **14**, 185–92
- Rackham, D.J. 2003 *Meppershall, Bedfordshire – LMB01. Environmental Archaeological Assessment*
- Renfrew, J. 1985 *Food and Cooking in Roman Britain. History and Recipes*. English Heritage
- Scott, E. 1993 *A Gazetteer of Roman Villas in Britain*. Leicester University Press (Leicester)
- Simco, A. 1984 *Survey of Bedfordshire. The Roman Period* (RCHME / Bedfordshire County Council)
- Soil Survey 1983 *The 1:250,000 Soil Map of England and Wales, and accompanying legend* (Harpenden)
- Spurr, M.S. 1986, *Arable Cultivation in Roman Italy c. 200BC–c. AD100*. Soc. Prom. Roman Studies
- Stead, I.M. & Rigby, V. 1986 *Baldock: The Excavation of a Roman and Pre-Roman Settlement, 1968–72*. Britannia Monog. Ser. 7, (London)
- Stead, I.M. & Rigby, V. 1989 *Verulamium: the King Harry Lane site*. Eng. Heritage Archaeol. Rep. **12** (London)
- Symonds, R.P. & Wade, S. 1999 *Roman Pottery from Excavations in Colchester, 1971–86*. Colchester Archaeol. Rep. **10**. Colchester Archaeological Trust Ltd (Colchester)
- Thompson, I. 1982 *Grog-tempered 'Belgic' Pottery of Southern England Parts I, II & III* Brit. Archaeol. Repts **108** (Oxford)
- Tomber, R. & Dore, J. 1998 *The National Roman Fabric Reference Collection: A Handbook*. MoLAS Monograph **2** (London)
- Tyers, P.A. 1996 *Roman Pottery in Britain*. Batsford (London)
- van der Veen, M. 1991 'Consumption or production? Agriculture in the Cambridgeshire Fens', in J. Renfrew (ed) *New Light on Early Farming. Recent Developments in Palaeoethnobotany*, 349–361 (Edinburgh)
- van der Veen, M. 1992 *Crop Husbandry Regimes. An Archaeobotanical Study of Farming in Northern England 1000 BC–AD 500*. University of Sheffield
- von den Driesch, A. 1976 *A Guide to the Measurement of Animal Bones from Archaeological Sites*, Peabody Mus. Bull. **1**. Peabody Museum (Harvard)
- Watson, J.P.N. 1979 'The estimation of the relative frequencies of mammalian species: Khirokitia 1972', *J. Archaeol. Science* **6** (2), 127–138
- Waugh, K. 1999 'Roman Coarse Pottery' in Going, C.J. & Hunn, J.R., *Excavations at Boxfield Farm, Chells, Stevenage, Hertfordshire*. Hertfordshire Archaeol. Trust Monog. **2**, 84–135 (Hertford)
- Webster, P. 1996 *Roman Samian Pottery in Britain*. Counc. Brit. Archaeol. Practical Handbook in Archaeol. **13** (York)
- Williams, D. 1973 'Flotation at Siraf', *Antiquity* **47**, 198–202
- Wilson, C.A. 1991 *Food and Drink in Britain*. (London)
- Wilson, M.G. 1984 'The Other Pottery' in Frere, S.S. (ed.) *Verulamium Excavations III*, 175–293, Oxford Univ. Committee for Archaeology Monog. **1** (Oxford)