



**University of
Leicester**

Archaeological Services



**An Archaeological Excavation
on land at
52, Grange Lane,
Castle Ward,
Leicester
NGR: SK 586 038**

John Thomas

ULAS Report No 2010-226.
©2010

**An Archaeological Excavation
on land at 52, Grange Lane,
Castle Ward, Leicester.**

NGR: SK 586 038

John Thomas

For: Contlands Investments Ltd.

Checked by

Signed: **Date:**

Name:

Approved by

Signed: **Date:**

Name:

University of Leicester
Archaeological Services
University Rd., Leicester, LE1 7RH
Tel: (0116) 2522848 Fax: (0116) 2522614

ULAS Report Number 2010-226

©2010

[A3.2005]

CONTENTS

Introduction.....	1
Geology.....	2
Archaeological and Historical Background	2
Aims and Objectives	5
General:.....	5
Prehistoric	5
Roman.....	5
Early Medieval (Anglo-Saxon	6
Medieval	6
Methodology	6
General Methodology and Standards.....	6
Excavation Methodology	6
Results of the Excavation.....	7
Prehistoric and Undated Remains	7
Roman Remains	8
Medieval Remains	24
The Lithics	32
The Medieval and Post Medieval Pottery	39
Roman ,Medieval and Later Small Finds	49
Roman and Medieval Coins.....	54
Metal working evidence.....	55
Roman Building Materials.....	56
Medieval Building Materials	57
Osteological Analysis of Cremated Human Remains.....	57
The Animal Bones	67
Charred Plant Remains	81
Pollen Remains	99
Wood and pit lining of the cesspit [362].....	102
Discussion	103
The Archaeological Sequence.....	103
Conclusion	107
Acknowledgements.....	108
Bibliography	109

FIGURES

Figure 1 Site location (OS map 233 Leicester & Hinckley area 2000)	2
Figure 2 The development area in its local context	3

Figure 3 Plan of Roman Leicester and excavated sites in the southern suburb (Grange Lane is No. 10).	4
Figure 4 General view of the excavation in progress facing north	7
Figure 5 Cremation burial (349) under excavation with much of the cremation vessel revealed	9
Figure 6 Remains of cremation burial (348) within the construction cut of medieval cess-pit [362]	10
Figure 7 The Early Roman, pre-road features and location of cremation burials (<i>in-situ</i> and disturbed)	12
Figure 8 The Roman SFB: plan and section drawings	13
Figure 9 The Roman SFB partially excavated	14
Figure 10 Evidence for the Roman Tripontium road and associated features (later features in white)	17
Figure 11 Roman well: plan and section drawing	18
Figure 12 The partially excavated Roman well with detail of the stone lining	19
Figure 13 Concentration of animal bones within Roman ditch [467]	20
Figure 14 Late Roman features following the disuse of the Roman road (later features in white)	22
Figure 15 Detail of Roman corn-drier following excavation	24
Figure 16 Medieval ditches [310] (right) and [342] (centre). Partial remains of Roman ditch [422] can be seen on the left hand edge of the slot	25
Figure 17 The medieval features	26
Figure 18 Medieval oven/kiln base [302] under excavation showing the stone surface on the right and the ash deposit (318) on the left	27
Figure 19 Section through medieval cess-pit [362]	28
Figure 20 Pit [362] during excavation showing exposed archaeology in edges	30
Figure 21 Fabrics present within the assemblage (% sherds)	34

TABLES

Table 1 The stratified lithics	32
Table 2 Summary of Leicestershire Museums Fabric Series	33
Table 3 Major fabric groups present within the assemblage	33
Table 4 The post Roman pottery totals by fabric sherd numbers and weight	39
Table 5 The Medieval Pottery from selected contexts	40
Table 6 The Roman and later coins	51
Table 7 Metal working evidence from Roman features	52
Table 8 Metal working evidence from medieval features	52
Table 9 Quantification of Roman Tile Assemblage by Form	53
Table 10 Suspected Cremation Burial contexts from Grange Lane	54
Table 11 Identified bone elements from burial vessel (348)	58
Table 12 Weights of bone recovered from each burial context	59
Table 13 Summary of results from osteological analysis of cremated bone	60
Table 14 Relative proportion of assemblage assigned to each phase	65
Table 15 Condition of bones	65
Table 16 Distribution of bones in the mid-Roman features	66
Table 17 Species represented in the mid-Roman features	66
Table 18 Distribution of bones in late Roman features	67
Table 19 Species represented in late Roman features (excluding ditch [467])	68
Table 20 Distribution of the assemblage within ditch [467]	68

Table 21	Species proportions in ditch [467]	69
Table 22	Minimum number of elements (MNE) represented by the horse and cattle remains	70
Table 23	Withers height calculations for horse bones in ditch [467]	70
Table 24	Withers height calculations for cattle bones in ditch [467]	71
Table 25	Distribution of bones in 12th-13th century features	72
Table 26	Species represented among the 12th-13th century bones	72
Table 27	Species represented in pit [301]	73
Table 28	Species represented in the post-medieval assemblage	74
Table 29	Charred Plant Remains from Roman contexts	86
Table 30	Medieval plant remains from Grange Lane	97
Table 31	Features sampled for pollen remains	98
Table 32	Pollen and spores	101

An Archaeological Excavation on land at 52, Grange Lane, Castle Ward, Leicester (SK 586 038).

John Thomas

Summary

Archaeological excavation in advance of residential development at 52, Grange Lane, Leicester revealed a well-preserved sequence of deposits reflecting prehistoric, Roman and medieval occupation. Prehistoric evidence was largely reflected by a small assemblage of struck flints, including two arrowheads, but an undated ditch may also represent contemporary activity on the site. Early Roman activity included an unusual sunken-featured building and a scatter of cremation burials although it is unclear if the features were associated. A scatter of other truncated features reflected more widespread early Roman activity although the nature of this occupation was difficult to characterise. During the 2nd century the focus for activity was a stretch of the Roman Tripontium Road, which was represented by an area of laid cobble surface defined on the eastern side by a recut roadside ditch. A large well was also apparently in use during this period and a third century timber building was also erected adjacent to the road. By the 3rd-4th century the road appears to have gone out of use, or become less important, and a substantial deposit of clay formed a platform covering part of the road, upon which an enclosure was sited. A large deposit of bone from the enclosure ditch suggests nearby butchery activities. Further specialisation was reflected by the presence of a corn-drier, and a collection of slags indicate metalworking was also taking place in the vicinity of the site. Medieval activity was reflected by a large recut ditch on the western (Grange Lane) edge of the site, perhaps demarcating the change from domestic plots and the southern fields of Leicester. A linear arrangement of pits suggested backyard activity relating to plots fronting Oxford Street to the east. Of particular note one cess-pit contained important waterlogged remains including a large amount of fruit pips and seeds. An oven or kiln base may indicate specialised brewing on the site, perhaps for trade with Leicester. Other activities reflected in the finds assemblage included horn-working, ironworking and needlecraft. The excavation has proved particularly important in highlighting the prospect of recovering complex and well preserved archaeological information from areas within the southern suburb of Roman and medieval Leicester. The site archive will be held by Leicester City Museum Service, under the accession code A3.2005.

Introduction

Open area archaeological excavation was undertaken by University of Leicester Archaeological Services (ULAS), on land at 52, Grange Lane, Castle Ward, Leicester between June 13th and August 10th 2005. Prior to the excavation, ULAS had undertaken a desk-based assessment (Harvey 2004) and trial trench evaluation (Thomas 2005), which had demonstrated the significant archaeological potential of the site. The excavation was carried out in response to proposals for residential development on the land and was commissioned by Ridge and Partners LLP.

The development site is located on the eastern side of Grange Lane, opposite the entrance to Deacon Street, lying at a height of c.60m OD. It comprises a wedge-shaped area of land encompassing approximately 492 square metres. The position of the site is to the south of the walled Roman town of Leicester, lying adjacent to the projected line of the Tripontium Roman road (Figures 1 and 2).

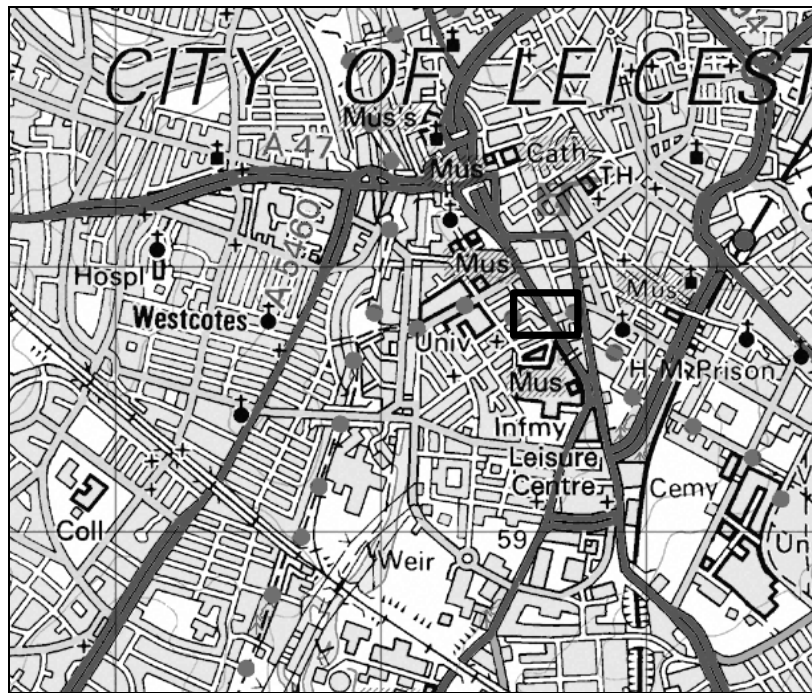


Figure 1 Site location (OS map 233 Leicester & Hinckley area 2000)

Reproduced from the Explorer OS map 233 Leicester & Hinckley area 1:25000 map by permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationery Office. © Crown Copyright 2000. All rights reserved. Licence number AL 10002186.

Archaeological work on other development sites surrounding the Grange Lane site has gradually revealed evidence which, when taken collectively, is beginning to build a picture of life on the southern outskirts of Leicester in the Roman and Medieval periods. The information recovered from 52, Grange Lane will make a considerable contribution to this growing understanding of the organisation and development of Leicester's southern suburbs over time.

Geology

The Ordnance Survey Geological Survey of Great Britain Sheet 156 indicates that the underlying geology consists of Mercian Mudstone with overlying river gravels.

Archaeological and Historical Background

The site lies to the south of the Roman and medieval walled area within the town's southern suburb; an area of known archaeological potential. Previous archaeological investigations in the vicinity of the site, at other sites on Grange Lane, Bonners Lane, Mill Lane, Oxford Street and York Road have uncovered significant remains of Roman, Anglo-Saxon, medieval and post-medieval date.

The main excavations have taken place to the north of the current site. At Bonners Lane (Finn 1994, 2002), approximately 80m north of the development area, produced evidence of the main Roman road leading from the south gate of Leicester to the Roman town of Tripontium (Caves Inn). The projected line of the Tripontium road would pass through the current development area at 52, Grange Lane.

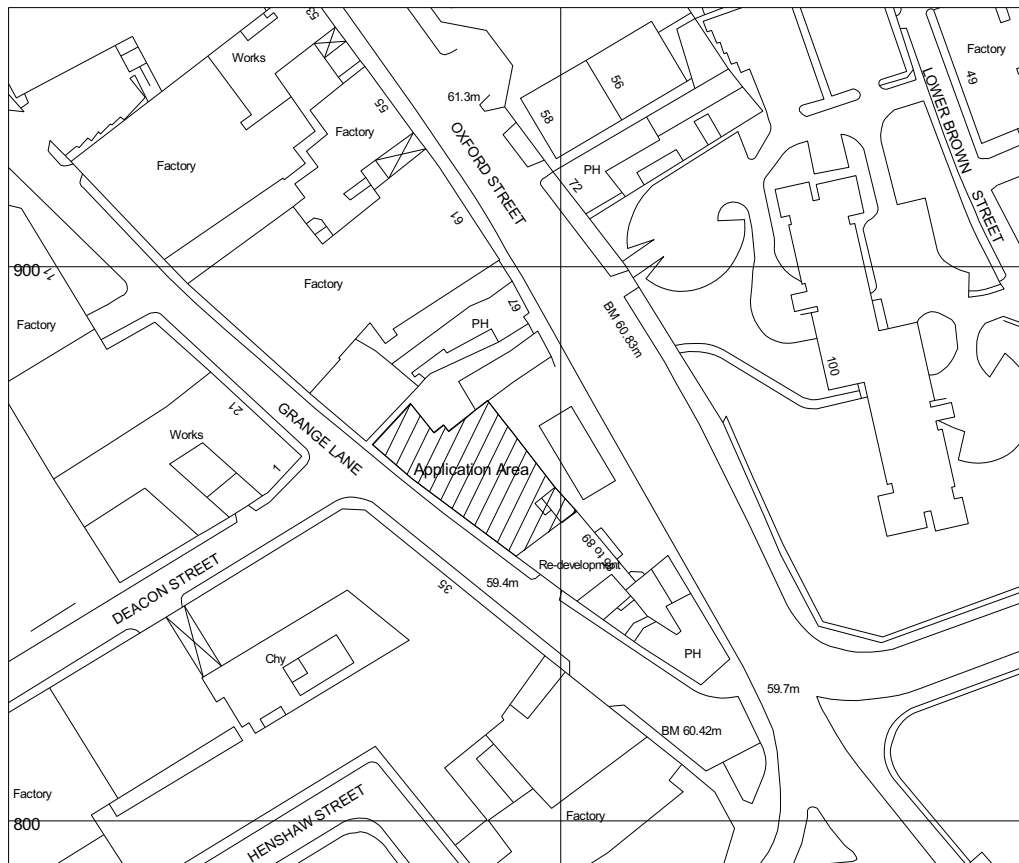


Figure 2 The development area in its local context

Reproduced from the OS map SK5803NE 1:1250 map by permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationery Office. © Crown Copyright 2003. All rights reserved. Licence number AL 10002186.

Evidence for Roman timber buildings fronting on to this street, as well as associated pitting, were also excavated. An Anglo-Saxon timber building was also found at Bonners Lane, representing the first structure from this period to be found in the city, and is considered of regional importance. Timber structural remains of the medieval period relating to properties fronting onto Oxford Street (medieval Southgates) were also revealed as well as ditches and pits from associated backyards. Evidence for post-medieval craft activities indicated hide processing on the site, while several large ditches represented remains of Leicester's Civil War defences.

Excavations on the eastern side of Oxford Street, on the corner with York Road, revealed a similar level of archaeological survival to that seen on Bonners Lane (Gossip 1999a, b). The Roman period was represented by a complex of boundary ditches and a spread of burials associated with an extensive cemetery outside the town wall. Another Saxon timber building was found on the site possibly indicating a focus of occupation here during this period, and medieval suburban development including structural remains, pitting and wells was also recovered.

A small evaluation to the south of the above sites, at 72, Oxford Street revealed further boundary ditches and pits reflecting Roman and Medieval occupation (Hunt 2004).

Further evidence for Leicester's Civil War defences was revealed during excavations at Mill Lane, on the corner with Grange Lane to the north of the present site (Finn 2002). Here also, evidence of prehistoric, Roman and medieval occupation, outside of the town wall, was discovered.

Several smaller pieces of work have also provided information on the character of surviving

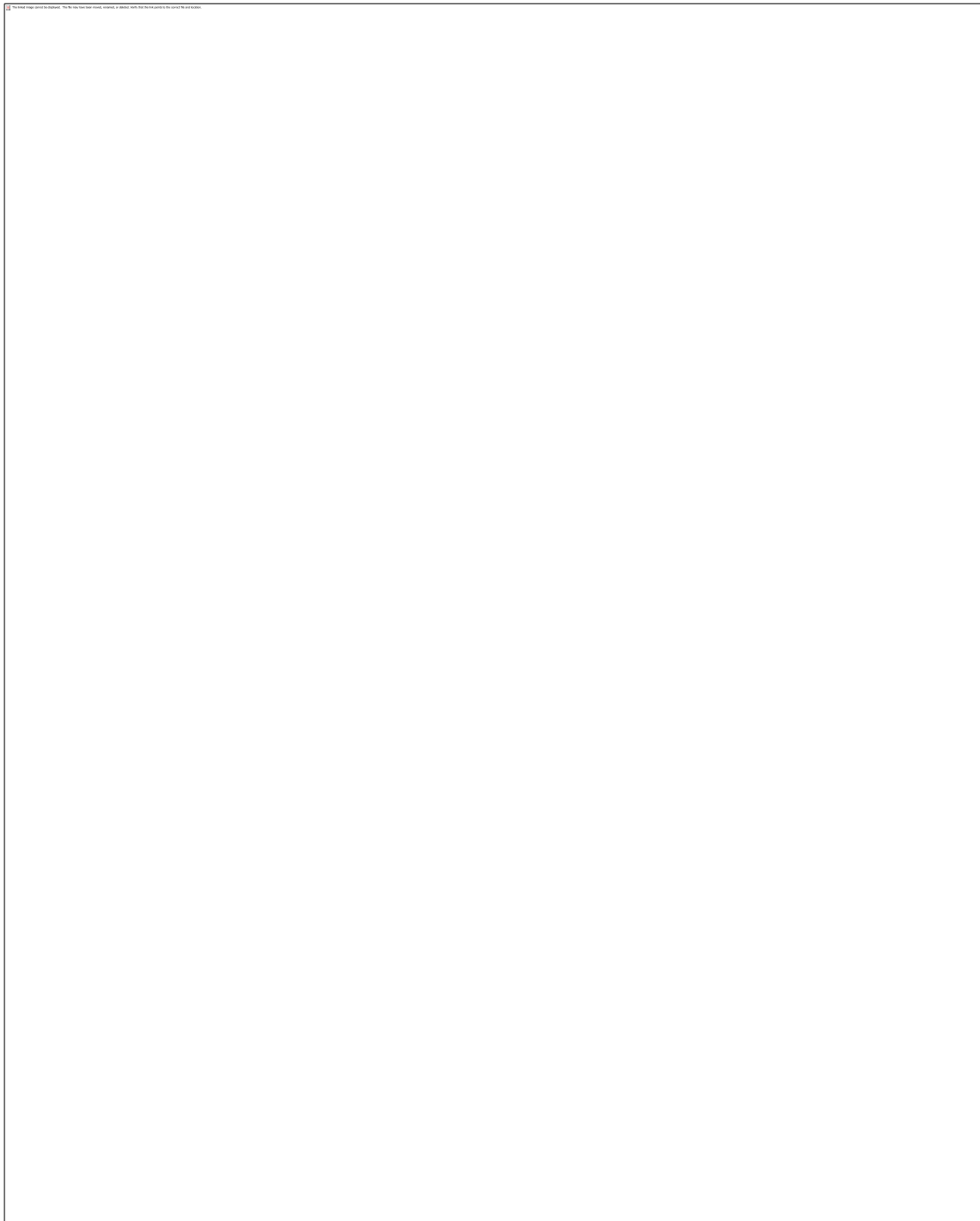


Figure 3 Plan of Roman Leicester and excavated sites in the southern suburb (52, Grange Lane is No. 10).

archaeology closer to 52, Grange Lane. To the immediate south an evaluation at 85-89 Oxford Street, adjacent and to the south of the current site, revealed evidence of a Roman cobbled surface overlying a probable ditch near to the Oxford Street frontage (Clarke 2003). Another partially revealed ditch also contained hand-made pottery of either Iron Age or

Anglo-Saxon origin. On the western side of the site a curving medieval ditch was also revealed, that may have been a property boundary or perhaps was associated with a windmill structure.

On the opposite side of Grange Lane, evaluation on land near the junction of Grange Lane and Deacon Street revealed evidence of extensive quarrying for sand and gravel extraction, although a falloff of this activity was noted towards the Grange Lane frontage, perhaps coinciding with a change in natural soils from gravel to mudstone (Clarke 2003). A mixture of relatively well-preserved pottery sherds recovered from these quarry pits suggested the nearby presence of medieval occupation remains. A large sherd of Iron Age scored ware also hinted at the possibility of later prehistoric occupation in the vicinity.

Archaeological evaluation at the junction of Grange Lane and Deacon Street, almost exactly opposite the current site, revealed evidence of 2nd century AD Roman occupation including structural remains, pits and gullies (Shore 2002). Medieval furrows probably indicate that this area had been turned over to agricultural use by the 13th-14th centuries, while a large linear feature dating to the post-medieval period may have been part of the Civil War defence system associated with similar remains found at Mill Lane.

Recent archaeological work in a neighbouring plot to the north of the current site has revealed remains of the Tripoint Roman road, as well as occupation layers, pits and structural remains reflecting Roman roadside activity (Higgins, 2009, 2010). Overlying and cutting the Roman deposits were medieval and post-medieval layers and cut features, probably associated with the back-yards of properties fronting Oxford Street.

Aims and Objectives

General:

- the establishment of the form, function and chronology of any preserved archaeological remains, utilizing all appropriate scientific and analytical techniques;
- the recognition and investigation of activity and occupation areas;
- the recovery of palaeo-environmental remains, including waterlogged deposits;
- the recovery of artefactual remains to assist in the development of local and regional type series;
- the recognition and investigation of industrial activity.

Prehistoric:

- the identification of any evidence for settlement evidence from the Iron Age or earlier; in particular evidence for the proto-urban, pre-Roman settlement, its extent and character.

Roman:

- the identification of any evidence for any traces of extra-mural suburbs, cemeteries or agricultural activity;
- the role of the immediate southern hinterland of Roman Leicester.

Early Medieval (Anglo-Saxon):

- the identification of any evidence for occupation during the 6th, 7th and 8th centuries;
- the identification of any evidence for the development of extra-mural suburbs or agricultural activity in the centuries before the Norman conquest.

Medieval:

- the identification of any evidence for the development of extra-mural suburbs or agricultural activity in the centuries after the Norman conquest
- the role of the immediate southern hinterland of Medieval Leicester.

The following objectives were also considered:

- establishment of the form, function and chronology of any preserved archaeological remains, utilising all appropriate scientific and analytical techniques;
- the recognition and investigation of activity and occupation areas;
- recovery of palaeo-environmental remains, including waterlogged deposits;
- examination of evidence for settlement development within the hinterland around Leicester;
- recovery of artefactual remains to assist in the development of local and regional type series;
- further information regarding the possible post-mill revealed during the evaluation of the adjacent site.

Methodology

General Methodology and Standards

All work followed the Institute for Field Archaeologists (IfA) Code of Conduct and adhere to their *Standard and Guidance for Archaeological Excavations*.

Excavation Methodology

The City Archaeologist of Leicester City Council required the area of excavation to be no less than 400 sq m within the site.

The excavation area covered the majority of the proposed development site although the southern part of the site, which contained an existing live drain running from adjacent properties, was avoided.

The uppermost demolition and topsoil layers were removed with the aid of a mechanical excavator using a toothless ditching bucket. This site was stripped in two episodes in order to keep the soil on the site. Following removal of the overburden from the excavation area the top of the archaeological level was revealed. The area was hand-cleaned and a scaled plan was drawn of the archaeological features. Archaeological features were then subject to sample excavation and a written, drawn and photographic record made of each intervention.



Figure 4 General view of the excavation in progress facing north

Results of the Excavation

Although archaeological features had been revealed during the evaluation in both trial trenches, the complexity of the site's archaeology was unexpected. Unusually for this part of Leicester, several areas of the site were characterised by reasonably deep, multi-layered archaeological deposits, the result of long-term occupation on the site. Remains of several periods illustrated the changing nature of occupation on the site over time whilst the artefacts and other evidence collected from the excavated features and layers will provide detailed information about the activities associated with the site during the different periods. In the description of the archaeological sequence below, Cut numbers are denoted by square brackets (e.g. [408]), while fills and layers are shown in round brackets (e.g. (206)).

Prehistoric and Undated Remains

A small collection of worked flint recovered from contexts across the excavated area indicated prehistoric activity on or near the site. Two struck flakes were residual finds in a

2nd-3rd century AD Roman context (505), the fill of sunken-featured building [504]. On the northern side of the site two further pieces, including a secondary flake and a Late Neolithic 'Petit-tranchet derivative' type arrowhead, were recovered from a probable bedding layer (445), located directly beneath the cobbled road surface (307) which also contained 2nd-3rd century AD Roman pottery. A final piece, also a probable Late Neolithic arrowhead, came from context (372), the only fill of an otherwise undated ditch [371].

Ditch [371] was one of the earliest features on the site and lay on the western edge of the site adjacent to Grange Lane. This feature was fairly irregular in plan but lay on a general north-south orientation. It was observed for approximately 12m although it was clear that later truncation had removed much of the feature. Partial excavation of [371] indicated that it was a fairly substantial ditch, measuring at least 1.8m in width by c.0.78m deep, with a steep sloping eastern edge leading to a flat base. A single fill of compact greenish brown silty-sand (372) was relatively sterile with the exception of occasional charcoal flecks. The only datable evidence recovered from this feature was a Late Neolithic arrowhead although other similar finds across the site suggest a scatter of such material lay within the site area and as with the others, it seems likely to be a residual find rather than clear evidence of a date for the ditch.

Roman Remains

Late 1st – Early 2nd Century

Cremation burials

Remains of four disturbed cremation burials represented the earliest evidence for Roman activity on the site and indicate the presence of a small cemetery dating to the late 1st or early 2nd century.

Unfortunately, due to the busy nature of activity on the site over time, all four cremation burials had been disturbed to some degree. However the evidence in some cases suggests that once disturbed, the burials were carefully re-interred indicating that their general location on the site was not too distorted.

The easternmost cremation burial, (206) consisted of 105g of calcined human bone and broken remains of an associated grey ware vessel that had been used as an urn. The burial had been slightly disturbed by a later ditch but enough of the cremation urn remained *in situ* to suggest that it had been placed upright within a small pit, cut [207].

A second cremation burial, (417) was found within the fill of a pit dating to the late 2nd – early 3rd century (cut [408] see below) where it had evidently been reburied after being disturbed. This burial consisted of just 5g of calcined human bone in close association with sherds of a grey ware carinated jar.

Remains of two further cremation burials, (348) and (349) were recovered from the fill of a construction cut for medieval well, cut [362]. Evidently both had been disturbed during the construction of the well and had been reburied together. Burial (349) had survived almost intact and consisted of *in situ* cremated remains of an adult male within a grey ware jar. A fragment of cattle mandible and a domestic fowl femur were also contained within the cremation urn fill. Directly beneath the (349) pot, disturbed remains of a fourth cremation

burial, (348), consisted of 45g of burnt human bone and a collection of broken sherds from a white ware flagon datable to the first half of the 2nd century.



Figure 5 Cremation burial (349) under excavation with much of the cremation vessel revealed

Possible Ditch

Further evidence of late 1st – early 2nd century Roman activity was partially revealed in the north-western corner of the site where a probable ditch, [422] was located. A full profile of this feature was not attained although what was revealed suggested it was a ditch on a north-south alignment. A single fill consisting of mid-greenish brown silty sandy clay, (441), contained late 1st – early 2nd century Roman pottery, tile and charcoal flecks.

2nd Century Activity

Early pre-road activity on the western side of the site

A scatter of features lay beneath the Roman road surface on the western half of the excavated area. In general these were only partially revealed and are consequently little understood, however they are indicative of occupation in the area before the road was formally established.

In the northern half of the site remains of two gullies and a pit lay beneath the Roman road surface. The pit [403] was oval-shaped, measuring c.0.81m x 0.59m x 0.18m deep and cut through the backfilled ditch [371]. The fill, consisting of mottled mid-brownish grey silty clay, (402), contained a small amount of Roman pottery dating to the middle of the 2nd century.



Figure 6 Remains of cremation burial (348) within the construction cut of medieval cess-pit [362]

To the north of pit [403] remains of two gullies were probably broadly contemporary with one another. Gully [404] lay on a north-west to south-east alignment and also cut through the uppermost levels of ditch [371]. [404] had been badly truncated during the demolition of former factory buildings but had also been affected by other archaeological features, making recognition difficult beyond a *c.*2m length. What remained had a shallow concave profile measuring approximately 0.35m wide by 0.21m deep. It was filled with mixed grey/brown sandy clay, (405), but was undated. Slightly to the north gully [465] lay on an east-west orientation and measured *c.*0.45m wide by 0.10m deep with shallow sloping sides and a flat base. A single fill of greyish brown sandy clay contained charcoal and mortar flecks and one sherd of Roman pottery with a wide 2nd-4th century date range.

Remains of several other features lying beneath the cobbled road surface were also observed at the very northern edge of the site although their interpretation is difficult due to the

circumstances of their discovery. A probable gully, [367] projected into the site from the north and was observed for approximately 1.75m. This feature was apparently curvilinear and had steep sloping sides and an irregular base. A small amount of broadly dated 2nd-4th century Roman pottery was recovered from the gullies single fill, (368) which comprised mid-brown/grey silty-sand with charcoal flecking.

Slightly to the west a feature with a similar appearance, cut [369], may have represented a butt-end of another gully. This feature also projected into the site from the north and was semi-rounded in plan, with near vertical sides and a flat base. No datable evidence was recovered from [369] although charcoal and burnt bone was present in the single fill, (370), which consisted of compact mid-brown silty-sand.

To the east a possible post hole, [461] was also revealed projecting from the northern site edge. This was filled with brown/grey sandy clay, (462), but was undated.

Another group of undated features was revealed during excavation of a slot at the southern end of the site, all of which had been cut into the natural subsoil and lay below the road surface. A shallow circular feature, possibly the truncated remains of a pit, [432] was c.0.50m in diameter and only c.0.03m deep. It was filled with compact grey silty-sand with iron pan mottling (431), but contained no finds. Several similar features lay adjacent although these remained unexcavated.

Activity on the eastern side of the site

Ditch/Enclosure

A section of curving ditch, [209], was located on the eastern edge of the excavated area. This feature was revealed over a length of c.7.15m and was broadly aligned north-west to south-east although it curved gradually northwards at the north-western limit, where it ended with a rounded terminal. Ditch [209] measured c.1.20m wide by 0.19m deep, having shallow sloping sides and a broad flat base. It was filled with dark greyish brown silty clay, (205) which contained a small group of pottery sherds from grey ware jars or bowls, a white ware flagon and a jar or bowl in Black Burnished ware indicating a date within the 2nd century.

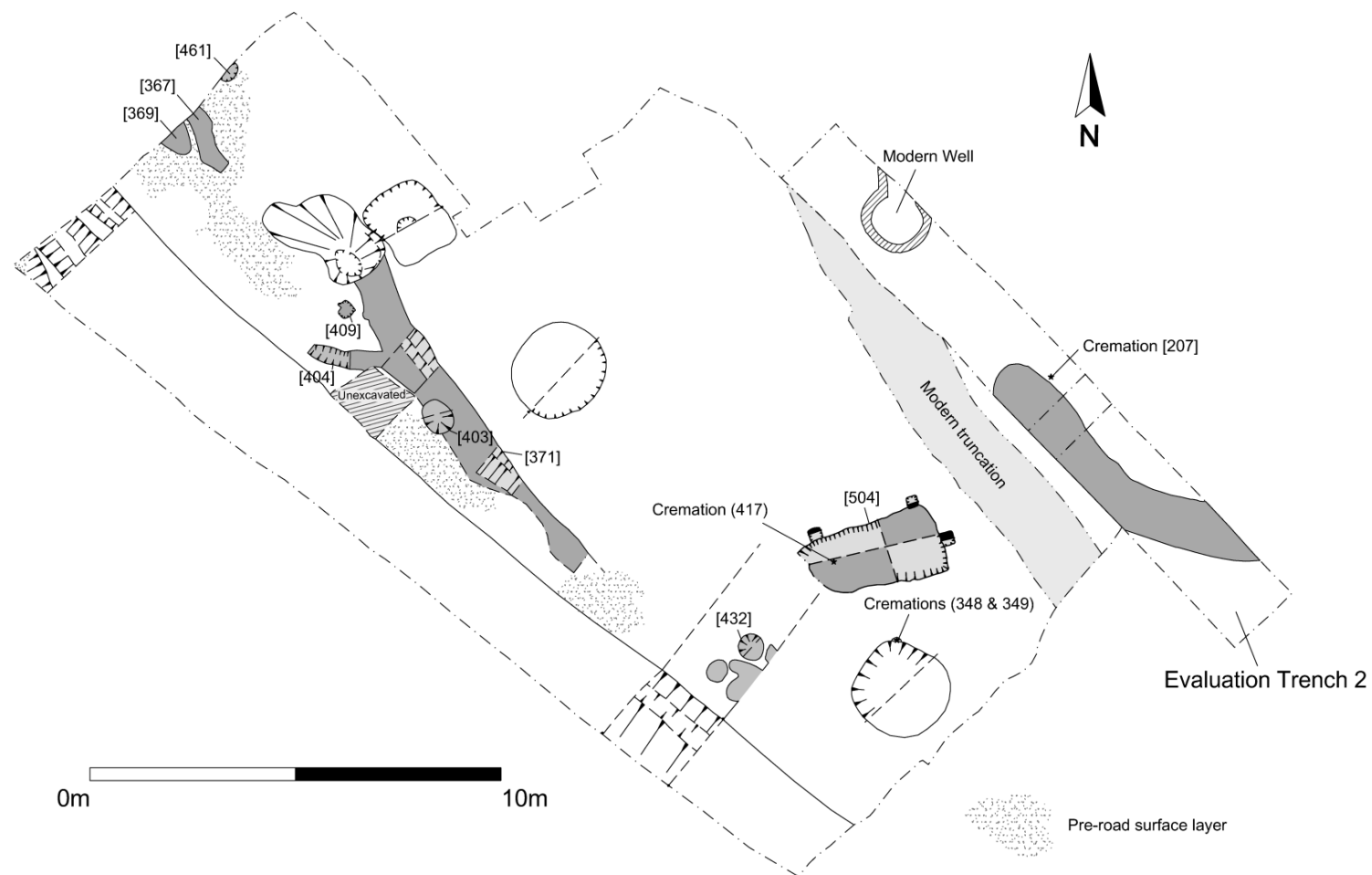


Figure 7 The Early Roman, pre-road features and location of cremation burials (*in-situ* and disturbed)

Sunken-Featured Building

A Roman sunken-featured building (SFB) lay approximately 3m to the west of Ditch [209]. This was represented by a large sub-oval pit, [504], aligned east-west measuring *c.*3.15m x 1.52m x 0.43m deep cutting the natural clay. SFB [504] had very steep sides and a flat base and was filled with a fairly uniform deposit of very firm brownish red silty clay, (505). Two post-holes and a post-pad, located on the northern perimeter of the SFB, may have related to the superstructure of the building. Post hole [510] lay close to the north-eastern corner and was square, measuring *c.*0.25m x 0.25m x 0.23m deep. A second post-hole, [514] lay close to the north-western corner of the SFB and was of similar shape and dimensions. Both post-holes were cut into the natural clay on the edge of the main SFB pit [504] and contained similar fills, (509) and (513) respectively, of compact orange/brown clay sand. A square patch of compacted pebbles, [512] measuring *c.*0.30m x 0.30m x 0.06m deep, lay centrally on the eastern short side of the SFB and may have acted as a post-pad in conjunction with the post-holes to support a structure above the pit.

Pottery and animal bones were recovered during the excavation of the SFB and a discrete charcoal patch was noted at the western end of the structure, possibly relating to a hearth. Interestingly two poorly preserved human humeri were also retrieved from the SFB fill; their condition perhaps suggesting they had become incorporated from elsewhere on the site rather than being representative of primary disposal. The pottery assemblage from this feature included remains of grey and shelly ware jars, a white ware flagon and Black Burnished ware bowl most likely dating to the later half of the 2nd century. A crudely shaped pottery disc (SF 41), probably a gaming counter, and a folded fragment of copper alloy sheet (SF 40) were also found during the excavation of the SFB.

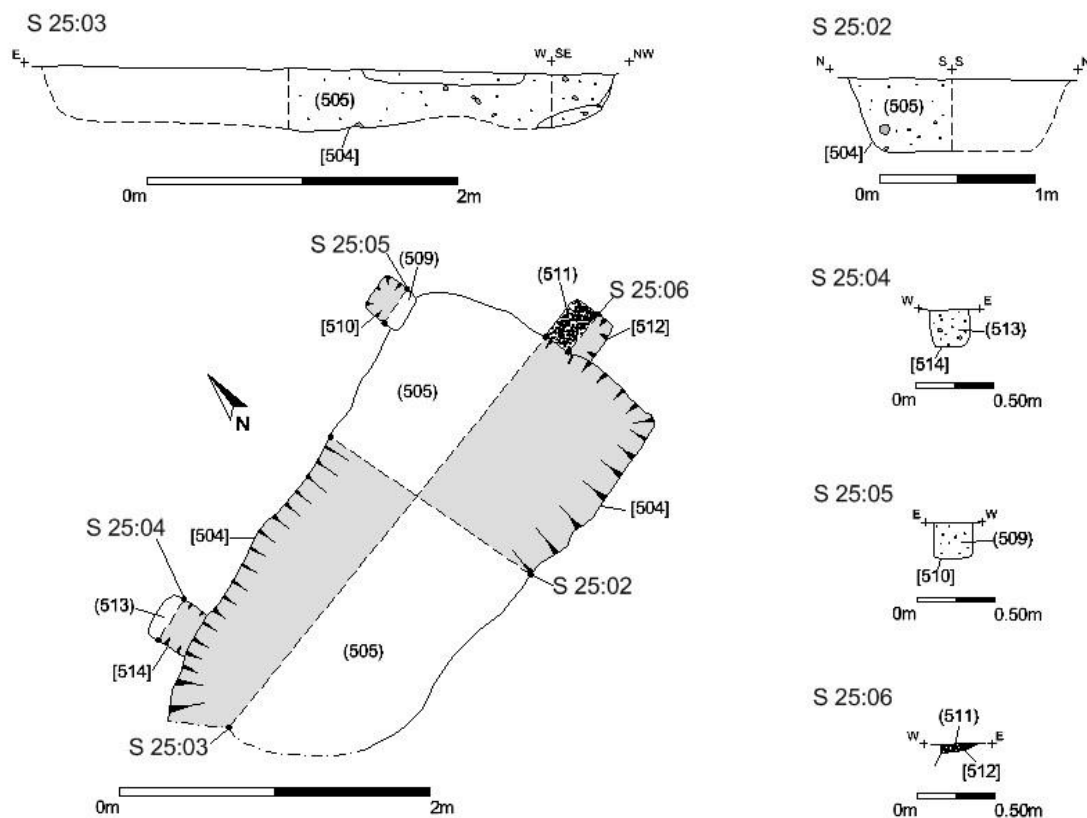


Figure 8 The Roman sunken-featured building: plan and section drawings



Figure 9 The Roman sunken-featured building partially excavated

Stratified Deposits Overlying the SFB

After the SFB had gone out of use it became covered with a *c.*0.07m thick layer of mid-greyish brown silty clay, (423) mixed with patches of redeposited natural clay. Given the relatively limited area in which this deposit was revealed, detailed interpretation is not possible but inclusions of predominantly 2nd century pottery, animal bone and charcoal flecks suggest an association with nearby occupation.

A number of later intrusions cut through layer (423). In the northern part of the area examined was a shallow foundation for a cobbled surface, [501], (426). This was only partially revealed but was perhaps indicative of a limited area of hard-standing possibly used as a yard. The western edge of the cobbling was truncated by the final phase of roadside ditch, [353] indicating this was part of earlier activities on the site, either relating to the earlier road phase or predating the road altogether.

Slightly to the north a shallow sub-circular pit, [480] measuring *c.*1.50m x 1.24m x 0.16m deep with sloping sides and a flat base cut through layer (423) and into the underlying natural clay. This contained a thin layer of pebbles at the base, (479), pressed into the clay and above this, a deposit of orange/brown clay silt which contained a small assemblage of Roman pottery that was not closely datable.

To the south an irregularly-shaped linear feature, [488] lay on an east-west alignment. This feature was only partially evident, having been truncated by several later features, however its eastern limit suggested a fairly narrow feature with a 'v'-shaped profile measuring *c.*0.70m wide x 0.20m deep. Excavation revealed a related post-hole, [495] located at the eastern end of [488] suggesting a structural function for both features although further

interpretation is precluded owing to the lack of other evidence available. Both were filled with brownish grey silty clay, contexts (438-linear) and (495-post-hole).

The area of cobbling, (426) was eventually overlaid by a c.0.10m thick layer of mid-dark brownish/grey silty clay, (422) containing Roman pottery broadly datable between the 2nd and 4th centuries. The extent of this layer to the north was limited but it was seen to cover a wider area to the west and may be part of the more extensive deposit on this side of the site that immediately pre-dates the laying of the road surface.

The Tripontium Roman Road

A section of the Tripontium Roman road occupied the western half of the site and was represented by a cobbled surface bounded to the east by at least two phases of a roadside ditch. All available evidence suggests a 2nd century date for the laying out of the road although it is unclear if a less formal version of the routeway existed prior to the deposition of the cobbled road surface.

Roadside Ditch

The eastern edge of the Roman road was defined by a recut ditch aligned northwest-southeast. Evidence for the earliest ditch phase, [346], survived only on the boundaries eastern side however enough was left to indicate that it had steep sloping sides and a flat base, measuring c.0.80m+ wide x 0.50m deep. The ditch was filled with compact mid-greyish brown sandy-clay, (351) that appears to have formed as a result of gradual silting over time. A concentration of pebbles at the lower interface of (351) with the ditch was at least two pebbles thick and was extremely compact and surface-like, particularly near the top of the ditch cut. It is uncertain if this represents an extension of the road surface into the flanking ditch or simply displaced pebbles that fell into the feature.

The ditch was redefined apparently after it almost completely silted up. The new ditch, [353] was cut along approximately the same line as its predecessor although it had shifted slightly to the west. Ditch [353] had a broadly similar profile to the earlier ditch, measuring c.1.22m wide x 0.50m deep with steeply sloping sides and a flat base. The main fill of ditch [353] consisted of mid-greyish brown silty clay, (354) that was very similar to the fill of earlier ditch [346] and distinguished only by a lesser pebble content. A small collection of Roman pottery from this context indicated a 2nd century date for its infilling. Overlying (354) a thin layer of very silty clay, context (358) measuring c.0.09m thick, probably represented a final silting of the ditch after it had almost filled in.

The ditch line was redefined for a second time by a much less imposing feature, cut [355], that was both narrower and shallower than the preceding ditches. Cut [355] measured between c.0.50 and 0.80m wide and was c.0.24m deep with fairly steep sloping sides and a flat base, adopting a slightly squarer profile than the earlier ditches. This was filled with a mix of red clay and silty sand, (356) that may represent a final consolidation deposit following the disuse of the boundary.

Metalled/Cobbled Surface

The main evidence for the Roman road was a metalled surface, (306), (307), (309) and (343), that extended across the whole of the western half of the excavated area. The surface survived to varying degrees of preservation but was generally between c.0.05m and 0.10m thick, comprising mixed small rounded pebbles (c.70% - between 0.05-0.06m diameter),

larger cobbles (c.20% - between 0.08m-0.12m diameter) and larger, sub-angular granite pieces. Removal of the road surface revealed that across much of this part of the site a thin layer of orange/brown silty sand, (394) and (445) lay beneath the cobbles. Pottery fragments from within the layer indicate a broad 2nd-3rd century date for its deposition but it is unclear if it is associated with pre-road occupation or represents a bedding layer for the road surface. In other places it appears that the road cobbling was laid directly onto natural subsoil and in others that it covered recently infilled features into which it eventually slumped.

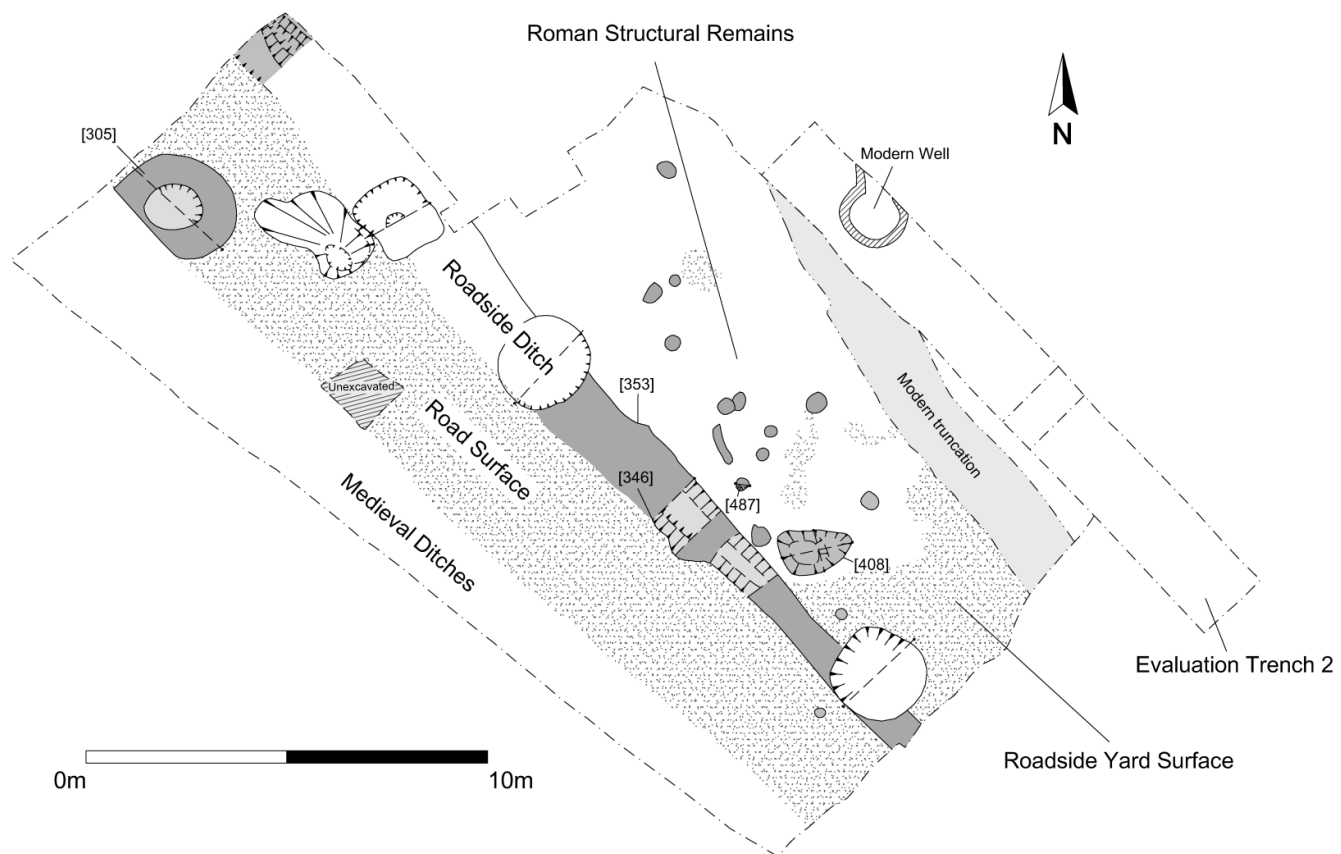


Figure 10 Evidence for the Roman Tripontium road and associated features (later features in white)

Roman Well

A substantial stone-lined Roman well cut through the road surface on the northern side of the excavated area. This feature, [305] had an upper diameter of *c.*2.85m and was funnel-shaped in profile, containing a carefully constructed stone-lined circular shaft with an internal diameter of *c.*1m. The well-lining comprised coursed granite blocks of varying shapes and sizes, (457) and (506) forming a smooth inner face. Generally the upper *c.*1m section of the lining, (457) comprised smaller and more frequent stones in contrast to the large stones, context (506) forming the lower section of lining. Partial removal of the stone lining during excavation of the well revealed a bone hair pin (SF 39) and a Roman coin of Constantine (SF 34) dating to 335-41 (see below), both sandwiched between stones.

The upper levels of the well cut, down to depth of *c.*2.20m, had been backfilled with clay, (455) behind the stone lining. Below this, for another *c.*0.40m, the stone lining had been placed directly onto the natural clay. For approximately another 1.50m the well-shaft was apparently unlined, cutting through the firm natural clay at this depth until evidence of more stone lining was observed at a depth of *c.*4m, beyond which the full depth of the well is unknown.

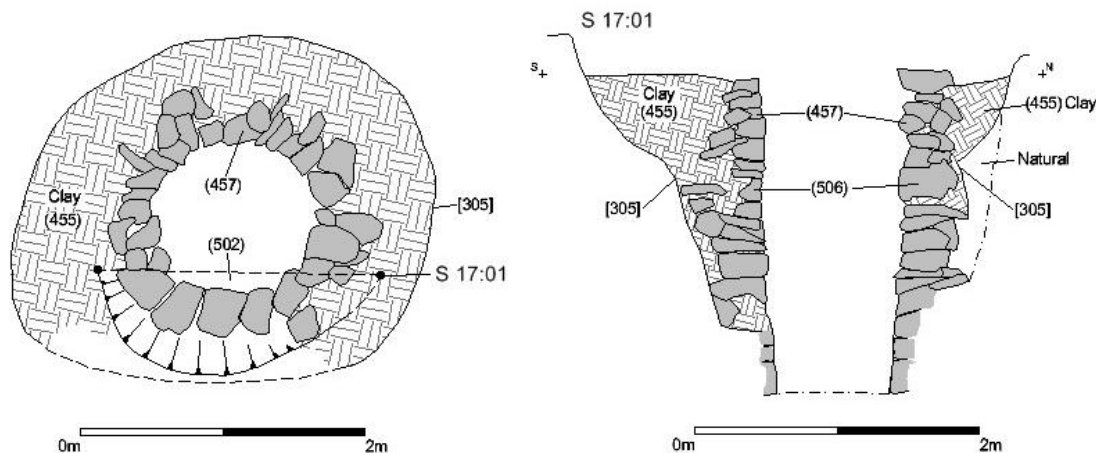


Figure 11 Roman well: plan and section drawing

The earliest fills of the well, (503) and (508) consisted of pale brownish grey, soft sandy-silt. The lowest, (508) contained remains of a shelly ware necked storage jar of the late 1st or early 2nd century, providing a date for the wells initial construction. Environmental samples produced only minimal evidence of charred cereal plant remains and no evidence that these levels were waterlogged.

Above these early well fills was a *c.*0.15m thick layer, (502) of compacted gravel in a matrix of yellowish green sandy silt which may represent a phase of capping or change of use. Overlying this was a *c.*0.90m thick layer of soft orange-grey sandy silty-clay, (418) which was finds free, but layers above this ((388) and (389)) contained pottery dating to the mid-2nd century. Layer (389) consisted of dark greenish brown silty-sandy-clay which also contained charcoal flecks, animal bone and a fragment of lava quern. Overlying this, (388) consisted of greyish brown silty-sandy-clay with fine yellowish/orange bands of mineralisation possibly related to the inclusion of cess-waste. The final layer, (304) was a *c.*0.75m thick deposit of fairly homogenous dark greyish brown silty-sandy-clay suggesting a final episode of infilling as the well finally went out of use. This fill contained Roman tile,

animal bone and pottery dating to the period between the middle of the 2nd century and the 3rd century.



Figure 12 The partially excavated Roman well with detail of the stone lining

Late 2nd – early 3rd Century Activity

Pit (cutting backfilled SFB)

A sub-oval pit, [408] lay in the southern half of the site and had been located above the western side of the backfilled SFB, [504]. This pit had sloping sides and a concave base, measuring approximately 1.76m in length x 1.07m wide, and was fairly shallow at 0.26m deep. The main pit fill, (407) comprised mid-greyish brown silty-clay although a distinct charcoal patch lay at the western end of the feature. Pottery dating to the late 2nd or early 3rd century, as well as animal bone and tile were recovered during the pits excavation. Disturbed remains of a cremation burial, (context (406) – see above) were located near the centre of the pit, having presumably been disturbed during its excavation and subsequently reburied.

Mid – Late 3rd century

Timber Structural Activity

An area of structural activity was recognised on the eastern side of the site comprising a linear/rectangular spread of c.11 post-holes and associated features aligned approximately with the Tripontium road. Interpretation of these features is problematic given disturbance from later features, which have undoubtedly removed other evidence however it seems likely that either a building or remains of fencing is represented. Dating of the structural remains is also problematic but a general 3rd century date for their use seems likely based on the available stratigraphic evidence.

Later 3rd - 4th Century Activity

Clay Deposit/Platform

A thick deposit of reddish brown clay, (323) was deposited over much of the northern corner of the excavation, and presumably also covered a wider area beyond the limits of the site. The layer effectively raised this part of the site and was probably intentionally laid down to create a solid platform for building upon. The clay layer partially covered the infilled remains of the roadside ditch [353] indicating it had gone out of use before this event, although the cobbled road surface was left largely uncovered, suggesting this continued to be used as a routeway, or possibly a yard area. Although a few animal bone fragments were recovered from this layer there was no pottery evidence to provide a clear date for its deposition. However, the apparently close relationship with a probable enclosure ditch, [467] dating to the 3rd/4th century (see below) might indicate a similar date for the deposition of the clay layer.



Figure 13 Concentration of animal bones within Roman ditch [467]

Possible Enclosure Ditch

Cutting the clay layer in the northern corner of the site was a right-angled ditch, [467] that probably represented the south-west corner of a square enclosure. The ditch had a broad U-shaped profile, measuring *c.*1.84m wide and 0.33m deep, with sloping sides leading to a slightly concave base. The primary fill of ditch [467] was *c.*0.17m thick and consisted of mid-greyish brown clay silt, (473), which contained Roman pottery dating to the mid-3rd to 4th century, animal bone and tile fragments. Overlying this was a secondary fill, (466) of dark greyish brown clay silt which contained a large amount of Roman pottery dating from the mid-3rd to 4th centuries and several coins (SF29, SF33, SF35) with a similar date range. This fill was also notable in containing a substantial localised deposit of butchered animal bone, (476) consisting of disarticulated limb bones, jaws and skulls, mainly from horse and cattle. Cut marks on the bones suggest that this was an assemblage resulting from slaughter and consumption, and also indicate that cattle hides were being removed on the site, presumably for the production of leather. The context of the bone assemblage suggested it had been dumped into the ditch from the northern side, suggesting it may have related to specific activities taking place within the enclosure.

Gully

A narrow linear gully, [364] traversed the western side of the site on a north-west to south-east alignment. This entered the site from the south and was observed for a distance of *c.*16m before it turned westwards and finally terminated after another *c.*2m. The gully had a variable width suggesting a degree of truncation had occurred, but generally it measured *c.*0.50m wide by 0.10m deep and had an angular profile with steep sloping edges and a narrow flat base. The single fill of the gully comprised dark greyish brown sandy-silty-clay, (344) which contained Roman pottery dating to the later 3rd and 4th centuries, tile fragments, animal bone and charcoal flecking. The fragmentary remains of a horned cattle skull were located at the northern end in the gully terminal.

Pit [460]

Pit [460] lay adjacent to gully [364] at its northern end although the relationship between the two was unclear. The exact shape of [460] was difficult to determine due to its proximity to [364] and modern truncation the east however a general sub-circular shape approximately 1.20m in diameter could be determined. The pit had an uneven, concave profile which was deepest on the eastern side where it reached a depth of *c.*0.55m. The pit had a single fill of mid-dark brownish grey silty-clay which contained assemblages of 3rd-4th century Roman pottery, a fragment of human humerus, animal bone, part of an iron bar and charcoal flecks.

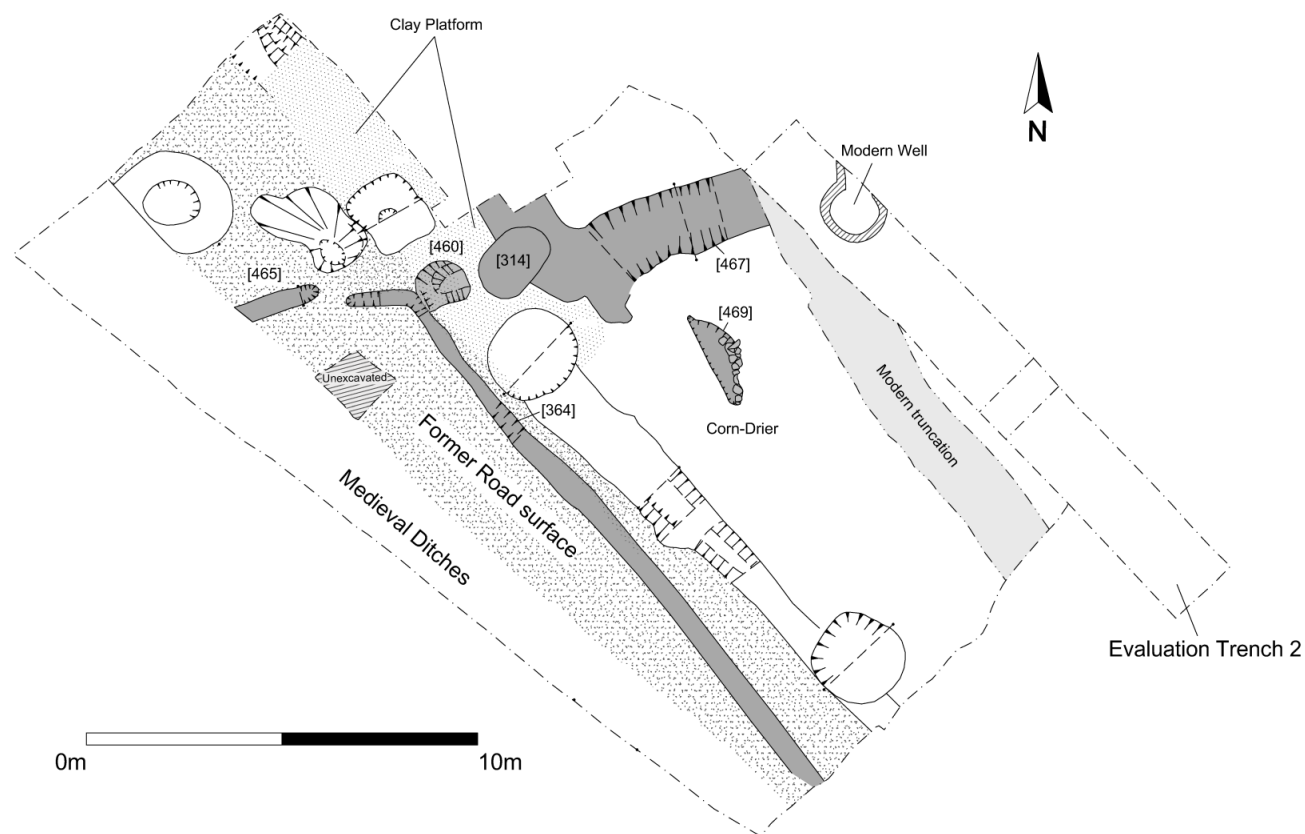


Figure 14 Late Roman features following the disuse of the Roman road (later features in white)

Corn-drier

A partially stone-lined corn-drier was located in the centre of the eastern half of the site. This feature, [469] was linear and lay on a north-north-east to south-south-west alignment, measuring c.2.6m in length. The western edge of the feature was very straight with vertical edges, but the eastern edge was rounded, broadening to c.0.85m at its widest. Both ends of the feature narrowed significantly. The northern end was only c.0.15m wide and the final c.0.60m section at the southern end of the structure narrowed to approximately 0.44m wide. This southern section may relate to a flue for the corn-drier. In general the base of [469] was flat but there was a noticeable slope from south to north in which the base of the feature rose by approximately 0.15m.

The eastern edge of the feature was partially stone-lined. The lining, (484) consisted of coursed blocks of relatively flat granite and Daneshill sandstone bonded with clean red clay in the middle of the feature, while at either end larger and coarser granite blocks had been used, placed flush with the inner edge. In contrast to the central section these areas of lining were unbonded. The opposite side of the feature was unlined but it was unclear if stone from this side had been robbed during its abandonment or if it had never been lined.

Excavation revealed a layer of very dark greyish brown clay-silt, (507) which partially covered the base of [469]. This layer contained frequent charcoal flecks and lumps of fired clay and was predominantly focussed in the southern half of the feature, where location of a flue seemed most likely. Layer (507) also overlay the southern end of [469], possibly resulting from the 'raking out' of charcoal following an episode of use, and may indicate the location of the stoke-hole. Contrasting evidence from material recovered from environmental samples taken from the corn-drier suggest that the stoke-hole may have been located near the northern end of the feature, as there were fewer grains in this location (see Monckton below). Overall the environmental results appear to indicate that the corn-drier was used to process spelt wheat on the site.

Overlying (507) the main fill of [469] consisted of a jumbled mixture of flat granite blocks, broken fragments of slate and broken roofing tile mixed with patches of burnt clay, (497). This deposit appears to have originally formed part of the corn-drier super structure, possibly capping the flue, which had collapsed into the feature after it had been abandoned. An unidentified iron object (SF 36) and fragment of quernstone made on Millstone Grit (SF 37) were found within the stones as well as residual Roman pottery from the late 1st or early 2nd century.

A final covering fill, (468) of mixed greyish brown/reddish brown silty clay overlay the stone deposit. This contained charcoal flecks, slate and roofing tile fragments as well as Roman pottery indicating a date into the 4th century. A Roman coin of early 4th century date (SF 32) was also found within this final fill.



Figure 15 Detail of Roman corn-drier following excavation

Medieval Remains

Ditches

The western edge of the site was defined by two successive medieval ditches which were revealed along the entire western edge of the site, adjacent to Grange Lane. Both ditches were aligned north-south and probably represented the rear boundary of properties fronting onto Oxford Street. The earliest, [342], was 'V'-shaped and c.1.42m deep. A single fill of dark greyish brown silty-clay, (366) contained two sherds of 12th century Potters Marston ware, as well as tile and charcoal flecks.

After ditch [342] had become completely infilled it was recut along its western edge by another ditch, [310], which followed a similar north-south trajectory indicating it served a similar function. As with the earlier boundary, ditch [310] was also 'V'-shaped but was more substantial, measuring approximately 2.20m in width by 1.90m deep. Also in contrast to the previous boundary, ditch [310] contained a series of fills, perhaps suggesting it had become infilled more gradually. The primary fill of [310] consisted of very dark greyish brown silty-clay, (341), which contained a small amount of pottery including Potters Marston ware and 11th-12th century Lincolnshire shelly ware, large sandstone fragments and charcoal flecks.

This was overlain by a secondary fill, (340), of pale brownish grey silty-clay which was generally finds-free. A final fill, (322), consisted of dark greyish brown silty-clay and was the most productive for finds retrieval including tile, slate, large sandstone blocks and a range of medieval pottery indicating a 13th-14th century date for the final disuse of the boundary. Animal bones from the ditch included part of a cattle skull from which the horns had clearly been sawn off, providing an indication of nearby craft working or the collection of bones for such purposes. In addition lead casting waste from [310] added to the range of possible craft working activities being carried out on or near the site.



Figure 16 Medieval ditches [310] (right) and [342] (centre). Partial remains of Roman ditch [422] can be seen on the left hand edge of the slot

Both ditches held waterlogged deposits which contained pollen remains. Those from [342] were of broad bean and nettle, while pollen from [310] provided more evidence for grassland plants such as ribwort plantain and knapweed. There was also evidence for nearby trees and shrubs such as elder. The pollen results from both ditches tend to support the idea that they bordered areas of cultivation within the southern fields of the medieval town.

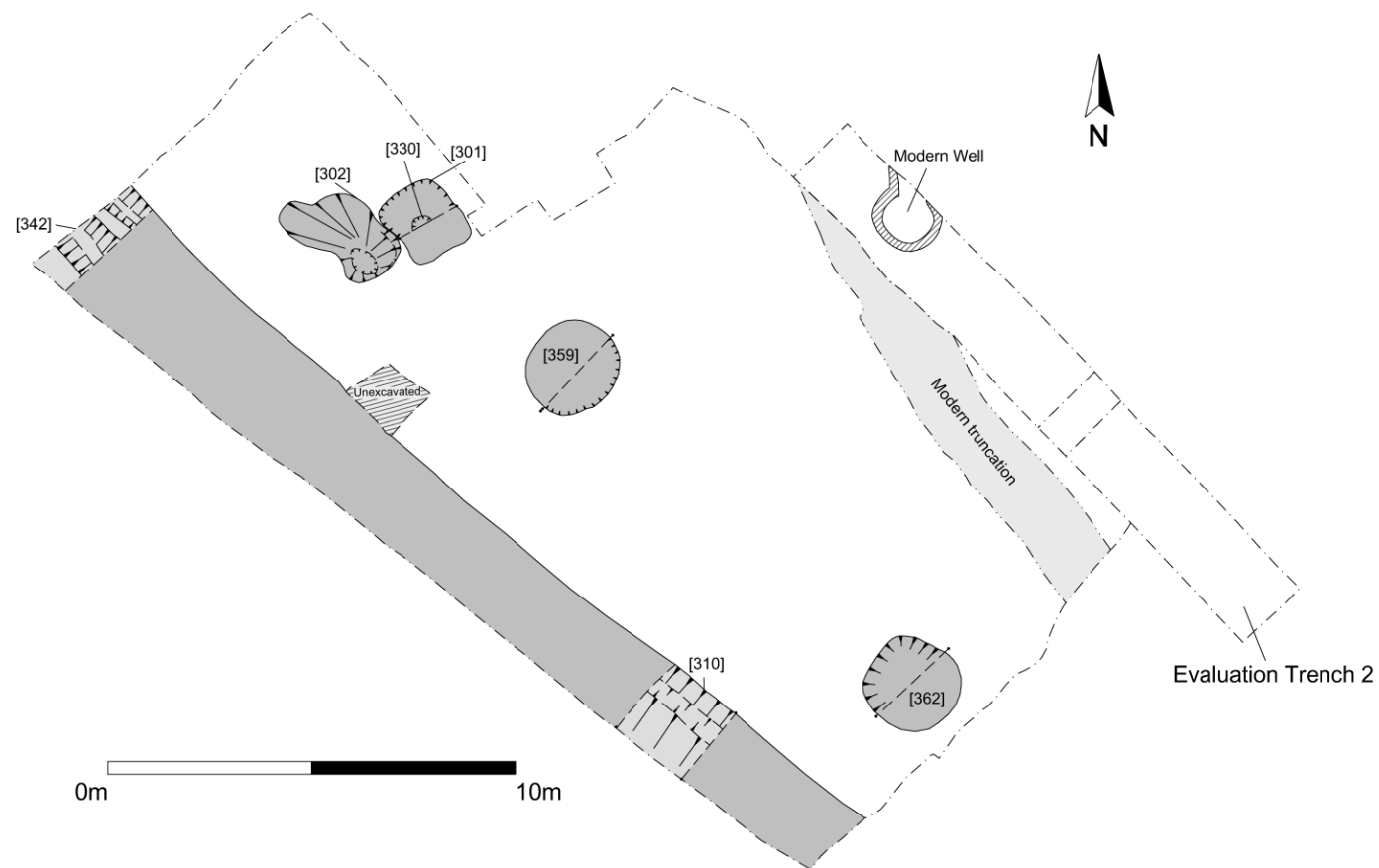


Figure 17 The medieval features

Oven or kiln base

Feature [302] lay on the northern side of the site and occupied a slight hollow of the site surface. It had a relatively amorphous shape in plan measuring *c.* 1.76m north-south and 1.60m east-west. Excavation revealed that the clearest evidence for a definite cut lay at the southern end of [302], where a sub-circular pit with steep sloping sides and an uneven base was defined. This pit was approximately 0.40m deep and had a thin layer of compacted dark greyish brown silt and charcoal, (345) at its base from which a sherd of 12th-13th century Potters Marston ware were recovered. Above this layer remnants of a carefully laid stone surface, (317), had survived, consisting of fragments of black granite interspersed with quartzite pebbles and cobbles and re-used quernstone fragments and ironworking 'hearth bottom' slags. The northern end of [302] was less clearly defined but was characterised by a distinct deposit of light grey to black, powdery ash or soot, context (318). In plan, the composition of (318) appeared 'banded' suggesting patterns accrued as a result of 'raking out' debris from the oven after episodes of use. This layer was rich in charred plant remains, containing grains, oats and chaff of both rivet and bread wheat, with weed seeds also abundant. The entire feature was finally covered by a layer of brown silty clay, context (303) from which a sherd of 12th-13th century Splashed ware was retrieved, as well as animal bone fragments and an unusual decorated bone fitting (SF 7), possibly from a composite object (Figure 23).



Figure 18 Medieval oven/kiln base [302] under excavation showing the stone surface on the right and the ash deposit (318) on the left

Pits

Three pits formed a north-south line approximately 3m east of the boundary ditches, and were perhaps also indicative of medieval backyard activity behind properties closer to Oxford Street.

Pit [362]

Pit [362] was the southernmost medieval pit on the site. In plan it was sub-circular but as excavation of this feature progressed it became more rectangular in shape at deeper levels. The distortion appears likely to have been caused by slumping of the clay sides at the top of the feature while it was open. Equally however, the flared nature of the pit's upper profile in comparison to the vertical edges of the pit's core fills (i.e. context (361)) may suggest the presence of a construction cut, possibly to aid installation of a wattle lining.

The pit had a diameter of *c.*1.98m and a total depth of *c.*2.20m (hand-excavation accounted for the first 1.50m and the remainder was revealed through hand-augering until natural subsoil was reached). The lower fills of [362] consisted of numerous interleaved waterlogged layers (contexts (379), (390), (391), (400), (419), (420), (424) and (497)) containing preserved wood, plant remains and fruit stones and seeds (sloe, small plum and apple) probably representing fairly frequent episodes of deposition. The preservation of these remains was a result of both waterlogging and mineralisation due to the presence of sewage, indicating that [362] had been used as a cess-pit. The presence of sewage was confirmed by the recovery of parasites of the gut; specifically maw worm, which can affect humans, and whip worm which affects pigs. Bones from a domestic fowl and charred food remains including cereal grains, peas and beans appear to reflect domestic food waste from preparation. In sum the organic remains from this pit indicate a mixture of domestic and animal waste; the latter probably resulting from pig keeping on the site.

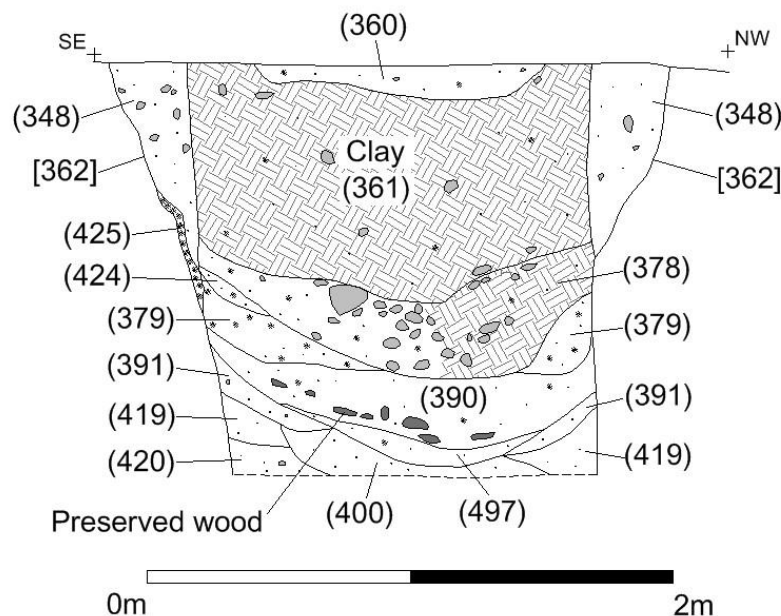


Figure 19 Section through medieval cess-pit [362]

Capping these waterlogged layers was a relatively thick deposit of brown clay silt, (378) which was in turn overlain by a thicker deposit of mixed reddish/greyish brown clay silt, (361) and a final consolidation deposit, (360) of greyish brown silty clay. These upper fills of the pit are in contrast to the many lower fills, both in composition and content, and evidently represent both change in use and eventual abandonment of the feature. Only a small pottery assemblage (*c.*36 sherds) was recovered from this feature and included fragments of 'developed' Stamford and Potters Marston wares indicative of a 12th-13th century date. Several sherds showed similarities with fragments recovered from the oven, [302] and pit

[359] perhaps highlighting the broadly contemporary use of these features, but the small size of these pieces makes it difficult to be sure.

Pit [359]

Pit [359] lay in the centre of the site and was sub-circular in plan with a diameter of c.2.26m. In general the pit edges were steep, although irregularities at the top indicated some collapse and slumping of the uppermost sides had happened when it was open. Hand excavation took place to a depth of 0.80m after which conditions became too difficult to continue excavating. Further investigation of this feature (i.e. by hand-augering) was not undertaken and therefore a full depth was not revealed.

The pit contained a single fill, (357), of mid-orange brown silty-clay from which pottery, animal bone and iron slag were recovered. The generally homogenous nature of the fill suggests the pit was rapidly backfilled at the end of its useful life, perhaps in a single event.

The largest medieval pottery assemblage of the site was recovered from pit [359]. This group comprised over two hundred sherds representing Stamford ware, Potters Marston and Stanion Lyveden pottery, ultimately indicating a later 12th to early 13th century date for the backfilling of the feature. Despite the large size of the pottery assemblage from this feature the average sherd weight was relatively small, at only 8.8 grams, indicating that little primary refuse had been incorporated. The suggestion that pit [359] was rapidly filled in with general refuse from the surrounding environment might indicate an episode of 'tidying up' and backfilling of features as part of a change of use for the site or the end of an occupation phase. A small assemblage of animal bone, several iron working 'hearth bottoms' and other associated industrial debris was also recovered from this pit.



Figure 20 Pit [362] during excavation showing exposed archaeology in edges

Pit [301]

The northernmost pit [301], was sub-rectangular, measuring c.1.86M x 1.62m and was 0.42m deep with vertical edges and a flat base. A possible post-hole [330] was revealed in a central position at the base of the pit. Both features were filled with the same material and the relationship between them is unclear.

Pit [301] was filled with dark greyish brown silty clay, context (300), containing pottery, animal bone, charcoal flecks and a number of small finds including a belt buckle (SF 9), two dress pins (SF 8 & 10) and a thimble (SF 11), all made of copper alloy.

Pottery from pit [301] indicated that this was slightly later than the other medieval pits on the site, with the presence of hard-fired Midland Purple wares suggesting a later 14th century date for its infilling. A range of other pottery types was also represented in the pit fill, many of which such as sherds of Stamford and Chilvers Coton wares of the 11th-13th centuries were evidently residual in this later context.

Animal bones recovered from the pit included butchered remains of sheep and goat, domestic fowl, and fish (cod). Plant remains consisted of a similar range to that found in Pit [362], including charred cereal grains, weeds and legume fragments, apparently the result of food preparation burnt in a hearth and eventually disposed of in the pit. Together with the animal bone assemblage and other evidence from this feature, the pit appears to have been a repository for a range of domestic waste from nearby occupation.

The Lithics

Lynden Cooper

Thirteen worked flints were recovered, all of local till-derived raw material (Table 1). There are two arrowheads diagnostic to the Late Neolithic period. The remaining pieces can be assigned a general later prehistoric date. Late Neolithic arrowheads have been recovered from the recent excavations in Leicester at DMU (Morris 2010) and Merlin Works (Kipling 2008).

Context	SF	Type
303		Core
304		3ry flake fragment
322		2ry bladelet
368		3ry flake
372	25	Transverse arrowhead barb(British Oblique type)
407		3ry flake fragment
410		2ry flake
422		3ry flake
423		2ry flake
445	24	Transverse arrowhead (chisel type)
445	23	2ry flake fragment
505		Retouched flake fragment
505		2ry flake

Table 1 The stratified lithics

Romano-British Pottery

Elizabeth Johnson

Assemblage size and condition

A stratified assemblage of 561 sherds of Roman period pottery weighing 6.765kg was retrieved from the excavations, along with a further 0.110kg of re-deposited material from post-Roman layers. The average sherd weight is 12.1g, which suggests reasonable preservation for material from urban excavations, though it must be noted that levels of fragmentation are variable with some very small sherds.

Methodology

The material was identified according to the Leicestershire Museums Fabric Series (Pollard 1994). Within the archive database specific fabrics were assigned to all sherds wherever possible, however in this report the generic ware groups summarised in the table below are used for clarity of quantified data presentation.

Fabric Code:	Fabric Type:	Fabric Code:	Fabric Type:
Samian	Samian ware	OW	Oxidised wares

C	Colour-coated wares	BB1	Black Burnished ware
WW	White wares	SW	Sandy wares
WS	White-slip wares	AM	Amphorae fabrics
GW	Grey wares	MO	Mortaria
CG	Calcite gritted (shelly)	DS	Derbyshire Ware

Table 2 Summary of Leicestershire Museums Fabric Series (Pollard 1994, 112-114).

Quantification was by sherd count and weight (grams). Average sherd weights (ASW) have also been calculated to provide an indication of the condition of the material and levels of preservation within the assemblage. Vessel forms were assigned where diagnostic sherds allowed, using the Leicestershire Form Series and other published typologies (Howe *et al* 1980; Holbrook and Bidwell 1991; Pollard 1994; Tyres 1996; Webster 1996; Clark 1999). The complete dataset was recorded and analysed within an Excel workbook, which comprises the archive record. References to percentages in the text are based on sherd count unless otherwise stated.

Summary of Major Pottery Fabrics within the Assemblage

The table and chart below detail a summary of the major pottery fabrics within the assemblage as a whole. Grey, shelly and sandy coarse wares account for 57.5%, with grey wares dominant at 47.1%. The majority of these are most likely locally made and predominantly provide the utilitarian jars and bowls for general household use. Sandy wares are sometimes known as “transitional” fabrics, largely dating within the 1st century but possibly continuing into the very early 2nd century (Pollard 1994, 74-75). Most of the grey wares are jars but a variety of bowls and dishes are also present, along with part of a strainer which is generally a less common form.

Fabric	Sherds	% Sherds	Weight (g)	% Weight	ASW (g)
AM	4	0.7%	97	1.4%	24.3
BB1	31	5.5%	120	1.8%	3.9
C	52	9.3%	297	4.4%	5.7
CG	48	8.6%	840	12.4%	17.5
GW	264	47.1%	4138	61.2%	15.7
MO	12	2.1%	283	4.2%	23.6
OW	35	6.2%	146	2.2%	4.2
Samian	37	6.6%	132	2.0%	3.6
SW	10	1.8%	26	0.4%	2.6
WS	2	0.4%	22	0.3%	11.0
WW	65	11.6%	648	9.6%	10.0
DS	1	0.2%	16	0.2%	16.0
Total	561	100.0%	6765	100.0%	12.1

Table 3 Major fabric groups present within the assemblage.

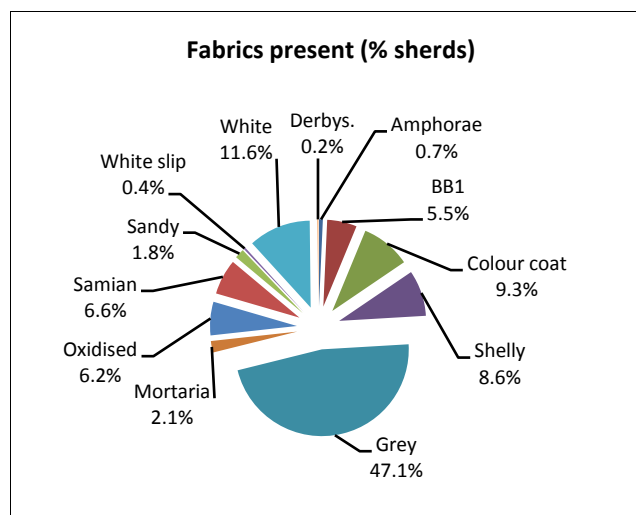


Figure 21 Fabrics present within the assemblage (% sherds).

The remaining coarse wares indicate regional pottery supply to the site. The Black Burnished wares comprise a range of jars, bowls and dishes dating from the middle of the 2nd century and possibly into the 3rd (Holbrook and Bidwell 1991). A late Roman shelly ware jar from the South Midlands dates to the later 3rd or early 4th century (Brown 1994) and a Derbyshire ware jar dates to the later 2nd or 3rd century. Most of the white and white slipped wares are flagons dating to the 2nd century. The oxidised wares comprise jars and cornice rimmed beakers with roulette decoration also dating within the 2nd century (Pollard 1994, 77-79). Likely sources for the oxidised, white and white slipped wares are Mancetter-Hartshill and Northamptonshire (Swan 1984, 98-101; Pollard 1994, 113-114).

Fine wares comprise a mixture of imported Gaulish Samian ware and Romano-British colour-coated wares. The samian is tableware (dishes, plates, cups and bowls), typical of the 1st and 2nd centuries (Webster 1996). Colour-coated fine wares are dominated by Nene Valley colour-coated wares, with small quantities from Oxfordshire and possibly Colchester along with one Gaulish import. Beakers are the predominant form, dating from the late 2nd century through to the 4th. There are also bowls, jars, dishes, flagons and Castor boxes common in Nene Valley colour-coated ware during the third and fourth centuries (Howe *et al* 1980, 16-25). The single Oxfordshire red-brown colour-coated ware sherd is probably from a bowl imitating a samian form dating to the 4th century in Leicester (Young 1977, 133).

The specialist wares comprise small amounts of amphorae and mortaria. The amphorae present are Baetican Dressel 20 olive oil and Gaulish Gauloise 4 wine amphorae, possibly representing only one or two vessels. These types are common on Romano-British urban sites from the Conquest to the mid-3rd century (Tyres 1996: 87-88; 94-95). Mortaria from Mancetter-Hartshill and the Nene Valley are present ranging in date from the middle of the 2nd century to the 4th century.

Stratified Features

Corn Drier

[469] (497), (468)

Fifteen sherds (119g) of pottery were recovered from a feature believed to be a corn drier. One sherd from a platter dating to the later 1st or possibly very early 2nd century was recovered from fill (497) which had collapsed into the flue. The remaining pottery was found

in the upper fill (468), comprising a few sherds of grey, white and samian ware probably dating to the 2nd century, alongside some later colour-coated wares from the Nene Valley. Forms present include a shouldered beaker, funnel neck or plain rimmed beaker and a dish, indicating a date into the 4th century. The dish is a little unusual as the rim is slightly beaded suggesting some form of variant of the plain rimmed dish commonly found during the 4th century (Howe *et al* 1980, 20-25). (*Figure 22*)

Ditch and Building

[207] (206), (205); [504] (505)

Five sherds (31g) of pottery were recovered from a ditch [207] (205) comprising grey ware jars or bowls, a white ware flagon and a Black Burnished ware jar or bowl. None of the pottery is particularly diagnostic or closely datable however, the presence of Black Burnished ware suggests a date after *c.*AD120. A date within the 2nd century is most likely. A fragmentary cremation pot (206) was also discovered as discussed below.

To the west of ditch [207], a building [504] was located, from which 45 sherds (364g) of pottery were recovered. The grey and shelly ware jars are undiagnostic and a white ware flagon most likely dates within the 2nd century. Two oxidised ware cornice rimmed beakers with roulette decoration date to the second half of the 2nd century, as does a Black Burnished ware bowl (Holbrook and Bidwell 1991, 108-109; Pollard 1994, 77-78). The latest datable sherd is a Derbyshire ware jar with a cupped rim which, though more commonly found in Leicester from the early 3rd century onwards, could date to the second half of the 2nd century, as recent findings at Vine Street in Leicester have shown very small quantities of Derbyshire ware appearing in Antonine levels (Johnson forthcoming).

Pit

[408] (407), (417)

Pit [408] cut into the building [504] with a total of 107 sherds (545g) of pottery recovered. The pottery from (407) comprises grey, shelly, oxidised, white and Black Burnished coarse wares, along with a small quantity of samian and colour-coated fine wares and an amphora. The grey wares include a flat rimmed bowl with burnishing and an oxidised jar with roulette decoration dating to the second half of the 2nd century. A Black Burnished ware plain rimmed dish also dates from the middle of the 2nd century onwards. The samian includes a form 72 beaker dating to the mid-late 2nd century and a Nene Valley colour-coated ware beaker dating to the late 2nd-early 3rd century. Overall the assemblage is of a similar date to that found associated with the building and this may in fact be the source. A cremation pot (417) was also found as discussed below.

South Ditch

(422); [346] (349); [353] (354)

An assemblage of 51 sherds weighing 1.293kg was recovered from the south ditch. Layer (422) revealed three sherds comprising a grey and white ware body sherd and the base of a grey ware strainer. This layer overlaid the south ditch. Three further sherds of Roman pottery were recovered from the re-cut of the south ditch [353] (354), comprising a very small sherd of Central Gaulish samian ware and two grey ware jars dating within the 2nd century. Two cremation vessels were also discovered as discussed below.

Cremations

[207] (206); [408] (417); [362] (348) & (349)

Four cremation vessels were found associated with three separate features across the site, (Figure 22), all of which had been disturbed and re-buried in antiquity. The fragmentary cremation pot (206) discovered underneath ditch [207] is a fine sandy grey ware jar with an everted rim and burnished decoration, dating to the late 1st or early 2nd century (Figure 22.1). Fifteen sherds weighing 281g were recovered. The vessel had been disturbed by the ditch construction. The cremation pot (417) was found within the fill of pit [408]. Thirteen sherds (123g) were recovered. The vessel is a grey ware carinated jar with lattice decoration dating to the later 1st or early 2nd century. (Figure 22.2)

Two further cremation vessels (348 & 349) were recovered from the the fill of a construction cut for a medieval well/cess pit [362], one of which is substantially complete. The grey ware jar has a fine sandy fabric and everted rim, with panels of barbotine dots and elongated “hairpin” decoration (Figure 22.3). This style of jar most likely appeared at the very end of the 1st century and into the early 2nd, when barbotine motifs of dots, rings and hairpins started to replace rusticated styles of decoration (Pollard 1994, 77), and the example here is comparable to a vessel found at Jewry Wall in levels dating to *c.*AD110-120 (Kenyon 1948, 148, fig.40.24). The second vessel found with evidence of cremated human bone inside is a white ware flagon, unfortunately more fragmentary than the grey ware jar (Figure 22.4). The ring-necked style of the flagon suggests a date during the first half of the 2nd century and again a parallel can be found in the Jewry Wall assemblage dating to *c.*AD110-120 (*Ibid*, 148, fig.40.28). Both cremations had been disturbed by the construction of a medieval well/cess pit and had been re-buried in the medieval period.

Well

[305] (508), (506), (388), (389), (304); (455)

Thirty-four sherds (966g) were recovered from a well located in the northern part of the site. The lowest fill (508) revealed a shelly ware necked storage jar and grey ware jar, most likely dating to the late 1st-early 2nd century with one sherd of undiagnostic grey ware found in (506). A plain rimmed grey ware dish dating from the middle of the 2nd century was retrieved from (388) and an abraded white ware was found in (389). A 2nd century samian ware decorated bowl was found in the fill of a construction cut (455), along with grey ware including a flat rimmed conical bowl with intersecting arc decoration similar to Black Burnished ware styles dating from the mid-late 2nd century. The upper fill (304) revealed 16 sherds of pottery ranging in date from the middle of the 2nd century to the 3rd. A Black Burnished ware dish and jar date from the middle of the 2nd century onwards as does the grey ware which includes a plain rimmed dish. A small abraded sherd of Central Gaulish samian ware is 2nd century. A colour-coated ware beaker and castor box from the Nene Valley date to the late 2nd-early 3rd and 3rd century respectively, whilst the latest datable vessel is a mortarium from Mancetter-Hartshill with a hammerhead rim dating to the 3rd century (Howe *et al* 1981, 16-25; Clark 1999, fig. 72.212, 152-154).

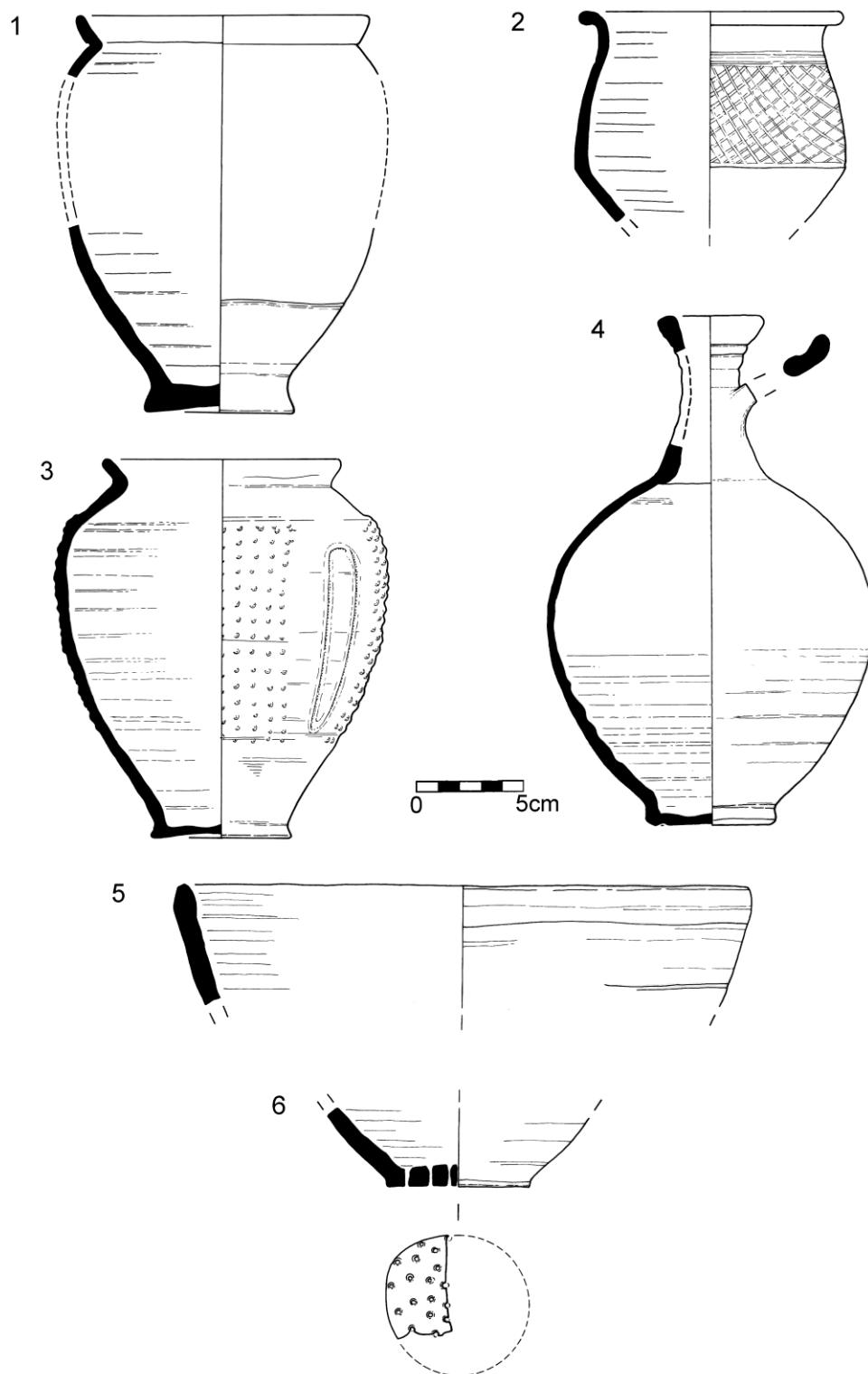


Figure 22 The illustrated Roman pottery

Late Ditch

[467] (466), (473), (476)

An assemblage of 136 sherds weighing 1.968kg was recovered from a ditch in the northern part of the site. Most of the material (116 sherds, 1.66kg) was found within fill (466) which comprised a mixture of pottery ranging in date from the 2nd to 4th centuries. The grey wares are jars and bowls including two bead and flanged bowls dating from the mid-3rd to 4th centuries (Pollard 1986, 5). Black Burnished ware jars and bowls are also present however, the sherds are undiagnostic and cannot be dated closely. Colour-coated ware beakers, dishes and a bowl from the Nene Valley and Oxfordshire date to the 3rd and 4th centuries (Howe *et al* 1981, 16-25; Young 1977, 133). A late Roman shelly ware jar from the South Midlands dates typologically to the late 3rd century, however in Leicester it could date into the early 4th century (Brown 1991, 62-64; Johnson forthcoming). The small quantity of amphora, white, oxidised and samian wares (five sherds in total) date within the 2nd century and are residual in this group.

Seventeen sherds (170g) of pottery were retrieved from fill (476) alongside an assemblage of animal bone. The pottery is very similar to that from (466) and includes two grey ware jar rims that join sherds in (466). A Nene Valley colour-coated ware jar and bowl date to the later 3rd and 4th centuries. Three sherds of grey ware were recovered from fill (473) including a bead and flanged bowl dating from the mid-3rd to 4th centuries.

Gully

[364] (344)

A small amount of pottery comprising six sherds (34g) was found within a gully [364] (344) also in the northern part of the site, comprising two mortaria and two colour-coated ware beakers. A Mancetter-Hartshill mortarium has a red painted rim and dates from the middle of the 2nd century into the 3rd, whilst the other mortarium is a colour-coated vessel from the Nene Valley dating to the later 3rd and 4th centuries (Howe *et al* 1981, 24-25). Both the beakers are also Nene Valley colour-coated wares including one with white painted decoration dating to the 3rd century (Ibid, 20-21).

Discussion

Overall there is evidence for activity on the site during the Roman period from the later 1st-early 2nd century through to the 4th century. The ditch [207] is most likely 2nd century whilst the building [504] close by could date to the second half of the 2nd century or possibly the early 3rd. Pit [408] is dated to the late 2nd-early 3rd century on the basis of a colour-coated ware beaker and the roadside ditch [346] dates within the 2nd century. The well may have been in use for a long period of time, perhaps constructed during the early 2nd century and used until the 3rd. The upper fill suggests it went out of use sometime during the 3rd century. The corn drier [460], ditch [467] and gully [364] are the latest features all dating to the 4th century, suggesting a slight shift in activity from the southern to northern area of the site over time.

The cremations are all dated to the later 1st or early 2nd century on the basis of the vessels used. Although this is not always an indication of when the burials took place as older vessels could be used for this purpose, at least the first vessel (206) probably does date to this early Roman period as it was disturbed by ditch [207] which dates to the 2nd century. It is

difficult to be more precise about the other vessels as they have been re-deposited at a later point.

The 2nd century groups are characterised by grey and Black Burnished wares with samian fine ware, whilst the later groups contain colour-coated wares from the Nene Valley and Oxfordshire. In this respect, the assemblage is fairly typical of urban assemblages from Leicester, demonstrating access to a range of local, regional and imported coarse and fine wares.

The Medieval and Post-medieval Pottery

Deborah Sawday

The pottery, 476 sherds, weighing 5.243 kg, was examined under a binocular microscope and catalogued with reference to the ULAS fabric series (Blinkhorn 1999), (Blinkhorn 2004); (Davies and Sawday 1999; 2004) (Table 4). The medieval vessel forms were also catalogued with reference to the nomenclature used in the Medieval Pottery Research Group *Guide to the Classification of Medieval Ceramic Forms*, (MPRG 1998).

Fabric/Ware	Sherd Nos.	%	Weight Grams	%	Av. Sherd Weight
Early/Middle Saxon					
SX – Quartz Tempered Saxon ware	8		19		
Sub Total	8	1.6	19	0.3	2.3
Late Saxon					
ST3 – Coarse Stamford ware	2		10		5.0
ST2 – Fine Stamford ware	8		24		3.0
ST1 – Very Fine Stamford ware	5		13		2.6
Sub Total	16	3.3	51	0.9	3.1
Medieval					
LI - Lincoln/Lincs Shelly ware	2		16		8.0
PM – Potters Marston	258	54.2	2696	51.4	10.4
SP3 – Splashed ware 3	4		20		5.0
OS1 – Oxidised Sandy ware 2z	1		3		3.0
OS - Oxidised Sandy ware	2		11		5.5
LY2 - Stanion Lyveden type ware 2	1		10		10.0
LY4 - Stanion Lyveden type ware 4	51		426		8.3
CC1 – Chilvers Coton ware 1	61		925		15.1
CC2 – Chilvers Coton ware 2	45		521		9.3
CC5 – Chilvers Coton ware 5	2		20		10.0
NO3 – Nottingham ware 3	2		7		3.5
MS2 – Medieval Sandy ware 2	5		134		26.8
Sub Total	434	91.1	4699	89.6	10.8
Late Medieval					
MP1 – Midland Purple ware 1	5		57		11.4
MP2 - Midland Purple ware 2	2		33		16.5
MP3 - Midland Purple ware 3	6		107		17.8
Sub Total	13	2.7	197	3.7	15.1
Post Medieval/Modern					
EA2 - Earthenware 2	3		260		86.6
SW4 – White Salt Glazed Stoneware	2		17		8.5
Sub Total	5	1.0	277	5.2	55.4

Totals	476	99.7	5243	99.7	
---------------	------------	-------------	-------------	-------------	--

Table 4 The post-Roman pottery totals by fabric sherd numbers and weight (grams)

The Early/Middle Anglo Saxon Pottery

Eight sherds of abraded and very fragmentary hand-made pottery, weighing 19 grams, were recorded. All were in a reduced quartz/quartzite tempered fabric and all were undecorated. Two of the fragments were burnished on one side. Recent attempts to refine the dating of the pottery by the technique of temper preparation used have failed (Blinkhorn 2004, 84) and the pottery is now dated generally from AD450-850.

One sherd was intrusive in the backfill, (304), of a Roman well [305], dated to the second century AD. Four joining sherds were recovered from the layer, (422), and another in the layer, (117), both contexts lying in the dark earths above Roman levels. The two remaining sherds were apparently residual in the medieval layer (321), a deposit that also contained a fragment of Potters Marston ware dating from c.1100.

Discussion

Hand made Saxon pottery in quartz/quartzite tempered fabrics has been recorded both within the walled town (Blinkhorn 1999), (Blinkhorn forthcoming) and without, at Bonners Lane just to the north of this site, (Blinkhorn 2004). Eight sherds of Saxon pottery, in granitic or calcareous fabrics (Cooper 1999), were found on the site of a car park just to the east, on Oxford Street. Iron Age, or possibly Saxon pottery was also recovered during an archaeological excavation on an adjacent site on Grange Lane (Cooper 2003).

Fabric	ST3	ST2	ST1	LI	PM	SP3	OS1	OS	LY2	LY4	CC1	CC2	CC5	NO3	MS2	MP1	MP2	MP3	Totals	Av Weight Grams
oven [302]		1/3			10/96	1/7													12/106	8.8
cess pit/well [359]	1/2	3/10	3/4		161/1368			2/11		41/329									211/1724	8.1
cess pit/well [362]		2/6	2/9		22/318	1/7	1/3		1/10	6/29				1/1					36/383	10.6
post hole [330]											1/12								1/12	12.0
ditch [342]					2/7														2/7	3.5
ditch [310]		1/4		2/16	34/555					4/68	10/208						1/32		52/883	16.9
pit [301]		1/1			19/255	2/6					50/705	43/511	2/20	1/6	5/134	5/57	1/1	6/107	135/1803	13.3
Totals	1/2	8/24	5/13	2/16	248/2599	4/20	1/3	2/11	1/10	51/426	61/925	43/511	2/20	2/7	5/134	5/57	2/33	6/107	449/4918	

Table 5 The Medieval Pottery from selected contexts, by fabric, sherd numbers and weight (grams).

Conclusion

Structural evidence of Saxon occupation was recorded at Oxford Street (Gossip 1999) and at Bonners Lane (Finn 2004) and, has also been found more recently, on the site of the former St Margaret's Baths (Gnanaratnam forthcoming) within the town walls. The pottery finds here provide further evidence of Saxon activity, if not occupation, in the area to the south of the Roman town.

Saxo-Norman to Post-medieval

The twelve sherds recovered from the layers associated with the oven [302] included from the lowest level (345), which lay below the cobbled floor of the structure, a roller stamped body sherd from a jug and part of an upright jar rim (Davies and Sawday 1999, fig.88.49) and other undiagnostic thin walled fragments of Potters Marston ware with a terminal date in the 12th, or possibly the early 13th century. A fragment of fine Stamford ware, fabric ST2, dating from the mid 11th or 12th centuries was retrieved from the cobbled floor, (317), above and a sherd of Splashed ware, dating from the 12th or early to mid-13th century was found in the layer (303), above the oven.

Over two hundred sherds of medieval pottery were found in the backfill of the cesspit or well [359] – the largest post-Roman pottery assemblage on the site. The earliest material comprised seven sherds of Stamford ware, including a glazed fragment of the coarse Stamford ware, fabric ST3, dating from the 10th or 11th centuries, and part of a 12th century jar or spouted pitcher rim in the fine Stamford fabric ST2. Quantities of Potters Marston and the Stanion Lyveden fabric LY4, dating generally from c.1100 to c.1300, were also found. Fragments of at least three jugs in Potters Marston were identified, one with an externally thickened rim and another with a flat topped rim, pouring lip and corrugated neck. Similar vessels in this ware have already been recorded in Leicester (Davies and Sawday 1999, fig.93.107 and 116-117). The presence of several glazed body sherds enabled the identification of the third jug. The double thumbled handle bases from two plain jugs in Stanion Lyveden type ware, fabric LY4, were also recorded. The glazed Potters Marston sherds and the range of vessel forms present, suggest a terminal date from the later 12th or early to mid-13th century for this group of pottery as a whole, which, with an average sherd weight of only 8.8 grams, clearly contains little if any primary refuse.

The back fill of the cesspit or well [362] produced only 36 sherds of pottery, with an average sherd weight of 10.6 grams. The finds included three sherds of 'developed' Stamford ware, with copper glaze, dating from c.1150 to the early or mid-13th century, together with two jug fragments, part of an externally glazed base, and a roller stamped vessel with a simple, externally thickened rim and pouring lip, in Potters Marston ware. It is possible that these two vessels may be the same as the roller stamped pot found in the oven [302], and the glazed jug found in the backfill of the cess pit or well [359], but the remains were too fragmentary to be certain. A Potters Marston jar with an upright and externally thickened rim was also present (*ibid*, fig.88.32). Over all the date range of this group of material appear very similar to the above, except for a small fragment of Nottingham ware, fabric NO3, dating from the mid or later 13th century, which was found in the one of the, upper fills, (361) of the cesspit or well.

The fill of the ditch [342] contained two sherds of 12th century Potter Marston ware, whilst the ditch [310], apparently representing a re-cut of [342] contained over 50 sherds of medieval pottery, with a relatively large average sherd weight of 16.9 grams, primarily in Potters Marston ware and the Chilvers Coton fabric CC1. The upper level, (322), contained a curved bowl in Potters Marston (Davies and Sawday 1999, fig.92.97), and an upright externally thickened jug rim with a slashed strap handle and neck in CC1. Similar vessels with complex slashing occur at the production centre from the mid-13th century, (Mayes and Scott 1984, fig.96.50.), and are also known in Leicester in fabrics pxii, and pxiv, (Woodland 1981, fig.33.107 and fig.34.115) which are both now thought to be Chilvers Coton fabrics. This same layer also produced a single sherd of the Midland Purple ware, MP2, dating from the later 14th century, and possibly intrusive in this context.

The fill of the post-hole [330] contained a single sherd of the Chilvers Coton fabric CC1. This jar fragment linked with sherds from the backfill of the pit [301], which cut this feature and may be intrusive in this context. The vessel is dated from the late 14th century at Chilvers Coton; where similar rounded vessels with everted rims were recorded at site 4, kiln 23 (Mayes and Scott 1984, fig.73.260-261).

The latest assemblage on the site was that from the pit [301], which, with a single fill, (300), produced 135 sherds with an average sherd weight of 13.3 grams. A range of residual Stamford, Potters Marston. Splashed, Nottingham and Medieval Sandy ware was present, including a slashed strap handle from a jug in the latter, in fabric MS2, probably dating from the mid- or later-13th century. Ninety five sherds in the Chilvers Coton fabrics CC1, CC2, and CC5 were also present, some of which was also evidently residual. The only identifiable vessel in fabric CC5 was a curved bowl with a simple upright rim with an internal bevel. This ware, fabric B at Chilvers Coton, is dated generally to the 13th century at the kiln site, and this form is paralleled at the production centre in kiln products of this date, although the example quoted here is in Chilvers Coton fabric A, (*ibid*, fig.70.187, 40-41). The identifiable vessel in fabric CC1, a jar dated from the late 14th century, linked with the sherd in the post-hole [330] noted above, which was cut by the pit. The fragments of two jugs were found in fabric CC2. One was a small vessel of uncertain shape but possibly of mid- to late-13th century date, the other a large and rounded vessel with inscribed horizontal lines at the base of the neck and with a mottled green and yellow glaze, and probably dating to the 14th century. This ware, fabric C at Chilvers Coton, is more commonly dated to the 14th and 15th centuries at the production centre (*ibid*). The 16 sherds in the hard fired Midland Purple wares, fabrics MP1, MP2, MP3, are dated from c.1375 to c.1550 and comprise the latest material in this group. Only one vessel was identifiable, a jar in MP3, with a simple everted rim. This fabric represents a more highly fired and heavily reduced version of the oxidised and coarse quartz tempered fabric, MS3, which is thought to originate in Derbyshire, sources including kilns at Burley Hill, Ticknall. Some Midland Purple ware is also thought to originate at Ticknall and elsewhere (Cumberpatch 2004, 88). A similar vessel in Purple ware has been dated to the late 15th century at Derby (Coppack 1980, fig.104.242), but a later 14th century date may not be impossible for this vessel form and is suggested as a terminal date for the group as a whole.

Discussion

The 15 sherds of late Saxon Stamford ware recovered from the excavations, including the 13 from the selected contexts described above (Table 5), were all residual in later contexts. Their small size suggests that the sherds in fabrics ST3 and ST2 represent manuring from at least the 11th and into the early 12th century, possibly associated with agricultural activity in the South Field of the medieval town, or with backyard activity relating to housing fronting onto Southgate Street, now known as Oxford Street. The sherds of 'developed' Stamford ware, dating from, c.1150 may be more properly considered with the medieval wares below although none of the medieval contexts could be dated with confidence to the early or mid 12th century.

The relatively low average sherd weight and the degree of residuality exhibited by much of the medieval pottery in the contexts selected for detailed examination, coupled with the presence of over 400 sherds of pottery dating from c.1100 to c.1400 suggests an increase in the intensity of the activity in the area at this time. The number of links between pottery sherds from different features across the site also points to the controlled dispersal of rubbish in the area during the medieval period. Links were noted between a roller stamped pottery sherd associated with the lowest level of the oven [302] and a sherd with similar decoration in the backfill of cesspit or well [362]. Another link was noted between the pottery from the latter and the backfill of the cesspit or well [359]. Similarly, a sherd from the fill of the post-hole [330] linked with a sherd from the backfill of the ditch [310], which had truncated it. However the absence of large numbers of rubbish pits, and the fact that little of the pottery, save perhaps some from the pit [301], could be described as primary refuse, suggests that much of the rubbish was perhaps being disposed of elsewhere, perhaps in the South Field.

Whilst the oven and one of the cesspits or wells seem to have fallen out of use during the later 12th or early 13th century and the second cesspit by the later 13th century respectively, the recut ditch [310] and the pit [301] appear to have been backfilled by the later 14th century. Little pottery could be attributed to the later medieval period, and only two sherds of post-medieval or modern pottery were recovered.

Conclusion.

In recent years there has been an increasing amount of archaeological evidence (Gossip 1999, 48; Finn 2004, 25) in support of the documentary evidence, which suggested that suburban settlement existed here by c.1200 (Courtney 1998, 124). These excavations produced early to middle Saxon pottery, which has been discussed above, and pottery dating from the late Saxon to the post-medieval period. The late Saxon pottery amounted to 3.1 and 0.8 per cent of the totals by sherd numbers and weight respectively. The figures for the medieval pottery are 91.3 and 89.7 per cent, with Potters Marston typically being the most common ware on the site, accounting for 54.2 per cent and 51.4 per cent of the totals. The apparent lack of later medieval and post-medieval material, suggesting either a change in the pattern of rubbish disposal or that there was little activity in the area during this time.

The range of pottery fabrics and vessel forms are very similar to that found on other excavation sites in the city and in the south suburbs. The only difference between this

assemblage and that commonly found within the city, being the absence of Nottingham Splashed wares and late Saxon Lincoln/Lincolnshire Shelly wares, an absence that has also been noted on other suburban sites. Unfortunately the pottery assemblage is too small to enable further analysis but there does appear to be an unusually high preponderance of jugs compared to the more utilitarian jars and bowls more commonly associated with the medieval household – perhaps suggesting that the rubbish came from an ale house or some similar establishment.

Catalogue of post-Roman pottery

Context	Fabric/ware	S h e r d s	W e i g h t g r a m s	Comments & latest date
POTTER Y				
108 [107]	PM – Potters Marston	7	5 2	12/13 th C.
117	SX 1 – Saxon ware 1	1	2	early/mid Saxon c.450-850 (Blinkhorn 2004).
203 [204]	EA2 – Earthenware 2	2	5 2	bowl rim
203	SW4 – White Salt Glazed Stoneware	2	1 7	bowl. rim, c.1730-1770
300 [301]	ST2 – Fine Stamford ware	1	1	glazed
300	PM	1 9	2 5 5	2 upright jar rims, 1 bowl rim and a glazed sherd..
300	SP3 – Splashed ware 3	2	6	one orange, one green glazed
300	CC1 – Chilvers Coton ware 1	3 6	3 0 5	misc jug body and 2 simple upright rim sherds, glazed
300	CC1	1 4	4 0 0	glazed jar rim, body & base sherds, joining fine fabric, min 1 vessel, 'joins' 329, later 14 th C.
300	CC2 – Chilvers Coton ware 2	3 9	4 5 6	jug body & base sherds, inscribed horizontal line dec at neck min. 1 vessel., 14 th – 15 th C.
300	CC2	4	5	misc. jug body

			5	& one rim
300	CC5 – Chilvers Coton ware 5	2	20	simple 13 th C. upright bowl rim (Mayes & Scott 1984, fig.70.187) & glazed sherd
300	NO3 – Nottingham ware 3	1	6	? base fragment
300	MS2 – Medieval Sandy ware 2	5	134	misc. including 2 joining strap handle sherds, with slashed dec
300	MP1 – Midland Purple ware 1	5	57	convex base, small, min 1 vessel
300	MP2 – Midland Purple ware 2	1	1	purple glaze
300	MP3 – Midland Purple ware 3	6	107	jar rim with simple everted rim, min 1 vessel, later med, (Coppack 1980, fig.104.242) late 15 th C. at Derby, this example may be earlier.
303 [302]	PM	4	37	
303	SP3 – Splashed ware 3	1	7	Green glazed, <i>circa</i> 1100-1250
304 [305]	SX 1 – Saxon ware 1	1	5	Very sandy quartz tempered fabric. <i>Circa</i> 450-850
317 [302]	ST2 – Fine Stamford ware	1	3	c.1050-1200+
318 [302]	PM	3	29	Convex basal angle, thin walled body sherds, probably 12 th C.
321	Saxon	2	3	Quartz/quartzite
321	PM	1	12	? 12th C.
322 [310]	ST2 – Fine Stamford ware	1	4	
322	PM	26	358	misc body – 2 jar rims
322	PM	3	167	13 th C. bowl, (Davies and Sawday 1999, fig.92.97)
322	LY4 – Stanion Lyveden type ware 4	4	68	Jar rim, 13 th – 14 th C (McCarthy & Brooks 1988, fig

				173.1028)
322	CC1	1 0	2 0 8	Includes a jug rim & slashed strap handle – draw – c1250+
322	MP2	1	3 2	Later 14 th or possibly intrusive?
329 [330]	CC1	1	1 2	Probably same vessel as glazed jar in 300, which may date from the later 14 th C. rounded vessels with everted rims were recorded at site 4, kiln 23 (Mayes and Scott 1984, fig.73.260-261).
334	PM	2 2	2 8 8	Includes a simple upright jug rim
334	LY4	5	9 7	jug body with double thumbing at handle base, ?12 th C.
334	OS – Oxidised Sandy ware	1	6	
341 [310]	PM	2	2 0	
341	?LI – Lincoln/Lincolnshire Shelly ware	2	1 6	Sparse shell inclusions, ? 11 th -12th C. +
345 [302]	PM	3	3 0	Upright jar rim (Davies and Sawday 1999, fig.88.49), roller stamped jug/jar body, mid later 12th C?
357 [359] pit	ST3 – Coarse Stamford ware	1	2	Glazed
357	ST2	3	1 0	2 glazed, including small jar/spouted pitcher rim
357	ST1 – Developed Stamford ware	3	4	
357	PM	7 7	6 3 0	2 jug rims, 1 ‘developed’, 1 jar rim, some glazed sherds – ?early/mid 13 th C. links with 363 and 334.
357	LY4	2	1	jug - ? links

		3	9 6	with 334 above, + ? jar body with thumbled applied clay strip
357	OS	1	5	
360 [362]	PM	5	5 3	
360	SP3	1	7	green glaze ?early/mid 13 th C.
360	LY4	5	1 2	
361 [362]	ST2	2	6	glazed
361	ST1	1	4	copper glazed jug/tubular spouted pitcher neck
361	PM	1 4	2 2 0	upright jar rim, simple upright jug rim with roller stamped dec
361	NO3 – Nottingham ware 3	1	1	Late 13 th C.
363 [359]	PM	4 9	3 6 2	Jug with everted, flared rim & corrugated neck, draw (very fragmentary) glazed, 13 th C.
363	PM	1 3	8 8	jar rim & misc
363	LY4	1 3	3 6	includes part of thumbled jug handle base, ? links with 334 above
365 [362]	ST1	1	5	spotted copper glaze, c.1150-1250
365	PM	1	2	
365	LY2 – Stanion Lyveden type ware 2	1	1 0	
365	LY4	1	1 7	
366 [342]	PM	2	7	?12 th – 13 th C
379 [362]	PM	2	4 3	? 12th C – thin walled
379	OS1 – Oxidised Sandy ware 1	1	3	Orange glaze, very coarse fabric, hand made.
391 [362]	ST1	1	4	spotted copper glaze, c.1150- 1250
422	SX 1 – Saxon ware 1	4	9	quartz tempered, c.450- 850

425 [362]	PM	1	15	12 – 13 th C.
444 [310]	PM	3	10	12 – 13 th C.
U/S	ST3	1	8	thick yellow glaze
U/S	PM	1	18	
U/S	CC2	2	10	
U/S	EA2	1	8	
ROOF TILE				
349 [347]	EA	1	528	Post Med nib tile - intrusive
CLAY PIPE				
203 [204]	china clay	1		bowl - clay pipe, c. 1730-1750 (Higgins 1985, fig.2.26).

Roman Small Finds

Nicholas J. Cooper

Introduction

Diagnostic objects of copper alloy, iron, worked bone and glass have been arranged into Roman and medieval sections and then by functional category according to Crummy (1983 and 1988).

Category 1: Objects of personal adornment or dress

Hairpin

Sf39 (506) Roman well lining. Bone hair pin tapering polished lower shaft fragment and tip. Probably of Crummy (1983) Type 1 or 2 and dating to the earlier Roman period. Length of fragment 33mm.

These are the most common worked bone finds from Roman sites and Types 1 and 2 are well represented in later 1st and 2nd-century deposits in Leicester (Cooper 1999, fig.121)

Beads

Sf17 (363) [359] Spherical (or short oblate) bead in blue glass. Length 5mm, diameter 6mm. This is a relatively common bead type occurring either in blue or green glass. A similar, but larger, example came from Causeway Lane, Leicester (Cooper 1999, 259, fig.124.73)

Armlet

Sf3 Shale armlet fragment of square section with rounded edges and decorated with single, widely spaced, ring and dot motifs around external face. Internal diameter 46mm, width of band 5mm. About 25% of the band remains.

Evidence from the Butt Road cemetery in Colchester indicates that an armlet of this diameter was worn by a child and a similarly-decorated example came from excavations in the city (Crummy 1983, 36, fig.38.1554). The wearing of jet and shale jewellery becomes popular in the later Roman period.

Category 4: Household Utensils and Furniture

Vessel Glass

Sf26 (405) [404] Fragment in colourless (white) blown glass from the tubular foot ring base of a cup or beaker. Probably dating to the mid-late 2nd century (Price and Cottam 1998, 93, fig.33).

Sf27 (458) Very small flat glass fragment. The patina on the surface suggests it is not Roman in date. Length 5mm.

Quern Stones

Four fragments of Roman rotary querns were recovered; one in sandstone of the Millstone Grit from Derbyshire and the other three produced from Mayen lava from the Eifel Mountains in Germany.

Sf37 (497) [469] Fragment of upper stone of a rotary quern manufactured from Millstone Grit. Both the upper and lower (concave) surfaces are tooled with bands of parallel grooves and the vertical skirts are lightly pecked. Diameter 340mm (10% of edge preserved), thickness 35mm.

(388) [305] Small, heavily-worn, fragment from the edge of a Mayen lava quern with a plano-convex section. Flat and worn ?lower surface. Thin vertical skirt (15mm). Convex upper surface. Diameter approx 400mm (<5% of edge preserved), max thickness 22mm.

(389) [305] Fragment from edge of partially worn lava quern upper stone. Undressed upper surface, slightly convex. Vertical skirt with vertical tooling marks (45mm). Slightly concave lower surface with remains of parallel tooling. Diameter estimated at 420mm (3% of edge preserved).

(317) [302] Miscellaneous fragment of Mayen lava quern. Parallel tooling on one surface. Thickness 39mm.

Category 5: Objects use for recreational purposes

Counters

Sf41 (504) [505]. Ceramic counter made from base sherd of a grey ware jar. In-expertly shaped from the central part of the base. Diameter 30mm.

Roughly made counters or roundels are relatively common finds on Roman sites and a large number are known from Leicester (Cooper 1999, 272)

Category 11: Fasteners and fittings

Sf40 (505) [504] Copper alloy folded sheet fragment. Length 15mm.

Medieval and later Small Finds

Nicholas J. Cooper

Category 1: Objects of personal adornment or dress

Buckles

Sf9 (300) Copper alloy buckle with oval frame and composite rigid plate (Figure 23.2). Complete except shaft and tip of pin missing. Outer edge of frame has a protruding, pointed lip but no pin rest. Bar has remains of the base of a copper alloy pin *in situ*. Integral, slightly flaring forked spacer is concealed beneath internal and external plates enclosing traces of leather from the attached belt. Plates are secured by a single iron rivet close to the end or inside edge of the plate which is decorated with two V-shaped cut outs. Outside edge does not appear to be secured by a rivet; a cut out accommodates the pin. Length 39mm, width of frame 17mm, width of plate 13mm.

This is a relatively small example of a type well represented in London from Ceramic Phases 11 and 12 (c.1350-1450) (Egan and Pritchard 1991, 78 and fig. 48.322). Such buckles were used to secure girdles, a type of long thin belt worn by both men and women, made of leather, linen or worsted. These composite buckles represent the most labour-intensive product and their quality was regulated by the London Girdlers' Guild (Egan and Pritchard 1991, 35 and 80). An example was found centrally on the waist of a burial of a 21 year old male at the Austin Friars site in Leicester (Clay 1981, 133 and fig.48.25, Grave 7).

Sf15 (322) Surface of ditch [310] but probably intrusive. Copper alloy (?brass) circular buckle frame with separate central bar missing. The bar would have been secured by small circular perforations on opposite sides of the ring, which is thickened at these points. The ring is of plano-convex section and the whole is slightly convex and has no pin rest. The outer, upper surface of the ring is decorated with moulded beading. Diameter of ring 30mm, thickness of ring 3mm.

The convex shape and lack of pin rest would suggest that this a decorative shoe buckle probably of 18th or 19th century date, but not closely paralleled.

Hooked tag

Sf18 (307). Copper alloy tag, ovoid in shape with single central perforation and a tapered hook projecting from one short end. Length 26mm, width 14mm, diameter of perforation 5mm.

Hooked tags were an element in a 'hook and eye' clothes fastening arrangement widespread in the Late Saxon and early Post-Conquest and again in the late medieval for example in Winchester (Hinton 1990, 548, fig.149.1426-7). However, whilst the cited Winchester examples are similar in size, the single large perforation of the present example is not typical, as the tags are supposed to be held by thread only. Some other function for this object might therefore be applicable.

Dress pins

Sf5 upper clay surface (323) Copper alloy dress pin, head missing. Length 39mm, diameter of shaft 1mm.

Sf8 (300) [301] dated Later 14th century. Copper alloy dress pin, head missing. Length 26mm, diameter of shaft 0.5mm.

Two damaged copper alloy dress pins with slender tapering shafts were recorded. Both would originally have had solid or wound wire heads and are similar to examples of late 14th-century from London (Egan and Pritchard 1991, 301, fig.200). Similar more complete examples have come from many Leicester sites including 9, St Nicholas Place (Brocklehurst and Cooper 2010). The 14th century saw a vast increase in the manufacture and use of pins as hair and dress accessories due to the greater availability of drawn wire and the fashion for tightly plaited hair and veils.

Category 3: Objects used in the manufacture or working of textiles

Sf11 (300) [301] Later 14th Century. Copper alloy thimble with a domed, slightly pointed, head (Figure 23.3). Surface badly corroded but circular pitting on surface appears irregular but probably following a spiral pattern and there is faintly engraved line around the base. Height 15mm, base diameter 17mm.

Parallels with the large assemblage from London suggests a date in the later 15th or earlier 16th century, before machine made thimbles from Netherlands became common (Egan 2005, 130-133, fig.126.621 and 624). If the pottery dating for this context is reliable then it makes it a very early example.

Category 4: Household Utensils and Furniture

Kitchen or Table Wares

Sf4 (319). Copper alloy fragment from upright rim of a cast vessel of small diameter. Part of perforation on one broken edge. Diameter of vessel 100mm, thickness of body 3mm.

Category 10: Tools

Knives

Sf16 (357) [359] 12th-13th century. Copper alloy knife hilt plate. Ovoid sheet with top edge flattened. Rectangular cut out set centrally to accommodate blade tang. Length 16mm, width 12mm, perforation 10mm x 5mm.

Similar examples come from medieval Winchester from 12th to 15th-century contexts (Biddle 1991, 861, fig.259.2864-67).

Sf12 (300) [301] Iron. Short length of a probable knife blade. Length 40mm

Category 11: Fasteners and fittings

Bone fitting

Sf7 (303) [302] dated to 12th/13th century. Fragment of a bone element perhaps from a composite object (Figure 23.1). Comprises a solid four-sided head, the front and rear faces tapering to a point at the top. From the bottom of the head projects a thin shaft of circular section, broken across the length. The front and rear faces of the head are decorated with transversely incised parallel lines, arranged in four pairs on each side. The other two sides are each decorated with a single ring and dot motif towards the apex, and below, a single

perforation runs right through the head. The function of the perforation must be for some form of suspension or to hinge the element and allow it to move on an axle perhaps, bearing in mind that the decorative head must be visible. Dimensions of head 7mm x 6mm x 4mm. Diameter of perforation 1mm. Broken length of shaft 9mm and diameter 1.5mm.

From the context it would appear to be of medieval date, and perhaps, given the use of ring and dot decoration, Late Saxon. However, no parallels have been traced.

Miscellaneous copper alloy fittings and fragments

Sf21 subsoil/unstrat. metal detected. Tin alloy (white metal) sheet washer or perforated disc with perforation slightly off-centre. Diameter 10mm. Diameter of perforation 4mm.

Sf21 (300) [301] Copper alloy sheet fragment. One straight edge length 30mm

Sf31 (466) [467] Cleaning top of ditch. Short length of lead, striated and slightly curved. Length 33mm.

Sf13 Unstrat. Copper Alloy subrounded disc. Diameter 20mm. Possibly a Late Roman coin but completely illegible.

Miscellaneous Iron Fasteners and Fittings

The remains of at least seven iron nails were recorded from (300) [301]. All were made with square sectioned, tapering shafts and the lengths of complete examples varied between 55mm and 65mm. Undiagnostic iron objects were recovered from (304), (307), (361), (368), (380), (459), (466), (468), (473) and sf36 from (497).

Miscellaneous Lead Object

Two, small amorphous lumps of lead came from (352) and (468), probably droplet waste from the melting and working of lead.

Category 13: Military equipment

Unstratified. Pb musketball. Diameter of ball 14mm.

Probably belong to the larger class of shot, of twelve to the pound, judging by the diameter of over 10mm. Casting sprues would originally have joined each shot to a 'header', the waste evidence for which has been discovered at Beeston Castle (Courtney 1988, 3 and fig.5).

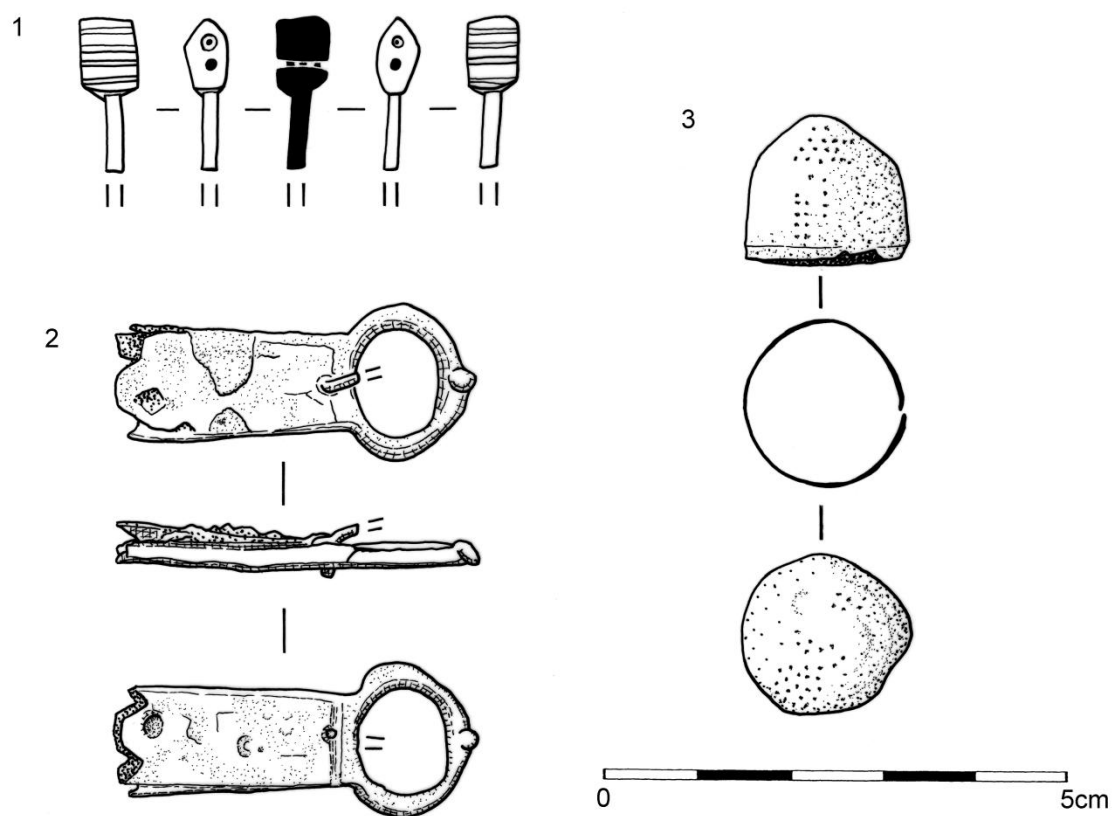


Figure 23 The illustrated small finds

Roman and Medieval Coins

Richard Buckley

Table 6 The Roman and later coins

Context	SF	Material	Period	Obv	Rev	mm	Denom	Date
506	34	ca	Roman	CONSTANTINVS[]	[GLORIA EXERCITVS] 2 soldiers with 1 standard	TRP	nummus	335-41
?	6	ca	Roman	[CONSTANTIN]OPOL[IS]	Victory on prow	TR[]	nummus	330
?	2	ca	Roman	[]AVG	GLOR[IA EXERCITVS] 2 soldiers with 2 standards	TR[]	nummus	333-4
466	29	ca	Roman	[FL IVL HELENAE AVG]	[PAX PVBLICA] Pax I. with branch and sceptre		nummus	337-41
344	20	ca	Roman	Radiate bust rt	figure standing		antoninianus	?270-273
307	19	ca	Roman	illegible	illegible		nummus	4th C
466	33	ca	Roman	[]NVS PF AVG	PROVIDENTIA AVG		antoninianus	268-70
466	35	ca	Roman	Radiate bust rt	[]AVG		antoninianus	270-84
468	32	ca	Roman	CONSTANTINOPOLIS	Victory on prow	TR.P	nummus	330

464	28	ca	Roman	Radiate bust rt	illegible		antoninianus	270-84
322	22	silver	medieval	bust facing [EDWA]	long cross		penny	1272-1483

Metal working evidence

Graham Morgan and Heidi Addison

Introduction

A total of over 7kg of metal working residue was recorded from the site and is detailed in the tables below. The vast majority of the material comes from medieval deposits with the remainder from the Roman period (286g) and a small amount (47g) undated including fragments of lead dross from (444) the lower fill of ditch [310].

Results

Table 7 Metal working evidence from Roman features

Roman Metalworking Residues from 52, Grange Lane				
Context	Cut	Type	Wgt (g)	Date
307		Hearth slag	54	RB 2-3C
354	353	Hearth slag	7	RB 2-3C
356	355	Hearth slag	9	RB 2-3C
366	342	Hearth slag	39	RB 2-3C
368	367	Fe Slag	121	RB 2-3C
368	367	Fe slag	6	RB 2-3C
441	442	Fayalite hearth slag	37	RB 2-3C
505	504	Hearth slag	13	RB 2C
Total			286	

Table 8 Metal working evidence from medieval features

Medieval Metalworking Residues from 52, Grange Lane				
Context	Cut	Type	Wgt (g)	Date
108	107	Hearth bottom	835	Med 12-13C
108	107	Hearth slag	101	Med 12-13C
108	107	Vit clay	12	Med 12-13C
108	107	Hearth slag	217	Med 12-13C
108	107	Vitrified clay + fuel ash glazing	23	Med 12-13C
300	301	Vitrified clay + Fuel ash glazing	11	Med 13-14C
300	301	Vitrified clay + Fuel ash glazing	11	Med 13-14C
304	305	Vitrified clay	14	Med 12-13C
317	302	Hearth bottom	705	Med 12-13C
317	302	Hearth slag	258	Med 12-13C
341	342	Vitrified clay + fuel ash glazing	10	Med 12-13C
357	359	Vitrified hearth lining, fuel ash glazing	72	Med 12-13C
357	359	Hearth slag	473	Med 12-13C

360	362	Vitreous clay lining	47	Med 12-13C
361	362	Hearth slag	920	Med 12-13C
361	362	Vesicular Fayalite hearth slag	224	Med 12-13C
361	362	Vitrified clay + fuel ash glazing	79	Med 12-13C
361	362	Hearth bottom	654	Med 12-13C
363	362	Hearth bottom	414	Med 12-13C
363	359	Hearth bottom	1074	Med 12-13C
363	359	Fuel ash slag	100	Med 12-13C
363	359	Hearth slag	221	Med 12-13C
365	362	Hearth bottom and Slag	721	Med 12-13C
Total			7196	

Discussion

The Roman evidence indicates debris from small-scale iron working or forging near the site, whilst the medieval evidence is far more substantial comprising at least six hearth bottoms and other debris particularly from (108), (317), (361) and (363) indicating heavy and frequent iron forging close to the site. In one case a hearth bottom had been reused as part of the cobbled base of an oven or kiln.

Roman Building Materials

Nicholas J. Cooper

Roman Ceramic Tile

A total of 96 fragments (12.5kg) of Roman tile was recovered, over half of which were unclassifiable fragments. All material was made in the typical sand-tempered orange fabrics typical of Leicester except for one example of a flue tile in shell tempered fabric typical of the south midlands.

Table 9 Quantification of Roman Tile Assemblage by Form

Roman Tile Summary Table				
Form	Frag	Weight	%ClassifWt	AvFragWt
Flue	1	54	<1	54
Imbrex	5	242	2	49
Tegula	28	7842	70	280
Wall	13	3110	28	239
Total	47	11239	100	239
Unclass	49	1299		26
Total	96	12538		130

This reflects a very broken assemblage and perhaps not likely to represent primary deposition relating to nearby demolition. Only one excavated group, from (497), contained diagnostic fragments of any size and by weight represented nearly half the diagnostic material. Tegulae (flanged roof tiles) were the best represented at 70% by weight and by comparison their counterparts in roof covering, curved imbrices, were few. This may be due to the preferential selection and survival of tegulae for re-use as material for hard standings. Only a single

fragment of hypocaust flue tile was recorded, in a shell-tempered fabric and probably made in Northamptonshire or Bedfordshire.

Tessera

A single grey tessera (20mm square) made from local Danehills sandstone and the typical stone type used in Roman Leicester for tessellated flooring was recovered (residually) from (459). It is probably the result of dumping of rubble outside the town rather than relating to a nearby building.

Medieval Building Materials

Nicholas J. Cooper

Medieval Ceramic Rooftile (see also Ridge tile report)

A single fragment of peg tile (270g) came from (322) [310].

Later Medieval Swithland Roofing Slates

Five complete examples of late medieval long slates were recovered from (200). All have a single round perforation towards the top, not always centrally placed. They vary in length from 140mm to 300mm in length and from 75mm to 110mm in width. The shapes are not uniform and the undersides are not flattened in the same way as Roman slates. Two examples have evidence for torching on the underside to help seal the interior of the roof from weather. The variation apparent is similar to that found amongst tiles from Leicester Abbey and may be the result of 'stop gap' repairs rather than a comprehensive re-roofing programme (Ramsey 2007 31).

A further nine undiagnostic fragments of Swithland slate came from (466) [467], a near-complete one with broken hole came from (476) from [467], two more fragments from (468) and one from (459) [460]. The undiagnostic fragments have been discarded.

Building Stone

Samples of stone imported to the site include undressed fragments of Danehills sandstone from (300), (363), (441), (446); slate from (459), and granite from (343) and (352). All would have been available from the immediate hinterland of Leicester and were probably incorporated into the rubble masonry of buildings. The samples have been discarded.

Osteological Analysis of Cremated Human Remains

Simon Chapman

Introduction and Methods

The suspected human remains were excavated from a total of four discrete features, believed to be cremation burial deposits (see Table 10).

Feature Cut	Context	Context Type	Urned/ Un-urned	Notes
[207]	(206)	Cremated bone	No Urn	Pos disturbed cremation deposit
-	(348)	Fill - Pot / bone sample	Urned	Broken urn
-	(349)	Fill – Urn with in situ contents	Urned	Full urn (emptied)
[408]	(417)	Fill – pot sherds only	Urned	Sherds only

Table 10 Suspected Cremation Burial contexts from Grange Lane.

Most of the suspected cremation related features had suffered from some degree of post-depositional disturbance/truncation and it seemed unlikely that any of the deposits were preserved in their entirety for subsequent specialist analysis. A total of 872g of cremated bone was available for analysis from four individual site contexts.

Site/ Lab Recovery

Where the cremation deposits were contained within an urn (349) (Figure 1), the urn was lifted and excavated within a controlled office environment. Those that were not preserved within complete or near complete vessels (206), (348) and (417) were removed from site as bulk samples. The bulk samples were later processed by water flotation and any flots were collected on to 500µm mesh sieve. Residues were collected on a 1mm mesh. Residues above 1mm were sorted by eye for the retrieval of bone etc.

The contents of the vessel recovered from burial context (349) were removed by ‘micro excavation’, by the author, under lab conditions. The vessel bore signs of damage on its upper side (Figure 1), with a section of the rim and neck missing, and presumably the contents from this area had been truncated at some time. This area of damage relates to the side of the vessel which was uppermost in the burial pit. The remainder of the vessel was complete all the way down to its narrow base (i.e. the only loss of contents would have been from the uppermost area of truncation previously mentioned. The contents of the burial vessel (349) was removed in eight 2 cm level spits (numbered 1-8 from rim to base). The constituent elements of each spit were recorded by plan drawing, photography and in the form of a schematic section drawing (Figure 2), so as to record the distribution of constituent elements. Once removed from the vessel the recovered bone and matrix were wet sieved in the manner described above (as for the bulk samples).



Figure 24 Burial vessel recovered from context (348).

Osteological Analysis

Once sieved, cleaned and dry the cremated bone from each context was again sieved through progressive wire meshes (10mm and 5mm) as a means by which to separate the bone fragments according to constituent sizes. The different levels could then be viewed, piece by piece, through a desk magnifier. The fragmented bone from each of the deposits was then classified according to anatomical type. In most cases the classificatory terms used were general ones: cranial, upper limb, lower limb and axial, since the small size of the fragments made specific identification virtually impossible. Each cremation was recorded in terms of weight (in gram's), of its percentage composition and according to visual characteristics. In some instances specific bones could be identified according to unique morphology (Spence 1967), such bones were further examined in an effort to determine age and sex characteristics using the methods described by Bass (1987), Brothwell (1981), Wells (1960) McKinley (1989) and the Workshop of European Anthropologists (1980), though some aspects of such analysis were made redundant either by incompleteness of the skeleton, or due to bone fragmentation. Further methodologies and sources will be detailed, where relevant, in the following text.

Where diagnosis of sex has been made groupings, according to certainty (based on reliability of available criteria), have been used:

Male > male? > male?? > Indeterminate > female?? > female? > Female

Similarly, broad ranges have been used for age determination, where more specific age diagnosis has not been possible:

Indeterminate > Infant > Juvenile > Young Adult > Adult > Mature Adult

Unsorted <1mm sieving residues were also available along with the sorted bone from the excavation. Although such minute bone fragments were of little osteological value.

Results

(206) - Produced 105g of calcined human bone. Mostly a uniform pale grey buff colour. Largest fragment size 25mm (humerus fragment). All bone displayed crazed cracking and warpage. Only fragments of upper and lower limb could be positively identified during analysis. Neither the sex nor the age of the individual represented could be identified.

(348) - Produced 45g of calcined human bone. Mostly a uniform mid-grey buff colour. Largest fragment size 29mm (femur fragment). All bone displayed crazed cracking and warpage. Only fragments of lower limb could be positively identified during analysis. Neither the sex nor the age of the individual represented could be identified.

(349) - Produced 717g of calcined human bone from ceramic burial vessel. Mostly a uniform mid-grey buff colour. Largest fragment size 62mm (tibia fragment). All bones displayed crazed cracking, also curved and serrated cracks were observed on some bones. Fragments from all bodily regions could be positively identified during analysis, however no obvious sequence of recovery/urn filling is discernible from the order in which the bones were recovered from the urn (Figure 25 & Table 11). The individual represented by these cremated remains has been identified as an adult by the presence of several fully fused bone epiphyses (distal metatarsal and humeral head) giving an age of over 17yrs. The individual has also been identified as a likely male (m?), based on a mandibular condyle of 12mm and a cranial thickness of 6mm (using Gejvall 1971).

(417) - Produced just 5g of calcined human bone. Mostly a uniform pale grey buff colour. Largest fragment size 27mm (tibia fragment). Only fragments of cranium and lower limb could be positively identified during analysis. Neither the sex nor the age of the individual represented could be identified.

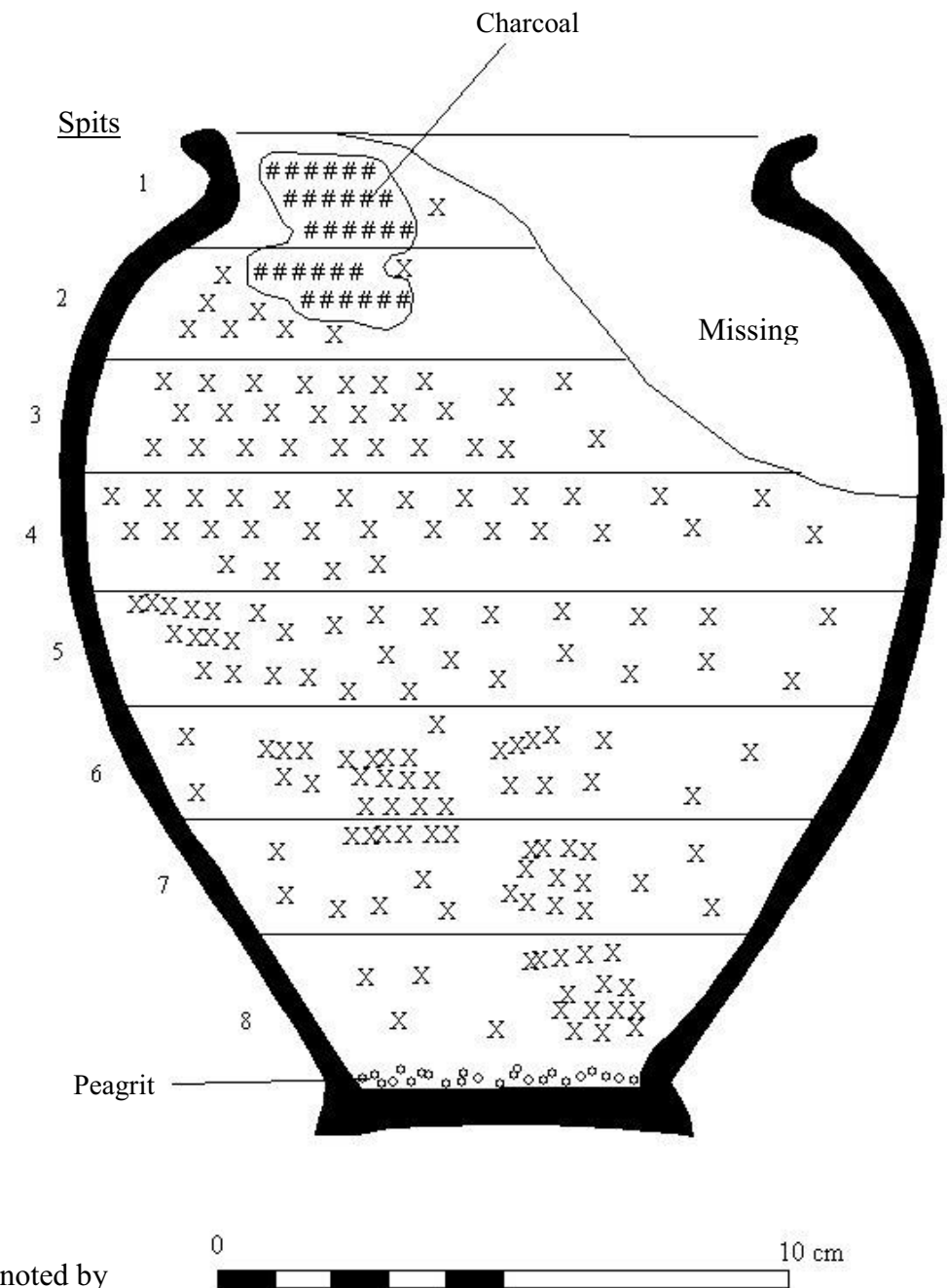


Figure 25. Schematic Illustration showing distribution of cremated bone (denoted by X) within the burial vessel. Also marked are the sequence of 2cm spits used during emptying.

	Spit	Bone Elements Identified
Rim	1 (0-2cm)	charcoal concentration + Unidentifiable bone fragments
	2 (2-4cm)	metatarsal
	3 (4-6cm)	rib, skull, mandibular condyl, mandible, tarsals, vertebrae
Body	4 (6-8cm)	skull, tibia, pelvis, cervical vertebrae, rib, ulnar, humerus, odontoid peg (axis), radius, humeral head
	5 (8-10cm)	skull, femur, head of ulnar, ulnar, trabecular
	6 (10-12cm)	tibia, metacarpal, femur, femur head
	7 (12-14cm)	femur head cont., trabecular bone
	8 (14-16cm)	tibia, vertebrae, peagrit
Base		

Table 11 Identified bone elements from burial vessel (348), indicating filling sequence.

Interpretation

Weights

The weights of the cremated bone samples recovered from Grange Lane (see Table 12), i.e. 5g-717g, with a mean average of 218g, when compared to cremation weights obtained elsewhere, can be said to be of fairly small size. McKinley (1989.69) observed a wide range of weights for adult cremations, from 200g-2,000g, but with an overall mean weight of c.800g. The recorded weights of bone from modern cremations gives us an indication that we should expect between 1000-3,600g of cremated bone for each adult represented (McKinley 1993).

Since similar bone weights were rarely reached by the Grange Lane cremations (in fact only cremation context (349) reached anywhere near the mean average of 800g) it seems likely that the majority of the cremation burials had been so severely truncated that most of the original deposit of bone had been lost (Figure 3). One cannot, however, rule out the possibility, as so often is the case, that only a token ‘handful’ of bone was buried in the first place. Other factors too would have affected the survival of the cremated bone. The intense heat of firing followed by subsequent pyre collapse would have reduced many of the thin and brittle bones (pelvis, ribs long bone heads etc.) to irrecoverable powder. Those bones recovered from the pyre seem to have been selected with some care, presumably by hand, once fully cooled, since there is only minimal evidence of charcoal in the burials (only a small amount in context 349) to suggest that the pyre remains were merely raked together for burial *en mass*. It is also possible that the volume of the burial vessel imposed an upper limit on the quantity of bone that it could hold for burial.

Feature Cut	Context	Context Type	Bone Weight (g)
[207]	(206)	Cremated bone	105
	(348)	Fill - Pot / bone sample	45
	(349)	Fill – Urn with in situ contents	717
[408]	(417)	Fill – pot sherds only	5

Table 12 Weights of bone recovered from each burial context from Grange Lane.

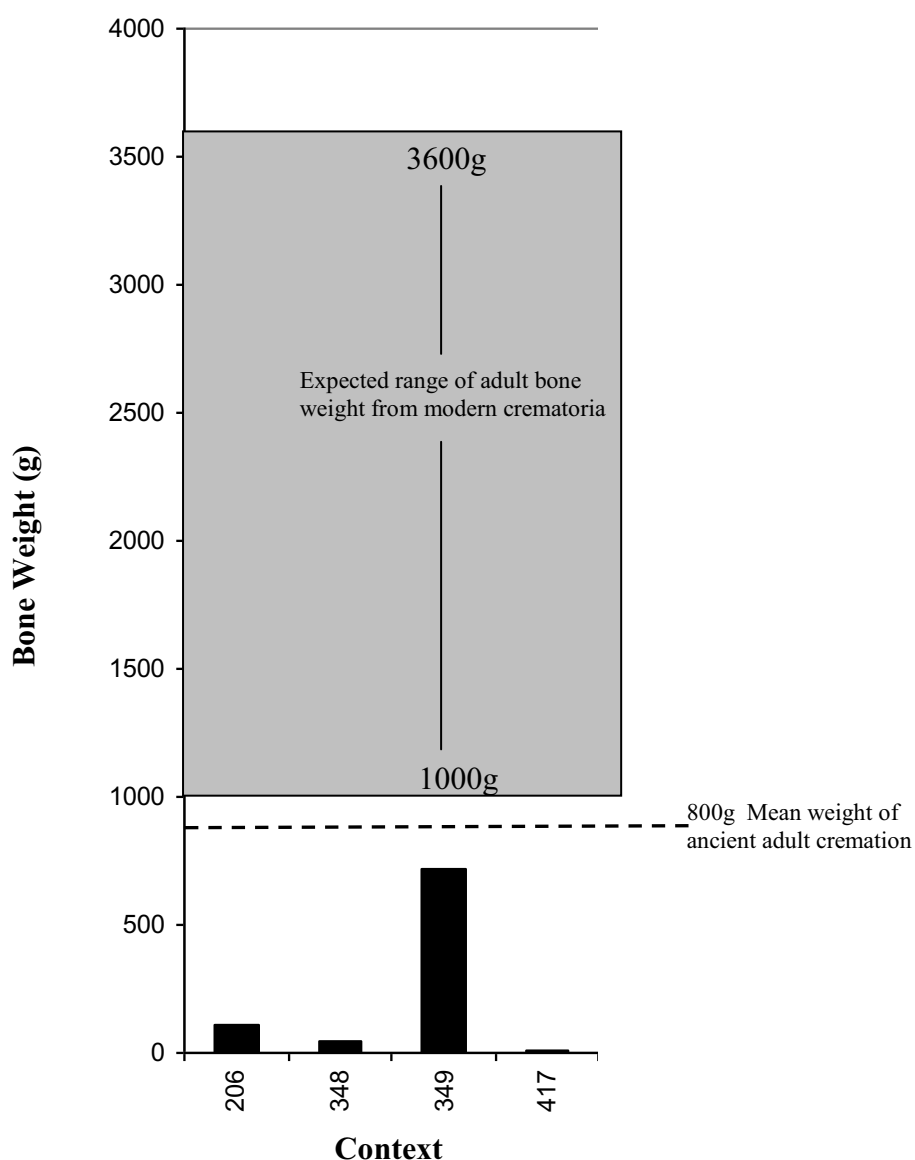


Figure 26 Graph showing dry bone weights of all the Grange Lane cremation deposits.

Pyre Efficiency

Detailed analysis of ancient cremated bones gives an insight into the process of their cremation. Since the rates and temperatures at which bone becomes calcined (heat degraded), deformed and discoloured have been studied by various authors (Piontek 1976; Shipman *et al* 1984; Buikstra & Swegle 1989 and Spencer 1989), it is possible to evaluate cremation efficiency and possible pyre temperatures of ancient cremations.

All of the cremated bone in the Grange Lane group had been fully calcined i.e. all of the organic (collagen) element of the bone had been combusted, leaving a predominantly inorganic (hydroxyapatite) structure of mid-pale whitish grey colouration. This overall uniformity of firing, of all body parts, seems to imply that some degree of pyre tending may have been observed at Grange Lane. It is also likely, to have obtained such results, that the pyre temperature must have reached in excess of 800°C (Spencer 1989). At these temperatures

most of the organic component of bone is burnt off and the remaining bone salts start to fuse (Mayne Correia 1997,276) resulting in higher bone durability.

That outdoor wood pyres could achieve such high temperatures has been proven by experimental research (Piontek 1976, Steiner *et al* 1995 & McKinley 1997). However, one should not completely overlook the duration of cremation as a controlling factor also, since a short but intense burning may lead to *incomplete* cremation in much the same way that a long less intense one will lead to *complete* cremation. Certainly, if Buikstra and Swegle's observations (cited in Shipman 1984, 322) are correct, firing must be maintained for a minimum of two hours before the bones even reach the temperature of the fire.

	(206)	(348)	(349)	(417)
Total weight	105g	45g	717g	5g
Identifiable bone	34g (32%)	8g (17.7%)	283g (39.5%)	5g (100%)
Cranial	0	0	103g (36.4%)	3g (60%)
Axial	0	0	32g (11.3%)	0
Upper Limb	19g (55.9%)	0	33g (11.7%)	0
Lower Limb	15g (44.1%)	8g (100%)	115g (40.6%)	2g (40%)
Unidentified bone	71g (68%)	37g (82.3%)	434g (60.5%)	0
Of which undefined limb	20g	0	86g	0

Fragment sizes:				
>10mm	47g (44.8%)	20g (44.4%)	480g (66.9%)	5g (%100)
10-5mm	52g (49.5%)	24g (53.3%)	207g (28.9%)	0
< 5mm	6g (5.7%)	1g (2.23%)	29g (4.2%)	0
Maximum fragment size	25mm	29mm	62mm	27mm

Minimum no. of individuals (MNI)	1	1	1	1
Age	Indeterminate	Indeterminate	Adult	Indeterminate
Sex	Indeterminate	Indeterminate	male ?	Indeterminate
Colour	Mid grey	Mid grey	Mid grey	Mid grey
Serrated cracking	Yes	Yes	Yes	No
Curving Cracks	Yes	Yes	Yes	Yes
Crazing	Yes	Yes	Yes	Yes

Table 13 Summary of results from osteological analysis of cremated bone.

Fragmentation

The loss of the organic components of bone, as described above, result in it being very brittle. Consequently cremated bone remains are invariably heavily shattered prior to any specialist analysis. Bone fragment size, measured in terms of maximum bone sizes (<1mm - 62mm in this case) and as a percentage of the total bone recovered in the 10 and 5mm sieves, were recorded for each of the cremation burials from Grange Lane (see Table 13). The overall small fragment size of bone from this site is, however, clearly illustrated by the fact that 36.6% of all the bone recovered was below 10mm in diameter (see Figure 27). It is always possible that any bones recovered from the funeral pyre may have been further broken (intentionally) as part of the burial ritual e.g, by rapid quenching, beating, grinding etc. (as in modern cremations the resulting bone is ground to powder). It is not, however, possible to add any substance to such claims in this case, despite such small fragment size, due to that fact that most of the burials had been disturbed/truncated, infiltrated with soil and wet sieved prior to analysis. Not to mention that they had undergone the traumas of pyre collapse, retrieval, burial and eventual excavation. In other words the fragment size observed at Grange

Lane could just as well be explained as a result of the cremation process and of post-depositional taphonomy as it could by intentional ritual breakage (McKinley 1994).

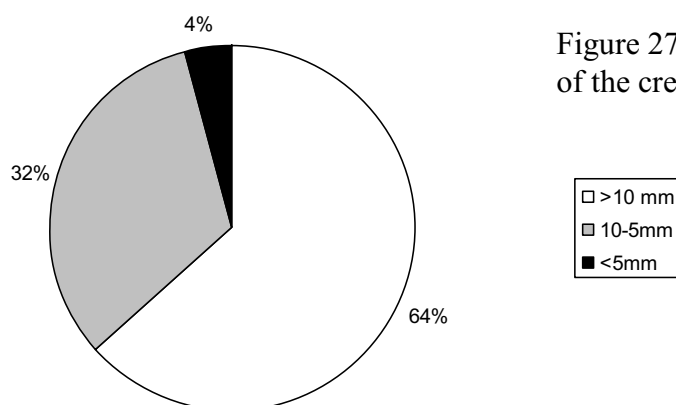


Figure 27 Results of Osteological analysis of the cremated bone from Grange Lane.

The State of the Body

For many years archaeologists, physical anthropologists and forensic scientists (Baby 1954; Spencer 1989; Thurman & Willmore 1981; Buikstra & Swegle 1989 and Piontek 1976) have endeavoured to determine the pre-cremation state of burned bodies i.e. were they complete 'fleshed' bodies at the time of burning or had they been excarnated/defleshed prior to their cremation. The upshot of their research was the classification of certain fracture and warpage patterns which seemed to relate to the pre-cremation state of the body. The surface of burned dry bone displays significant cracking or 'checking' (often described as having the appearance of an old oil painting). The burning of flesh covered bones, on the other hand, results in the development of curved and serrated heat fractures in addition to checking and significant bone warpage. These attributes may be a result of differential speeds of desiccation, and, in the case of fleshed bodies, the rapid contraction of the large muscle groups.

All of the bone from the cremation burials at Grange Lane display numerous curved and serrated heat fractures and noticeable bone warpage consistent with the burning of whole fleshed bodies.

Composition

Body part representation, in terms of relative included proportions of cranial, axial, upper-limb and lower-limb elements, was quantified during the analysis of each of the cremation burials. However, very little evidence was found to suggest that any body part was preferentially selected for burial over another. In experiments to determine the average dry ash weights of the various parts of the skeleton Trotter and Hixon (1974, 17) calculated that the weight of the average adult skeleton would be distributed roughly as 20% Skull, 18% Axial, 18% upper-limb and 44% lower limb.

Due to the apparent heavy truncation and bone loss from three of the four Grange lane cremated bone deposits, it is not appropriate to comment on actual retrieval rates in these cases. In the case of context (349), however, the ratio of 36% Skull, 11.3% Axial, 11.7% Upper limb, and 40.6% lower limb, seems to fit loosely in to Trotter and Hixon's Model, and suggests that an attempt was made to recover bones from all regions of the body.

Minimum Number of Individuals (MNI)

Due to the fact that the majority of the bone was of very small fragment size and due to the lack of distinguishable fragments each cremation can only be said to contain the remains of a minimum of one individual. There is of course a possibility that a single pyre or pyre site may have been used for a number of cremations, but this cannot be proven without evidence of cross contamination of remains. In no instance were there obvious remains of more than one individual represented in a single burial at Grange Lane. There is no evidence to suggest that multiple cremation or burial was practiced in this case. Therefore a minimum number of four individuals is represented by the four contexts examined from Grange Lane. It is of course possible that some of the smaller deposits may have been associated with one the others.

Age and Sex

Determination of age and sex in cremated bone samples, wherever possible, follows the same methods as would be employed in un-burnt skeletons (Bass 1987; Brothwell 1981; Workshop of European Anthropologists 1980), principally through examination of sexually dimorphic features of the pelvis and skull for sex, and bone and dental development/degradation for age determination. However, such methods do rely heavily on the preservation of large pieces of the relevant bones. Due to the small fragment sizes and deposit sizes observed in this group only the individual represented by deposit (349) could be aged and sexed. This individual, from a well preserved ceramic burial vessel, was identified as an adult male (m?).

Discussion

The above analysis has attempted to provide information pertaining to the specific individuals that were recovered from the site of Grange Lane. Unfortunately the small fragment size and deposit sizes of the cremation deposits significantly restricted the scope of this investigation.

Analysis of the cremated bone has nonetheless shed some light on the nature of the funerary ritual associated with the human remains at this site. The intentional burial of human remains as part of a ritual process is a recognised phenomenon in all periods of human history, however, the burial itself is often merely the culmination of a far more complex burial rite. The term 'Cremation' itself does not describe the product of the burial ritual, thus cannot be used to describe the burials and the bones themselves, rather the term conveys the process by which these products have come about. The 'cremation burials' and their constituent 'cremated remains', however, often retain some residual evidence of the process which created them.

To efficiently burn a human body on a cremation pyre requires the application of well honed methods and principles. If the duration and/or temperature of the firing is too low then cremation will be incomplete. Similarly climactic conditions, size and weight of the body, efficiency of the fuel etc. must all be carefully considered and acted upon if an efficient cremation is to ensue. Such considerations mean, in modern day India at least, that pyre construction and cremation is carried out by experienced professionals. Holck (1986) has estimated that it would take a minimum of 146Kg of wood fuel to cremate an adult in an open air pyre, however, great fluctuations may have arisen as a result of fuel shortage or abundance or as a reflection of the status of the person(s) being cremated. That all of the recovered cremated bone from this site was fully calcined certainly indicates that

considerable effort was being made at Grange Lane to collect together sufficient fuel, and to fully tend the cremation of these individuals.

Once the pyre's flames had done their work, usually lasting between 3-10 hrs according to ethnographic parallels (modern India) and experimental cremations (Pointek, 1976:278), and had cooled sufficiently to handle, it is clear that the bones were then painstakingly separated from the wood ash and charcoal. This was clearly evident in the burials from Grange Lane by the notable lack of charcoal among the recovered bones. To obtain such good separation it seems most likely that the remains were removed from the pyre collapse by hand picking. This practice is recorded in antiquity by Homer (Iliad xxiii. 239-240) and documented in India (Dubois & Beauchamp 1943, 498). Experimentation has demonstrated that this could have been carried out by one person (with no particular anatomical training) in about four hours (McKinley 1997: 134). Certainly this would have been a time consuming job, though many hands might have made lighter work.

The cooled and recovered cremated bones were then placed in to ceramic vessels for final burial. It was not important that all the bodily remains were recovered from the pyre site (since clearly they were not) rather the token collection of remains, a pot-full, seems to have been the final intention of this ancient burial act.

The Animal Bones

Jennifer Browning

Introduction

The largest proportion of the assemblage was recovered from a late Roman ditch [467] but bones recovered from features dating to the Roman, medieval and post-medieval periods were also studied.

Methodology

Specimens were identified with reference to comparative modern and ancient skeletal material held by Leicester University, School of Archaeology and Ancient History. Species, anatomy, state of fusion, completeness and modifications or other agents were recorded, to elicit information on species proportions, skeletal representation, age and condition. Where possible, the anatomical parts present for each skeletal element were recorded using the 'zones' defined by Serjeantson (2000), with additional zones ascribed to mandibles based on Dobney and Reilly (1988) and a simple system devised for skulls by the author, based on recognition of pre-maxillae, upper and lower orbits and occipital condyles. Condition of the fragments was assessed on a scale of excellent to very poor, where excellent denotes a bone surface with no cracking or flaking and very poor indicates that the fragment is disintegrating into splinters. Joining fragments were re-assembled and the result counted as a single fragment. The location and nature of modifications such as burning, gnawing and pathologies were also recorded. Butchery marks were located by zone, where feasible, and described using a simple code. Measurements were taken as appropriate, following von den Driesch (1976) and Payne and Bull (1988) for pigs.

Species proportions were calculated using both NISP (Number of Identified Specimens) and a restricted count based on all fragments with a recognisable 'zone'. Minimum Numbers of Individuals (MNI) is not considered an appropriate method of quantification for urban sites (O'Connor 2003, 156) and has consequently only been used when describing material from particular groups. When quantifying carcass components the raw counts were standardised using zones, to ensure that only non-repeatable parts were included and making the results comparable across species by dividing by the number of times the element occurred in the body.

Age at death was assessed for the three main species using a combination of epiphyseal fusion and dental eruption and attrition. For the purposes of analysis, 'fusing' specimens (defined as where the fusion line was clearly visible) were considered to be fused. Although there is no definitive sequence and age at which epiphyseal fusion of each element occurs, it is possible to use the ranges provided by various authors as a guide. This report follows the figures from Silver (1969), grouping epiphyses into 'early', 'middle', 'late' and 'final' after O'Connor (2003, table 34). Recording of tooth-wear followed Grant (1982) and the resulting mandible wear stages were then grouped into age categories following O'Connor (2003, table 31). Sheep and goat bones are frequently difficult to distinguish and post-cranial fragments were recorded as sheep/goat unless positive goat attributes were present. Attempts were made to separate the two species using criteria defined by Boessneck (1969) and Prummel and Frisch (1986), paying particular attention to horncore, skull and teeth, humerus and metapodials.

Bones recovered during sieving of the bulk environmental samples were very scarce. Flots from four samples (Sample numbers: 2, 4, 7 and 14) were examined but only a small number of amphibian bones were observed and these were not identified further.

Quantity, condition and taphonomy

A total of 1604 bone fragments was hand-recovered from 49 different contexts. It can be seen from table 14 that the bulk of the assemblage was recovered from the Late Roman deposits; in particular enclosure ditch [467], which contained 693 fragments. The faunal remains from the site are discussed chronologically.

Table 14 Relative proportion of assemblage assigned to each phase

Phase	Date	No fragments	Relative proportion %
Early Roman	Late 1st-early 2nd C	5	<1
Mid-Roman	2nd-3rd C	316	20
Late Roman	Late 3rd-4th C	956	60
Post -Roman		13	<1
Earlier medieval	12th-13th C	143	9
Medieval	14th C	94	6
Post medieval	18th C	46	3
Unphased		31	2
		1604	

Condition	%
Very Poor	1
Poor	26
Medium	65
Good	7
Excellent	<1

--	--

Table 15 Condition of bones

The majority of bones, 65%, were in a 'medium' condition (table 2), indicating some cracking, breakage and erosion of the cortical surface, while a further 26% were less well-preserved. There were some differences between the phases; the late Roman bones were on average more poorly preserved than the early medieval bones; 2% and 38% were respectively considered to be in 'good' condition, indicating that bone surfaces were less abraded, the bone was solid and examination for surface features, such as butchery, was relatively unimpeded.

Few bones were gnawed (<1%) and not in sufficient numbers to suggest any patterns. The low numbers suggest that bones were rapidly buried and were not readily accessible to dogs and other scavengers, although there is always the possibility that gnawing is under-represented due to some specimens being reduced to undiagnostic fragments. Similarly, only a small number of bones were burnt (n=21; 1%) and these were not concentrated in any particular features.

Roman

Early Roman: Late 1st/early 2nd century

Very few bones were recovered from this early phase and the pre-road surfaces yielded none that were identifiable to species. A fragment from a cattle mandible and a domestic fowl femur were recovered from the fill of a disturbed cremation reinterred into a medieval ditch (context 349).

Mid-Roman: 2nd -3rd century

Occupation became more intensive on the site in the mid-Roman period and bones were recovered from a variety of features relating to the construction of the Tripontium road, a building, ditches, pits, gullies and a well (table 15).

Table 16 Distribution of bones in the mid-Roman features

Cut	Context	Feature	No
	307	road surface	43
	308	road surface	15
	309	road surface	39
	380	road surface	2
	445	layer below road cobbles	1
	446	layer below road cobbles	20
209		ditch	13
305		well	38
346		ditch	1
353		ditch	3
367		gully	5
369		pit/butt end	2
408		pit	120

465		gully	1
504		building	13
		total	316

Table 17 Species represented in the mid-Roman features

Species	Fragment no:	%
Cattle	33	48
Sheep/Goat	28	41
Pig	1	1
Dog	2	3
Horse	3	4
Human	2	3
Total	69	100
Large mammal	103	
Medium mammal	25	
Indeterminate mammal	119	

Cattle bones were most numerous (table 16) and were predominantly retrieved from the road surfaces but were also present in pit, well, gully and ditch features. Skull, limbs and feet were among the parts of the carcass represented. From the fragments found it is evident that the cattle were horned and no examples of polled skulls were observed. The vast majority of cattle epiphyses were fused; an unfused distal metacarpal (which fuses at 2- 2 ½ years) was the only evidence for the presence of immature cattle. No jaws suitable for toothwear analysis were retrieved however most of the loose teeth that were recovered appeared to be permanent rather than deciduous.

The well [305] contained surprisingly few bones for a feature of its considerable depth (n=38) and only cattle was identified. This therefore does not indicate that it was backfilled with rubbish at the end of its life.

The road surfaces contained 99 bones, 26 of which were identified. Cattle were most common but sheep/goat and horse were also identified. Horse bones, metapodia and a molar, were recovered from two road surface contexts; a complete metatarsal provided a withers height estimation of 1.50m, the equivalent of 14.3hh.

The sheep/goat bones were predominantly retrieved from pit [408] and mostly consisted of mandible and tooth fragments. It was estimated that a minimum of three animals was represented, based on numbers of left mandibles. Toothwear evidence was sparse but suggested diverse ages, representing both immature and adult animals. Butchery marks were noted on cattle and sheep/goat bones and probably represent both disarticulation and filleting. Although pit [408] appeared to contain a relatively sizeable assemblage (n=120), only 18% was identified to species. Isolated dog bones were identified within this pit and a ditch [209].

Two poorly preserved human humeri fragments were recovered from the building [505]. Sheep/goat was the only other species identified among this small assemblage, which also contained large and medium mammal shaft fragments.

Late Roman: 3rd-4th century

The majority of the late Roman assemblage was recovered from ditch [467] and, to a lesser extent, pit [460]; other features contributed relatively small numbers of bones (table 20).

Cut	Feature	Fragment No:
359	layer	18
364	gully	6
460	pit	178
467	ditch	693
469	corn drier	61
		956

Table 18 Distribution of bones in late Roman features

Species	Fragment No:	%
Cattle	14	56
Sheep/Goat	7	28
Pig	2	8
Horse	1	4
Human	1	4
Total identified	25	100
Large mammal	61	
Medium mammal	17	
Indeterminate mammal	160	
	263	

Table 19 Species represented in late Roman features (excluding ditch [467])

The bones from the corn drier were mostly collected from context (468), the final covering fill, and were therefore likely to be associated with backfilling following disuse of the feature. Cattle and sheep/goat were identified but most fragments were undiagnostic.

Despite the size of the assemblage, few identifiable bones were recovered from pit [460]. Small numbers of cattle, sheep/goat, horse and pig were identified, along with a fragment from a human humerus. However, many of the indeterminate fragments may have derived from a shattered cattle skull. A clean chop through the occipital condyle indicated that the beast had been decapitated.

Gully [364] contained a fragmented cattle skull, which was horned, although this was not in sufficiently good condition to measure.

Ditch [467]

Three fills of ditch [467] contained bones (table 20). The largest proportion was recovered from the upper fill, context (476). Only 22% of specimens from the feature were identifiable to species, the remainder consisted overwhelmingly of undiagnostic shaft fragments categorised as large mammal and likely to have resulted from fragmentation of cattle and equid (horse) bones. The bones were mostly in a 'medium' and 'poor' condition (61% and

34% respectively), therefore slightly less well preserved than the assemblage as a whole. The conditions therefore may have adversely affected the survival of juveniles and small species.

Context	Cut	Feature	Location	No
476	467	ditch	Upper fill	496
466	467	ditch	Middle fill	165
473	467	ditch	Primary fill	32
				693

Table 20 Distribution of the assemblage within ditch [467]

Table 21 Species proportions in ditch [467]

Species	No	%
Cattle	49	32
Horse	81	53
Sheep/Goat	21	14
Pig	3	2
Total identified	154	
Large mammal	453	
Medium mammal	20	
Indeterminate mammal	66	
Total	693	

Horse bones were most numerous, with cattle also making a significant contribution (table 20). All but five horse bones (6%) occurred in the upper fill but cattle bones were distributed between the upper and middle fill; about a third of cattle bones were recovered from the middle fill.

Table 22 Minimum number of elements (MNE) represented by the horse and cattle remains (R=right; L=left; U=unsided; LO= Lower Orbit, OC=Occipital Condyle; P=proximal; D=distal)

Region	Element	Cattle			Horse		
		R	L	U	R	L	U
Head	Horncore			1			
	Skull LO	1					
	Skull OC		1		1	1	
	Maxilla	1			1	1	
	Mandible	3	2		2	1	
	Atlas			1			2
	Axis						1
Forelimb	Scapula D	1	3				
	Humerus P			1		2	
	Humerus D		1			2	
	Ulna P					1	
	Radius P			1		2	

	Radius D			1		1	
	Metacarpal P		1				
	Metacarpal D		1				
Hindlimb	Pelvis						
	Femur P		1	1		3	1
	Femur D		1	1		2	
	Tibia P				1	3	
	Tibia D				1	3	
	Astragalus	1	1				
	Calcaneum			1			
	Metatarsal P	1					1
	Metatarsal D	1					1
Foot	Phalanx 1			4			1
	Phalanx 2						
	Phalanx 3			1			
Lower spine	Sacrum						2
	Total	9	12	12	6	22	9

The bones of different equid species, such as horses and donkeys, are remarkably similar and an attempt to distinguish them followed Davis (1982). Measurements taken on the first phalanx were adjusted and subjected to a stepwise discriminant analysis. Using this method, the resulting variables can be plotted against other and should group according to species. In this case the position of the variables was compared with Davis's plotted examples (1982, figure 2) and suggested that the animal present plotted with *Equus caballus* (horse).

A minimum of the three horses were represented by the number of femora and tibiae (table 22). The majority of fragments were from the skull and mandible but several limb bones were also present (table 21). A large number of skull fragments provided evidence for a minimum of two skulls. There were also articulating vertebrae, suggesting that the bones may have been deposited while still partially fleshed rather than re-deposited from another feature. Butchery was observed on two horse bones, indicating that the carcasses were processed before deposition. Although most elements were fused, a small number of immature elements suggest that at least one of the animals was aged less than 3-3 ½ years at death (based on fusion times for the proximal humerus and femur; Silver 1969). The mandibles were fragmented but no mandible fragments with deciduous teeth were recovered and the presence of permanent dentition suggests ages in excess of four years (Sisson and Grossman table 18-1). The height of the cheek teeth was measured, where it was possible to identify the tooth and compared with data from height-wear curves (Levine 1982). The results suggested that one mandible was aged between 5-6 and 6-7 years, while measurements from loose molars suggested further ages of 8-9 and 9-10 years. Withers height calculations were attempted from seven complete limb bones (table 23). The measurements confirm the suggestion that the bones belong to several different individuals but indicate a height range of 1.42m (14hh) to 1.60m (15.3hh).

Table 23 Withers height calculations for horse bones in ditch [467]

Context	Element	Greatest Length (mm)	Calculation Factor (Kiesewalter 1888)	Withers height (m)	Equivalent in Hands
476	Humerus	311.0	4.87	1.51	15
476	Radius	329.0	4.34	1.43	14
476	Metatarsal	266.0	5.33	1.42	14
476	Tibia	335.0	4.36	1.46	14.2
476	Tibia	361.0	4.36	1.57	15.2
476	Tibia	352.0	4.36	1.53	15
476	Tibia	367.0	4.36	1.60	15.3

The cattle bones represented three individuals, based on numbers of mandibles and scapulae; carpals, tarsals, skull and phalanges were also represented, as well as a small number of limb bones. Withers heights of around 1.14m for a cow and up to 1.21m for a male animal were estimated from complete bones, which fall within the range observed at other Roman sites in Leicester (Gidney 1999, 313).

Table 24 Withers height calculations for cattle bones in ditch [467]

Context	Bone	Greatest Length (mm)	Calculation factors (Matolcsi 1970)	Female	Male
476	Metatarsal	216.0	5.28 (cow) 5.62 (steer)	1.14	1.21
473	Metacarpal	188.0	6.05 (cow) 6.33 (steer)	1.14	1.19

A cattle femur had filleting marks and scapulae appeared to have been trimmed and while cutmarks suggested meat had been sliced from the bone, possibly during curing of some kind. Ribs showed signs of portioning and filleting of meat. The mandible was a focus for butchery, exhibiting chops and cuts associated with skinning, filleting of cheek meat and possibly extraction of marrow from the medullary cavity. Cuts associated with skinning were noted on a skull and phalanx. The cattle bones therefore seem to represent debris from meat preparation, as well as slaughter waste.

Other species were less well-represented. Sheep/goat remains recovered from the feature included mandible and teeth fragments and bones of the forelimb. An ageable mandible from an adult sheep with the third molar in wear was present. Three fragments of pig bone were recovered, including a tibia with distal epiphysis unfused, indicating an animal aged less than two years.

The bones are predominantly from large mammals and are both fragmented and less well-preserved than in other features, indicating that young animals and smaller species could be under-represented. Body parts present and butchery marks suggest that waste from both slaughter and consumption were included and indicate that cattle hides were utilised.

Post-Roman

A sheep/goat molar was among the small number of bones recovered from layers above the road surface, while the remainder were undiagnostic shaft fragments.

Medieval

Earlier medieval: 12th-13th centuries

Bones were retrieved from a variety of features relating to 12th and 13th century occupation (table 11).

Cut	Feature	No
302	oven	46
310	ditch	12
359	pit/well	60
362	pit/well	23
342	ditch	2
	Total	143

Table 25 Distribution of bones in 12th-13th century features

Species	Fragment No:	%
Cattle	15	35
Sheep/Goat	11	26
Goat	1	2
Pig	6	14
Horse	4	9
Dog	1	2
Domestic Fowl	5	12
Total identified	43	100
Large mammal	48	
Medium mammal	24	
Indeterminate mammal	28	
Total	143	

Table 26 Species represented among the 12th-13th century bones

Cattle bones were most numerous and widely distributed in this phase (table 25). All epiphyses were fused and no age-able mandibles were recovered. Four limb bone fragments were noted but the majority of bones were from the head and feet. Although the sample size is very small, the presence of these types of bones is indicative of slaughter waste.

Eleven sheep/goat bones, representing various carcass parts, were recovered from the oven feature, a pit/well and a ditch. Both fused and unfused bones were present but there were no age-able mandibles. A goat was represented by a butchered horncore in pit/well [359].

The pig bones are all loose teeth; a canine suggested that the remains included a female pig.

Domestic fowl bones were identified predominantly in pit/well [362] but a single bone was also retrieved from pit [359]. No juvenile bones were recovered. The elements in feature [362] conceivably belonged to a single male bird; they represent adjacent leg bones and a right and left tarso-metatarsal appear to be paired. In both cases the spur has been deliberately removed close to the shaft of the tarso-metatarsus; there does not appear to be healing or

remodelling of the bone, which suggests that this may have occurred post-mortem. A tarso-metatarsus was chopped through the distal shaft suggesting removal of the lower legs, perhaps prior to cooking.

Bones from a ditch [310] included a partial cattle skull from which the horncore had been cleanly sawn, providing further indications of craft working or the collection of bones for these purposes.

Two thirds of the faunal remains from the oven [302] were found within a compacted charcoal layer at the base, context (345). Cattle and horse bones were identified in this deposit, while the upper fill (303) of the feature included cattle and sheep/goat. None of the bones from the oven appeared to have been directly heat-affected, only two showed signs of butchery and they do not appear to represent the ‘meatiest’ parts of the carcass. These factors suggest that the bones are unlikely to be *in situ* and probably became incorporated into the fill following the disuse of the feature.

Medieval: 14th century

Species	Fragment No:	%
Cattle	8	5
Sheep/Goat	27	64
Sheep	2	5
Pig	2	5
Domestic fowl	1	2
Cod	2	5
Total identified	42	86
Large mammal	8	
Medium mammal	22	
Indeterminate mammal	22	
Total	94	

Table 27 Species represented in pit [301]

The 94 bones from 14th century contexts are all from the same pit [301]. Sheep/goat bones dominate the assemblage, and two elements (skull and horncore) were positively identified as sheep (table 27). The skull and the hind leg were particularly abundant representing a minimum of two animals. There were no unfused limb bones and the toothwear on two separate mandibles suggest that the animals are adult; at least one of the animals may be aged 5-6 years, according to the wear on the first and second molars (based on modern data from Moran and O'Connor (1994) quoted in O'Connor 2003, table 33). A skull had been chopped close to the median line, presumably in order to better access the brain and head meat. Tibiae were consistently butchered through the distal shaft, chopped transversely, presumably to separate the lower leg and foot, which carried little meat, from the choice joint above.

A single domestic fowl bone was the only avian bone in the assemblage. A partial cod cleithrum and a branchiostegal ray were identified in the assemblage. Bones of large fish, such as cod, are often the only species identified in hand-collected assemblages. The cleithrum may have been chopped, which could suggest that it came from stockfish or saltfish. These were usually prepared by cutting off the head at the point of capture (Cutting

1955, 133), resulting in the severing of the bones at the back of the head, such as the post-temporal, cleithrum and supra-cleithrum (Nicholson 1999, 335). The pit appears predominantly to contain food waste, suggesting that this was a repository for household rubbish.

Post-Medieval

Species	Fragment No:	%
Cattle	17	62
Sheep/Goat	4	15
Sheep	4	15
Goat	1	4
Pig	1	4
Total identified	27	100
Large mammal	3	
Medium mammal	4	
Indeterminate mammal	12	
Total	46	

Table 28 Species represented in the post-medieval assemblage

A cobbled surface with an 18th century date, context (208) was the only post-medieval feature from which animal bone was recovered (table 27). The assemblage included several horncores and horncore fragments, implying that craft activities were taking place nearby. Cattle horncores were most frequent and both a small and a larger horned variety were present, along with both sheep and goat (probably both males). Although the group was small, it was interesting that different species were represented and even those horncores belonging to the same species did not share the same morphology. Where length could be established, the cattle horncores meet Sykes and Symmons criteria for shorthorn (2007, table 1), although an especially small specimen may have been juvenile.



Figure 28

Discussion

The site at Grange Lane is situated in the suburb south of the Roman and medieval town. The site covers a wide time-span stretching from the early Roman through to the post-medieval period and the excavations have produced small phase assemblages in which the main domestic species are represented but there is little species diversity.

Birds and fish are not well-represented in the hand-collected assemblage and do not occur at all in the Roman phases. Pigs are very poorly represented in all phases of the site, which may be partly attributed to preservation. Unlike cattle and sheep bones, evidence from nearby sites (eg Bonner's Lane (Baxter 2004) suggests that the pigs were juvenile and it is reasonable to assume that porous, immature pig bones are more likely to fragment than adult bones.

Forty-three % of the bone was recovered from a late Roman pit [467], which contained a mixture of slaughter and consumption waste and suggested the utilisation of cattle and horse hides. Work at nearby sites suggests that evidence for Roman occupation in the area is fairly sparse, with archaeology mostly representing the evolution of the Tripontium Road and activities taking place by the roadside, for example Bonner's Lane (Finn 2004) and De Montfort University (Morris et al unpublished). A 3rd-4th century pit at Bonner's Lane, containing deliberately fragmented cattle bones, may represent the extraction of fats or production of stock or glue (Baxter 2004, 132).

An increase in sheep/goat bones was noted amongst the medieval bones, although the sample size is too small to be conclusive. If this trend is genuine, it would reflect observations made at other sites both in the region and nationally, where such an increase is thought to represent the rise of the wool trade. Most of the bones at Grange Lane appear to represent discarded domestic waste from cooking and consumption but there are hints that craft activity was taking place in the 14th century and later. Cattle, sheep and goat horncores appear to have been utilised, although the available evidence does not support large-scale activities. The accumulating faunal evidence from the area suggests the development of specialised workshops in the medieval and post-medieval period, as well as occupation. For example, an early post-medieval (1500-1650) pit, containing an unusual concentration of sheep bones, was identified at nearby excavations at De Montfort University (Browning unpubl.). The representation of bone elements, as well as their archaeological context, is strongly suggestive of skin working rather than primary butchery. Similar evidence has been identified at Bonner's Lane (Baxter 2004).

Although the Grange Lane assemblage is not sufficiently large to provide reliable age profiles or butchery patterns for intra-site analysis, it has provided the opportunity to examine specific features, as well as contributing data which aid wider investigations into the exploitation of animal resources in Leicester.

Appendix

Cattle and Sheep Mandibles		
<i>N</i>	Neonatal	DP4 unerupted or just in the process of eruption
<i>J</i>	Juvenile	DP4 in wear, LM1 not in wear
<i>I</i>	Immature	LM1 in wear, LM2 not in wear
<i>SA</i>	Sub-adult	LM2 in wear, LM3 not in wear
<i>SAI</i>		LM3 forming, to just erupting

<i>SA2</i>		LM3 erupting
<i>A</i>	Adult	LM3 in wear
<i>A1</i>		LM3 up to minor dental exposure (stages a and b)
<i>A2</i>		LM3 dentine exposure across central column (stages c and d)
<i>A3</i>		LM3 dentine exposure on distal column (stages e to h)
<i>E</i>	Elderly	Dentine exposure to or beyond stage j
Pig Mandibles		
<i>N</i>	Neonatal	DP4 unerupted or just in the process of eruption
<i>J</i>	Juvenile	DP4 in wear, LM1 not in wear
<i>I</i>	Immature	LM1 in wear, LM2 not in wear
<i>I1</i>		LM2 present in crypt
<i>I2</i>		LM2 erupting
<i>SA</i>	Sub-adult	LM2 in wear, LM3 not in wear
<i>SA1</i>		LM3 present in crypt
<i>SA2</i>		LM3 erupting
<i>A</i>	Adult	LM3 in wear
<i>A1</i>		LM3 with enamel attrition only (stage a)
<i>A2</i>		LM3 with minor dentine exposure (stages b to d)
<i>A3</i>		LM3 dentine exposure merging on mesial cusps (stages e to h)
<i>E</i>	Elderly	Three main zones of dentine exposure across LM3 merging (stage j)

Definitions of dental eruption and attrition stages used in analysis of age at death After O'Connor (2003: Table 31)

Period	Date	Context	Species	Dp4	p4	m1	m2	m3	MWS	Age category
Roman	3rd/4th C	476	Cattle			m	l	l	49	E
Roman	3rd/4th C	476	Cattle			k	j	g	41	A3
Roman	3rd/4th C	476	Cattle					j		E
Roman	3rd/4th C	476	Cattle					k		E
Roman	3rd/4th C	476	Cattle			k	j	g	41	A3
Roman	3rd/4th C	476	S/G				h	g	40-42	A3
Roman	2nd/3rd C	407	S/G				g	c		A2
Roman	2nd/3rd C	407	S/G	h		e	V			I
Medieval	14th C	300	S/G		j	m	h	g	42	A3
Medieval	14th C	300	S/G			h	g	g	37	A3

Toothwear data collected (Key: s/g= sheep/goat)

Main measurements taken (after von den Driesch 1976)

Period	Phase	Species	Bone	Bd	Bp	Dd	GL	GLP	SD	SLC
Roman	4	Cattle	Femur	93.7						
Roman	4	Cattle	Metacarpal	52.5	50.7		188		28.5	
Medieval	6	Cattle	Metatarsal	44.8		25.5				
Roman	3	Cattle	Metatarsal	49.3		28.5				
Roman	4	Cattle	Metatarsal	54.9	42.6		216		25	
Roman	3	Cattle	Radius	66.7						
Roman	3	Cattle	Radius	76.6						
Roman	4	Cattle	Scapula					67.6		47.9

Cattle long-bone measurements

Period	Phase	Species	Bone	Bd	Bp	Bt	Dd	HTC	SD
Roman	3	S/G	Humerus	27.7		26.7		13.8	

Roman	4	S/G	Humerus			25.1			13.6
Roman	4	S/G	Humerus		38.3				
Medieval	6	S/G	Radius		26.6				
Medieval	7	S/G	Radius	28.4					
Roman	4	S/G	Radius		29.1				
Medieval	6	S/G	Tibia	24.5			20.3		
Medieval	6	S/G	Tibia	26.2			20.6		
Medieval	7	S/G	Tibia	27.5			20.8		
Post-med	8	S/G	Tibia	25.1			19.1		13.4

Sheep/goat long-bone measurements

Period	Phase	Context	Species	Bone	Bd	GL	GLI	GLm
Medieval	7	300	S/G	Astragalus	18.4		28.5	26.8
Medieval	7	300	S/G	Calcaneum	13.2	54.2		

Sheep/goat tarsal measurements

Period	Phase	Species	Bone	Basal circumf.	L	Max basal Diameter	Min basal Diameter
Medieval	6	Cattle	Horncore	121		42.3	32.6
Post-med	8	Cattle	Horncore	172	84	56.1	47.4

Cattle horncore measurements

Period	Phase	Species	Bone	Basal circumf.	L	Max basal diameter (hc)	Min basal diameter (hc)
Medieval	7	Sheep	Horncore		135		
Post-med	8	Sheep	Horncore	122	144	48.2	29
Post-med	8	Goat	Horncore	133		48.8	35.7

Sheep and goat horncore measurements

Period	Phase	Species	Bone	Bd	Bp	Bt	DC	Dd	Dp	GL	SD
Roman	4	Horse	Femur	91.2			48.9				45.4
Roman	4	Horse	Humerus	79.7	91	75.2				311	38.6
Roman	3	Horse	Metapodial	48.8				35.5			
Roman	3	Horse	Metatarsal	51.7	52.3					282	33.8
Roman	4	Horse	Metatarsal	48.3	50.6					266	30.3
Roman	4	Horse	Phalanx 1	44.4	54.7			24.6	36.1	84	33.3
Roman	4	Horse	Radius		79.7						
Roman	4	Horse	Radius	72.1	80.3					329	37.3
Roman	4	Horse	Tibia	73.7	98.7			48.9		367	44.9

Horse long-bone measurements

Period	Phase	Date	Species	H	Tooth
Roman	4	3rd/4th C	Horse	047.2	Up2
Roman	4	3rd/4th C	Horse	055.6	Up3
Roman	4	3rd/4th C	Horse	065.1	Um3

Roman	4	3rd/4th C	Horse	053.9	Um3
Roman	4	3rd/4th C	Horse	047.0	Up2
Roman	4	3rd/4th C	Horse	043.9	Lp2
Roman	4	3rd/4th C	Horse	062.7	Lp3
Roman	4	3rd/4th C	Horse	076.8	Lp4
Roman	4	3rd/4th C	Horse	066.9	Lm1
Roman	4	3rd/4th C	Horse	074.8	Lm2
Roman	4	3rd/4th C	Horse	048.0	Lm3
Roman	4	3rd/4th C	Horse	063.7	Lp4
Roman	4	3rd/4th C	Horse	056.7	Lm3

Horse tooth heights from ditch [467]

Period	Phase	Species	Bone	Bd	Bp	Dd	Dp	GL	Dic	SC
Medieval	6	Dom Fowl	Femur	15.1	15.8	12.5	10.4	75.5		5.6
Medieval	6	Dom Fowl	Scapula					57.4	13.7	
Medieval	6	Dom Fowl	Tarsometatarsus	15.5	14.6			84.7		7
Medieval	7	Dom Fowl	Tarsometatarsus	12						
Medieval	6	Dom Fowl	Tibiotarsus	11.8		12.9				

Domestic fowl long-bone measurements

Charred plant remains

Angela Monckton

Introduction

Excavations were carried out by ULAS directed by John Thomas, and Roman and medieval features were investigated. Samples were taken from deposits with potential to contain charred plant remains in order to recover evidence of crops and cultivation, and possibly give information about activities on the site. The medieval samples are dealt with separately below. Roman features including a corn drier were sampled. The composition of remains in the corn driers was examined in order to find evidence for the kind of cereal processing that was carried out in the feature. It was hoped that the investigation of these samples would provide the opportunity to add to our knowledge of agriculture in the locality and supply of grain to the town. The remains from the corn driers were compared with others from the region.

Methods

Samples were wet sieved in a York tank using a 0.5mm mesh with flotation into a 0.3mm mesh sieve. The residues were air dried and the fraction over 4mm sorted for all finds which are included in the relevant sections of this report. Fractions below 4mm were reserved for sorting during the analysis stage if required. The flotation fraction (flot) was air dried and packed carefully in self-seal polythene bags before examination and those with abundant material were selected for further analysis. The remaining flots were examined and sorted. The flots were sorted at x10 magnification with a stereo-microscope and the plant remains were then identified by comparison with modern reference material, counted and recorded

(table 29). The more productive samples had a known fraction sorted because of the abundance of the material. Plant names follow Stace (1991) and the cereals Zohary and Hopf (1993) and are seeds in the broad sense unless stated.

To compare the Roman samples with each other and with those from other sites the percentages of chaff (spikelet forks consist of two glumes added to the glumes), cereal grains and weed seeds were calculated for each sample (table 1). The ratios of glumes to wheat grains, and weed seeds to total grains were also calculated because this can give evidence of crop processing activities (van der Veen 1992). This was done for samples with over 50 items recovered because below this there is insufficient material for interpretation.

Roman

The plants remains

A high density of charred plant remains was recovered from the samples from the corn drier, higher than at most sites from the town of this period. The corn drier deposits included wheat grains, chaff and weed seeds although many grains were broken and abraded and could not be identified further; such damage may occur by raking out of hearths or kilns. Chaff was much more abundant than found on sites within the town. Few remains were found in the other samples

Cereals: Wheat chaff fragments (glumes) were numerous, the majority of identifiable glumes were of spelt (*Triticum spelta*) with prominent minor veins, one prominent wide angled keel and wide bases. Glumes which were broken too short to distinguish these features were identified only as the glume wheats (either emmer or spelt (*Triticum dicoccum/spelta*)), however, from their width and robust appearance many of these were probably spelt. Small rachis segments were also identified only as glume wheat. Indeterminate cereal grains were numerous being broken and abraded grains, the identifiable cereal grains were mainly classed as of glume wheat (*Triticum dicoccum/spelta*). Identification of wheat grains is problematic because of overlap of characters and distortion by charring, however, some of the better preserved grains were identified as spelt as none had the characteristic shape of emmer. A few grains were short and rounded and were classed as free-threshing wheat, possibly bread wheat (*Triticum aestivum* s.l.); although spelt can also produce short grains these were most similar to bread wheat which has been found sporadically in Roman contexts in the town. A few barley grains (*Hordeum vulgare*) were found which were of a hulled form, some twisted grains showing that six-row barley was present. Single grains possibly of rye were also present (*Secale cereale*) which was also found in small numbers at Causeway Lane. A few oat grains may have been of wild types which occur as crop weeds.

A few of the spelt wheat grains were thought to have germinated from the impressions of cereal sprouts on some, and some with sunken backs, comprising about 15% of the grains. This is too low to indicate malting, although many broken grains were present which did not preserve evidence of germination. Germinated grains, however, are more susceptible to damage by charring (Moffett 1986) so germination could be underestimated. A few detached cereal sprouts (coleoptiles) were also found (table 29) as well as some fragments. The length was estimated to have been about 5 mm around the same length as the grain as would be expected in malting but very small numbers were found. In modern malting over 70%

germination is expected but crops were less uniform in the past (Moffett 1986), and the remains were poorly preserved here.

Other plants: Weed seeds were relatively numerous. Of the weeds present, cleavers suggests autumn sowing as would be expected for spelt. The presence of stinking mayweed (*Anthemis cotula*) suggests the cultivation of heavy clay soils as known from samples from Ashby By-pass, Leicestershire (Ciaraldi forthcoming). This weed was also found in Roman Leicester at Causeway Lane (Monckton 1999a) and in the corn drier at Crown Hills (Jarvis 2000a). It was not found in the corn driers at Hamilton but was present elsewhere on the site. Of the weeds here only a few seeds such as spike-rush suggest the presence of wetter areas of the fields. The large grasses including brome grass are the most common weed as is often the case at this period. Weeds of spring sown crops or disturbed ground include the ubiquitous goose-foots and docks, while grassy vegetation is suggested by vetches, clover type plants and possibly eye-bright or bartsia, although all can grow as arable weeds (for botanical names see table 29).

Results from Roman features

Mid 2nd to Early 3rd century

Well [305] sample 18: Two samples were examined from the well, the earlier sample 40 (503) of Late 1st to Early 2nd century date was unproductive with no sign of waterlogged plant material. A later sample 18 (304) of mid 2nd to early 3rd century date did not contain waterlogged plant material but did contain a few charred remains with only evidence of a charred cereal grain and large grass seeds possibly from domestic waste.

Late 3rd- 4th century

Ditch [467] sample 37: The sample from ditch fill (466) contained a few cereal grains, legume fragments of bean or pea with weed seeds including cleavers. These remains probably represent domestic waste from food preparation. The deposit also contained a few uncharred seeds including blackberry and elder in single numbers. Both are edible and may be archaeological, but in the absence of other waterlogged remains may be incidental because both are common on urban sites.

The corn drier

The corn drier [469] contained an *in situ* spread of charred material context (507) which was sampled in three sections from north to south, the north end was widest and sloping and was thought to be the stoke hole, while the south end was narrowest and steep sided and thought to represent the flue. This was in comparison with a group of corn driers investigated at Ridlington by Beamish (2002) where a more complete example was excavated and sampled; evidence of fuel was found in the stoke-hole, while a sample interpreted as cereal product was found in the flue (Monckton 2002). Here, possibly only the flue survives because the feature was quite narrow and straight sided with stones lining one side, although the north sample may represent the end nearest to the stoke hole.

North end of corn drier sample 44: This was near the stoke hole. The sample contained the fewest remains with about equal numbers of grains, chaff fragments and weed seeds. In the

ear of spelt there is one glume to each grain and this may suggest ears of spelt were present. The weeds include arable weeds of the crop showing that uncleaned cereal was present.

Centre of corn drier sample 43: This sample from the centre of the burnt spread contained more remains at a high density of 161 items per litre of sediment. The sample was dominated by grains with quite abundant chaff and weed seeds present. Chaff and weed seeds represent waste from cereal cleaning and dehusking removed by fine sieving to clean the crop (Hillman 1984). This waste was often used as fuel in corn driers to parch the cereals before pounding to dehusk the spelt. Some grains may be spilled and included with the waste. This type of waste is thought to confirm that the feature was certainly a corn drier which was being used to process spelt on the site.

South end of corn drier sample 42: This sample was from the narrow end of the feature possibly the flue. The sample contains the most remains at the highest density of 385 items per litre of sediment. The sample consists mainly of chaff and weed seeds in about equal amounts, probably representing fine sieved cleanings from dehusking spelt used as the fuel for the corn drier. There are spelt grains present including 15% germinated grains with a few cereal sprouts. The grains include two fused grains from a spikelet of spelt. This may represent processing spelt spikelets, either drying a damp crop for storage or dehusking, however it is possible that this may represent roasting malted grain for beer making. The germination percentage may be underestimated because many grains were broken, and it should be remembered that this is the waste from processing, so is likely to consist of the final batch being processed together with spent fuel, so may not be representative of the cereal used.

Discussion

Corn driers are interpreted as having had a stoking area and flues which would have heated a drying floor above. The structures here may have the stoke hole and flue bases surviving but in common with most of these features evidence for the drying floor had not survived. Corn driers have been suggested as having a variety of possible functions (van der Veen 1989). Cereals in the following forms could have been processed in corn driers: whole ears could have been dried for storage or to produce green corn, spikelets could have been parched for removal of chaff, cleaned grain could have been dried for storage or to harden it for milling, or germinated grain could have been roasted for the production of malt (van der Veen 1989). Interpretation of the use of these features is complicated by the use of chaff for fuel which may become mixed with the some of the product making it difficult to define the material being processed. Chaff is known to be a favoured fuel for grain drying and roasting (Hillman 1982) as it produces little smoke and is an efficient use of a waste product. In addition, the material being processed rarely survives *in situ*, product from the floor may fall into the flues for example, so it is difficult to prove the function of the features. Furthermore the remains found represent the last use or last few uses of the feature which may not relate to the usual function (van der Veen 1989) and sometimes may only represent rubbish backfill of the feature. The samples from the feature here were from a spread of charred material from the base of the corn drier thought to be *in situ*, perhaps from the final uses, probably representing a mixture of cereal and fuel which has fallen into the flue or been raked into the flue. Fragments of tile throughout the deposit may represent the broken drying floor which would have been over the flue.

In order to interpret the samples their composition was examined in comparison to what is known about the cereals. The main cereal found here was spelt, in which the grains are held firmly in the chaff even after initial threshing which only breaks the ears into spikelets. After threshing the straw is removed and the spikelets winnowed to remove light contaminants and coarse sieved to partly clean the spikelets (Hillman 1981). The spelt could then have been stored as spikelets with the chaff still present, because the chaff protected the grains from weevil and fungal attack (Hillman 1984). Before the grain was used the chaff could be removed by parching in a corn drier and then by pounding, followed by fine-sieving to remove the chaff (glumes and rachis) and any small weed seeds, leaving cleaned grain for use (Hillman 1981). The waste chaff could be burnt either as rubbish or used as fuel or kindling and so be preserved by charring. Evidence for fine sieving waste is indicated where the ratio of glumes to wheat grains is high, because in the ear of wheat there is one glume to each grain so an excess of glumes in the sample indicates cereal cleaning waste. Here grains mostly outnumber glumes so that partly cleaned product is indicated, although some chaff may be burnt away. A high ratio of weed seeds to grains would also indicate cereal cleaning waste (van der Veen 1992). Hence the abundant weed seeds with chaff found here represent this waste. Therefore the samples from the corn drier appear to include cereal cleaning waste used as fuel to process further cereals, and the presence of the waste chaff shows that dehushing of spelt was carried out on at the site.

Experiments at Butser Ancient Farm have shown that reconstructed features of this type will parch malted grain efficiently but were poor at drying whole ears of cereal (Reynolds 1979). Less is known about parching spikelets of spelt for dehushing and little is known about different types of drying floors which may have been used. The association of dehushing waste and corn driers at these and other sites would suggest that parching for dehushing was carried out in these features. In addition it is possible that the remains represent either a damp crop being dried for storage or dehushing, or possibly roasting malted grain for beer. Some of these features elsewhere have been found to contain evidence of malting grain, often spelt in the Roman period (Hillman 1982). However, the processing of grain for bread and other foods must have been at least as important, if not more so. The cereals may have been brought to the town or cultivated in fields near the town, and then processed for supply to the people of the Roman town of Leicester.

Comparisons with other sites

Corn driers with cereal remains have been found at a number of sites in Leicestershire and Rutland mostly in the last few years. This site at Grange Lane adds to three other sites near to Leicester i.e. at Norfolk Street Roman villa (Jones 1982), Crown Hills (Jarvis 2000a), and Hamilton (Jarvis and Monckton 2004). Further away Appleby Magna in Leicestershire has remains from a corn drier (Jarvis forthcoming), and in Rutland Empingham Roman site produced remains analysed in 1970 (Alvey 2000), also a group of corn driers at Ridlington had a variety of functions (Monckton 2002). All are Late Roman with the exception of the kilns at Ridlington which are early and middle Roman period dates. A keyhole shaped feature at Bonners Lane contained no charred plant remains in the samples so could not be confirmed as a corn drier. Such features at Ketton, Rutland excavated by Northamptonshire Archaeology have no samples analysed so cannot be confirmed as corn driers because keyhole shaped kilns can have other functions. The evidence here for the use of spelt chaff as fuel in corn driers has been found at a number of sites in England (van der Veen 1989), as at Norfolk Street (Jones 1982), Crown Hills in Leicester and Ridlington in Rutland. It has also been found at the Warwickshire sites such as at Tiddington Romano-British village (Moffett

1986), the rural settlement at Wasperton (Bowker 1987), the villa site at Salford Priors (Moffett and Ciaraldi 1997), and Billesley Manor and Long Itchington (Monckton 1999b, 2003).

Some corn driers have been interpreted as malting kilns such as at Tiddington where evidence for malting was found from abundant cereal sprouts and germinated grains, some thought to be in spikelet form. At Empingham villa most of the spelt grains were germinated (Alvey 2000), and malting was possible for Ridlington Oven 7 although there was less evidence there with germination at 34%. Here at Grange Lane there is even less evidence for malting with only 15% germination seen. The samples with less germination may be taken to indicate the processing of cereal including accidentally sprouted grains as was found at Fengate Farm, Weeting, Norfolk (Murphy 1984) and Billesley Manor Warwickshire (Monckton 1999b) where around 10% germination was found. At Wasperton the small amount of evidence for germination found in samples interpreted as spelt chaff used as fuel was thought to be insufficient to indicate malting, and was thought to indicate parching or drying of a partially spoiled crop (Bowker 1987), this was similar to the evidence from Ridlington Ovens 1 and 8 with germination up to 20% (Monckton 2002), and at Hamilton where there was even less evidence of germination, below 1%, suggesting only occasional sprouted grains due to dampness of some of the crop. On balance malting is uncertain at Grange Lane and processing a damp crop is more likely.

Some sites have additional evidence from the plant remains. There was evidence for wheat in spikelet form at Billesley Manor Warwickshire, at Ridlington Oven 5 and at Appleby Magna, the spikelets could have been burnt during parching for dehusking or possibly drying spikelets for storage. Some evidence for spelt in spikelet form was also found here at Grange Lane. It is likely that spikelets of spelt were being processed here by dehusking from the presence of the waste chaff. Only occasional barley grains were found here and at Hamilton, but the site at Wasperton had evidence for the processing of barley as did Ridlington Oven 2. In Roman Britain there is less evidence for processing barley compared to wheat from these features (van der Veen 1989). Large scale processing of spelt has been found at Tiddington and at Salford Priors in Warwickshire and the very abundant chaff remains found as fuel at the latter site was thought to be evidence for processing large quantities of spelt for commerce or trading (Moffett and Ciaraldi 1997). There is insufficient evidence from the quantity of plant remains to suggest this here but the proximity to the town suggests that the cereals processed were for supply to the people of the town. Cereals may have also been brought from further away already processed, comparison of the weeds present may help to indicate the source of the cereals at different times. Most of the corn driers have evidence of dehusking spelt from waste chaff, and chaff is sparse within the town. Four sites with corn driers are now known around the edge of the town; Norfolk Street, Crown Hills, Hamilton and Grange Lane which must have been processing cereals for supply to the town.

Conclusions

In the Roman corn drier the main cereal was spelt and the presence of waste chaff was taken to show that dehusking of spelt was carried out on the site. The samples contained wheat chaff with weed seeds and were interpreted as including fine sieved cereal cleanings used as fuel in the corn driers. Wheat grains, mainly of spelt but with a few bread wheat type grains, were quite abundant as partly cleaned cereal product. There was some evidence for germination of the cereal from a few detached cereal sprouts and c.15% germinated grains,

although broken grains may also have been germinated. This was thought to be insufficient to confirm malting, but this may possibly be crop with some accidentally sprouted grain being processed. Weed seeds were quite abundant and cultivation of heavy clay soil was suggested from the presence of stinking mayweed, this weed was also found with cereal grains within the town. Chaff was quite noticeably abundant on the corn drier sites but sparse in the town adding to the evidence that spelt was dehusked before it was supplied to the town. The corn drier at Grange Lane adds to others from Norfolk Street, Crown Hills and Hamilton, all at the edge of the town, as sites where cereals were processed to supply the people of Roman Leicester.

Table 29 Charred Plant Remains from Roman contexts.

Period							
Feature type	Well	D		CD	CD	CD	
Cut number	305	467		469			
Context	304	466		507			
Sample	18	37		44	43	42	
GRAINS							
<i>Triticum spelta</i> grain	-	-	-	12	56		Spelt
<i>Triticum</i> cf <i>aestivum</i>	-	-	-	4	20		Bread wheat type
<i>Triticum dicoccum/spelta</i>	-	2	4	8	2		Glume wheat
<i>Triticum</i> sp.	-	-	3	6	12		Wheat
<i>Hordeum</i> sp. hulled	-	-	1	12	12		Barley
<i>Secale cereale</i> L.	-	-	-	-	1		?Rye
Cereal/Poaceae.	-	-	1	6	-		?Oats
Cereal indet.	1	2	9	57	105		Cereal
Cereal embryos	-	-	1	1	4		Cereal
Cereal coleoptiles	-	-	-	-	3		Cereal sprouts
CHAFF							
<i>Triticum spelta</i> L. s-fork	-	-	-	4	2		Spelt
<i>Triticum spelta</i> L. gb	-	-	6	3	12		Spelt
<i>T. dicoccum/ spelta</i> s-fork	-	-	2	-	-		Glume wheat
<i>T. dicoccum/spelta</i> gb	-	-	10	36	133		Glume wheat
<i>T. dicoccum/spelta</i> rachis	-	-	-	7	1		Glume wheat
<i>Triticum</i> sp. rachis	-	-					Wheat
<i>Triticum</i> cf <i>aestivum</i> rachis	-	-					?Bread wheat
<i>Hordeum vulgare</i> L. rachis	-	-	1	4	-		Barley
Cereal rachis	-	-	-	11	7		Cereal
Awn frags	-	-	-	+	++		Awns
<i>Avena</i> sp. awn frags	-	-	+	+	+		Oat awns
<i>Avena</i> sp. chaff	-	-	-	3	1		?Oat chaff
Culm node large	-	-					Cereal stem
LEGUMES							
<i>Vicia/Pisum</i>	-	2	1	1	1		Bean/Pea
WILD PLANTS							
<i>Ranunculus</i> subgen <i>Ranunculus</i>	-	-	-	1	1		Buttercups
<i>Chenopodium album</i> type	-	-	1	-	1		Fat-hen
<i>Chenopodium</i> sp.	-	1	4	3	4		Goose foot
<i>Polygonum</i> sp.	-	-	-	-	-		Knotweed
<i>Rumex</i> sp.	-	-	1	10	17		Dock
<i>Rumex</i> cf. <i>acetosella</i>	-	-	-	1	2		Sheep's-sorrel
<i>Fallopia convolvulus</i> (L.) A.Love	-	-					Black bindweed
<i>Raphanus raphanistrum</i> L. pod	-	-					Wild Radish
<i>Potentilla</i> sp.	-	-	-	-	1		Cinque-foil
<i>Vicia</i> sp.	-	-	1	11	28		Vetches
<i>Vicia/Lathyrus</i>	-	-	-	-	1		Vetch/Vetchling
<i>Medicago/Trifolium</i> type	-	-	2	-	4		Clover type
<i>Euphrasia/Odontites</i>	-	-	-	-	6		Eye-bright type
<i>Rhinanthus</i> sp.	-	-					Hay Rattle
<i>Galium aparine</i> L.	-	-					Cleavers
<i>Anthemis cotula</i> L.	-	-	1	2	25		Stinking mayweed
<i>Tripleurospermum inodorum</i> (L.) S-B.	-	-	-	-	4?		Scentless mayweed
Asteraceae	-	-	-	4	8		Daisy family
<i>Eleocharis</i> sp.	-	-	2	-	-		Spike-rush
<i>Carex</i> sp.	-	-					Sedges

<i>Bromus hordeaceus/secalinus</i>	-	-		1	2	7		Brome grass
Poaceae large	1	1		5	17	45		Grasses
cf <i>Phleum</i> sp.	-	-		-	-	2		Grass
Poaceae small	-	-		-	2	-		Grasses
<i>Cynosurus cristatus</i> L.	-	-		-	2	-		Crested dog's-tail
Poaceae medium	-	1		5	3	36		Grasses
Indetermined seeds	-	-		5	10	16		Seeds
OTHER								
Stem fragments								Stem
Tiller bases								Grass roots
Culm fragments small								Grass stem
TOTAL	2	10		62	242	573		Items
Vol sample	6	8		7	6	6		Litres
Vol flot	50	15		20	54	90		Mls
% Sorted	All	1.3		all	25	25		% Flot sorted
Items/litre	0.3	1.3		8.9	161	385		Items/litre
RATIOS								
Ratio wheat glumes : grains	-	-		1.3	0.7	0.8		glumes : grains
Ratio weed seeds : total grains	-	-		1.2	0.7	1.0		seeds : grains
PROPORTIONS of REMAINS								
% GLUMES	-	-		33.3	21.1	21.1		%
% GRAINS	-	-		30.0	47.1	36.5		%
% SEEDS	-	-		36.6	31.8	37.1		%

Key. gb = glume base, s-fork = spikelet fork, ra = rachis fragment, ge = germinated, + = present, ++ = abundant. CD = corn drier, D = ditch.

Remains are seeds in the broad sense unless described otherwise.

The Medieval Plant Remains

Angela Monckton and Anita Radini

Introduction

Medieval features with potential to contain remains were sampled and some deposits rich in charred plant remains were recovered from the base of an oven or kiln, with and a scatter of fewer remains from other features. A cesspit or well contained abundant mineralised and waterlogged remains in a few deposits including very numerous fruit stones. The deposits were investigated for preservation of microscopic remains including gut parasites. Another type of preservation was found here, as at the Shires (Moffett 1993), which was described as uncharred where the seeds are not mineralised although the seed coat survives. Some of these from the Shires have been shown to be archaeological by radiocarbon dating (Moffett 1994), and are considered so here where they occur in well-sealed deposits. A set of samples from the cesspit and ditches were submitted for pollen analysis by James Greig (see below).

Methods

Samples from eight selected contexts were processed by wet sieving in a tank using a 0.5 mm mesh with flotation on a 0.3mm mesh sieve as for the Roman samples (see above). The samples were assessed and the most productive analysed by AM. The plant remains were sorted from the flots using a x10 to x30 stereo microscope, and identified, counted and tabulated, the plant names follow Stace (1991) (table 3).

The waterlogged material was processed by wet sieving a sub-sample of 0.5 litres on a 0.2mm mesh sieve after disaggregation in water in a bucket. The fruit stones were removed and identified, and the organic residue sorted for small plant and animal remains in water using a stereo microscope. They were sorted and examined wet because small delicate items shrivel and lose their structure when dried. Very small fragments were then identified using a high-power microscope and reference material at York University; in addition, small preparations were made and examined for parasites under high power magnification by AR.

Cereals

Charred grains of wheat were numerous with oats as the second most abundant cereal. Smaller numbers of barley and rye grains were found. Chaff, which is more diagnostic than grains, was also found to be quite numerous in samples from the kiln. The wheat grains differed from the spelt of Roman period by all being of free-threshing wheat. Wheat chaff was quite abundant in the kiln [302] and included rachis of bread wheat (*Triticum aestivum* sl), and also rachis of rivet or macaroni wheat (*Triticum turgidum/durum*). This is most probably rivet wheat (*T. turgidum*), which has been found in recent years on an increasing number of medieval sites in the midlands and south-east England (Moffett 1991). It is known from descriptions in post medieval documents such as Fitzherbert's Book of Husbandry of 1534 (Skeat 1882). Rivet wheat has now been identified from a number of medieval sites south of a curve from Chester, through Stafford and West Cotton (Northamptonshire) to Ipswich (Moffett 1991). The finds from Leicester are from the 11th century onwards which compares with finds such as Ipswich (11th century) and Stafford (12th century) (Moffett 1991). However it is now known from a pre-Norman conquest context from Higham Ferrers, Northamptonshire, the earliest find to date (Moffett forthcoming). Rivet wheat is a productive tall cereal, resistant to disease and bird attack (Moffett 1991), the long straw being useful as roofing material.

Bread wheat and rivet wheat are both free-threshing and have similar grains but can be distinguished from each other by their rachis fragments. No spelt glumes (chaff fragments) were found in the samples analysed confirming the change from the Roman period. Oats were identified from the grains and some chaff as cultivated oats (*Avena sativa*) as the grains were large, however there were also some smaller oat grains which may be weedy species or tail grains from a crop. Rye (*Secale cereale*) and barley (*Hordeum* sp.) were identified from grains only but were present in only small amounts here. However, tiny fragments of cereal bran of both wheat and rye were found in the waterlogged deposit showing that both were consumed by people at the site.

Cultivated or collected plants

Legumes were represented mainly by fragments and incomplete seeds identified as beans or peas (*Vicia/Pisum*), a pea was identified from a complete seed, and a legume of the size of field bean was found so edible legumes including peas and field bean were probably present. Some medium sized legume fragments may include peas and cultivated vetch but the latter could not be confirmed.

Numerous fruit stones were found in the cesspit [362] preserved either mineralised or waterlogged. A few fruit stones of sloe were present but most were of small plums (*Prunus* sp.); these include primitive plums such as bullace, the stones of which are much smaller than those of the sweet plums known today. Some of the fruit stones were of cherry type which

are also smaller types than grown today and may be wild species. Both of these can, however, include cultivated varieties. Another fruit represented only by tiny fragments of core (mericarp) was apple (*Malus* sp) which had obviously been consumed as the tiny fragments were recovered from the sewage in the cesspit. The presence of sewage was confirmed by the presence of parasites of the gut (see below). Fragments of mosses, including possible *Sphagnum*, may represent material used as the equivalent of medieval toilet paper.

A herb was represented by a possible fennel seed also in the cesspit. The leaves of edible plants such fat-hen (*Chenopodium album*) may have been consumed gathered for salads or pottage, although this could not be confirmed from the seeds found. Pips from fruits such as blackberry (*Rubus fruticosus*) and elder (*Sambucus nigra*) may represent gathered fruits, the latter was found both charred and uncharred. Elder could have been one of the plants growing on or near the site because it grows on disturbed nutrient rich soils. Nuts represented by charred hazel nutshell fragments were present in some of the samples.

Arable Weeds.

Corn cockle (*Agrostemma githago*) and possible cornflower (*Centaurea cyanus*) were found and these weeds are often found associated with free-threshing cereals (Jones 1988). Stinking mayweed (*Anthemis cotula*) was also quite numerous, more abundant than in the Roman period, indicated the cultivation of heavy, damp land, it is thought to be associated with cultivation using the mould-board plough (Greig 1991). Cleavers (*Galium aparine*), which is often associated with the autumn sown cereals such as wheat and rye, was present in the pit but not in the kiln. However another group of weeds associated with spring sown crops, garden cultivation and disturbed ground of settlements were also common including goosefoots (*Chenopodium* sp.) and dock (*Rumex* sp.). Large grasses (Poaceae) are also well represented in some samples.

Interpretation of remains in samples

The plant remains were counted to find the proportions of cereal grains, chaff and weed seeds that can indicate the stage of cereal processing or activities on the site (van der Veen 1992). Deposits with a high proportion of grains represent the cereal product for use, while deposits with a high proportion of chaff and weed seeds represent waste from various stages of cereal processing and cleaning to prepare grain for use. Bread wheat and rivet wheat are both free-threshing cereals which are easily threshed from the chaff, so chaff would not be expected to be found in quantity far from where the cereals were grown and an unexpected find in the town. Chaff was sparse at the Shires and Causeway Lane but more common in the suburb at Bonners Lane where it was probably associated with commercial activity (Monckton 2004a). Domestic occupation is typified by a low-density scatter of charred cereal grains and weed seeds, probably as waste from food preparation of whole grain foods such as pottage, with the weeds from the final cleaning of the grain and a few spilled grains burnt in the hearth. Richer burnt deposits of grain can represent accidental fires during storage or processing grain for a variety of reasons including malting, this can be indicated by germination of the grains. Modern malting shows over 70% germination of the grains but lower levels have been found in medieval deposits, perhaps because the cereals were less uniform (Moffett 1990), and poor preservation and damage by burning makes this more difficult to recognize.

Results by feature

Early medieval. AD 12th to 13th century

Oven or kiln base [302]

A spread of charred material, context (318), was found in the base of a truncated oven or kiln which had been lined with stones. The spread was sampled in quarters to investigate the distribution of charred plant remains, on examination this appeared to be fairly uniform. Two samples were recorded in detail, sample 4 from the north-west and sample 7 from the south-east quarters. Both were rich in charred plant remains with numerous wheat grains and oats, wheat chaff of both bread wheat and rivet wheat, and weed seeds were also abundant. Light chaff mainly awns, some silicified were found as are often deposited in flues of kilns for cereal processing. The deposit is one of a rising number from parts of the town and suburbs, which are rich in fragments of chaff and weed seeds interpreted as cereal processing waste of different types.

The most numerous of the identified cereals was bread wheat, with rivet wheat as a second type of free-threshing wheat. Oats are also numerous in the deposit, and oats have been found as a high proportion of some samples associated with kilns, and with germinated grains indicating malting. Here the proportion of oats was 45% with 51% of wheat of the identified grains in sample 23; and germination was 38 % of the large cultivated oats. At the Highcross sites samples with 55 to 94% of oat grains with wheat were found, with germination of the oats of 15% to 76% (Monckton 2010). The samples from the Freeschool Lane kilns had the highest percentage of germination of oats, 63 to 76%, which were certainly malted grains found in well preserved stone lined kilns (Radini 2009). Some of the other samples with less germination may also have contained some brewing waste because ungerminated oats were sometimes added to the mash for ale in order to add more starch to strengthen the brew (Amsterdam Museum 1994). The remains here may be some of this waste from the last use of the kiln, however there is the possibility that this was waste from crop processing to clean grain for use or sale in the town.

Seeds of spring-sown crops such as oats include goosefoots and docks, seeds of autumn sown cereals such as wheat include corn cockle and corn flower and both types were present. Hence the wheat and oats would have been grown separately at different seasons, but possibly the bread wheat and rivet wheat were grown as a mixed crop because cereals were often grown in mixtures (Greig 1988b). The more numerous seeds include stinking mayweed with very numerous leguminous weeds of vetches as were found at Bonners Lane. Seeds of large grasses were present, while damp ground plants such spike-rush were few in number. This appears to represent cereal cleaning waste from mixed crops. Crops could have been dried for storage, or to facilitate milling, or been cleaned for use in pottage or for brewing with the waste burnt in the oven with the fuel. This certainly represents uncleaned crops being processed near to the town.

Cesspit or well [362]

This feature was probably originally a well, later backfilled and re-used as a cesspit and this contained deposits with fruit stones and seeds preserved by mineralisation with some waterlogging. Mineralisation occurs in such conditions as occur in sewage when impregnation with calcium phosphate causes organic material to become semi-fossilised. Waterlogged preservation occurs in anoxic conditions in permanently wet deposits, however, very organic deposits in pits can hold water and provide patches of waterlogged conditions

even above the water table. Here both types of preservation are possible. The presence of sewage was confirmed by the presence of parasites of the gut from the evidence of ova of maw worm (*Ascaris* sp.) which can affect humans, and whip worm (*Trichuris* sp) of a type which affects pigs. This may suggest that pigs were kept on the site as found at Bonners Lane (Baxter 2004); pig-keeping was a common back-yard activity in the medieval period feeding the animals scraps and waste to produce meat and lard for the household. Many people may have been infected with gut worms because the ova have been found in Roman and medieval cesspits, for example at Causeway Lane (Boyer 1999). The infections could be debilitating for the very young or the old and infirm, but may have been part of life for many people and various remedies are recorded for their treatment in medieval herbals. Further evidence of latrine waste in this pit was found as fragments of mosses, including possible *Sphagnum*, probably representing material used as the equivalent of medieval toilet paper.

Numerous fruit stones were found in the cesspit samples 23 and 27, with most in the former. These included a few fruit stones of sloe, but most were of small plums (*Prunus* sp.); these include primitive plums such as bullace, the stones of which are much smaller than those of the sweet plums known today. Some of the fruit stones were of cherry type, also smaller types than grown today. Both of these latter types may be wild but both can include cultivated varieties, either brought into cultivation from the wild or orchard varieties. Another fruit represented only by tiny fragments of core (mericarp) was apple (*Malus* sp) which had obviously been consumed as the tiny fragments were recovered from the sewage in the cesspit. A seed of possible fennel represented a plant which could be used as a herb for food flavouring. Other food remains were tiny fragments of cereal bran of both wheat and rye showing that these cereals had been consumed, although it is unknown if this was as bread or pottage. Tiny fragments of broken or ground seeds of corn cockle were also present, this plant was a common cornfield weed and could be left with the cereals ground as flour because it was a large seed which would not be separated by winnowing or sieving. It is undesirable because it is poisonous but may have been left in poorer quality flours, or very weed contaminated crops. A few other weed seeds were probably also crop weeds or possibly weeds of the locality which had fallen into the pit. A sample 14 from context (361) contained only charred remains including a few charred cereal grains, weed seeds and fragments of peas or beans probably as domestic waste from food preparation. Burnt remains from hearths form frequent layers in cesspits, perhaps because charcoal absorbs smells.

Other features

Ditch [342] sample 8 of 13th to 14th century date contained very little but was submitted for pollen analysis to investigate if the ditches contained any evidence of nearby cultivation as the site was near to the town fields.

Pit [301] sample 2 of later 14th century date contained a similar scatter of charred cereal grains, weeds and legume fragments to sample 14 and was also thought to represent domestic waste from food preparation, burnt in a hearth and then dumped in the pit.

Discussion

There appear to be two types of activity represented by the charred plant remains in the samples; domestic occupation and possible trade activity. Firstly some compare with those from Causeway Lane which mostly contained a low-density scatter of domestic waste of

mainly cereal grains and weed seeds as waste from probable food preparation. At that site this scatter was accompanied by food remains from cesspits as further evidence of the domestic nature of the remains as also found here at Grange Lane. Some of the samples are different and contain abundant chaff and arable weeds which probably represent some types of trade waste from cereal processing found in the samples from the kiln. Samples show that un-cleaned cereals were brought to the site and were processed, probably for use in the town. This suggests that cereals were probably produced nearby because transport was expensive and difficult in medieval times (Dyer 2002) therefore cereal waste contamination would have been minimised before much transport. It seems likely that cereals processed in this area were for supply to nearby people or to the townspeople in general.

Domestic occupation was shown by a scatter of charred cereal grains, with legume fragments and weed seeds as waste from food preparation throughout the period. The main evidence is from deposits in the cesspit containing fruit stones of plums and cherries, and remains of apple. Cereal bran of wheat and rye, was identified for the first time in Leicester by AR, from remains preserved by waterlogging as well as mineralisation; an unusual deposit for the town and not investigated in this detail before. Mineralised remains in cesspits have been found previously in the earlier medieval phases at the Shires and Causeway Lane, medieval pits at York Road, post-medieval phases at Bonners Lane and Bowling Green Yard (summarized in Monckton 2004). And recently, late medieval cesspits at St Nicholas Place and Freeschool Lane have produced fruit and fish remains (Monckton 2010, Radini 2009). Mineralised remains are preserved in cesspits where the minerals in the sewage cause organic remains to become semi-fossilised by calcium phosphate replacement and a range of fruits have been found including imports of figs and grapes at some sites, although not found here at Grange Lane. Charred remains were present in some layers and material from hearths may have been added to cesspits because it absorbed smells. Other remains included parasite ova of the human gut confirming the presence of sewage, together with mosses possibly used as the medieval equivalent of toilet paper. Remains of another parasite, whip worm of the species which affects pigs, suggests the keeping of pigs in back yards as found at Bonners Lane (Baxter 2004).

The find of rivet wheat together with bread wheat adds to the sites in Leicester where this cereal occurs. Both bread wheat and rivet wheat are species of free-threshing wheat and this shows a change from the Roman period when mainly spelt was grown. Rivet wheat was identified from 11th to mid 13th century dates at Causeway Lane (Monckton 1999a), it was also found from earlier medieval and late medieval phases at the Shires (Moffett 1993). At both these sites it occurred in phases of domestic activity. Very little wheat rachis was found at the Shires and Causeway Lane probably because free-threshing wheat can be supplied as threshed grain which is largely free from chaff. However, if whole grains are used for some purposes such as making pottage, rather than as milled flour alone, sorting the grain for weed seeds and impurities is necessary before using the grain. In the medieval period pottage was a staple food and cereal grains are constantly present on sites in the town. Rivet wheat is a productive cereal, but not favoured for bread making so possibly used more in pottages. The medieval finds of rivet wheat with bread wheat at Grange Lane, Vine Street and St Nicholas Place Undercroft occur with quite abundant chaff and weed seeds as partly cleaned crops with evidence of crop processing, possibly including brewing, suggesting that these sites are places where cereals were prepared for sale or use in the town.

Until recently commercial waste has only been found in post medieval deposits in the southern suburb at Bonners Lane (barley processing and rich cesspits) and Bowling Green

Yard (cereal cleanings of wheat, possible bread oven associated with a rich cesspit). Earlier trade waste was found at Oxford Street with in an early medieval hearth deposit of barley with some germination (either spoiled cereal or possibly malting waste, and a well with dye plants, leather, with wild plants). The medieval kiln base at Grange Lane adds to these finds from the suburb for possible brewing waste of wheat and oats also with a cesspit. Recent analysis has now found commercial activity within the town with early medieval deposits at St Nicholas Place Undercroft of oats and wheat with some germination (possible brewing waste in a pit and cesspit). At Vine Street a kiln base with oats and seeds may have been crop cleaning or brewing waste, while at Vaughan Way a shallow pit thought to be a kiln base had several layers of use with very abundant oats thought to represent malting waste, while a better preserved stone kiln had more mixed remains which may represent malting or cereal cleaning waste. The best preserved kilns were at Freeschool Lane where conical stone lined pits contained numerous oat grains with high levels of germination. Hence the townspeople were supplied with cereals, malt and ale from both the suburb and within the town at various times during the medieval and post medieval periods.

The kiln base here, like the shallow pit at Vaughan Way and Vine Street have little evidence surviving of how they were used. The requirements for brewing are the same now as in the past; grain is soaked in water, drained and put in a warm place to germinate because this converts the starch to sugars for food for the growing plant. When the grain has sprouted and the length of the sprout is about equal to the length of the grain, germination is halted by parching or roasting the grain. The grains are then broken up and steeped and boiled in water to dissolve the sugars, the liquid poured off and cooled, then yeast is added to ferment the sugars to alcohol. When the fermentation ceases the liquid is allowed to settle and poured off to be consumed as ale. Various flavourings could be added to the brew before fermentation, sweet gale and alecost were used in ale in the early medieval period; hops were only generally used in England later when beer came into fashion replacing ale. The grains used also changed over time, wheat and oats being favoured in the Early Medieval period in England; barley being more popular later (Unger 2004). When there were shortages of wheat for bread the other grains are known to have been used for brewing.

Early medieval brewing was mainly a domestic process using the equipment available in the home so small scale brewing was carried out, and the ale consumed or sold quickly because ale did not keep well (Dyer 2004). With the development of the towns larger scale brewing developed with specialized equipment, kilns and breweries. Kilns lined with stone were used to roast the malt laid on horsehair mesh supported on a frame over the flue (Amsterdam Museum 1994). The kiln base here is not unlike Roman corn driers where it is thought that the grain was roasted over the flue supported on a fired clay or organic superstructure. The grain may have been laid on straw over the flue and heated by a fire at the opposite end of the oven. Cereal remains are difficult to interpret from these features because cereal waste was used as fuel and some of the grain product could fall into the fire and mix with the fuel (cf van der Veen 1989). In addition such ovens were used to parch grain for different reasons: grain could be parched for storage if gathered damp, it could be parched to facilitate milling, malted grain could be parched or roasted for brewing, and other grain products may also have required parching in their preparation. Only the evidence from the last uses of the kiln may survive so ovens could be used for a number of purposes. The kiln here is like the Phase 9 medieval oven at Vaughan Way and fits more with small scale brewing using malted oats to make ale. Malting was often carried out separately from brewing and the malt sold to brewers, also many households brewed ale on a small scale to sell to the public and this may be the case here.

Conclusions

At Grange Lane there is evidence for medieval domestic occupation with additional trade activity in backyards. Evidence of domestic occupation and diet was found from well preserved remains in a cesspit which contained numerous fruit stones of plums and cherries, probably consumed on the site. Tiny waterlogged remains of cereal bran were identified as wheat and rye bran as evidence of cereals consumed by the people, fragments of apple core were also found in the investigation of microscopic vegetable remains in the partly mineralised deposit. The presence of sewage was confirmed from parasite ova of worms of the human gut, with pig keeping suggested by a parasite which affects pigs. Domestic waste was also found from the evidence of a scatter of charred cereal grains, legume fragments and hazel nutshell as waste from food preparation.

A burnt deposit in a kiln base contained both bread wheat and rivet wheat chaff, numerous weed seeds with cereal grains was found here at Grange Lane with about 45% oats, and germination of some of the oats. This was similar to medieval finds at Vine Street phase 8 and Vaughan Way phase 9 at the Highcross excavations, the latter with bread wheat alone. There is evidence of cereal processing and / or brewing waste at these three sites. All three kilns or ovens were truncated shallow pits with evidence of burning but lacked other structures. These sites appear to be processing cereals to supply to the people of the town, possibly grown in the town fields nearby. Deposits with grain, abundant chaff and weed seeds have been now been found at some sites in both the town and suburbs and are interpreted as partly cleaned cereals brought to the town, probably threshed but not cleaned of contaminants. These appear to have been processed in various ways for consumption in the town, here there is evidence of cereal cleaning and possible malting for brewing as trade activities.

Table 30 Medieval plant remains from Grange Lane.

Phase	Med							
Type	Ov	Ov	Pit	Pit	Pit	D	Pit	
Feature	302	302	362	362	362	342	301	
Context	318	318	361	390	397	341	300	
Sample	4	7	14	23	27	8	2	
CEREAL GRAINS								
<i>Triticum</i> free-threshing grain	70	64	4	-	-	-	4	Free-threshing Wheat
<i>Triticum</i> sp(p)	14	8	2	-	-	-	6	Wheat grains
<i>Secale cereale</i> L.	2	9	-	-	-	-	-	Rye grains
<i>Hordeum vulgare</i> L.	4	5	-	-	-	-	2	Barley grains
<i>Avena</i> sp.	24	16	-	-	-	-	-	Oat grains
<i>Avena</i> sp. Germinated	15	15	-	-	-	-	-	Oats germinated
Cereal/Poaceae	36	16	-	-	-	-	-	Small Oats/Grass
Cereal indet	87	73	4	-	-	-	4	Cereal
CEREAL CHAFF								
<i>Triticum turgidum/durum</i> rachis	11	2	-	-	-	-	-	Rivet wheat
<i>Triticum aestivum</i> s l rachis.	21	5	-	-	-	-	-	Bread wheat
<i>Triticum</i> free-threshing rachis	22	5	-	-	-	-	-	Free-threshing Wheat
<i>Triticum</i> sp. Bran	-	-	-	++	++	-	-	Wheat bran
<i>Secale cereale</i> L. bran	-	-	-	++	++	-	-	Rye bran
<i>Hordeum vulgare</i> L. rachis								Barley
<i>Avena</i> sp spikelet	2	-	-	-	-	-	-	Oat spikelet
<i>Avena sativa</i> L. spikelets	1	-	-	-	-	-	-	Cultivated Oat
Cereal rachis fragments								Rachis fragments
Cereal light chaff, awns.	++	+	-	-	-	-	-	Light chaff fragments
Cereal culm nodes	6	3	-	-	-	-	-	Cereal straw
Cereal sprouts	1	4	-	-	-	-	-	Cereal sprouts
LEGUMES								
<i>Vicia faba</i> L. type	-	-	-	-	-	-	1	Bean
<i>Pisum sativum</i> L.	-	1	-	-	-	-	-	Pea
<i>Vicia/Pisum</i>	-	2	1	-	-	-	2	Bean/Pea
<i>Vicia sativa/Pisum</i>	1	-	1	-	-	-	-	Vetch/Peas
FOOD PLANTS								
<i>Corylus avellana</i> L.	2	1	1	-	-	-	-	Hazel nutshell
<i>Prunus spinosa</i> L.	-	-	-	+	-	-	-	Sloe
<i>Prunus</i> sp. Bullace	-	-	-	60	12	-	-	Plum, bullace
<i>Prunus</i> sp. Cherry	-	-	-	34	6	-	-	Cherry, ?wild
<i>Malus</i> sp.	-	-	-	+	-	-	-	Apple
<i>Foeniculum vulgare</i> L.	-	-	-	1?	-	-	-	?Fennel
ARABLE/ DISTURBED								
<i>Papaver rhoeas/dubium</i>	-	-	-	+	-	-	-	Field Poppy
<i>Chenopodium</i> sp	10	4	-	-	-	-	1	Goosefoots
<i>Chenopodium album</i> L.	3	-	-	-	-	-	-	Fat-hen
<i>Agrostemma githago</i> L.	-	1	-	++	-	-	-	Corn Cockle
<i>Cerastium/Stellaria</i>	-	1	-	-	-	-	-	Mouse-ears/Chickweed
<i>Polygonum aviculare</i> L.								Knotgrass
<i>Fallopia convolvulus</i> (L.) A. L.								Black bindweed
<i>Rumex</i> sp	9	6	-	-	-	-	-	Docks
<i>Rumex acetosella</i> L.	4	2	-	-	-	-	-	Sheep's sorrel
<i>Brassica</i> sp.								Cabbage family
<i>Thlaspi arvense</i> L.								Field Penny-cress
<i>Vicia sativa</i> ssp <i>nigra</i> (L) Ehrh	7	-	-	-	-	-	-	Common Vetch
<i>Hyoscyamus niger</i> L. (u)								Henbane
<i>Lithospermum arvense</i> L.	1	-	-	-	-	-	-	Field gromwell

<i>Galium aparine</i> L.	-	-	-	+	-	-	-	Cleavers
<i>Centaurea cyanus</i> L.	2?	1	-	-	-	-	-	Cornflower
<i>Anthemis cotula</i> L.	25	21	-	-	-	-	-	Stinking Mayweed
<i>Tripleurospermum inodorum</i>								Scentless Mayweed
<i>Bromus hordeaceus/secalinus</i>	2	-	-	-	-	-	-	Lop-grass/Rye-brome
UNCLASSIFIED								
<i>Ranunculus</i> sp.	-	3	-	-	-	-	-	Buttercups
<i>Urtica dioica</i> L. (u)	-	-	2	-	-	-	-	Nettle
<i>Cerastium/Stellaria</i>	-	1	-	-	-	-	-	Mouse-ear/Stitchwort
<i>Spergula arvensis</i> L.	-	3	-	-	-	-	-	Corn spurrey
<i>Polygonum</i> sp.	4	-	-	+	-	-	-	Knotweed
<i>Persicaria</i> sp.	-	1	-	-	-	-	-	Persicaria
<i>Raphanus raphanistrum</i> L.								Wild radish
<i>Prunella vulgaris</i> L.								Self-heal
<i>Vicia</i> sp	150	69	1	-	-	-	1	Vetch
<i>Vicia/Lathyrus</i>	5	10	-	-	-	-	-	Tare/Vetch/Vetchling
<i>Medicago/Melilotus/Trifolium</i>	-	-	-	-	-	-	1	Medick/Melilot/Clover
<i>Euphorbia helioscopia</i> L. (u)	-	-	1	-	-	-	-	Sun spurge
<i>Chelidonium majus</i> L.								Greater celandine
Apiaceae								Carrot family
<i>Conium maculatum</i> L. (u)								Hemlock
<i>Aethusa cynapium</i> L. (u)	-	-	-	-	-	-	1	Fools-parsley
Lamiaceae	-	1	-	-	-	-	-	Deadnettle family
<i>Plantago lanceolata</i> L.	-	1	-	-	-	-	-	Ribwort plantain
<i>Plantago major</i> L.								Greater plantain
<i>Euphrasia/Odontites</i>								Eyebright/Bartsia
<i>Sambucus nigra</i> L.	1	-	-	-	-	-	-	Elder
<i>Sambucus nigra</i> L. (u)	-	-	11	-	-	-	-	Elder
<i>Valerianella dentata</i> (L.)	1	1	-	-	-	-	-	Cornsalad
Asteraceae	5	1	-	-	-	-	-	Daisy family
<i>Centaurea nigra</i> L.								Knapweed
<i>Crepis</i> sp.								Hawks-beard
<i>Luzula</i> sp.								Wood-rush
<i>Eleocharis palustris/uniglumis</i>	-	-	1	-	-	-	-	Spike-rush
<i>Carex</i> sp.								Sedges
Poaceae large	5	10	1	-	-	-	-	Grasses
Poaceae small-medium	-	1	-	-	-	-	-	Grasses
Indeterminate seeds (charred)	16	12	2	-	-	-	-	Indeterminate seeds
Uncharred seeds (u)	-	-	-	+	-	-	-	Seed fragments
OTHER								
Grass stem frags.	+	-	-	-	-	-	-	Grass stem
Capsule indet	-	1	-	-	-	-	-	Capsule
Mosses cf <i>Sphagnum</i> sp. (u)	-	-	-	++	-	-	-	Moss fragments
<i>Ascaris</i> sp (ova) (u)	-	-	-	++	+	-	-	Maw-worm, parasite
<i>Trichuris</i> sp. (ova) (u)	-	-	-	++	+	-	-	Whip-worm, parasite
TOTAL	574	383	29	+++	++	-	22	Total seeds
Sample Vol	4	2	8	0.5	0.5	7	6	Litres
Flot Vol	400	110	30	-	-	-	65	MLs
% flot sorted	25	all	all	all	all	-	All	% sorted
Items/litre of soil	574	192	3.6	++	++	-	3.7	Items per litre of soil

Key: Remains are seeds in the broad sense and are charred unless described otherwise.

u = uncharred, m = mineralized, + = present, ++ = common, +++ = abundant.

Ov = oven or kiln, D = ditch.

Pollen Remains

James Greig

Summary

Five samples were submitted for pollen analysis. Four of the five, those from medieval pits and ditches, contained good pollen with abundant cereals and other food plants and cornfield weeds, showing the presence of sewage and other waste. This should add to the information from other biological remains in helping interpret the features and activities on or near the site.

Samples

A number of features were sampled, and the samples which were submitted for pollen analysis are listed below:

Table 31 Features sampled for pollen remains

sample			
8	(341)	[342]	medieval ditch
23	(390)	[362]	medieval well/cesspit
33	(366)	[342]	medieval ditch
34	(444)	[310]	medieval ditch
46	(508)	[305]	Roman well

Laboratory work

Pollen analysis

Pollen samples were processed using the standard method; about 1 cm³ subsamples were dispersed in dilute NaOH and filtered through a 70µm mesh to remove coarser material. The finer organic part of the sample was concentrated by swirl separation on a shallow dish. Fine material was removed by filtration on a 10µm mesh. The material was acetolysed to remove cellulose, stained with safranin and mounted on microscope slides in glycerol jelly. Counting was done with a Leitz Dialux microscope. Identifications were made using the writer's own pollen reference collection. Counts of about 170 grains were made, and the whole of each pollen slide was also scanned at low power for further taxa, which are recorded as “+” for presence.

The pollen types have been listed in taxonomic order according to Kent (1992), together with other microfossils such as parasite ova in Table 1. There is a category of “large Poaceae” since many grains were found which looked like *Cerealia* but which were slightly below the usual 42µm diameter perhaps because they were crumpled. These could be from cereals, or from some weedy grasses such as wild barley, but they are probably not from the aquatic *Glyceria* (sweetgrass) since the wetland flora was insignificant.

Results (Table 31)

All samples except [46] the Roman well contained plenty of well preserved pollen and other microfossils.

There was a general similarity of pollen spectra from the four successful samples, with a quite large and varied flora dominated by grasses, cereals and composites as well as

Centaurea cyanus (cornflower). Most of them contained the parasite ova *Trichuris* and *Ascaris* as well. A few grassland pollen taxa were found. Pollen from trees, shrubs and wetland plants was present in traces only, and likewise spores.

Such spectra are associated with latrines or other deposits containing human sewage (Greig 1981, 1983). The abundance of intestinal parasite ova provides direct evidence of the sewage content, while remains of cereal food are shown by abundant cereal pollen and cereal bran, and probably also by at least some of the pollen of cornfield weeds such as *Centaurea cyanus* (cornflower) and *Anthemis*-type which includes *Anthemis cotula* (stinking mayweed) and *Chrysanthemum segetum* (corn marigold). Part of the cornfield crop and weed spectrum could also have arrived with straw together with weeds and other waste, but it is not thought that natural pollen dispersal played an important role here as cereals do not usually disperse much pollen, although they contain a large amount in chaff and straw. A number of other foodstuffs are often identifiable from their pollen contained in remains of the food itself, or from crop waste, here including *Linum* (flax, linseed), possible *Fagopyrum* (buckwheat) and *Vicia faba* (broad bean).

Differences between samples

[8] also contained pollen of *Vicia faba* (broad bean), adding another food plant to the list. There was also some *Urtica* (nettle) pollen, which seems to have a somewhat irregular appearance, even when nettle seeds are present, so its pollen dispersal needs studying.

[23] had a rather restricted flora, but also the largest amounts of cereal and possible cereal pollen together with very numerous parasite ova and some possible bran, adding to the evidence that this was a cesspit. Two grains of *Linum usitatissimum* (flax) were present, and as flax is a low disperser of pollen this evidence of its presence is significant. Linseed could be eaten, but flax remains could have come from flax storage or processing waste, which was perhaps deposited in cesspits together with general rubbish. A possible record of *Fagopyrum* (buckwheat) may show the presence of a rather minor crop which was grown on poor sandy soil where it is more successful than other crops. This sample contained the largest amounts of intestinal parasite ova which show the presence of large amounts of probably human sewage.

[33] and [34] seem to have slightly more evidence of grassland plants such as *Plantago lanceolata* (ribwort plantain), Lactuceae (a large group which includes a number of grassland plants as well as some weeds) and *Centaurea nigra* (knapweed), some of which could have come from hay or dung. There were very slightly more records of trees and shrubs, too, including *Sambucus nigra* (elder) in [34], hinting that these two deposits may have received some of their pollen from the surroundings.

Centaurea cyanus (cornflower) is characteristic of medieval cornfield waste deposits (Greig 1991). It has the advantage of being identifiable to species from its pollen, whereas many of the other traditional cornfield weeds cannot be so precisely identified, or leave a much smaller pollen record

Acknowledgements

Thanks to Angela Monckton for her cooperation with this project.

sample number	8	23	33	34	
spores					
<i>Pteridium</i>	1	-	3	2	bracken
<i>Polypodium</i>	+	-	-	+	polypody fern
pollen					
<i>Pinus</i>	-	-	1	1	pine
<i>Thalictrum</i>	+	-	-	-	(meadow) rue
<i>Ranunculus</i> -tp.	1	-	4	1	buttercup, crowfoot
<i>Ulmus</i>	1	-	-	-	elm
<i>Urtica</i>	14	-	-	-	nettle
<i>Quercus</i>	-	-	2	5	oak
<i>Betula</i>	-	-	3	-	birch
<i>Alnus</i>	-	1	3	+	alder
<i>Corylus</i>	2	-	-	4	hazel
Chenopodiaceae	1	1	6	1	goosefoot
Caryophyllaceae	+	+	-	-	stitchwort family
<i>Persicaria bistorta</i> -tp.	1	-	6	5	bistort etc.
<i>Rumex</i> -tp.	-	-	+	-	docks and sorrels
cf. <i>Fagopyrum</i>	-	+	-	-	cf. buckwheat
cf. Brassicaceae	7	-	-	-	brassicas
cf. <i>Sanguisorba officinalis</i>	1	-	-	-	great burnet
<i>Trifolium pratense</i>	-	-	-	1	red clover
<i>Trifolium repens</i>	-	-	-	1	white clover
<i>Vicia faba</i>	1	-	-	-	broad bean
<i>Myriophyllum</i>	+	-	-	-	milfoil
cf. Onagraceae	1	-	-	-	willowherbs
<i>Linum usitatissimum</i>	++	-	-	-	flax
Apiaceae	-	1	-	-	umbellifers
cf. <i>Menyanthes</i>	-	-	-	1	bog bean
<i>Plantago lanceolata</i>	1	-	3	3	ribwort plantain
<i>Sambucus nigra</i>	-	-	-	4	elder
Dipsacaceae	-	+	-	-	scabiouses
<i>Cirsium</i> -tp	-	-	-	+	thistles
<i>Centaurea cyanus</i>	6	3	9	5	cornflower
<i>Centaurea nigra</i>	1	-	2	8	knapweed
Lactuceae	13	3	55	50	a group of composites
Aster-tp	34	11	20	14	daisies etc.
<i>Artemisia</i>	1	-	1	-	mugwort
<i>Anthemis</i> -tp.	9	-	4	22	mayweeds etc.
<i>Sagittaria</i>	1	-	-	-	arrowhead
Cyperaceae	-	1	3	4	sedges

sample number	8	23	33	34	
Poaceae	47	26	23	48	grasses
large Poaceae	22	79	17	17	possible cereals
Cereal-tp.	6	15	6	2	cereals
cf. <i>Secale</i> -tp.	+	-	-	1	rye
pollen sum	171	142	168	198	
unidentified	11	13	9	15	
parasite ova					
<i>Trichuris</i>	5	145	2	6	
<i>Ascaris</i>	+	17	+	-	

Table 32 pollen and spores

Wood and pit lining of the cesspit [362]

Anita Radini

Introduction

Samples of the pit lining and wood from the cesspit [362] were submitted for identification. The identification is based on Microscopic Wood Anatomy by Fritz. H. Schweingruber (1982), and modern reference material.

Results

Sample 25 (379), pit lining

The sample consisted of dried out clay and a small amount of waterlogged remains consisting of organic material. The only plant remains were of tiny fragments, mainly of cereal bran of wheat and rye, but no other large remains were recovered from the sample. This is possible due to its location, the very side of the pit, where the microscopic fragments of cereal bran had possibly arrived in water, filtering into the clay at the side of the pit.

Wood samples

Sample 26, fragments of wood found at the bottom of layer 390, below sample 23 (Table 3 of plant remains report). The wood fragments were mainly of alder (*Alnus glutinosa*) and hazel (*Corylus avellana* L.), mainly of wood chips. The larger fragments of wood were of alder wood possibly used to line the cess pit. Few fragments of oak, hazel and alder wood were also collected from sample 23.

Wood sample 21 from context (365) consisted of a small sample of oak (*Quercus* sp.), heartwood.

Comments.

Alder wood, especially twig is a soft wood often used in artefacts as handles, also in pit linings because it is a tree of watersides, resistant to rotting in water.

Hazel is a common tree, which is likely to have grown nearby the site. The twigs grow quickly in large numbers from coppiced or pollarded trees, or from the base of major trees

making hazel wood a common resource for wood. The twigs are easily bent when fresh or soaked in water and useful for making hurdles and baskets. Oak is usually used for structural timbers, wood chips can be carpentry waste.

Discussion

The Archaeological Sequence

Prehistoric

Evidence for prehistoric activity comprised a small scatter of worked flints including two Neolithic arrowheads. One of these was from a large ditch that was otherwise undated although it is uncertain if the two are contemporary. The ditch fills were distinct from others on the site by their pale colour, perhaps indicating a feature of some antiquity although based on the present evidence only a broad 'prehistoric' date may be suggested. The finds complement other discoveries from nearby excavations that have indicated a wider spread of prehistoric activity in the area. Further evidence for local Neolithic activity includes a stone axe from Bonners Lane (Finn 2004) and Peterborough ware pottery from Oxford Street (Higgins 2000) both to the north of the present site. Thin scatters of undiagnostically datable worked flint were also present at Bonners Lane and Mill Lane (Finn 2002) and are also probably broadly contemporary with these finds.

Roman

A long span of more or less continuous Roman activity was revealed on the site, beginning in the later 1st century and ending in the 4th century, enabling a broad understanding of changes in the sites use over time.

Late 1st – early 2nd century

The earliest evidence for Roman activity came from remains of four cremation burials located in the eastern half of the site, some of the first to be found through controlled excavation in the city. These burials represent an important addition to the understanding of early Roman burial in Leicester and their presence in such a small area presents the possibility that a cremation cemetery existed in this location. This idea has additional support from another possible cremation burial or cremation related feature recently discovered during evaluation work at an adjacent site to the north (Higgins 2009) and a cremation burial in a glass urn discovered east of Oxford Street in 1865 (LC576), some 30m from the present site (Harvey 2004, 5). The burial record for Roman Leicester prior to these latest discoveries includes c.60 cremations, many of which were the result of chance discoveries made during building work. The distribution of these burials therefore is inevitably biased to areas where such work has taken place. That said there appears to be a particular concentration of cremations on the eastern side of the Roman town, perhaps in association with the line of the Fosse Way. Roman law forbade burial within the town boundary and the suggestion is that cemeteries grew immediately outside the urban limits and along the main routeways (Courtney 1993). Given the proximity of the Grange Lane/Oxford Street cremations to the Roman Tripontium road or perhaps an earlier version of this routeway, it seems reasonable to suggest that a similar situation might have resulted in the formation of a cemetery in the southern suburb.

Further evidence for activity from this period is relatively scarce although the location of the cremation burials may suggest the presence of the Tripontium road by this time. The

orientation of a partially revealed ditch in the north-west corner apparently corresponds to the projected road alignment and may have been an early roadside ditch. If this is the case it would make more sense of the scatter of apparently pre-road activity to the immediate west of the ditch. The nature of this activity is difficult to determine on the basis of present evidence although the pits, post holes and gullies appear to reflect occupation at this time. The early establishment of the stone-lined well, based on dating evidence from its earlier fills, may also relate to this phase of the sites occupation. The latest dates, from pottery associated with these features (with the exception of the well), suggests that they had become infilled by the middle of the 2nd century. A similar date was indicated for pre-road activity on the neighbouring site to the north, where layers containing late 1st – mid 2nd century pottery were recorded (Higgins 2010, 7-8). It seems likely that these represent an extension of similar layers recorded directly beneath the cobbled Roman road surface at Grange Lane.

In addition to the cremation burials, a small amount of disarticulated, unburnt human bone was also recovered from Grange Lane and similar groups were also recovered from other nearby sites (Finn 2002, Higgins 2010). Their presence suggests that inhumations may have once been located on these sites, perhaps associated with plot boundaries rather than the formal cemeteries closer to the town wall, which seem to have a later development (Cooper 1996, Derrick 2009). Alternatively the dead may have been disposed of in different ways, leading to residual human remains in areas of domestic occupation.

2nd – 3rd Century

The eastern side of the site during this period was dominated by a stretch of Roman road represented by a metalled surface and associated linear roadside ditch. The road orientation accords with the projected line of the Tripontium road, also discovered at Bonners Lane (Finn 2004) and more recently at 61, Oxford Street (Higgins 2010) and, closer to the Roman town, during excavations for the De Montfort University Business and Law building (Morris 2010). This road would have connected the southern gate of Ratae Corieltavaurum with the Roman small town of Tripontium, situated on Watling Street at the border with the modern counties of Leicestershire and Warwickshire.

Evidence from Grange Lane suggests that the edges of the road were initially demarcated with the cutting of the roadside ditches, as evidenced by the eastern ditch present on the site. Dating for this phase of activity is not entirely clear but given the evidence below the road surface it must have occurred sometime after the mid-2nd century. Soon after the ditch was open the metalled surface was laid down. The eastern fringes of the surface were laid so as to overlap with the upper inner edge of the roadside ditch. This was a feature also noted at the De Montfort University excavation (Morris 2010.), suggesting this was a measure to facilitate drainage of the road surface. The earlier occupation features were fully overlain by the road surface indicating a reorganisation of space at this time, and if the interpretation of the earlier ditch is correct, a significant widening or relocation of the Tripontium road. Evidence from the Bonners Lane excavation indicates that the road underwent numerous changes during its lifespan, with regular recutting and re-siting of the roadside ditches (Finn 2004).

Roadside occupation in the 2nd-3rd century consisted of building remains and a probable ditched enclosure. The possible enclosure was represented by a partially revealed curving ditch on the western edge of the site. This had been badly truncated by later disturbance but enough remained to suggest it formed the western side of a possible enclosure with a northwest facing entrance. Pottery and animal bone from the ditch fill indicated its proximity

to areas of occupation but a function for the possible enclosure is uncertain. Its estimated size might suggest use as a small animal stockade or agricultural area.

Structural evidence associated with this period of occupation comprised unusual remains of an apparently sunken-featured building; a tradition more commonly associated with Anglo-Saxon settlement from the 5th century AD rather than the Roman period (Tipper 2004). Similar Roman structural remains, incorporating a sunken floor or large pit, have been found in Britain, most notably at Monkton on the Isle of Thanet in Kent where over twenty such structures dating to the 2nd century AD were excavated (Bennett 1997). However the buildings at Monkton and other Romano-British examples appear quite unlike later, Anglo-Saxon SFB's and according to Tipper (2004, 7-9) represent a quite different tradition. The Grange Lane building is, in itself, quite different to other broadly contemporary examples that have are known and is in comparison smaller and less elaborate. It might be best compared with a small group of similar buildings discovered at Appleby Magna, Leicestershire (Clarke 2010). These buildings were slightly later in date to the Grange Lane example (*c.* 4th century AD) and were more truncated, but had similarities in plan comprising a *c.* 4x3m sunken floor surrounded by structural post holes. At least one of the features may have represented a sunken threshing floor but others may have formed the foundations of insubstantial buildings (Sophie Clarke pers. comm.). Unfortunately there are few clues from the finds assemblage of the Grange Lane building to assign a function and it must remain fairly enigmatic.

The disuse and backfilling of the SFB appears to have coincided broadly with the infilling of the roadside ditch in the later 2nd or early 3rd century. This was apparently recut as a much slighter linear feature, although its alignment was still respected and activity on the eastern side of the site developed with the construction of a timber structure, possibly associated with an external cobbled yard surface to the south. The form of the building is difficult to determine given the incomplete nature of the evidence as a result of later disturbance. It is possible however that a small rectangular post-built structure measuring *c.* 6x3m was represented, lying generally adjacent to the line of the Tripontium road. Evidence for a similar, though slightly earlier structure has been excavated at Bonners Lane to the north (Finn 2004, 10), while the presence of post hole groups at York Road (Gossip 1999) and on the opposite side of Grange Lane (Shore 2002) hint at the presence of similarly built structures on these sites. Although it provides evidence for continued roadside occupation during this period there was no evidence to suggest the function of the building.

3rd-4th Century

Dating evidence from a recent excavation to the north suggests that the eastern roadside boundary eventually went out of use during the later 3rd-early 4th century (Higgins 2010, 15). At a broadly similar time the well went out of use and northern stretch of the roadside ditch at Grange Lane was overlaid by a thick deposit of red clay, apparently to artificially raise this part of the site and create a platform on which to build. Although this was indicative of a distinct change of use for the area, it was noticeable that the clay layer did not extend greatly over the road cobbling suggesting the continued use of the road at this time. This was also suggested by the presence of a gully that lay along the inner edge of the road surface, at the interface with the clay layer. The gully may have served as both a boundary marker and drainage feature for the road surface, but is also an indicator that occupation had begun to encroach upon the road at this time.

The newly raised area became the focus for activity within an apparent enclosure, the southwest corner of which was revealed in the excavation. A concentration of butchered animal bone within the ditch fill had been dumped in from the internal area of the enclosure. Scattered remains of butchered bone on the top of the cobbled road surface hint may also be linked to these activities. If so it might suggest that this area had changed use by the later Roman period and was functioning as a yard. A similar deposit of butchered animal bone recovered during excavations at Great Holme Street, also a suburban site, was interpreted as evidence for a nearby abbatoir (Gouldwell pers. comm.). If such activities were taking place at Grange Lane it may indicate that meat was being processed on or near the site with the intention of producing cut joints for selling in the Roman town.

A corn-drier provided further evidence for 4th century activity on the site and its orientation broadly reflected the road alignment as a measure of its continued importance. Similar features discovered at Bonners Lane (Finn 2004, 12) and further afield at Crown Hills (Chapman 2000, 25 and Fig.16) and Hamilton (Jarvis and Monckton 2004) appear to have fulfilled similar functions and may have been involved with supplying grain to Roman Leicester. Other aspects of the finds assemblage hint at a variety of specialist craft activities taking place in the area of the site, such as bone/horn working and iron/lead working. Evidence for these activities is relatively low-key but it is possible that production may have also been aimed at supply to the Roman town, as well as meeting domestic requirements.

Anglo Saxon

A small assemblage of eight sherds of abraded Early/Middle Anglo Saxon pottery, dating between 450-850 AD, was recovered during the course of the excavation. One sherd was intrusive in the final backfill of the Roman well [305], otherwise dated to the 3rd century, while others were intrusive in Roman layer (422) or residual in medieval features. An assemblage of possible Anglo Saxon pottery was recovered from an adjacent evaluation to the south (Clarke 2003) while discoveries of sunken-featured buildings at Bonners Lane (Finn 2004) and Oxford Street (Gossip 1999), both to the north, suggest a focus occupation nearer to the remains of the Roman walled town.

Medieval

The focus of occupation during the medieval period was focussed along the Southgates (now Oxford Street) frontage and the site is likely to have formed part of the rear yards of these properties. The majority of the physical evidence for medieval occupation related to features dating to the 12th-13th centuries although residual pottery dating to the 10th-11th centuries suggests limited Late Saxon/Early Medieval activity in the area.

The deep, recut ditches along the Grange Lane frontage appear to have marked the boundary between domestic properties fronting Oxford Street and land to the west, which is likely to have been agricultural land forming part of the towns South Field (Finn 2002, 13). An extension of at least one of these ditches was also recorded to the south (Clarke 2003) where it was apparently curving westwards, perhaps showing that the triangular block of land between Grange Lane and Oxford Street was smaller in the medieval period. Environmental evidence from the base of these ditches indicated their proximity to cultivated fields, perhaps suggesting they marked the boundary between the back of domestic plots and the south fields of the medieval town.

Evidence for domestic activity within the plot(s) was characterised by several deep rubbish or cess-pits and a small oven. No distinct east-west boundary markers were evident so it is

uncertain if the site is contained within a single property or straddles several. A similar lack of distinct plot boundaries was also encountered on the adjacent site to the north (Higgins 2010). This may suggest that medieval plots were defined by hedges or fences, with shallow footings that would be difficult to see archaeologically. The large pits show a degree of organisation however, being arranged an even distance from the back plot boundary in a straight row, suggesting some planning in their location. A similar situation was revealed at York Road and Oxford Street (Gossip 1999a and b) and Bonners Lane (Finn 2004) and their provision was no doubt an attempt at maintaining sanitary conditions.

Finds recovered from the medieval pits provide a good illustration of the types of activities the sites occupants were involved with. A range of crafts were represented including bone and metalworking, the latter in relatively high quantities. Environmental evidence associated with the small oven or kiln base contained possible brewing waste which may have been produced commercially for consumption within the walled town. The Grange Lane evidence adds to that found on other sites in the southern suburbs, such as at Bowling Green Lane and Oxford Street for commercial production activities at this time.

Mixed with the commercial evidence were remains of a more domestic nature, particularly associated with waste from food preparation and consumption. This was best preserved in the cess pit [362] which contained abundant fruit remains owing to the good preservation of organic material in this feature. Additional evidence from this feature indicated that pigs were kept in the backyard of the associated nearby property. A small collection of sewing paraphernalia from pit [301] may point to either domestic or commercial activity during the later medieval period.

Finally, the unusual nature of the two Roman cremation burials, apparently re-interred within the construction cut for cess pit [362], may offer a hint at the medieval mindset. The contrasting states of the two cremation vessels from this context suggest that one had been broken during the excavation of the pit, and had been recognised for what it was. This was apparently reburied with some care, alongside a more complete vessel. Perhaps this latter example was rescued from damage after the excavators of the pit had been alerted to the possibility that more cremations may exist. If this interpretation is correct, it may imply a degree of respect for the dead, or superstition on the part of the pit diggers.

Conclusion

The Grange Lane excavations have added considerably to current understanding of the growth and development of Leicester's southern suburb. Importantly the results have built upon findings from a growing number of sites in the area which, between them, have shown the great potential for archaeological survival in the area. For a site in this location, the Grange Lane excavation has also highlighted the level of complexity that may exist as well as the potential for recovery of important information from relatively small areas. The Grange Lane results have shown that a more coherent picture of life in the past can be attained by piecing together strands of evidence from small sites that are spatially close together. In the case of Grange Lane and its environs, the results from several contiguous sites can now be viewed together alongside larger excavated areas such as Bonners Lane and York Road/Oxford Street to provide a more comprehensive understanding of this areas archaeology.

Acknowledgements

This report was compiled from excavated evidence gathered by the author, Jenny Barrett, Simon Cleggett, Lucy Griffin, Leon Hunt, Steve Baker, Dan Prior, Martin Henson and Pete Burns. Illustrations are by Martin Shore (plans and sections) and Michael Hawkes (finds). The post-excavation was undertaken by Lynden Cooper (lithics); Elizabeth Johnson (Roman pottery); Deborah Sawday (Medieval & Post-medieval pottery); Nicholas J. Cooper (Roman & Medieval Small Finds, Roman & Medieval Building Materials); Richard Buckley (Roman & Medieval Coins); Graham Morgan & Heidi Addison (Metal working remains); Simon Chapman (Human remains); Jennifer Browning (Animal Bones); Angela Monckton & Anita Radini (Environmental evidence) and James Greig (pollen remains). The project was managed by James Meek (fieldwork) and Patrick Clay (post-excavation). The project was funded by Courtauld Investments Ltd and was commissioned by Ridge and Partners LLP. The archaeological work was monitored by Chris Wardle, Leicester City Archaeologist, on behalf of the planning authority.

Bibliography

Amsterdam Museum, 1994, *Beer! The story of Holland's Favourite Drink*. Amsterdam Historical Museum, K. E. Kistemarker and V.T. van Vilsteren (Eds. Dutch edition) Translation Shaffer's English, Amsterdam: Batavian Lion, 1994.

Baby.R.S. 1954, Hopewell Cremation Practices. Ohio Historical Society, Papers in Archaeology No.1.

Bass. W. 1987 *Human Osteology: A laboratory and Field manual*. 3rd Edition. Missouri Archaeological Society.

Baxter, I. L. 2004 The animal bones from Bonners Lane, Leicester in Finn N., 2004.

Baxter, I. L, 2004 'Animal, Bird, Reptile and Amphibian' in N. Finn 2004, 132-148

Beamish, M. G., 2002 *Archaeology of the Wing to Whatborough Hill Trunk Main, Sites 2 to 10*. ULAS Report 2002-99.

Biddle, M., 1990 'Knife hilt plates' in M. Biddle *Object and Economy in Medieval Winchester*, 860-61. Winchester Studies 7.ii: Artefacts from medieval Winchester. Oxford: Clarendon Press.

Blinkhorn, P., 1999. 'The Saxon Pottery' in S. Davies and D. Sawday 1999, 165.

Blinkhorn, P., 2004. 'The Early/Middle Anglo-Saxon Pottery' in N. Finn 2004, 84-85.

Blinkhorn, P., forthcoming. *The Saxon Pottery from St Peters and Little Lane, Leicester*.

Boessneck, J. 1969 'Osteological differences between sheep (*Ovis aries* Linne) and Goat (*Capra hircus* Linne)' in D. Brothwell et al *Science in Archaeology* Thames and Hudson

Bowker, C. H., 1987 Charred plant remains from Wasperton. Archive Report, Birmingham University, Dept of Archaeology.

Boyer, P. 1999 The parasite ova from Causeway Lane Leicester in Connor A. and Buckley R. J. 1999.

Brocklehurst, S. and Cooper, N.J., 2010 Roman and medieval finds in R. Kipling Excavations at 9, St Nicholas Place, Leicester. ULAS Report No?

Brothwell. D. 1981 *Digging up Bones*. London. British Museum Press.

Brown, A. E., 1994: A Romano-British Shell-Gritted Pottery and Tile Manufacturing Site at Harrold, Bedfordshire. *Bedfordshire Archaeology* **21**: 19-107.

Browning, J., 'The Animal Bones' in J. Gossip and V. Priest Excavations at York Road Unpublished ULAS report 99/111

Buikstra, J.E. & Swegle, M. 1989, Bone Modification Due to Burning: Experimental Evidence. In Bone Modification. R. Bonnicksen & M.H. Sorg (eds) 247-258. Centre for the Study of the First Americans. University of Maine, Orono, ME.

Clark, R., 1999: The Roman Pottery. Pp 95-164. In Connor, A. and Buckley, R. (eds): *Roman and Medieval Occupation in Causeway Lane, Leicester. Excavations 1980 and 1991.* Leicester Archaeology Monographs No. 5. Leicester: University of Leicester Archaeological Services.

Clarke, S., 2003a. *An Archaeological Evaluation of land at 85-89 Oxford Street, Leicester.* Unpublished ULAS Report 2003/145.

Clarke, S., 2003b. *An Archaeological Evaluation of land off Deacon Street/Grange Lane, Leicester.* Unpublished ULAS Report 2003/140.

Clarke, S., 2010. Sunken-featured buildings on a late Romano-British farmstead, in *Transactions of the Leicestershire Archaeological and Historical Society*, **84**, 213-222.

Clay, P.N. 1981 'The small finds' in J.E. Mellor and T. Pearce *The Austin Friars, Leicester.* CBA Res Rep 35. London.

Cooper, L. 1996, 'A Roman Cemetery in Newarke Street, Leicester' *Transactions of the Leicestershire Archaeological and Historical Society* **70**, 170-90.

Cooper, N.J., 1999 'The small finds' in A. Connor and R. Buckley 1999 *Excavations at Causeway Lane, Leicester.* Leicester Archaeology Monograph **5**, 239-282. Leicester: School of Archaeology and Ancient History, University of Leicester.

Cooper, N., 1999. 'The Saxon Pottery' in J. Gossip 1999, 50.

Cooper, N., forthcoming. *The Iron Age and Roman Pottery from excavations at Grange Lane, Leicester.*

College, S., 1986 Alcester Coulters Garage, the carbonized remains. Trans. Birmingham and Warwickshire Archaeological Society, 1985-6, 94, 88-91.

Coppack, G., 1980. *The Medieval Pottery of Lincoln, Nottingham and Derby.* Unpub PhD thesis, University of Nottingham.

Courtney, P. 1988 *Small Arms Accessories of the Mid-Seventeenth Century.* Finds Research Group 700-1700 Datasheet 11. Oxford: University of Oxford.

Courtney, P., 1998. Saxon and Medieval Leicester: The Making of an Urban Landscape. *Trans. Leicestershire Archaeol. and Hist. Soc.* 72, 110-145.

Crummy, N., 1983 *The Roman small finds from excavations in Colchester 1971-9.* Colchester Archaeological Report **2**. Colchester: Colchester Archaeological Trust Ltd.

Crummy, N., 1988 *The Post-Roman small finds from excavations in Colchester 1971-85.* Colchester Archaeological Report **5**. Colchester: Colchester Archaeological Trust Ltd.

Cumberpatch, C.G., 2004. 'Medieval Pottery in Derbyshire: A Review.' *Archaeological Journal*, **124**, 86-112

Cutting, C.L., 1955 *Fish Saving* Leonard Hill (Books) Ltd: London

Davies, S., and Sawday, D., 1999. 'The Post Roman Pottery and Tile' in A. Connor and R. Buckley, *Roman and Medieval Occupation in Causeway Lane, Leicester*, Leicester Archaeology Mon. **5**, 165-213.

Davies, S., and Sawday, D., 2004. 'Medieval and Later Pottery and Tile' in N. Finn 2004, 86-99.

Derrick, M., 2009. 'The Excavation of a Roman Cemetery at 21-33, Newarke Street.' *Transactions of the Leicestershire Archaeological and Historical Society*, **83**, 63-102.

Dobney, K and Reilly, K. 1988 'A method for recording archaeological animal bones: the use of diagnostic zones' *Circaea* **5**, pp 79-96.

Dubois.J.A. & Beauchamp.H.R. (1943), *Hindu Manners, Customs and Ceremonies*. Oxford, Clarendon press.

Dyer, C. (2002) *Making a living in Medieval England*. Cambridge University Press.

Egan, G., 2005 *Material Culture in London in an Age of Transition: Tudor and Stuart period finds c.1450-c.1700 from Excavations at Riverside Sites in Southwark*. MoLAS monograph **19**. London: Museum of London Archaeology Service.

Egan, G. and Pritchard, F., 1991 *Dress Accessories c.1150-c.1450*. Medieval Finds from London **3**. London: HMSO.

Finn, N., 2002. *Mill Lane, Leicester: evaluation and limited excavation of an area to the south of the historic town*. Unpublished ULAS Report No. 2002-026.

Finn, N., 2004. *The Origins of a Leicester Suburb*. Oxford: British Archaeological Reports (British Series) **372**.

Gejvall.N.G 1971, Cremations. In D.Brothwell & E.Higgs (ed) *Science in Archaeology*. 468-479. Revised and enlarged edition. Thames & Hudson.

Getty, R., 1975 *Sisson and Grossman's The Anatomy of the Domestic Animals* 5th edition W. B. Saunders Company Philadelphia, London, Toronto. Vol 1, Vol 2

Gossip, J., 1999. *Excavation at Republic Car Park, Oxford Street, Leicester*. University of Leicester Archaeological Services Rep. 99/112 (unpublished report).

Grant, A., 1982 'The use of toothwear as a guide to the age of domestic ungulates', in B. Wilson, C. Grigson and S. Payne (eds) *Ageing and Sexing Animal Bones from Archaeological Sites* BAR British Series 109 Oxford

Greig, J.R.A. 1981 (with contributions by E. Crowfoot, A.K.G. Jones and P.J. Osborne) The investigation of a medieval barrel-latrine from Worcester. *Journal of Archaeological Science* 8, 265-282.

Greig, J.R.A. 1982 The interpretation of pollen spectra from urban archaeological deposits. in A.R. Hall & H.K. Kenward (Eds.) *Environmental archaeology in the urban context, Council for British Archaeology, Research Report 43*, 47-65.

Greig J. 1988 Plant Resources in G. Astill and A. Grant *The Countryside of medieval England*. Blackwell 1988: Oxford and Cambridge. pp108-127

Greig J., 1991 The British Isles, in W. van Zeist, K. Wasylikowa and K-E. Behre: *Progress in Old World Palaeoethnobotany*. Rotterdam: Balkema.

Greig, J.R.A. 1991 J.R.A. The early history of the cornflower (*Centaurea cyanus* L.) in the British Isles. in *Palaeoethnobotany and Archaeology, International Work-Group for Palaeoethnobotany, 8th Symposium, Nitra-Nové Vozokany 1989, Acta Interdisciplinaria Archaeologica 7*, 97-109 Nitra/CSFR

Higgins, D.A., 1985. 'Leicester Clay Tobacco Pipes' in P.J. Davey, (ed) *The Archaeology of the Clay Tobacco Pipes*, Vol **IX**, 291-307, Oxford: British Archaeological Reports (British Series) **146**.

Higgins, T., 2000. *An Archaeological Watching Brief of Ye Olde Bowling Green Public House, Oxford Street, Leicester*. ULAS Draft Report.

Higgins, T., 2009. *An Archaeological Evaluation at 61, Oxford Street, Leicester*. Unpublished ULAS Report No. 2009-109.

Higgins, T., 2010. *An Archaeological Excavation at 61, Oxford Street, Leicester*. Unpublished ULAS Report No. 2010-201.

Hillman G., 1981 Reconstruction of crop husbandry practices from charred remains of crops in R. Mercer *Farming practices in British prehistory*. Edinburgh University Press 1981, 123-162.

Hillman G., 1984 Interpretation of archaeological plant remains: the application of ethnographic models from Turkey. in W. van Zeist and W. A. Casparie (eds.) *Plants and Ancient Man*. A. A. Balkema: Rotterdam. 1984, p1-41.

Hinton, D.A., 1990 'Hooked tags' in M. Biddle *Object and Economy in Medieval Winchester*, volume 2, 548-552. Winchester Studies 7.ii. Oxford: Clarendon Press.

Holbrook, N. and Bidwell, P., 1991: *Roman Finds from Exeter. Exeter Archaeological Reports: Volume 4*. Exeter: University of Exeter Press.

Holck.P. 1986, *Cremated Bones: A Medical-Anthropological Study of an Archaeological Material on Cremation Burials*. Anthropologiske Skrifter, *Anatomisk institutt*- Oslo University.

Homer Iliad. 1987 translation by E.V.Rieu, Guild Publishing, London.

Howe, M. D., Perrin, J. R. and Mackreth, D. F., 1980: *Roman Pottery from the Nene Valley: A Guide*. Peterborough City Museum Occasional Paper No. 2. Peterborough: Peterborough City Museum.

Jarvis, W., 2000a 'Charred plant remains' in S. Chapman An Archaeological Excavation of an Iron Age and Roman Settlement at Leicester General Hospital, Crown Hills, Leicester (SK621 041). Unpublished ULAS Report 2000-041, 68-73.

Jarvis, W., 2000b 'The Charred plant remains' in S.J. Clarke An Archaeological Evaluation and Excavation on land at Rectory Lane, Appleby Magna, Leicestershire (SK600 234). Unpublished ULAS Report 2000-049.

Jarvis, W. and Monckton A. 2004 Charred cereals from Roman corn driers at Hamilton, Leicester, North Area. Archive Report for ULAS.

Johnson, E., (forthcoming): *Romano-British pottery from excavations at Vine Street, Leicester*. Leicester: ULAS Report.

Jones M., 1981 The development of crop husbandry in M. Jones and G. Dimbleby The environment of man, the Iron Age to the Anglo-Saxon period. BAR Brit Ser 87, Oxford.

Jones M., 1988 The arable field: a botanical battlefield. in M. Jones (ed) Archaeology and the flora of the British Isles. Oxford University Cttee. for Archaeol, Oxford.

Kent, D.H. 1992 *List of vascular plants of the British Isles*. Botanical Society of the British Isles, London.

Kenyon, K. M., 1948: *Excavations at the Jewry Wall site, Leicester*. Oxford: Society of Antiquaries.

Kipling, R., 2008 Bath Lane (former Merlin Dye Works) in *Transactions of the Leicestershire Archaeological and Historical Society* **82**, 275-8.

Levine, M., 1982 'The use of crown height measurements and eruption-wear sequences to age horse teeth' in B. Wilson, C. Grigson and S. Payne *Ageing and sexing of animal bone from archaeological sites* BAR British Series 109

Lucas, J.N., forthcoming *Excavations at an Extra-Mural Site at Great Holme Street, Leicester, 1976-77*.

Mayes, P., and Scott, K., 1984. *Pottery kilns at Chilvers Coton, Nuneaton*. Soc. Medieval Archaeol. Mon. Ser. **10**.

Mayne Correia.P.M 1997, Fire Modification of Bone: A Review of the Literature. In W.D.Haglund & M.H.Sorg Forensic Taphonomy: The Post-mortem Fate of Human Remains. CRC Press inc.

McCarthy, M.R., and Brooks, C.M., 1988. *Medieval Pottery in Britain AD900-1600*. Leicester, Leicester University Press.

McKinley, J.I. 1989 Cremations: Expectations, Methodologies and Realities, in C.A. Roberts; F.L. & J. Bintliff (eds) *Burial Archaeology: Current research Methods and Developments*. BAR British series no **211** (1989).

McKinley, J. I., 1993 Bone Fragment Size and Weights of Bones From Modern British Cremations and its Implications for the Interpretation of Archaeological Cremations. *International Journal of Osteoarchaeology*, **3**: 283-287.

McKinley, J. I. 1994, Bone Fragment Size in British Cremation Burials and its Implications for Pyre Technology and Ritual. *Journal of Archaeological Science* **21**(3) May 1994, 339-342.

McKinley, J. I. 1997 Bronze Age 'Barrows' and Funerary Rites and Rituals of Cremation. *Proceedings of the Prehistoric Society*, **63**: 129-145.

Mellor, J.E., and Pearce, T., 1981. *The Austin Friars, Leicester*. London: Counc. Brit. Archaeol. Res. Rep. **35**.

Moffett L., 1986 *Crops and crop processing in a Romano-British village at Tiddington, Warwickshire: The evidence from the charred plant remains*. Ancient Monuments Laboratory Report 15/86 English Heritage, London.

Moffett L. 1991 'The archaeobotanical evidence for free threshing tetraploid wheat in Britain' in *Palaeoethnobotany and archaeology, International Workgroup for Palaeoethnobotany, 8th symposium at Nitra-Nove Vozokany 1989, Acta Interdisciplinaria Archaeologica*, **7**. Nitra: Slovak Academy of Sciences.

Moffett L C 1993 *Macrofossil Plant Remains from The Shires Excavation, Leicester*. Ancient Monuments Laboratory Report 31/93 (E.H.).

Moffett, L., 1996 Charred plant remains in S. Cracknell *Roman Alcester: defences and defended area*. Vol 2, CBA Research report 106, 1996, pages 35, 112-114.

Moffett, L. and Ciaraldi, M., 1999 Charred plant remains in S. C. Palmer *Excavations in the Arrow Valley, Warwickshire*. Birmingham and Warwickshire Archaeological Transactions for 1999, 103, 32-34, 52-53 and Roman samples 162-171.

Monckton A., 1999a The plant remains in A. Connor and R. Buckley *Roman and Medieval Occupation in Causeway Lane, Leicester*. Leicester Archaeology Monograph No.5, University of Leicester 1999, 346-362.

Monckton A., 1999b Oxford Street, York Road Republic Car Park and Bowling Green Yard: Plant remains from the Southern Suburb of Leicester, in V. Priest ULAS Archive Report.

Monckton A., 1999c *Charred plant remains from corn driers and other contexts of a Romano-British settlement site at Billesley Manor Farm, Warwickshire*. Ancient Monuments Laboratory Report 25/99 English Heritage: London.

Monckton, A. 2002 Charred cereal remains from Roman corn driers at Ridlington, Rutland, in Beamish, M., 2002, ULAS Report 2002-99.

Monckton, A. 2003 Charred cereal remains from a Roman corn drier at Long Itchington, Warwickshire. Archive Report for Warwickshire Museum 2003.

Monckton A. 2004a The charred plant remains from Bonners Lane Leicester. In Finn 2004, 156-166.

Monckton A., 2004b Investigating past environments, farming and food in Leicester, Leicestershire and Rutland: the evidence from plant and animal remains, in P. Bowman and P. Liddle (eds.) Leicestershire Landscapes. Leicestershire County Council 2004, 154-171.

Monckton, A., 2006 'Environmental archaeology in the East Midlands', in N. Cooper (ed.), *The Archaeology of the East Midlands; an archaeological resource assessment and research agenda*. Leicester Archaeology Monographs 13, 2006, University of Leicester Archaeological Services, 259-286.

Monckton, A., 2009 The Plant Remains from St Margarets Baths site, Vaughan Way, Leicester. In Gnanaratnam, A., Excavations at Vaughan Way Leicester. ULAS Report 2009-000.

Monckton, A. and Radini, A., 2009 The Plant Remains from Vine Street, Leicester. In M. Morris and T. Higgins, Excavations at Vine Street, Leicester, Highcross Project. ULAS Report 2009-000

Morris, M. 2010 *Life in the suburbs. The archaeological excavation of Iron Age to Post-medieval occupation beneath the PACE and Hugh Aston buildings, De Montfort University, Leicester NGR SK 584 040*. Unpublished ULAS Report 2010-134.

MPRG, 1998. *A Guide to the Classification of Medieval Ceramic Forms*. Medieval Pottery Research Groups, London.

Murphy P., 1984 Fengate Farm, Weeting, Norfolk: Plant Remains (Archive Report)

Murphy P., (1985) The plant remains in M. Atkin Excavations in Norwich. East Anglian Archaeology 26. 1985.

Nicholson, R., 1999 'Fish Remains' in A. Connor and R. Buckley *Roman and Medieval Occupation in Causeway Lane, Leicester* Leicester Archaeology Monographs No.5

O'Connor, T. P., 2003 *The Analysis of Urban Animal Bone Assemblages* The Archaeology of York: Principles and Methods 19/2 Published for York Archaeological Trust by the Council for British Archaeology

Payne, S., and Bull, G., 1988 'Components of variation in measurements of pig bones and teeth, and the use of measurements to distinguish wild from domestic pig remains' *Archaeozoologia* Vol II/1,2, 27-66

Piontek.J. 1976, The Process of Cremation and its Influence on the Morphology of Bones in the Light of Results of Experimental Research. *Archeologia Polski* . XXIX: 247-280.

Pollard, R, 1986: *Roman Pottery in Leicestershire*. Unpublished: Leicestershire Archaeological Unit.

Pollard, R., 1994: The Iron Age and Roman Pottery, in P. Clay and R. Pollard (eds) 1994: *Iron Age and Roman Occupation in the West Bridge Area, Leicester. Excavations 1962-1971*. Leicester: Leicestershire County Council Museums, Arts and Records Service, 51-114.

Prummel, W. and Frisch, H., 1986 'A guide for the distinction of species, sex and body side in bones of sheep and goat' *Journal of Archaeological Science* 13, p567-577

Radini, A., 2009 The Plant Remains from Freeschool Lane, Leicester. In J. Coward and G. Speed, Excavations at Freeschool Lane, Leicester, Highcross Project. ULAS Report 2009-000.

Ramsey, D.A. Ramsey 'New light on early slate and granite extraction in north-west Leicestershire' *Bulletin of the Leicestershire Industrial History Society* **18**, 3-79.

Reynolds P. J., 1979 Romano-British Corn-Drying Oven: An experiment. In *Arch. J.*, **136**, 27-42.

Schofield P, and Vince A., 2003 *Medieval Towns* (2nd edition). Leicester University Press. 2003.

Schweingruber, F. H., 1982. *Microscopic Wood Anatomy*, 2nd Edition. F. Flück-Wirth, Internationale Buchnadrung Fur Botanik und Naturwissenschaften, CH-9053 Teufen Ar.

Serjeantson, D. 1996 'The animal bones' in S. Needham and T. Spence *Refuse and disposal at Area 16 East Runnymede* Vol. II Runnymede Bridge Research Excavations. British Museum Press.

Shipman, P., Foster, G. & Schoeninger, M. (1984), Burnt Bones and Teeth: an Experimental Study of Colour, Crystal Structure and Shrinkage. *Journal of Archaeological Science*, **11**, 307-325.

Shore, M. 2002 *An Evaluation and Watching Brief at Grange Lane, Leicester*. Unpublished ULAS Report

Spence, T.F. 1967 The Anatomical Study of Cremated Fragments from Archaeological Sites. *Proceedings of the Prehistoric Society* vol. **5**.70-83.

Spencer, H. 1989, *Cremated Remains and the Experimental Burning of Animal Bone*. Unpublished undergraduate dissertation, School of Archaeological Studies, University Of Leicester.

Stace C., 1991 *New flora of the British Isles*. Cambridge University Press.

- Steiner.M.C, Kuhn.S.L., Weiner.S. & Bar-Yosuf.O 1995 Differential Burning, Recrystallisation and Fragmentation of Archaeological Bone. *Journal of Archaeological Science*, **22**, 223-237.
- Sykes, N. and Symmons, R., 2007 'Sexing cattle horn-cores: problems and progress' *International Journal of Osteoarchaeology* Volume 17 Issue 5, 514-523
- Swan, V. G., 1984: *The Pottery Kilns of Roman Britain*. London: HMSO
- Thurman, M.D. & Willmore, L.J. 1981 A Replicative Cremation Experiment. *North American Archaeologist*. **2(4)**: 275-283.
- Tipper, J., 2004. *The Grubenhaus in Anglo-Saxon England*. Colchester: Landscape Research Centre Archaeological Monograph Series Number 2: Volume 1.
- Trotter.M. & Hixon.B.B. 1974, Sequential Changes in Weight, Density and Percentage Ash Weight of Human Skeletons from an Early Fetal Period Through Old Age. *Anatomical Record* (1974) **179**: 1-18.
- Tyers, P., 1996 *Roman Pottery in Britain*. London and New York: Routledge.
- Unger, R. W., 2004 *Beer in the Middle Ages and the Renaissance*. University of Pennsylvania Press, 2004.
- van der Veen, M., 1989 Charred grain assemblages from Roman-Period corn driers in Britain. *Archaeol. J.* **146**, 302-319.
- van der Veen, M, 1992 *Crop Husbandry Regimes*. Sheffield Archaeological Monograph 3. Sheffield University.
- von den Driesch, A 1976 *A guide to the measurement of animal bones from archaeological sites*. Cambridge, Mass., Peabody Museum of Archaeology and Ethnology, Bulletin no. 1.
- Webster, P., 1996: *Roman Samian Pottery in Britain*. *Practical Handbooks in Archaeology* no. 3. York: Council for British Archaeology.
- Wells, C. 1960 A Study of Cremation. *Antiquity* **34**, 29-37.
- Woodland, R.R., 1981. 'The pottery' in J.E. Mellor and T. Pearce, 81-129.
- Workshop of European Anthropologists 1980. Recommendations for Age and Sex Diagnoses of Skeletons. *Journal of Human Evolution* **9**. 517-549.
- Young, C. J., 1977: *Oxfordshire Roman Pottery*. Oxford: BAR 43.
- Zohary D. and Hopf M., 1993. *Domestication of plants in the Old World*. (2nd ed.) Oxford: Clarendon Press.

Appendix

INFORMATION REQUIRED	EXAMPLE
Project Name	An Archaeological Excavation at 52, Grange Lane, Leicester (SK 586 038)
Project Type	Archaeological Excavation
Project Manager	James Meek/Patrick Clay
Project Supervisor	John Thomas
Previous	Evaluation
Current Land Use	Factory
Development Type	Residential (Student Flats)
Reason for Investigation	PPG16
Position in the Planning Process	As a condition
Site Co ordinates	SK 586 038
Start/end dates of field work	June-August 2005
Archive Recipient	Leicester City Museum
Study Area *	492 square meters

Contact Details

Richard Buckley or Patrick Clay
University of Leicester Archaeological
Services (ULAS)
University of Leicester,
University Road,
Leicester LE1 7RH

T: +44 (0)116 252 2848

F: +44 (0)116 252 2614

E: ulas@le.ac.uk

w: www.le.ac.uk/ulas



INVESTOR IN PEOPLE



THE UNIVERSITY OF THE YEAR 2008/9