

**Excavations at Republic Car Park,  
Oxford Street  
Leicester**

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**For Willowbrook Properties/Craven (Builders) Ltd  
Planning Application Number: 97/0510/5**

**University of Leicester Archaeological Services**

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## Contents

<b>Figures</b>	ii
<b>Tables</b>	iii
<b>Charts</b>	iv
<b>Plates</b>	iv
<b>Summary</b>	1
<b>Introduction</b>	1
<b>Methodology</b>	4
<b>Results</b>	5
<i>Summary</i>	5
<i>Phase 1: The Late first to fourth centuries</i>	5
<i>Phase 2: Cemetery Activity</i>	15
<i>Phase 3: The Anglo-Saxon Period</i>	27
<i>Phase 4: The Medieval Period, 12th to 13th centuries</i>	29
<i>Phase 5: The 14th– 15th centuries</i>	39
<i>Discussion of Phases 4 and 5 – The Medieval Suburb</i>	43
<i>Phase 6: The 16th – 17th centuries</i>	46
<i>Phase 7: The 18th century</i>	47
<i>Discussion of Phases 6 and 7</i>	47
<i>Phase 8: The 19th – 20th centuries</i>	47
<i>Conclusion</i>	48
<b>The Roman Pottery</b> <i>Patrick Marsden</i>	49
<b>The Saxon Pottery</b> <i>Nicholas J. Cooper</i>	51
<b>The Medieval and Post-Medieval Pottery and Medieval Tile</b> <i>Deborah Sawday</i>	51
<b>The Clay Tobacco Pipes</b> <i>John Lucas</i>	60
<b>The Non-Ceramic Building Materials</b> <i>Tony Gnanaratnam</i>	61
<b>The Slag</b>	63
<b>The Small Finds</b> - <i>Nicholas J. Cooper</i>	64
<b>The Animal Bone</b> - <i>Jennifer Browning</i>	66
<b>The Environmental Evidence</b> - <i>Angela Monckton</i>	77
<b>Osteology Report on the Human Bone</b> - <i>Simon Chapman</i>	84
<b>Bibliography</b>	99
<b>Appendix 1.1</b> Representation of bone elements for most common species.	104
<b>Appendix 1.2</b> Epiphyseal fusion (cattle, sheep and pig)	106
<b>Appendix 1.3</b> Frequency of butchery marks on bone elements	109
<b>Appendix 2</b> The mMedieval and Later Pottery, Ridge Tile and Clay Pipe Catalogue	110
<b>Appendix 3</b> Skeletal Metrics/Indices	116



## Figures

Figure 1	Site Location.	3
Figure 2	Phases 1 and 2: Roman ditches and cemetery activity.	6
Figure 3	Section through F1 (Scale 1:20)	7
Figure 4	Section through F1 (Scale 1:20)	7
Figure 5	South facing section of F1 (Scale 1:20)	8
Figure 6	Section through F3 (Scale 1:20)	8
Figure 7	South facing section through ditch F6 (Scale 1:20)	11
Figure 8	South facing section through ditch F6 (Scale 1:20)	11
Figure 9	Ditch F6 and recuts (Scale 1:20)	12
Figure 10	North facing section of F6 and F614 (Scale 1:20)	12
Figure 11	East facing section of ditches F6 and F7 (Scale 1:20)	13
Figure 12	West facing section of F7 (Scale 1:20)	13
Figure 13	Ditch showing recuts as visible in Trench D (Scale 1:20)	13
Figure 14	Plan of Grave F13 (Scale 1:20)	18
Figure 15	Plan of Grave F14 (Scale 1:20)	18
Figure 16	Plan of Grave F15 (Scale 1:20)	19
Figure 17	Plan of Grave F16 (Scale 1:20)	19
Figure 18	Plan of Grave F17 (Scale 1:20)	20
Figure 19	Plan of Grave F18 (Scale 1:20)	20
Figure 20	Plan of Grave F162 (Scale 1:20)	21
Figure 21	Plan of Grave F178 (Scale 1:20)	21
Figure 22	Section through Grave F17 (Scale 1:20)	21
Figure 23	Section through Grave F17 (Scale 1:20)	21
Figure 24	Phase 3: Saxon sunken-features building.	28
Figure 25	Phase 4: The 12th– 13th centuries	30
Figure 26	Section through F28 and F43 (Scale 1:20)	31
Figure 27	Section through F54 and F53 (Scale 1:20)	32
Figure 28	Section through F26 (Scale 1:20)	33
Figure 29	South facing section of Pit F10 (Scale 1:20)	36
Figure 30	Section through pit F10 (Scale 1:20)	38
Figure 31	Section through post hole F89 (Scale 1:20)	38
Figure 32	Phase 5: The 14th– 15th centuries	40
Figure 33	Section through F25 (scale 1:20)	42
Figure 34	Section through F37, 39, F40 and F184 (Scale 1:20)	42
Figure 35	East facing section through Phase 6 gullies	46
Figure 36	Grey ware everted rim small jar (52 SF4, F17, Phase 2) Scale 1:4	50

## Tables

Table 1	Grave Attributes	15
Table 2	For Fabric descriptions see Pollard 1994, 112-114	49
Table 3	The Pottery and Ridge Tile Fabrics	51
Table 4	The Saxo Norman and Medieval Pottery from Phases 4 and 5, by fabric sherd numbers and weight (grams).	56
Table 5	The Later Medieval, Post Medieval and Modern Pottery from Phases 6 to 8, by fabric sherd numbers and weight (grams).	56
Table 6	The Saxo Norman and Medieval Pottery Site Totals, by fabric sherd numbers and weight (grams).	57
Table 7	The Post Medieval and Modern Pottery Site Totals, by fabric sherd numbers and weight (grams).	57
Table 8	The Medieval Ridge Tile from the Site, by fabric, fragment numbers and weight (grams).	58
Table 9	Catalogue of clay tobacco pipes	59
Table 10	Catalogue of Slate	60
Table 11	Catalogue of mortar fragments	61
Table 12	Provenance of the slag from Oxford Street	61
Table 13	The amount of animal bone derived from each phase identified at Oxford Street and York Road. The Identified column denotes the amount of positively identified bone from each phase.	65
Table 14	Fragment count for the Roman phase 1	68
Table 15	Fragment counts for the medieval period.	70
Table 16	Summary of remains from Roman samples	77
Table 17	Summary of remains in medieval samples	82
Table 18	The Inhumations	83
Table 19	The Charnel Bone	83
Table 20	Showing the relative survival and preservation of the Oxford Street bones.	85
Table 21	Ages and Sexes.	86
Table 22	Non-metric variations observed in the Oxford Street Skeletons	87
Table 23	Build and stature observed in the Oxford Street skeletons	88
Table 24	Mean statures observed among the Oxford Street skeletons compared with individuals from other local and large Roman cemeteries.	88
Table 25	Incidence of arthropathy among the Oxford Street skeletons.	89
Table 26	Incidence of Exostoses and Periostitis.	90
Table 27	Dental representation compared with levels of ante-mortem loss/caries.	91

## **Charts**

Chart 1	Mandible Wear Stages for Sheep	72
Chart 2	Distribution of ages (in years) among the nine discrete individuals.	87

## **Plates**

Plate 1	Neonate bones of Skeleton 510. Age = c. 10 lunar months, depicting (from left to right) ulna, humerus, femur, tibia & fibula.	94
Plate 2	Osteoarthritic pitting and osteophytosis of the cervical vertebrae of skeleton 53.	94
Plate 3	Manifestations of probable Scheurmann's disease in Skeleton 342. a) twisting of cervical vertebral spinous process b) ankylosis of T5-6 vertebral facets c) marginal osteophytosis of thoracic vertebrae d) anterior Schmorl's node and osteophytosis of thoracic vertebrae.	95
Plate 4	Exostoses observed on the lower right leg of skeleton number 52. Involving the lateral tibia surface and medial fibula surface. Probably reflecting leg sprains i.e. the damaging of the interosseous membrane, due to pulling stresses.	95
Plate 5	Hyperostosis Frontalis Interna. Endocranial thickening of the frontal bone of skeleton 342 (female, 40+ yrs old).	96
Plate 6	Severe and uneven dental attrition in the left molars of skeleton 52.	97
Plate 7	Heterotopic maxillary third molars observed in Skeleton 409.	97

## Excavations at Republic Car Park, Oxford Street

### Summary

*An archaeological excavation following evaluation was undertaken at the former Republic Car Park site on Oxford Street, Leicester (SK 585 039), in advance of residential development. Roman ditches were revealed indicating roadside property layout during the second century, along with eight burials probably dating to the fourth century when the area had become part of the large extramural cemetery to the south of the town walls. The remains of a Saxon sunken feature building was also discovered, and medieval and post-medieval deposits indicated continued roadside occupation from the 12th to the 17th centuries.*

### Introduction

An archaeological excavation was undertaken by University of Leicester Archaeological Services at the Republic Car Park, Oxford Street, Leicester, in advance of residential development by Willowbrook Properties. The site lies approximately 300m to the south of the historic walled core of the Roman and medieval town of Leicester (SK 585 039). Although the topography is generally flat, the site is situated at the top of a gradual west facing slope descending towards the River Soar. The Ordnance Survey Geological Survey of Great Britain Sheet indicates that the underlying geology comprises Mercia mudstone, with occasional pockets of sand and gravel.

The proposed redevelopment of the site required an archaeological desk-based assessment in order to establish the archaeological potential of the area (ULAS Report No. 97/06). This concluded that the development area was situated in an area of high archaeological potential, comprising Roman cemetery activity and suburban occupation, Anglo-Saxon settlement and medieval and post-medieval suburban development (Courtney and Gnanaratnam 1997, 6). Situated adjacent and to the rear of the public house formerly known as 'The Olde Bowling Green', the site was close to areas of known archaeological importance. Excavations had taken place in early 1997 on the corner of Oxford Street and York Road, revealing evidence for Roman domestic and cemetery activity, along with medieval and post-medieval occupation. Possible Civil War defences were also located (Gossip, 1999). On the opposite side of Oxford Street, on the corner of Bonners Lane, major excavations had revealed a Roman road with associated buildings, Leicester's first domestic Saxon building, and medieval and post-medieval occupation (Finn 1994 and forthcoming). The road formed the main southern approach road to the Roman town, linking *Ratae* with *Tripontium* (Caves Inn, Warwickshire).

Subsequent archaeological evaluation by trial trenching of the Republic Car Park site confirmed the presence of archaeological deposits, including Roman burials. Trial trenching also confirmed the presence of cellars and the extent of disturbance from

these. Due to the nature of development, and the relatively shallow survival of archaeological features, it was clear that large scale disturbance of remains would occur. It was agreed that full excavation of the development area was necessary in order to provide a permanent record of surviving archaeological deposits prior to destruction by development.

Proposed development plans included the stripping of all overburden above the natural substratum and the excavation of trenches for strip foundations. The evaluation concluded that such development would have a considerable and detrimental impact on the archaeological deposits given the shallow depth of many of the remains, especially the burials.

The aims of the subsequent excavation were to record and adequately sample any surviving archaeological deposits under threat of destruction by the proposed development.

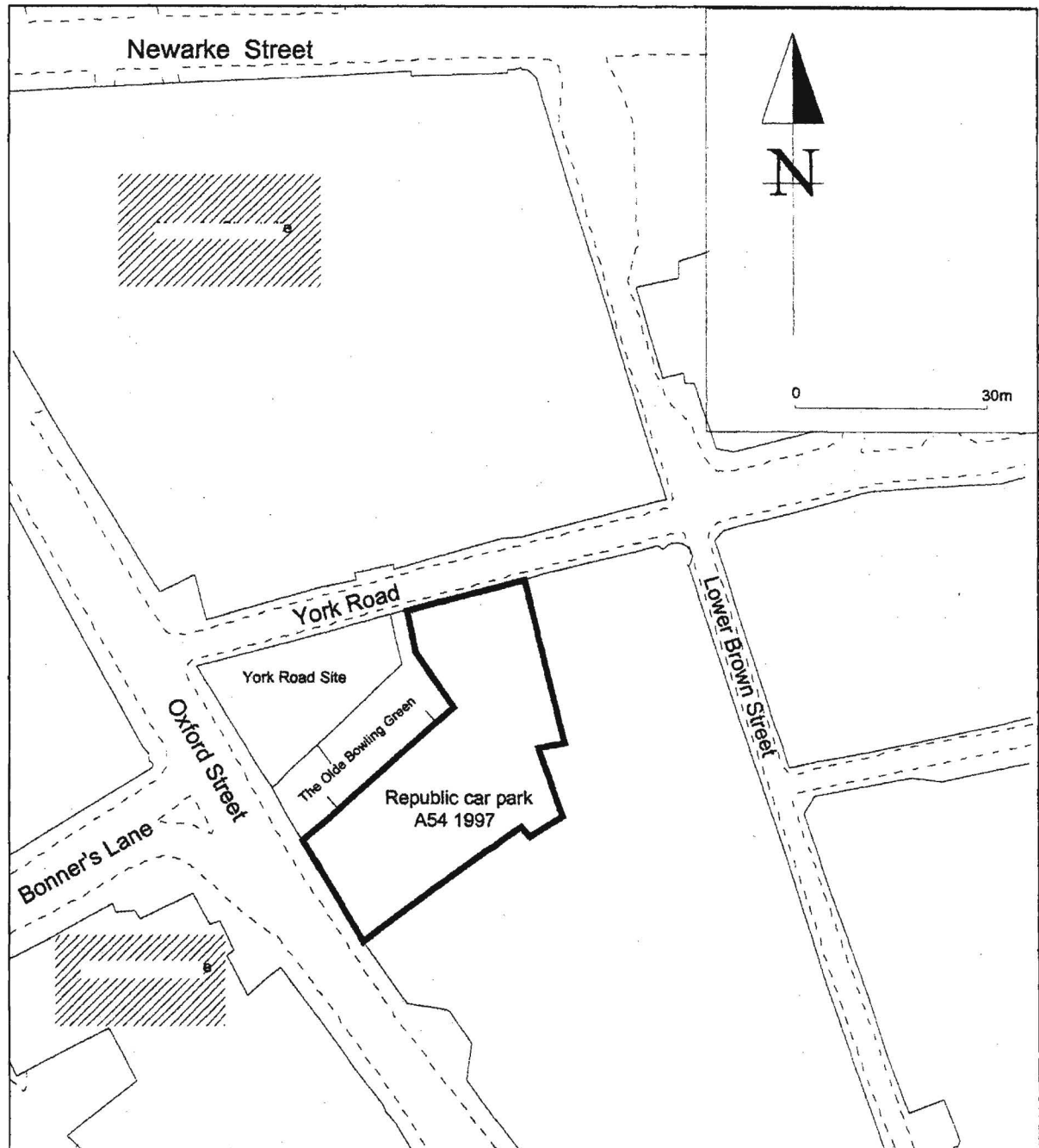


Figure 1 Site Location

## Methodology

Initial evaluation of the western lower half of the development area (area 1) commenced on 9th June 1997. This was immediately followed by 'open area' excavation, whilst the eastern half of the development area (area 2) continued to function as a car park. Overburden covering area 1 was generally shallow (no more than 0.3m in depth) and was therefore stripped in its entirety with the exception of areas of cellaring located close to the Oxford Street frontage.

Completion of the area 1 excavations led to the evaluation of area 2. This was never stripped in its entirety due to widespread modern disturbance and the far greater depth of overburden (up to 1m). Archaeological deposits comprised a series of linear ditches and gullies, which were sampled in a number of targeted trenches. Excavation of these areas of interest defined by the evaluation continued until 15th August 1997. Excavation was carried out by the removal of overburden and other modern deposits using a JCB. The nature of the overburden required the use of a concrete breaker, toothed bucket and ditching bucket. The stripping of these deposits was constantly monitored by an archaeologist.

All exposed areas were hand cleaned using trowels and shovels. Excavation and recording of archaeological features followed the standard procedures outlined in the ULAS recording manual. The graves were recorded in relation to two survey points usually above the head and below the feet outside of the grave cut. All finds encountered during excavation, such as coffin nails and hob nails were located on a 1:20 plan and were levelled. The survey points were related to the site grid. Cleaned skeletons were sketch-planned *in situ* and photographed from an overhead position using targets (often the survey points) tied into the site grid.

A large area of the site had been truncated by 19th and 20th century cellaring and services. Cellars were left in place since their depths were such that no archaeological deposits could have survived. Many of the services (pipe trenches) were removed to provide a 'window' into archaeological deposits. Area 2 had suffered greatly from 19th and 20th century truncation, with many archaeological features disturbed by this activity.

The majority of features were sampled by half section. Excavation did not continue where deposits exceeded 1.2m in depth due to health and safety considerations, or where deposits became waterlogged. These deposits were augered to establish depth. During post-excavation analysis all features, including graves were assigned feature numbers, prefixed with 'F'. These were used to encompass the cut and fills of each ditch, pit, post hole or gully. In the case of the graves, the feature included grave cut, skeleton and backfill.

Unless otherwise mentioned, the natural subsoil through which the earthfast features were cut comprised reddish pink - orange Mercia mudstone. The nature of this natural substratum resulted in excellent definition of the majority of features, which on the whole had been backfilled with dark clay soils. Numbers in parentheses in fill descriptions indicate the number of pottery sherds recovered from those fills.



## Results

### *Summary*

Eight phases of activity have been defined from the excavation results. These are presented in order of their archaeological sequence from earliest to latest. Phase 1 describes Roman activity comprising ditches, gullies and post holes, apparently dating from the second to the fourth centuries AD, representing the division of land adjacent to the *Tripontium* road leading to the south gate. This is followed by phase 2, a period of burial activity possibly during the fourth century, comprising eight inhumation burials probably following a pagan burial practice. One of these was an infant buried beyond the general cemetery area, possibly within some form of mortuary enclosure.

Phase 3 represents a phase of Saxon occupation in the form of a small sunken featured building. Intensive activity does not recur until the 12th century (phase 4) which sees the a number of pits being dug representing rear-yard activity of buildings fronting onto Oxford Street during the 12th and 13th centuries. This is followed by phase 5, representing similar activity continuing into the 14th and 15th centuries.

Phase 6, the 16th and 17th centuries, shows a decline in activity on the site. The small number of pits, gullies and post holes suggest less intensive occupation of the Oxford Street frontage. Phase 7 (18th century) indicated a similar level of activity, with much of the site being covered by a cobbled surface or trackway.

Phase 8 encompasses the redevelopment of the site during the later 19th century and its occupation by small businesses and factories.

### *Phase 1: The second to fourth Centuries (fig. 2)*

#### *The Ditches, Gullies and Pits*

The earliest activity at Oxford Street was represented by a complex of Roman ditches on various alignments together with gullies and a pit. F1 was a large ditch on a north-south alignment, visible along the eastern extent of area 1 (fig. 2). The ditch survived to an approximate depth of 0.80m, was a maximum width of 2.70m, and had been truncated in several places by post Roman activity. The ditch profile showed gradually undulating concave sides tapering to a gently rounded base (figs 3-4). Silty fills suggested that the feature had been open for some time, with evidence for gradual erosion and slumping of the natural substratum (Mercia mudstone) through which it had been cut. The ditch may also have been re-cut at some time. Diagnostic pottery recovered from the ditch ranged in date between the late first-third centuries (37), and a coin from the latest fill dated to 330-335 AD (small finds catalogue no. 91). The ditch extended beyond the limits of the site towards the north (where it was seen at York Road), and towards the south.



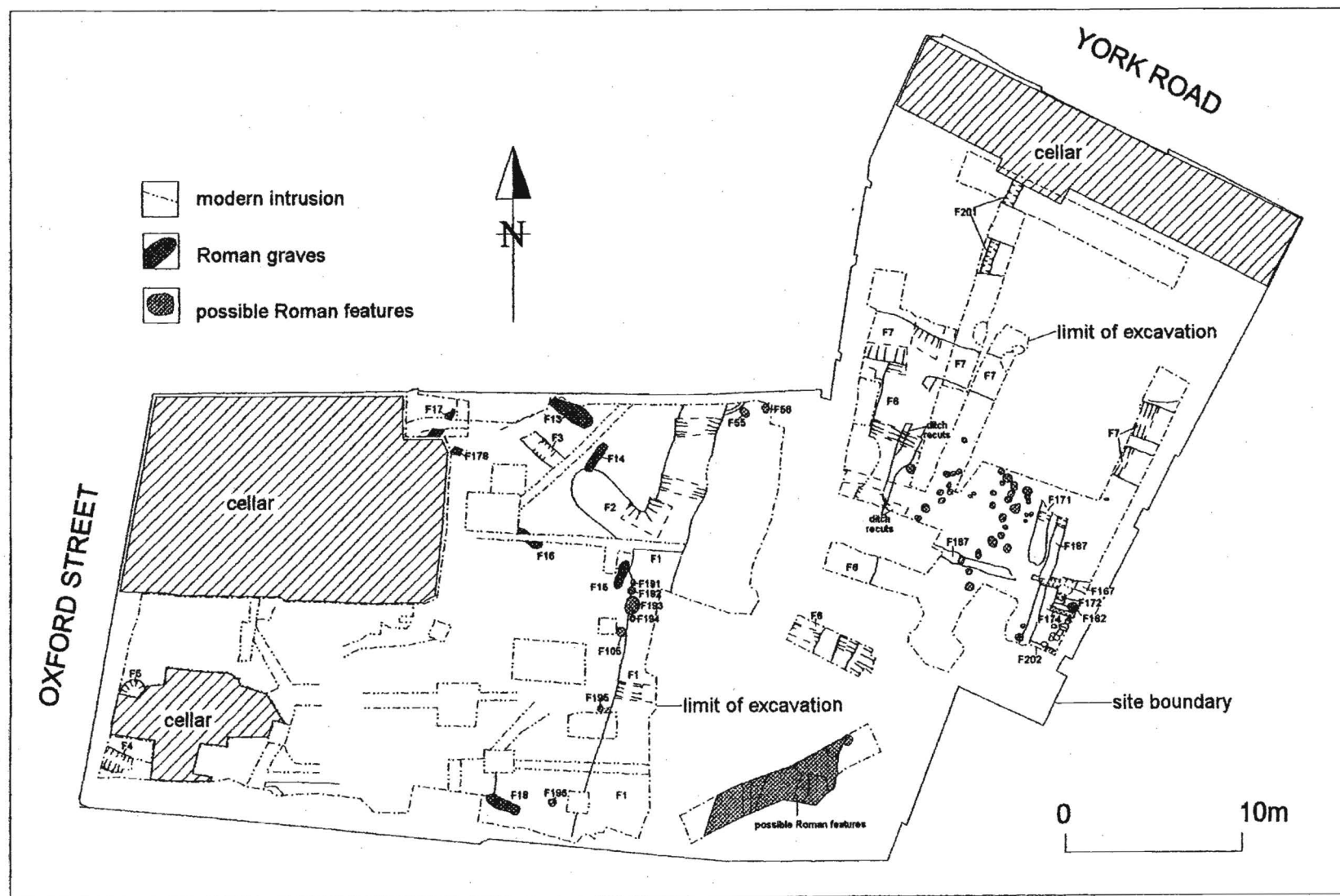


Figure 2 Phases 1 and 2: Roman ditches and cemetery activity

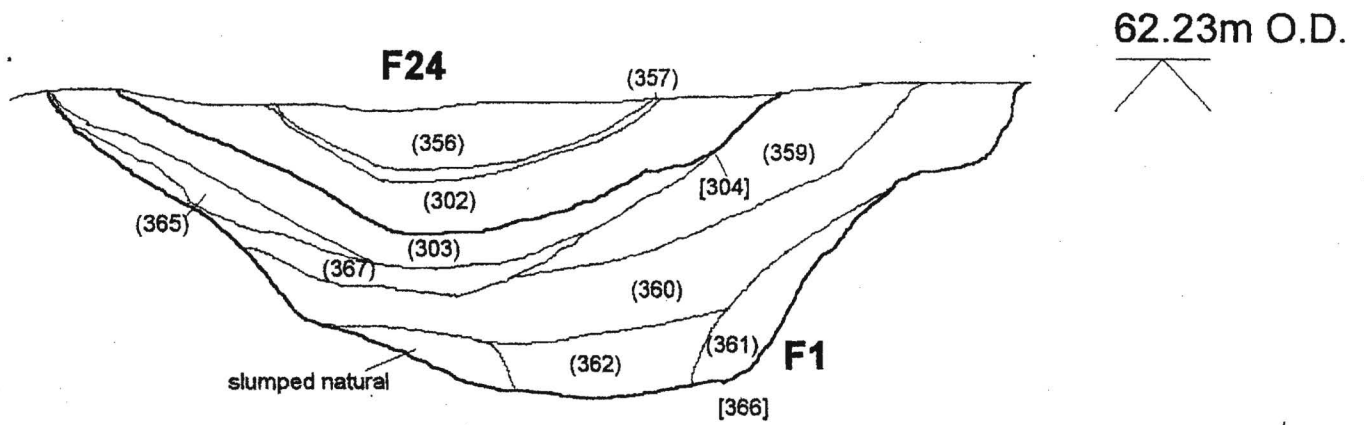


Figure 3 Section through F1 (Scale 1:50)

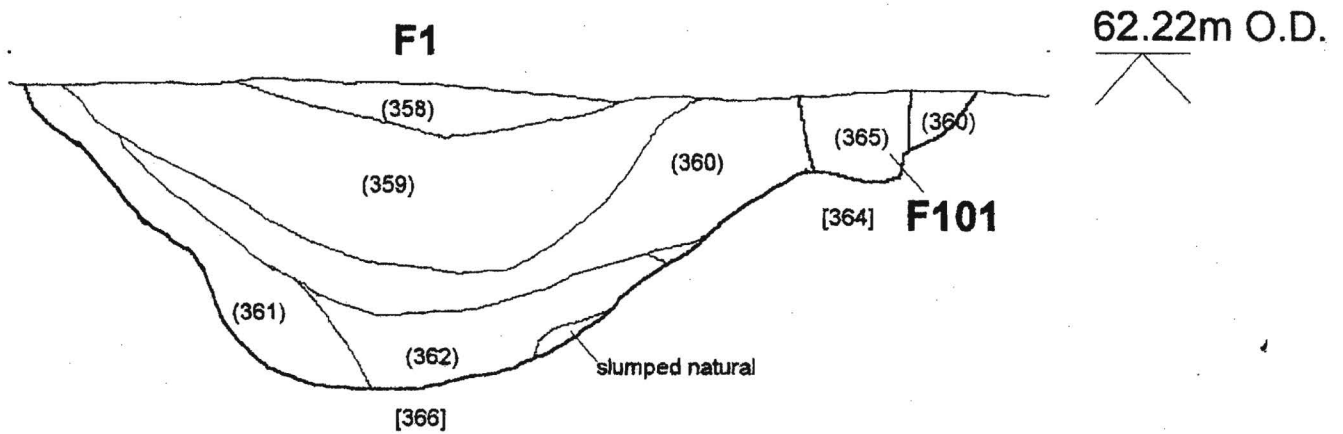
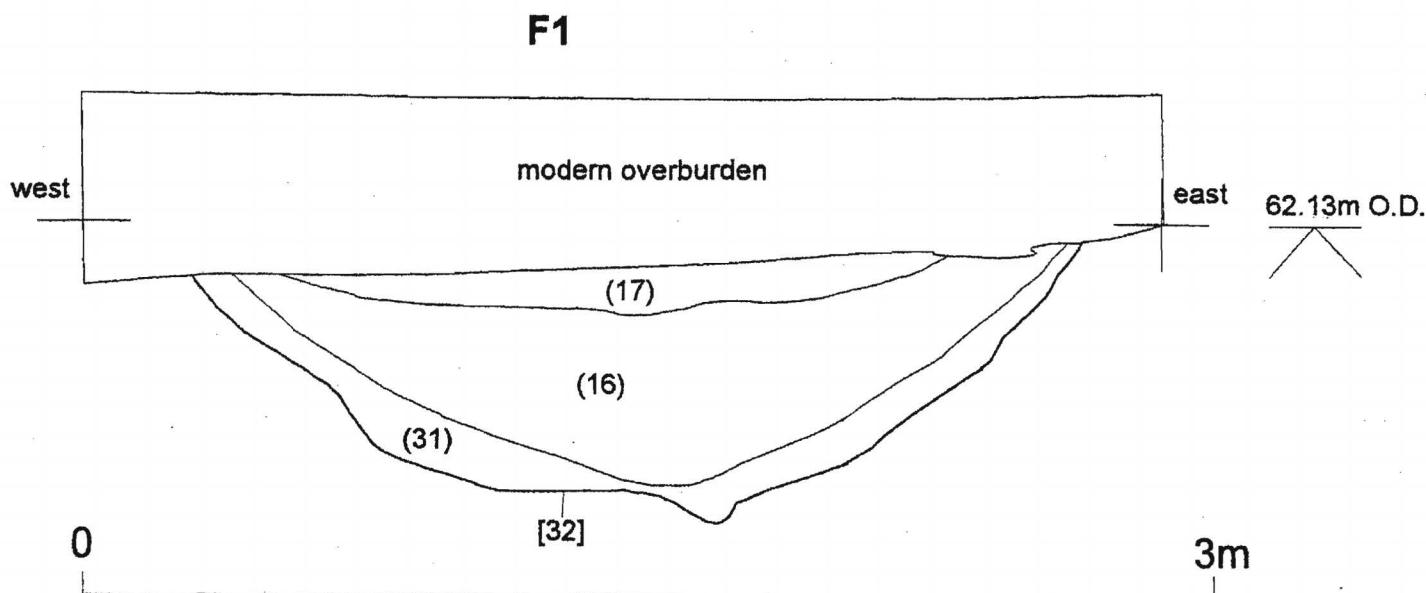


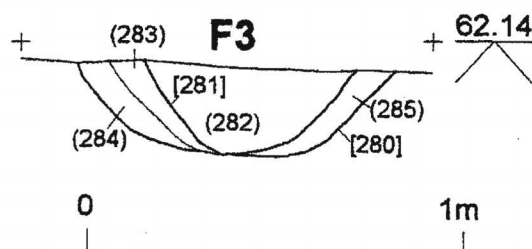
Figure 4 Section through F1 (Scale 1:50)



**Figure 5** South facing section of F1 (Scale 1:20)

Running away at an angle of  $45^\circ$  towards the north-west from F1 was F2 (fig. 2). The relationship between the two features was not established due to truncation by a medieval pit (F10). F2 extended for 5m where it terminated in a rounded butt-end, which had also been truncated by a medieval pit (F9) and grave F14. The secondary fill of the ditch contained early-middle second century pottery (9), and a coin of 335-337 AD (small finds catalogue no. 16). The primary fill was a sandy silt similar to that of F1, and suggested gradual and natural erosion of the sides.

A little further to the north-west, and on the same alignment as F2, was F3, a narrow linear ditch (fig. 2). Only a short section of this could be seen (approx. 2.5m); the south-eastern butt-end of the feature had been obscured by a modern pipe, and to the north-west it had been truncated by a medieval pit (F8). The ditch had gradual, concave sides and a rounded base, and was a maximum of 0.26m in depth. A fill representing the gradual silting-up of the ditch was apparent on the interface with the ditch sides (fig. 6). The ditch had apparently been re-cut at some stage, and then backfilled in what may have been a single action. This uppermost fill contained sherds of pottery dated to 120 + AD.



**Figure 6** Section through F3 (Scale 1:20)

An additional short section (2m) of ditch, F4, was observed in the south-western corner of the site on a similar alignment to F2 and F3. This extended towards the road to the west and was truncated by a post medieval cellar to the east (fig. 2). The ditch, which was 0.65m in depth, had steep sides tapering to a grooved base and contained a clay silt primary fill and a firm sandy clay upper fill. Between the two layers was a lens of a cess-like deposit. The primary fill contained late first-early second century pottery (7), while the uppermost fill contained early second century pottery (39) and a quantity of charcoal and animal bone.

To the north of F4 was a small circular pit, F5 (fig 2). The pit was 0.35m in depth, and had been truncated by modern activity to the south and east. A large number of pottery sherds (47) of early-mid second century date, a fragment of tegula and the disarticulated bones of a small dog were found within the pit, close to the edge and forming a semi-circular arrangement. It is possible that the feature represents a dog burial disturbed in antiquity (Baxter pers. comm.).

A complex of ditches and gullies was observed in area 2. The largest ditches were F6 and F7. F6 was aligned approximately north-south, and was parallel with ditch F1 (areal), visible for a length of c.10m (fig. 2). The feature had been re-cut at least twice, visible both in plan and in section (figs 7 - 10). Recut F164 was the most evident (fig. 10). Generally the ditch had steep concave sides, in places with a break of slope at mid-point down the sides, where it then tapered to a rounded base. The ditch was a maximum of 0.95m in depth, and up to 2.8m wide. Several tip lines following the curve of the slope indicated gradual infilling over a period of time of the lower part of the ditch. A single more homogeneous fill of the uppermost half of the feature appears to indicate a single phase of deliberate backfilling. Pottery from fills ranged in date from late first to second century (43). Re-cuts appeared to have been backfilled in a single episode, following partial erosion of the inside edges, and contained sherds of Roman pottery (10). The ditch was truncated by the east-west ditch F7.

F7 was a ditch up to 1.35m wide and 0.5m deep (fig. 2). It had steep concave sides and a flat base with a single homogeneous brown silty fill containing pottery dating in range from the second to the later third centuries in date (40). A coin dated to 335-337 AD was also recovered from the uppermost fill (small finds catalogue no. 39). The ditch was visible for a length of 4m, and was also visible further to the east in trench D, where a parallel ditch was also visible, possibly a truncated re-cut of F7. Trench F radiating north from F7 revealed a truncated ditch F201 on a north-south alignment and parallel with ditches F6 and F1.

Extending towards the east was gully F167. This may have originally adjoined F6, but this area was not visible due to truncation by modern activity (fig. 2). F167 was a linear gully, 0.52m wide and 0.07m deep, with shallow concave sides and a flat base. The fill contained pottery dated to the mid second century onwards (2). The feature continued on an east-west alignment to the eastern extent of the site, where it may have formed part of an enclosure surrounding burial F162 (see mortuary enclosure below).

Truncating F167 was F187, a similar feature on a north-south alignment. The gully was 0.35m wide, 0.07m in depth, with very shallow concave sides. The fill contained a large number of rounded pebbles but no dating evidence. F171 was a short section of gully terminating in a rounded butt-end and visible parallel to and to the west of F187. The gully was 0.7m wide and only 0.06m deep, with steep concave sides and a flat base. No finds were recovered from the fill.

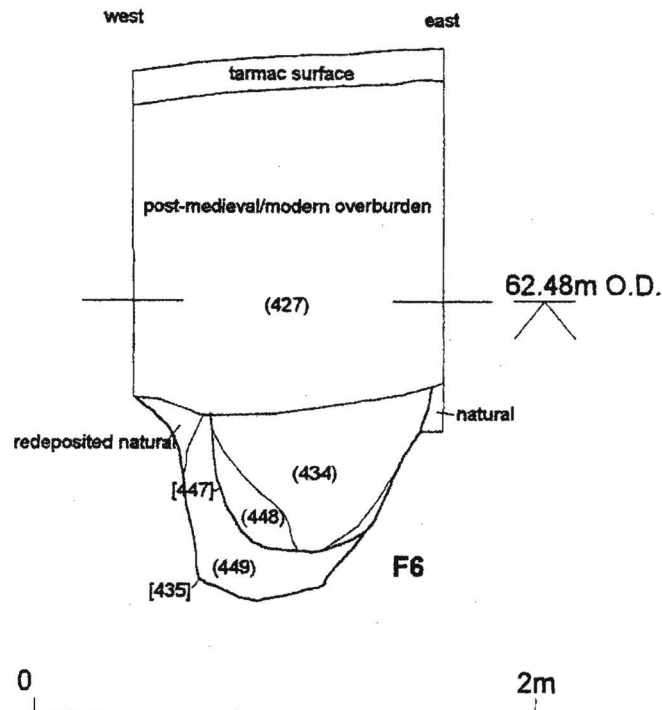
Dating the gullies presents problems, although a Roman date is most likely considering their stratigraphic relationships with later features. The function of the gullies is uncertain, but they may represent a small livestock or horticultural enclosure, surrounding the numerous post holes of unknown function mentioned below.

### *The Postholes*

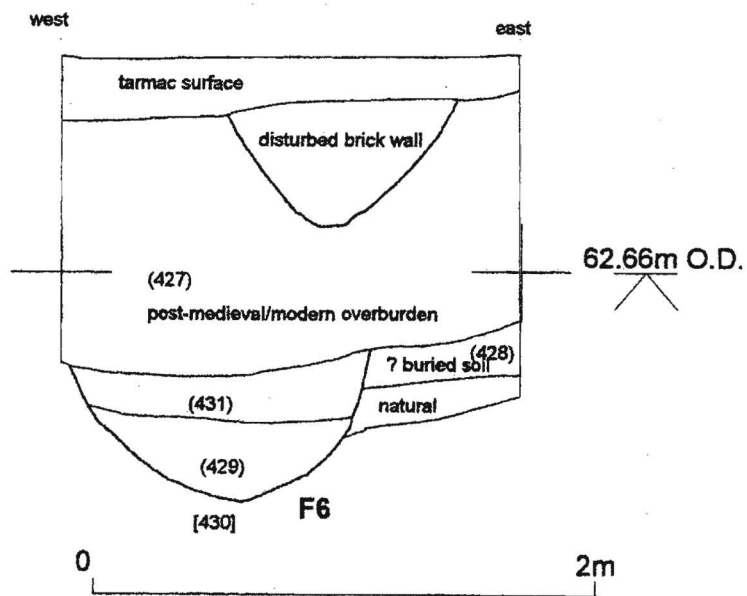
The majority of post holes on the site probably date from the 12th or 13th centuries and are associated with rear-yard activity from this period. A number of post holes seen in area 1 (Fig. 2: F105, F191, F192, F193, F194, F195 and F196) truncate or are close to backfilled phase 1 features and may indicate the maintenance of these boundaries into the third or fourth centuries. Large numbers of post holes were observed in the centre of area 2, the majority of which were located in an area bounded by the large north-south Roman ditch F6, the east-west ditch F7, north-south gully F167 and east-west gullies F171 and F187.

The chronology of these post holes is difficult to establish due to the lack of finds. Most were insubstantial and when considered as a whole lacked any coherent plan. Many probably represent natural features or had been almost entirely obliterated by horizontal truncation. Even where the depth exceeded 0.10m there was little formal pattern. Description of these post holes will be confined to the site archive.

The exception is the group of post holes adjacent to the infant burial F162 close to the eastern limit of the site. The post holes F125, F126 and F127 occur in proximity to linear features apparently surrounding the burial. It is possible that these contribute to some form of burial enclosure.



**Figure 7** South facing section through ditch F6 showing modern truncation



**Figure 8** South facing section through ditch F6 showing modern truncation

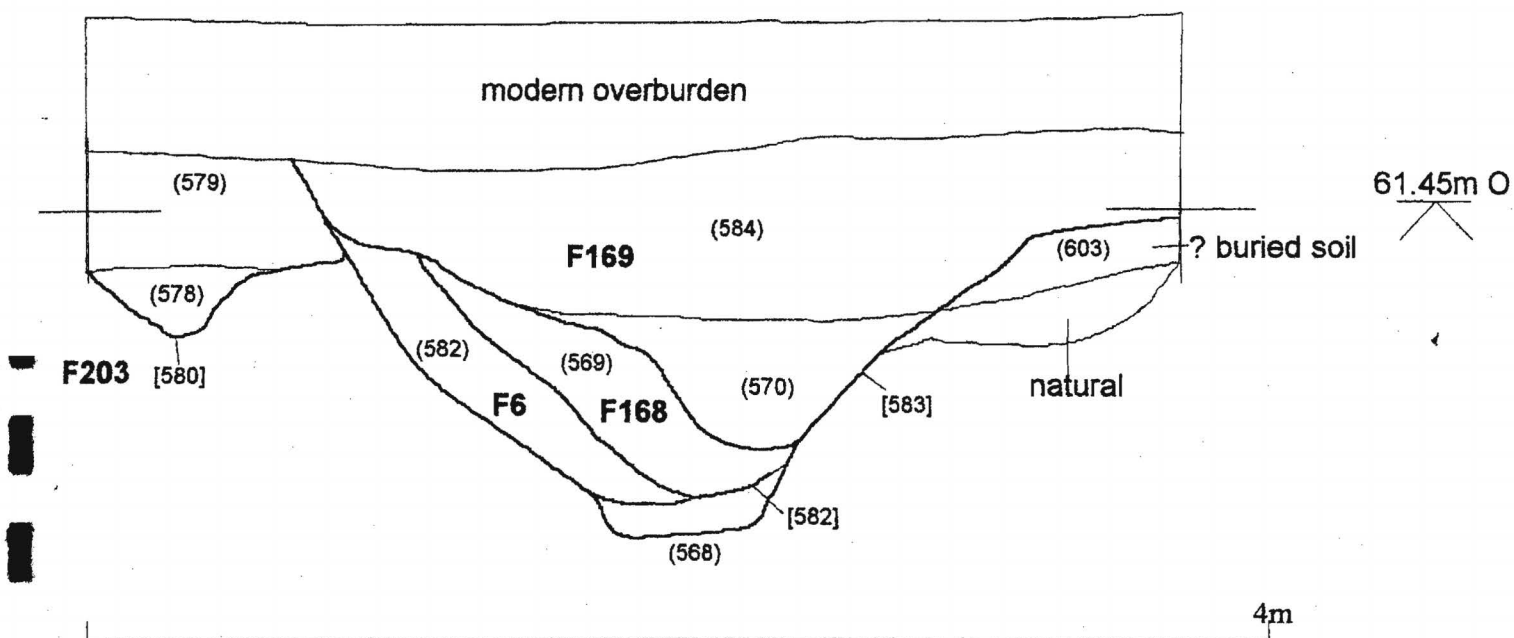


Figure 9 Ditch F6 and recuts

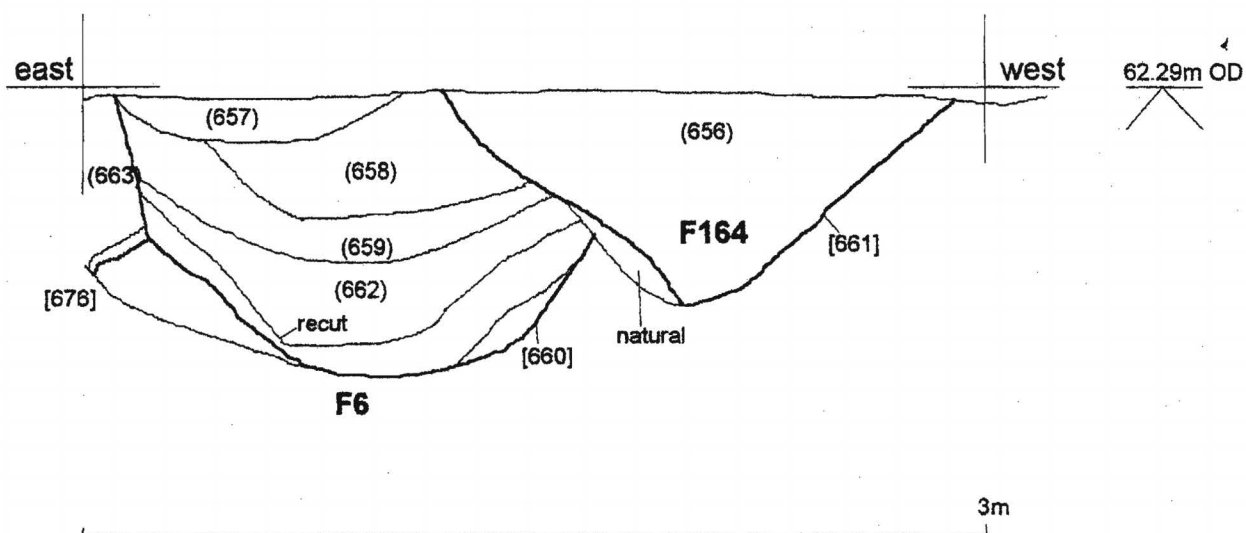


Figure 10 North facing section of F6 and F164

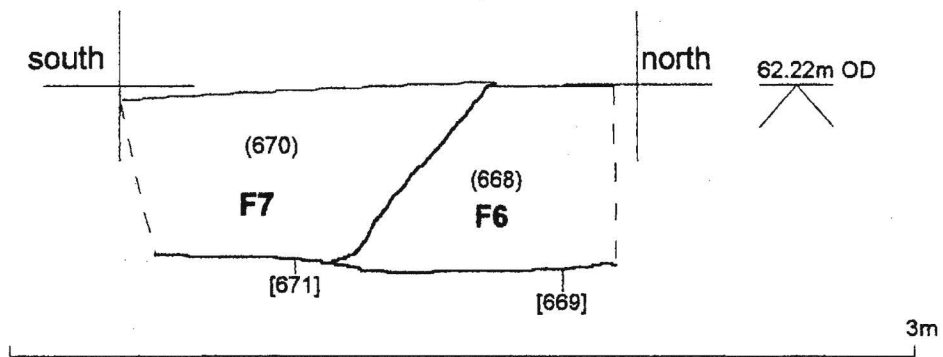


Figure 11 East facing section of ditches F6 and F7

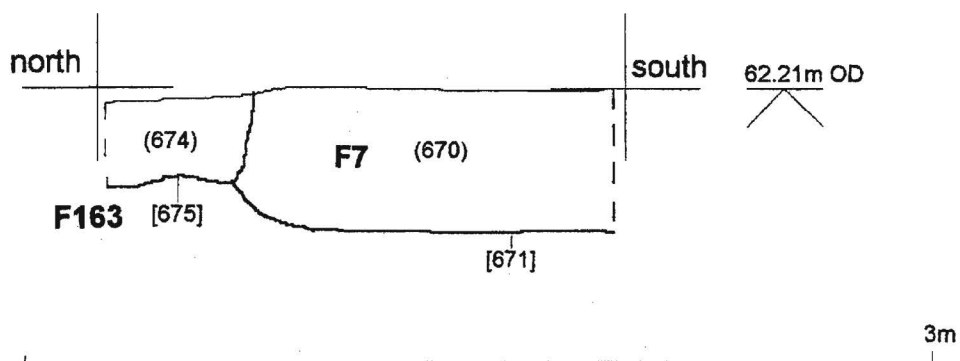


Figure 12 West facing section of F7

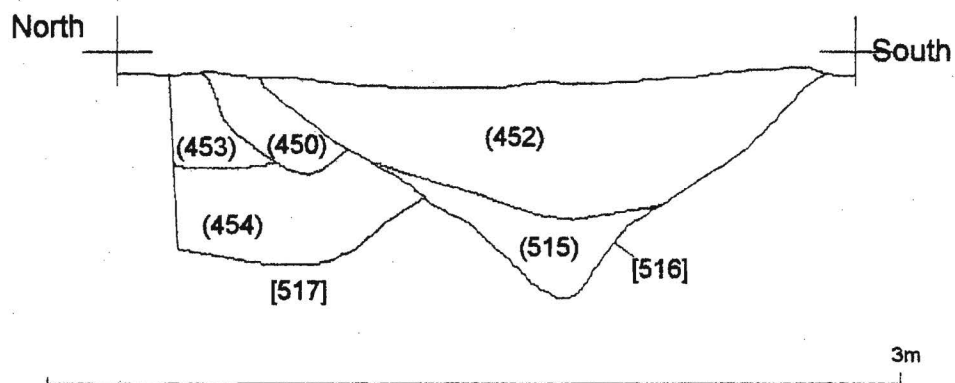


Figure 13 Ditch showing recuts as visible in Trench D



### Discussion of Phase 1

The ditches at Oxford Street are most probably indicators of formal boundaries defining areas of ownership and land use in the south suburb of the Roman town. These plots were probably established at some point during the second century and laid out adjacent to the *Tripontium* road (early second century) as it approached the south gate of the town. The establishment of a regular street grid in the late first-early second century, and construction of formal defences in the late second-early third centuries (Buckley and Lucas 1987), strengthened or defined the distinction between urban and suburban occupation. The pattern of suburban boundaries may even have been influenced by the street grid of the Roman town (Cleary 1987, 75).

The ditches are likely to have defined field systems or plots which may have included some form of occupation closer to the road. The main north-south ditches would have been almost parallel to the *Tripontium* road as observed at Bonners Lane. Ditches revealed at Great Holme Street respect the alignment of the suggested route of the Fosse Way as it approaches the West Bridge, defining similar roadside zones in the western suburbs (Lucas forthcoming; Higgins 1998, 14). The unusual alignment of ditches F2 and F3 and F4 is a mystery. They may indicate the boundaries of a plot predating the layout of the road or street grid and the distinctly different alignment of F1, F6, F201 and F7. By the time that land-use converted from agriculture to cemetery, it appears that F2 at least had been backfilled, since it is truncated by grave F14. However, the north-west to south-east alignment of the ditch is either parallel with or perpendicular to the grave orientation, suggesting that the ditch alignment was still visible in some form, perhaps as an above ground feature such as a hedge or fence. The latest phases of ditches F1, F2 and F7 all contained coins dating to the first half of the fourth century.

It is possible that the other features (the gullies) dated to this period are indicators of agricultural activity towards the rear of these plots. The land therefore may have been enclosed in order to form a roadside property that could include space for livestock, agriculture and possibly housing, although domestic occupation is likely to have occurred closer to the road. The Roman pit F5, containing the bones of a disturbed dog burial, is probably an indicator of Roman domestic activity further to the west and beyond the limit of the site. It is likely that properties beyond the Roman defences were distinctly rural compared with those within the town, taking the appearance of farmsteads with associated field systems (Cleary 1987, 77). This form of roadside settlement is common in smaller rural settlements such as Ilchester, where sub-rectangular enclosures at right angles to the road contained buildings near to the road and ancillary structures and pits towards the rear (Smith 1987, 22-23). Similar ditches seen at Bonners Lane may indicate a similar function (Finn forthcoming), and ditches parallel with the Fosse Way to the west of the town have been observed at the Great Holme Street site (Lucas forthcoming) in addition to domestic features, possibly defining a roadside zone (Cleary 1987, 103). An undated Roman ditch was also noted on 'The Old Bowling Green' site on an east-west alignment, possibly representing the continuation towards the Oxford Street frontage of ditch F7. Further ditch systems have previously been observed to the north on the York Road site (Gossip 1999) and ditch F1 is almost certainly the continuation of one of these ditches to the south. It has been suggested that the shape of suburban plots may have been influenced by the street grid, and therefore tending towards the square or rectangular (Cleary 1987, 74),

and this may have been a determining factor in Leicester's suburbs. It is clear at least that the most common form of extra-mural settlement of large towns is ribbon development along the major roads, and that settlement in such places could be encouraged and sustained by the volume of trade using the major approach roads. Similar development has been seen in the extra-mural areas of a number of towns such as Alcester, Colchester, Winchester and Mancetter, in the form of ribbon development alongside major approach roads. Much of this development and the expansion of towns beyond their defensive boundaries has been seen to occur in the second century (Cleary 1987, 173).

It is unclear how long these boundaries continued in use, although the fills indicated the gradual erosion of the sides. Ditches F1, F3 and F6 showed evidence of recutting and therefore maintenance of these property boundaries. As noted above, dating evidence later than the late third century in the form of coins was recovered from the latest fills of the ditches and it is possible that they survived as some form of visible boundary into the fourth century, and consequently exerted influence on cemetery layout. The post holes mentioned above might have formed a fence line along the fossilised ditch F1 in the third or fourth centuries, which may have served as the eastern extent of the cemetery. The only burial to the east of this is the infant grave F162, and no residual human bone was found in any later features from this side of the site.

### *Phase 2: Cemetery Activity (fig. 2)*

Table 1: Grave Attributes

Grave	Skeleton	Fill	Cut	Sex	Age	Coffin evidence	Grave goods
F13	409	407/408	406	F	20-25	15 nails	
F14	313	314	315	M	50+	No nails	
F15	273	274	275	?	?	No nails	
F16	393	394	395	M	Adult	No nails	Hobnailed footwear, 1 shoe placed next to foot, other shoe disturbed?
F17	52	53	54	M	50+	1 nail	2 Hobnailed shoes, placed next to lower legs, small jar between lower legs
F18	342	310	311	F	40-50	9 nails	
F18	343	310	311	M?	40-50		Head (343) below feet of (342) and outside coffin
F162	510	509	508	?	c.10 lunar months	No nails	
F178	390	390	392	?	Adult	1 nail	

This phase saw the digging of eight graves on the site. A chronology for the burials is problematic. If pottery is taken as a reliable indicator of date, then cemetery activity occurred from the second to the fourth centuries. However, if the ditches, gullies and pits of the first and second centuries (phase 1) are taken to illustrate domestic/agricultural activity, it is unlikely that the land was used for burial concurrently. Grave F14 appears to post-date the backfilling of ditch F2, indicating a change in land use. The best dating evidence is the small jar found in grave F17, dated to the later third and fourth centuries. It is suggested that this is the broad date range of the other burials. The Roman graves recently excavated on the corner of

York Road and Oxford Street date to the same period, and are presumably all part of the wider area of extra-mural cemetery activity.

It is probable that others had existed but were truncated by medieval and post-medieval activity. So-called charnel deposits included the remains of a further four adults and an infant. Burials may even have been cut into the backfilled Roman ditches and hence gone unnoticed during excavation (this practice has been seen at the Newarke Street site). All but one of the burials were located on the western area of the site (area 1), to the west of the second century ditch F1. The only outlier was an infant situated at the far eastern limit of the site. The major north-south ditches F1 and F6 appeared to define cemetery layout - they bounded the extent of the majority of cemetery activity to the east. F6 had been re-cut twice, probably in the late third or fourth centuries, and the four (unexcavated) post holes F191, F192, F193 and F194 had been cut into the western edge of the backfilled ditch F1, perhaps for a fence line redefining the boundary. Postholes F195 and F196 to the south may have performed a similar function. Gullies/?beamslots F167, F172, F173 and F174 may indicate a structure associated with the infant burial F162. Two alignments predominated (north-west to south-east and north-east to south-west), either parallel with or at right angles to all Roman ditches and the Roman road to the west, and graves were spatially well spread across much of the site. Burials were present as far as the southern extent of the site, and as such no true limit of this extra mural cemetery has been established. A number of interesting traits were present such as the inclusion of hobnailed shoes, the grave vessel, and most interesting of all, the 'extra' skull within grave F18.

**Grave F13 (409): Female, 20-25 years. Orientated north-west to south-east (fig. 14).**

The grave comprised a deep sub-rectangular feature, with almost vertical sides and an almost flat base, measuring 2.55m x 0.92m and 0.40m at its deepest point. It is assumed that a coffin was present, since coffin nails were found above the head, below the feet, and on the outside of both arms. The grave was deepest in the area immediately beneath that defined by the coffin nails. The grave had been backfilled with greyish brown silty clay. An uppermost fill was also present, comprising compacted pebble-rich clay, and containing six sherds of pottery dated to the late second century +.

The corpse had been laid in an extended supine position with the arms placed alongside the body. The head had probably been placed facing upwards, but had slipped to face the south-west.

**Grave F14 (313): Male, 50 + years. Orientated north-east to south-west (fig. 15).**

The grave cut was irregular, apparently just fitting the shape of the corpse. No nails were recovered, and it is assumed that no coffin was present. The sides of the grave were steep, and the base almost flat. The corpse had apparently been laid on the base of the grave cut. Grave dimensions were 1.8m x 0.45m and 0.21m deep. The grave had been backfilled with dark greyish brown silty clay, mixed with lumps of redeposited clay, pebbles and flecks of charcoal. The corpse had been laid in an extended supine position, with the hands apparently folded above the pelvis. The right femur and other bones of the leg and feet had apparently been disturbed in antiquity. The head faced towards the south-east.

**Grave F15 (273): Sex?, age indeterminate. Orientated north-east to south-west? (fig. 16).**

This grave had suffered tremendously from horizontal truncation by post-Roman activity, and only the very base of the grave cut survived. This was sub-rectangular in shape, measuring 1.6m x 0.55m. Remaining fill comprised mid grey clay silt. Only 15% of the bones survived (Chapman, this report), comprising mainly leg bones. As no epiphyses survived *in situ* corpse orientation was hard to establish, although the position of the bones suggested a north-east to south-west orientation.

**Grave F16 (393): Male, adult. Orientated north-west to south-east (fig. 17).**

This grave had been truncated at its north-western end by modern brickwork, and through its middle by a modern drain. The surviving cut was linear with a rounded south-eastern end, 0.5m in width and 0.14m in depth. 20% of the bone was present, including most of the lower right leg and foot, left arm and left side of the rib cage. The grave had been backfilled with greyish silty clay. Well preserved

hobnails retaining the shape of a sole were present against the outer side of the lower right leg. A possible hobnail situated inside the leg may indicate the presence of another shoe prior to truncation. It is certain that the shoe was not worn at the time of deposition. The absence of coffin nails suggests that a coffin was not present. The body had been laid in an extended supine position, apparently with the arms by the sides.

**Grave F17 (52) : Male, 50 + years. Orientated north-east to south-west (figs 18, 22, 23)**

This grave had also been truncated by a modern pipe trench, foundations and a medieval post hole. Despite this, 30% of the bone was present in fair condition. Grave shape was linear, with almost vertical sides, 0.5m wide and 0.15m deep. Length prior to truncation is estimated at c. 1.9m. Backfill comprised dark greyish brown clay silt. The body had been laid in an extended supine position with the head lying on its side facing towards the east. Arm position could not be ascertained. A small greyware jar (third - fourth century) was found between the lower legs, lying on its side with the rim facing the feet. On the outside of the lower right leg were the remains of two hobnail shoes, both retaining the shape of the shoe, one laid flat with the sole lowermost, the other on its side with the sole leaning against the leg. A badly corroded iron object, probably a nail, was situated to the right of the head, suggesting the presence of a coffin.

**Grave F18 (342) : Female, 40 - 50 years. Orientated west-east.**

**(343) : Male ? skull, 40 - 50 years, placed below the feet of (342) (fig. 19)**

The grave comprised a linear rectangular cut with rounded ends, partially truncated at the western end. Dimensions were 2m x 0.55m and 0.2m in depth. Grave fill comprised mid brown sandy clay containing eight sherds of pottery dating from the early to middle second century. The main corpse (342) was well preserved with 85% of bone present. This had been laid out in an extended supine position, with the arms folded over the abdomen. Nails were found on the two sides and below the feet indicating the presence of a coffin. At the eastern end of the grave, outside the coffin were the partial remains of a skull, placed upside down, with the mandible missing.

**Grave F162 (510): Sex? c. 10 lunar months. Orientated east-west (fig. 20)**

The grave comprised a sub-rectangular cut 0.5m x 0.45m and 0.10m in depth. Fill surrounding the skeleton comprised dark greyish brown sandy clay containing one sherd of pottery dated to the mid second century or later. The body had been laid on its left side facing south. Linear features surrounding the burial ( [451], [544], [546] and [505] ) may indicate some form of enclosure (discussed above).

**Grave F178 (391): Sex? Adult. Orientated north-east to south-west (fig. 21)**

This grave had been severely truncated by later activity, leaving only most of the left leg and part of the right leg. Two finger bones from the left hand also survived. One possible coffin nail was recovered, others may have been missed during excavation, since a burial had not been expected. The depth of the original grave cut, which was probably steep-sided, rectangular, with a flat base, was estimated at c. 0.40m. Surviving bones suggested that the corpse had been laid in an extended supine position, probably with the arms at the sides.

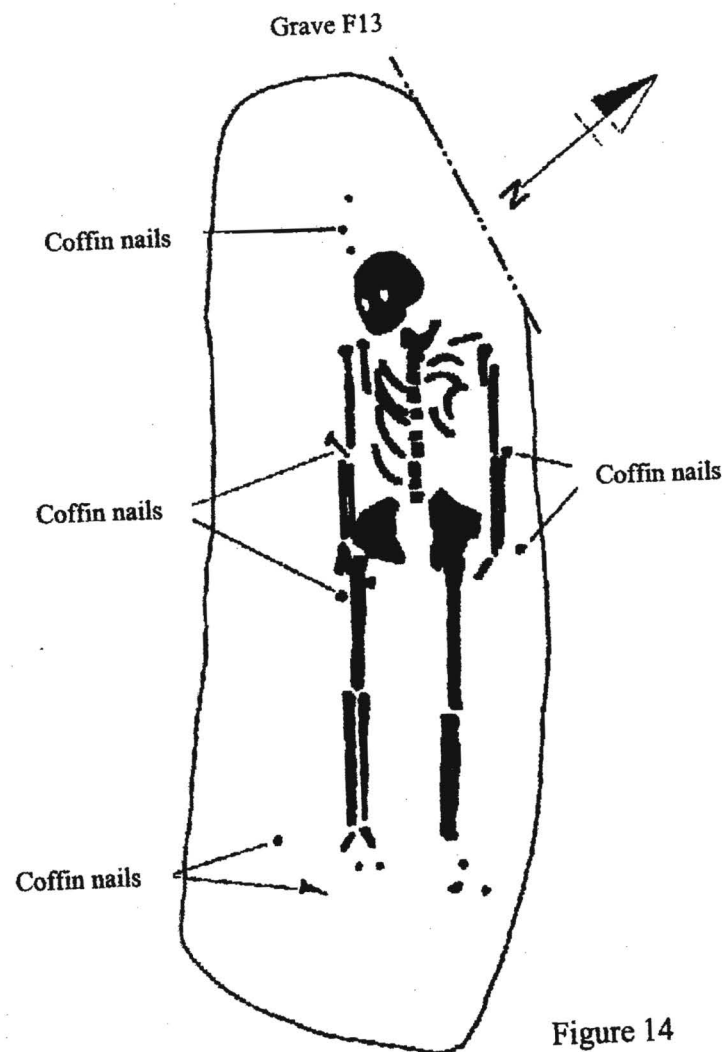


Figure 14 Plan of Grave F13 (Scale 1:20)

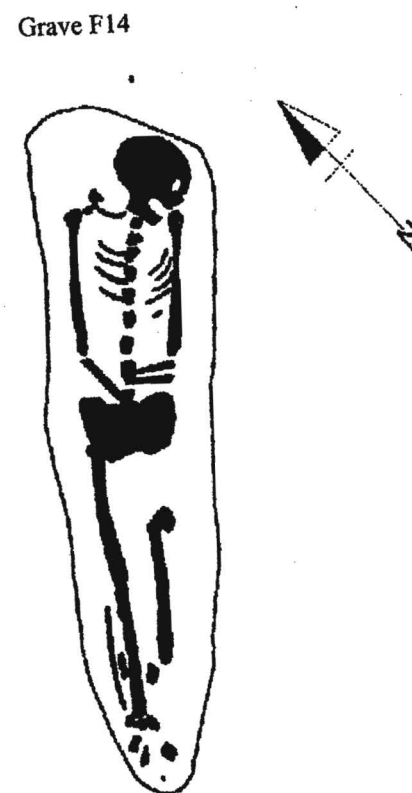


Figure 15 Plan of Grave F14 (Scale 1:20)



Figure 16 Plan of Grave F15  
(Scale 1:20)

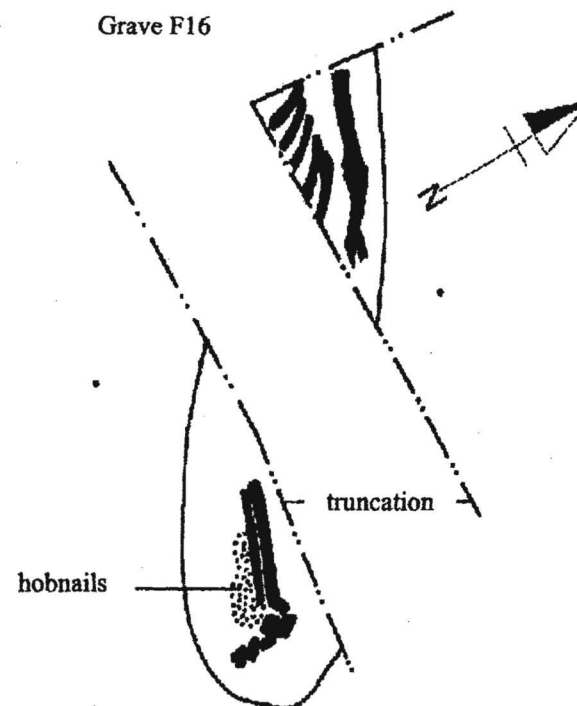


Figure 17 Plan of Grave F16  
(Scale 1:20)

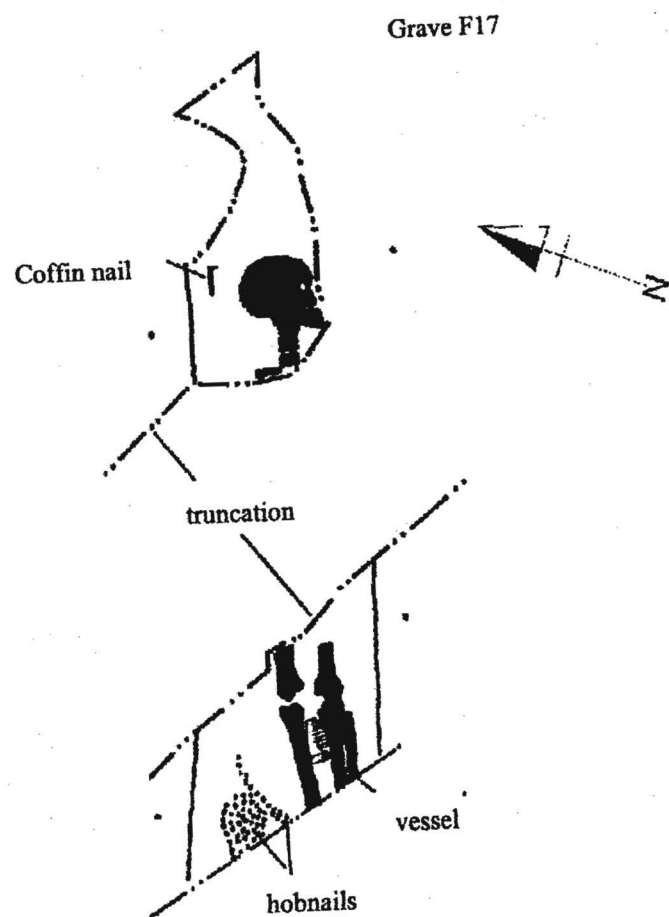


Figure 18 Plan of Grave F17  
(Scale 1:20)

Grave F18

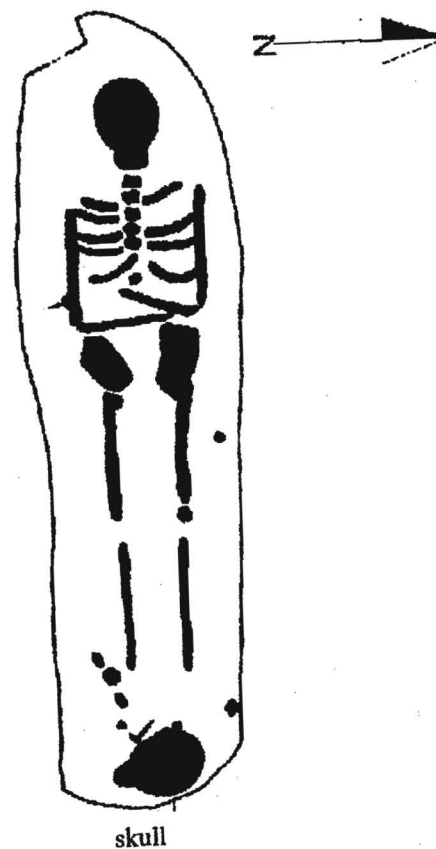


Figure 19 Plan of Grave F18  
(Scale 1:20)



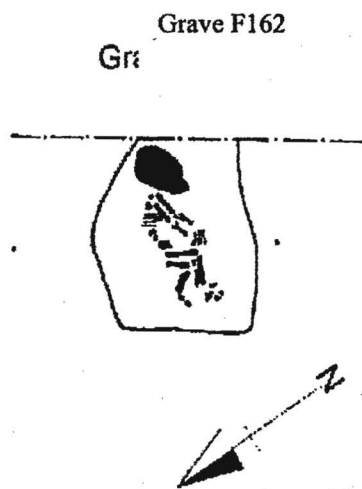


Figure 20  
Plan of Grave  
F162  
(Scale 1:20)

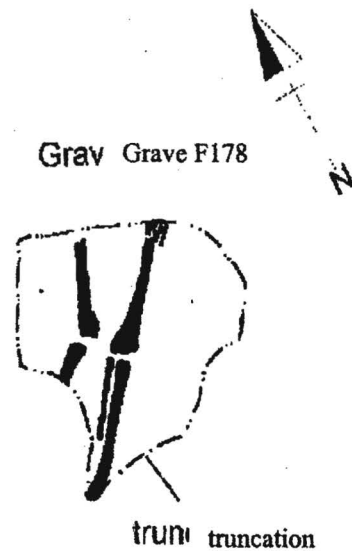


Figure 21  
Plan of Grave  
F178 (Scale  
1:20)

Figure 22 Section through Grave F17 (Scale 1:20)

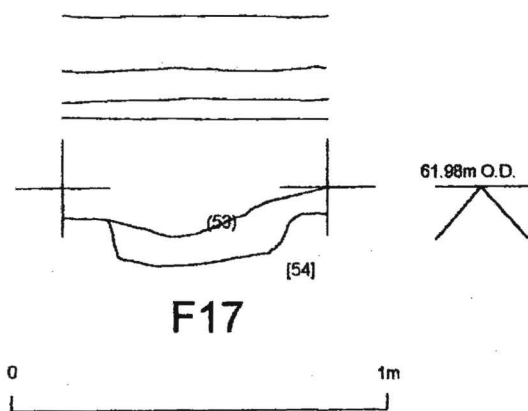
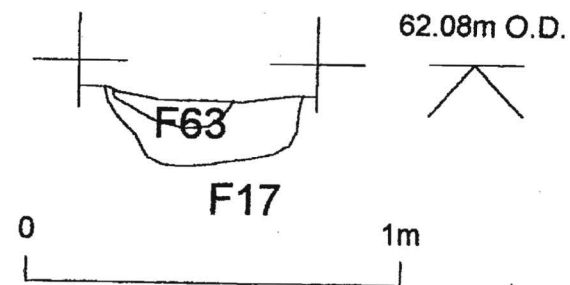


Figure 23 Section through Grave F17 (Scale 1:20)





### *Discussion of Phase 2*

As previously noted, the burials at Oxford Street respect the alignment of ditches F2, F3 and F4, which may have survived as visible boundaries into the fourth century. To the east, ditches F1 and F6 may still have been apparent, and may have served as the eastern extent of a burial ground peripheral to the large Newarke Street cemetery to the north, previously discussed by Dare (1927) and Cooper (1996). There is no evidence of residual human bone to the east of the major north-south ditches, whereas two contexts both pre-dating and post-dating the cemetery activity yielded human bone on the western side of the site.

The original density of burial to the west of ditch F1 is unclear. Possible coffin nails and human bones (charnel) have been recovered from later features distributed across the site suggesting truncation of earlier burials.

Evidence for grave layout and orientation respecting the line of boundary ditches has been seen at the extensive Newarke Street site (Cooper 1996, 20). The available evidence suggests a pagan community carrying out the burials, on the basis of orientation, grave goods and decapitation. Disturbance of graves during the Roman period is likely (grave F14), and no grave markers were evident. In view of the weighting of burial criteria suggested by Watts (1991, 38-98), these attributes suggest a pagan custom. Although some of the burials exhibit traits which may be associated with peripheral burial, the extent of cemetery activity to the south has not yet been established. If it is presumed that the York Road burials and the Oxford Street burials form parts of the same cemetery area, it might be suggested that the cemetery activity is becoming more pagan as distance from the town increases.

A large number of Roman burials have been identified outside the southern wall of the town, all falling within what must be seen as a large extra mural cemetery area. Dare (1927) attempted to identify the extent of the burial ground as 'an area bounded today by the lines approximately of Millstone Lane, Newarke Street, Pocklington's Walk, and the line of Oxford Street and Southgate Street' (Dare 1927, 33-57). The majority of burials have been found in the Newarke Street area, although apart from the large scale excavation on Newarke Street in 1993 (Cooper 1996) many of these arose from observations during construction work in the late 19th and early 20th centuries (Dare 1927), and those recorded may have been the more conspicuous examples. Roman cremations have been discovered on the eastern side of Oxford Street to the north of the York Road site (*TLAHS* 1865 and 1893). The Oxford Street burials presumably represent a continuation, but not necessarily the extent of the southern cemetery.

Suburban cemetery activity is evident to the east (Cooper forthcoming) and to the west of the Roman town (Lucas forthcoming), also in the vicinity of major approach roads or close to the defences. The development of the cemetery alongside suburban roads follows a pattern common to many Romano-British towns such as Colchester and Wroxeter (Cleary 1987, 174), and extensive suburban cemeteries have been seen outside other Roman towns such as Cirencester, Winchester and Dorchester.

### *Dating of the Burials*

Only one of the burials (F14) has a stratigraphic relationship with a Roman feature (ditch F2) that suggests a date later than the second century. Graves F18, F13 and F162 contained sherds of second century or later pottery, and the complete vessel from grave F17 was dated to the late third to fourth centuries. Despite the lack of datable finds the other burials are expected to be contemporary. The spatial and stratigraphic relationships between the graves and the ditches reinforce a third or fourth century date. A fourth century date for the cemetery activity is consistent with the Newarke Street cemetery and possibly other burials south of the town which have predominantly been inhumations (although much of this information is based on old and insufficient records). It has been suggested that the more common instance of cremation burials to the east of the Roman town in Churchgate, Gallowtree Gate and Humberstone Gate indicates an earlier date for this cemetery (Cooper 1996). The recently excavated inhumation cemetery at Haymarket Towers to the east of the city has been dated to the fourth century (Cooper forthcoming). It is generally considered that by the fourth century inhumation had replaced cremation as the dominant burial rite in the Roman world (Cooper 1996, 28; Watts 1991.)

### *Coffins*

Coffin nails were recovered from four of the grave fills, although the lack of nails in some graves is almost certainly a result of their truncation (for example grave F17), rather than the absence of a coffin. It is also possible that nails were used simply to consolidate a construction of timber joints (Cooper 1996, 23), as can be seen from a well preserved timber coffin from Great Holme Street, Leicester (Lucas forthcoming). Only the nails from graves F13 and F18 were seen close to what may have been their *in situ* positions, and even then little can be said of coffin construction from nail positions. Although some attempt was made to plot nail position, the collapse and distortion of the coffin during its process of decay meant that many of the nails had moved from their original positions.

From such a small sample of burials it is impossible to know whether gender, age or social rank played a role in determining the presence or absence of a coffin and this has been the case elsewhere (Lankhills: Clarke 1979, 143). It is interesting, though probably coincidental considering such a small sample, that the two graves containing the largest number and the most '*in situ*' nails also contained two adult females.

A number of iron objects similar to coffin nails were recovered from the fills of later features, possibly indicating the presence of additional burials in the vicinity which had been truncated by post-Roman activity.

### *Corpse Orientation and Position*

Burials F13, F16 and F18 were seen to be orientated north-west to south-east, that is with their heads at the north-western end of the grave cut. F17, F14 and probably F15 and F178 were orientated north-east to south-west.

Despite the poor preservation of the skeletons, all corpses appear to have been laid out in an extended supine position. Where it has been possible to ascertain, arms seem to

have been positioned alongside the body, and in the case of F18 and F14, the hands were probably folded above the abdomen.

The alignment of the graves broadly respects that of ditches F2 and F3. A slight rotation of grave orientation is perhaps seen in grave F15 which is almost parallel with ditch F1 perhaps as a result of the proximity of the visible boundary. Corpse orientation is not assumed to suggest two distinct burial traditions. Here graves conforming to either alignment share some of the same traits. The orientation of the graves is more likely to have resulted from the relationship with surrounding physical boundaries, in this case the ditches. Grave orientation away from west-east has been seen as an indicator of a non-Christian burial rite (Watts 1991, 53-55), although this is not always the case (Rahtz 1977, 44)

### *Grave Goods*

Although the inclusion of pottery vessels with inhumations becomes rarer by the fourth century, those that do occur often appear at Romanised urban centres such as (in the Midlands) Derby and *Tripontium* (Philpott 1991, 106). An example from the third or fourth centuries has also been seen at the Roman small town of Goadby Marwood in north-east Leicestershire (Abbott 1956, 17-35). A number have been recorded from Leicester in the proximity of Newarke Street (Dare 1927, 33-57) although the precise location of these vessels in terms of their deposition with burials has to be treated with caution due to primitive recording techniques and the inadequacy of the records. A small greyware jar dating from the fourth century has been found with a burial at Haymarket Towers (Cooper forthcoming), and recently a similar vessel to that from grave F17 was found within a grave at the York Road site to the north. The large cemetery to the south of Newarke Street produced no evidence for the deliberate deposition of vessels within graves.

The purpose of vessels as grave goods has been discussed at length, and are generally considered as offerings to the dead (Philpott 1991, 112; MacDonald 1979, 409). Grave goods are considered to indicate pagan burial almost exclusively (Merrifield 1987; Watts 1991). The positioning of the vessel between the legs of the skeleton in grave F17 appears to be a rare but not unknown trait. At Butt Road, Colchester, one example was found where an upright vessel had been placed between the legs (Crummy 1993). At Lankhills, Winchester (Clarke 1979) there are no positive examples, and at both of these large sites vessels appear to have been frequently placed outside the coffin. In grave F17 at Oxford Street it is certain that the vessel had been placed inside the coffin. It is uncertain whether the jar had originally been placed upright, and had fallen into position on its side.

### *Hobnails*

As with decapitation, the deposition of footwear is a more common feature of rural cemeteries (Philpott 1991, 167). Becoming more numerous in the late second and third centuries, most examples appear to be fourth century in date. The inclusion of hobnails has been a fairly common characteristic of burials from Leicester. Hobnails have been recovered from four graves at Haymarket Towers (Cooper forthcoming) and two at Great Holme Street (Philpott 1991, 354). The East Midlands may mark the northern extent of the practice of footwear deposition (Philpott 1991, 167).

The largest sample of footwear so far excavated is from the Roman cemetery at Lankhills, Winchester. Most of these occur in graves without a coffin, and more appear to have been placed away from the feet rather than worn or placed over the feet. Shoes seem to have been worn in later fourth century burials and not worn in the early fourth century burials, perhaps indicating a change in the ritual over time, whilst maintaining the importance of the symbolic inclusion of footwear (Clarke 1979). In both graves F16 and F17, the shoes appear to have been placed adjacent to the lower legs. This was also the case with at least two of the burials at Haymarket Towers. The most common form of grave furniture in association with hobnails seems to be pottery vessels, a characteristic in common with grave F17 (Philpott 1991).

Although the exact reasons behind the ritual are uncertain, it is generally agreed that shoes were intended for use by the dead (Philpott 1991, 173; Merrifield 1987, 74), perhaps to ease their passage to the underworld. It has been suggested that whether the shoes were worn or unworn is unimportant; their ritual deposition alone indicates that they were needed for some sort of journey after death (MacDonald 1979, 407).

### *Decapitation*

Decapitation seems to have been a fairly common practice in Roman Britain, although it is more often a feature of rural communities than of those in urban centres. When it does occur, it is not generally thought to represent a punitive action. In most cases there is evidence of formal burial, usually extended supine burials with arms by the sides, perhaps with the hands folded across the abdomen. Decapitated heads are often placed near to or between the legs, and occasionally beyond the feet and outside the coffin (MacDonald 1979, 414). Coffins are also often present with decapitated burials (Philpott 1991, 84; Clarke 1979). Although it is almost impossible to assess from the skeletal evidence, the formal appearance of these burials suggests that the head has been removed *post mortem* and the individual granted a certain degree of respect in death. Exceptions to this have been seen elsewhere, and certain less formal burials which are prone, or may have had the hands tied, suggest execution or murder (Philpott 1991, 84).

The decapitated skull in grave F18 is of course different in that it accompanies an otherwise ordinary inhumation, but the remainder of the body is missing. This was in no way the result of post-Roman truncation or disturbance of the grave. At the foot of the inhumation burial, and outside the coffin but within the grave cut was the decapitated skull, upside down and with the mandible missing. Two displaced mandibles from decapitations at Kimmeridge, Dorset, have in the past been seen as a method by which to prevent the dead from talking (Calkin 1947, 38). These are believed to have been removed as part of the decapitation process, and then placed with care next to the head (Calkin 1947, 36). The 'spare' head appears to be a unique occurrence in Romano-British cemeteries. The body of the individual was not present elsewhere in the excavated cemetery, but may have been situated nearby. The peripheral nature of the burial containing the decapitation at Oxford Street may be significant, since may have been important to set this different burial apart from the others in the cemetery.

There has been much discussion on the significance of decapitation as part of the Roman burial tradition. Generally it is thought to represent a tangible way in which to



sever links with the afterlife (Merrifield 1987, 71), and may have been seen as a way in which to prevent the dead from haunting the living (Philpott 1991, 84) or to 'give rest to wandering spirits' (MacDonald 1979, 417).

#### *The Infant Burial and Mortuary Enclosure*

The infant grave F162 is enclosed on its southern, western and northern sides by the linear features F167, F172, F173, F174. To the south of F174 was a linear arrangement of post holes. The presence of features to the east was unknown since this area was not excavated for reasons of safety. F174 comprised a shallow (0.07m) linear cut on a north-south alignment. Abutting this to the north and on the same alignment was F173, a short 'sausage-shaped' linear cut, 1.04m in length, 0.26m wide and 0.10m in depth with steep sides and a rounded base. The fill, a dark brown friable clay contained second century pottery (2). Perpendicular to and truncated by F173 was F172, a linear cut 0.5m wide, 1m long and 0.25m deep with steep, stepped concave sides tapering to a rounded base. This abutted F167, a linear feature on an east-west alignment, probably part of the feature visible further to the west. F167 was shallow with concave sides and a rounded base. The fill contained pottery dated to the mid second century onwards.

The exact function of this feature group is uncertain. It is possible that the linear cuts and post holes had supported some form of structure that surrounded the burial. Examples of infant burial within or under structures is a common feature throughout the Roman period, both in rural and urban contexts. Examples of infant burial under workshops have been seen at Rudston Villa (Woodward and Steer 1936, 85) and under disused buildings at St. Albans (Wheeler 1936, 138-139) and Springhead (Penn 1968, 170). By the fourth century, the inclusion of infants into formal adult cemeteries becomes more common, although these may still have been in special areas reserved for infant burial (Philpott 1991, 99), as seen at Winchester and Cirencester. The distance between grave F162 and the nearest adult grave indicates that it has been set apart. This segregation is emphasised by the large north-south ditches F1 and F6, separating the infant burial from the adult cemetery.

### ***Phase 3: The Anglo-Saxon Period (Fig. 24)***

#### ***The Sunken Featured Building***

F175 comprised a feature truncated by medieval pits F30 and F31, in addition to modern service trenches and other disturbance. One long vertical edge was visible on the southern side, and parts of the eastern and western edges. These were shallow vertical cuts 0.10m in depth, breaking to a flat base cut into the natural clay. The fill, a dark greyish brown sandy silt, contained eight sherds of Roman pottery and two sherds of Saxon pottery. Three post holes truncated the feature, although it is uncertain if they are associated. The surviving edges indicate a feature measuring c. 3m x 2.25m, 0.10m in depth.

#### ***Discussion of the Saxon phase***

Despite the recovery of relatively large amounts of Saxon pottery within the town walls, no Saxon centre in Leicester has been located. Excavations at Bonners Lane revealed a sunken-featured building surrounded by a number of deep post holes. This however was the only Saxon occupation evidence. The Oxford Street structure is less substantial, but is certainly post-Roman and fairly typical of small early/middle-Saxon sunken featured buildings. Located only 40m to the east of the larger Bonners Lane example, the two buildings are likely to be associated and may be part of a larger farmstead perhaps with rural origins and not related to proto-urban settlement in Leicester (Courtney 1998).

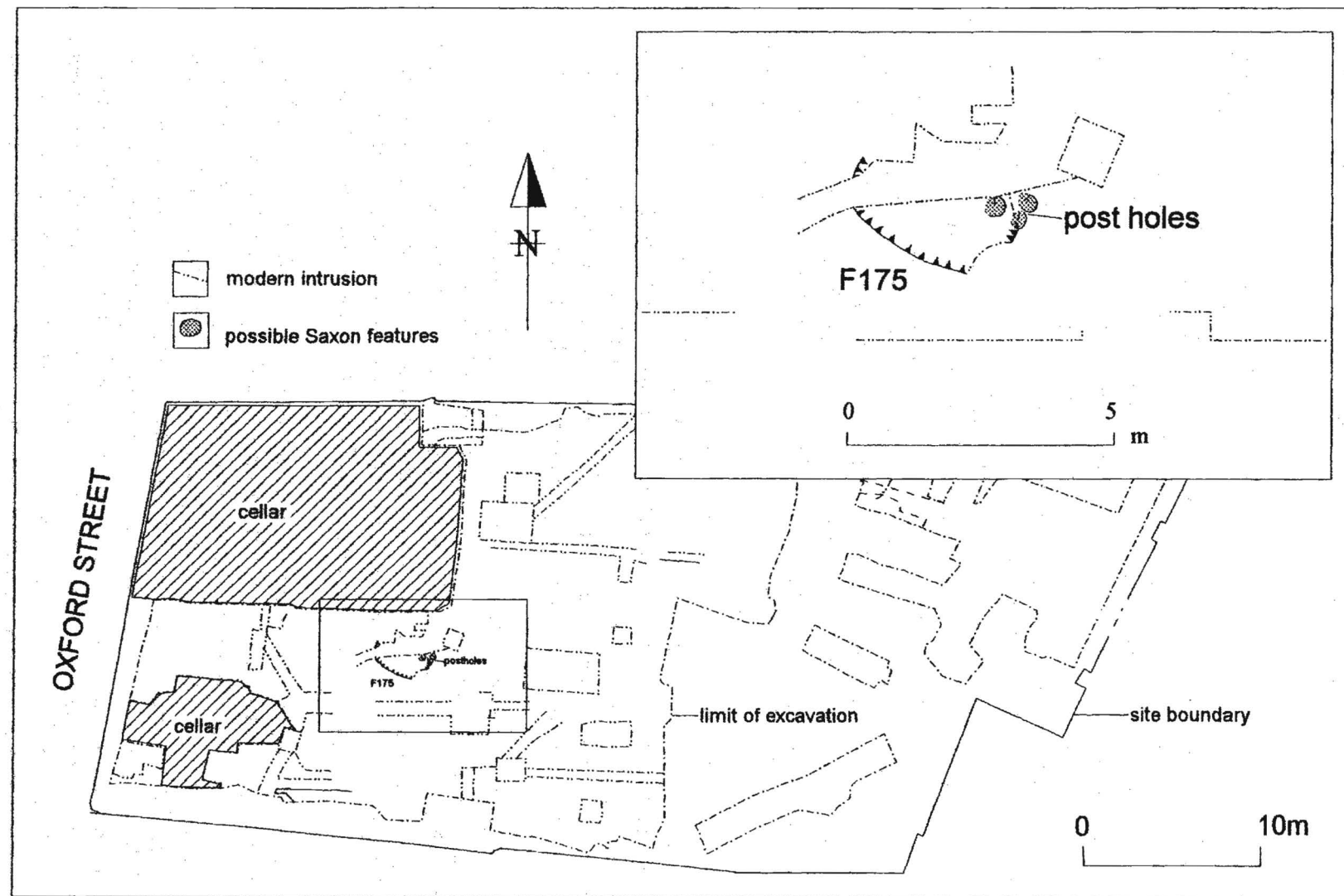


Figure 24

Phase 3: Saxon sunken featured building

**F47** This feature comprised a large pit truncated by modern activity. The pit was probably square or rectangular originally, and measured 2.8m long and at least 2m wide. It had vertical sides and a flat base at a depth of c.1m. The primary fill comprised green organic silty clay, followed by a secondary fill of greyish brown silty clay containing 13th century pottery (7). The tertiary fill consisted of a layer of redeposited natural, perhaps used to cap the cess fills beneath, and containing one sherd of 12th/13th century pottery. The final fill yielded 13th century pottery (13).

**F30** This was a shallow circular pit 1.5m in diameter and 0.35m in depth, with vertical sides and a flat base. Fills comprised two fairly homogeneous brown clay silts, the primary fill being slightly greener in colour, and containing two sherds of 12th or 13th century pottery.

**F31** A large oval pit measuring 3m x c. 2m. The southern extent of the pit had been truncated by modern activity. The pit was at least 0.7m in depth (the pit was not fully excavated) with vertical sides and a flat base. A single silty fill contained one sherd of 11th/12th century pottery.

**F23** This pit had been truncated by modern activity on its northern and western sides. The pit would originally have been circular in plan, c.1.5m in diameter and 0.5m in depth. The sides were vertical and the base flat but sloping towards the south. The primary fill comprised organic greenish grey silt. The secondary fill contained sherds of 12th/13th century pottery (7).

**F177** A small circular pit truncated by a modern tank. Originally c.1.5m in diameter, the pit was 0.40m in depth with gradual concave sides and a rounded base. On the base of the cut were several large sherds from three vessels, all dating to the 13th century.

**F21** This comprised a small circular pit, 0.7m in diameter and 0.52m in depth, with concave sides and a rounded base. The silty clay fill (85) contained numerous fragments of bone and charcoal flecks. One sherd of 12th/13th century pottery was recovered from the fill.

**F45** This comprised a very shallow and ill-defined sub-circular cut, no more than 0.1m deep and 1.25m in diameter. The fill contained fragments of slate, stone, bone, charcoal and ceramic building material, but no pottery. The feature may have truncated, or abutted F44 immediately to the north.

**F44** Truncated by F45, this comprised a shallow oval pit with very gradual concave sides and a largely rounded base, 0.95m x 0.60m and mostly 0.15m deep. The westernmost edge of the feature was deeper, tapering to a rounded point 0.25m deep. Within this deeper part of the cut the fill comprised clean greenish sand. Above this the main fill of the feature was a brown sandy clay containing fragments of charcoal and ceramic building material, in addition to sherds of 13th century pottery (3).

**F46** To the east of F44 was this circular pit 1.5m in diameter and 0.25m deep, with steep sides and a rounded base. The fill comprised dark greenish brown silty clay which rapidly became waterlogged. Five sherds of 12th century pottery were recovered from the fill.



**F8** The semi-circular remains of what was probably a circular pit, truncated to the north by the wall of the Fullback and Firkin. The sides of the pit were almost vertical, and although full excavation was impossible due to safety, the feature was augered to a depth of 2.08m. Fills included a series of silty clays and redeposited clays, and partial collapse of the western edge of the pit was evident, and the natural erosion of the sides. Only the uppermost fill (355) was substantially different, comprising later material, probably post-medieval, slumping into the backfilled pit. The latest true fill of the pit contained 12th/13th century pottery (4). The pit truncates Roman ditch F3, which may have still survived as a visible feature when the pit was cut.

**F9** A few metres to the south-west lay this large circular pit cut into the butt-end of Roman ditch F2. As with F8 above, the relationship between the pit and the ditch suggests that the Roman ditch, although mostly backfilled, was visible in some form in the 12th or 13th century. The pit was 2.5m in diameter and at least 0.8m deep, with steep concave - almost vertical sides. Excavation was halted at 0.8m due to waterlogging. Four silty clay fills were visible in section, in addition to erosion of the pit edges. Eleven sherds of 12th/13th century pottery were recovered from the fills.

**F200** This was situated to the east of F9, and comprised a shallow pit with concave sides and a rounded base, 0.80m in diameter and 0.30m deep. One sherd of 12th/13th century pottery was recovered from the fill.

**F10** A large pit to the south-east of F9, also truncating Roman ditch F2. The dimensions in plan were hard to establish, although the pit probably had a diameter of c.1.5m. The pit was excavated to a depth of 0.8m, at which point the fill became waterlogged. No finds were recovered from the fill, a dark brown silty clay.

**F24** This comprised a circular pit truncating Roman ditch F1, 1.3m in diameter and 0.5m in depth. The primary, secondary and tertiary fills comprised organic greenish grey clayish silts, the tertiary fill containing sixteen sherds of 13th century pottery. The pit had gradual concave sides and a rounded base. Near to the top of the pit was a lens of yellow sand, on top of which was a compacted silty clay, perhaps evidence of capping of the pit.

**F11** A small circular pit truncating Roman ditch F1, 1.25m in diameter and 0.35m in depth, with steep sides and a flat base. Two sandy clay fills were evident, the interface between the two fills notable for a lens of charcoal, probably a episode of dumping preceding the secondary fill. The secondary fill contained twelve sherds of 13th century pottery.

**F28** This comprised a circular pit 2.5m in diameter and 0.8m in depth. The principal fill comprised greenish grey organic cess-like silt. This was sealed by a layer of redeposited clay and a layer of sandy clay. No finds were present, but its form and stratigraphic relationship beneath 14th/15th century feature F27 suggests that it is contemporary with other 12th/13th century features.

**F32** This comprised a circular pit truncated by the footings of the Fullback and Firkin boundary wall at the northern limit of the site. The pit was 1.20m in diameter

and 0.4m in depth, with gradual concave sides and a flat base. Fill comprised dark greyish green silty clay containing five sherds of 12th century pottery.

**F36** This comprised a partially visible circular pit protruding from the eastern limit of area 1 and truncating Roman ditch F1. The pit was truncated by pit F35 and possibly other modern activity. Excavation was halted at a depth of 0.7m at which point the feature became waterlogged. The fill contained two sherds of 13th century pottery and two sherds of 18th century pottery thought to be intrusive.

**F48** A partially visible circular pit truncated on its southern side by modern activity. The pit would have had an original diameter of c.1.5m. The pit was not excavated, but hand cleaning of the uppermost fill produced a sherd of Saxon or Saxo-Norman pottery.

**F50** This comprised a partially visible shallow pit truncated on its western side by modern activity. The pit is likely to have been circular in plan originally, 0.2m in depth with a diameter of 0.75m. The greyish brown sandy clay fill contained 12th century pottery (2).

**F52** A sub-rectangular pit with only partially defined edges c.1.5m x 0.75m and 0.65m in depth. The southern edge was vertical, while the western edge formed a gentle slope. The northern and eastern sides could not be defined. The fill comprised organic/cess-like sandy silt with frequent flecks of charcoal, found to contain five sherds of pottery dated to 1100 - 1250.

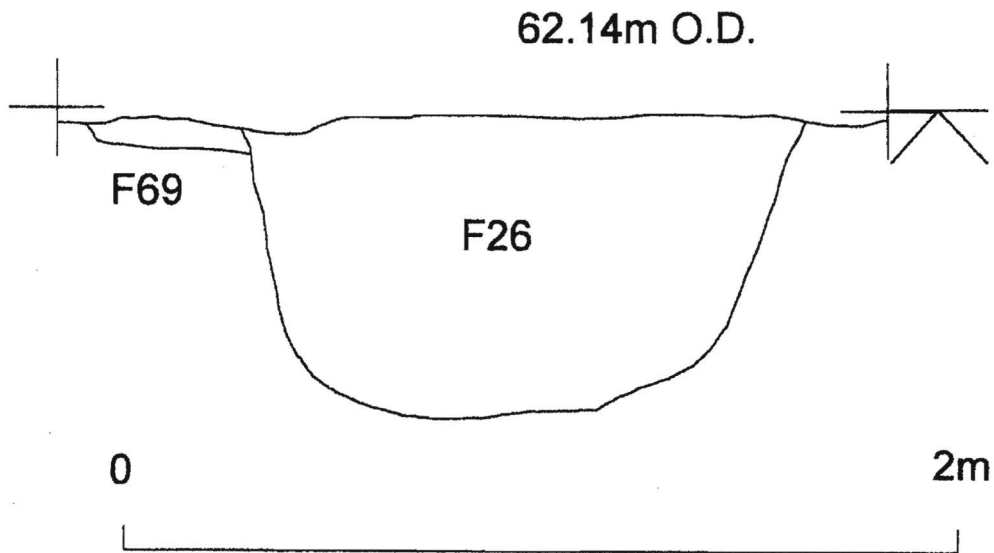


Figure 28 Section through F26 (scale 1:20)

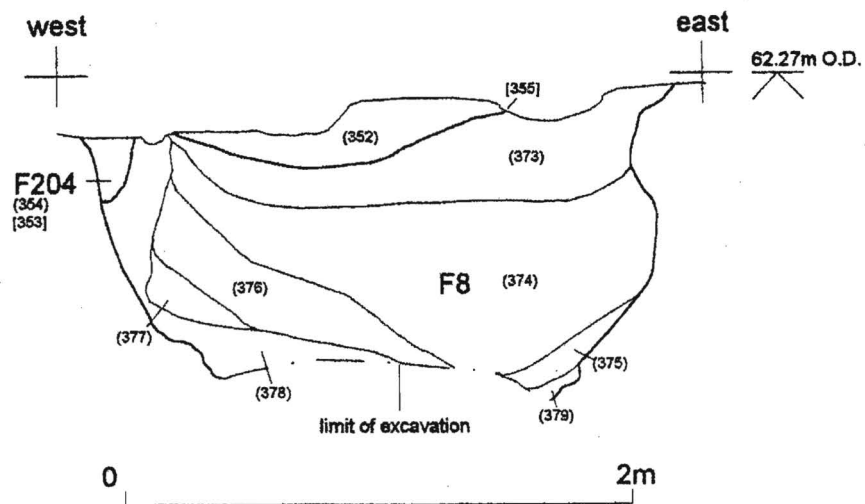


Figure 29 South facing section of pit F8 (scale 1:20)

### *The Postholes*

A large group of nineteen post holes was observed in the centre area 1 and a similar group of thirteen post holes was seen in the north-east corner of area 1. The chronology of the post holes is problematic, since very few dateable finds were recovered from secure contexts. The majority of the finds were 12th or 13th century, with a few incidences of Roman pottery. The post holes have a general spatial relationship with many of the phase 4 (12th/13th century) pits, and some have a stratigraphic relationship with the Roman ditches, showing the post holes to be later, and probably contemporary with the 12th/13th centuries. Despite the depths of some of the post holes, it is unlikely that either group represent buildings. The most probable function is the subdivision of the medieval rear yards by fencing, with the possibility of insubstantial structures such as livestock pens.

#### Group 1

Feature No.	Diameter (cm)	Depth (cm)	Notes
F38	35	20	
F41	13	30	Stone packing ?
F58	40	20	
F68	30	15	
F70	24	20	
F71	45	42	Stone packing
F73	25	15	
F74	32	34	Stone packing
F77	?	?	
F78	30	6	
F79	22	33	Stone packing
F80	20	4	
F81	24	11	
F82	33	23	
F83	28	25	
F85	18	13	
F88	45	40	Post pipe visible
F89	24	54	Packing visible

This group of post holes comprises two parallel linear groups on approximate east-west alignments, and a north-south group perpendicular to this. Five of the post holes in this group were unusual due to their depth and the stone packing present within the fills. It might be assumed that these post holes were intended to support substantial posts. One of these, F89 (Fig. 30) may have held the corner of a fence or insubstantial structure. The remaining deeper, post-packed post holes appear not to be located in a 'functional' position. The post hole lines separate areas of 12th/13th century pit activity, and may indicate the boundary between two properties.

Postholes F58 and F83 contained small amounts of Roman pottery which is assumed to be residual. Post holes F88, F89, F85, and F38 contained 12th/13th century pottery. F41 contained 14th/15th century pottery, believed to be intrusive.

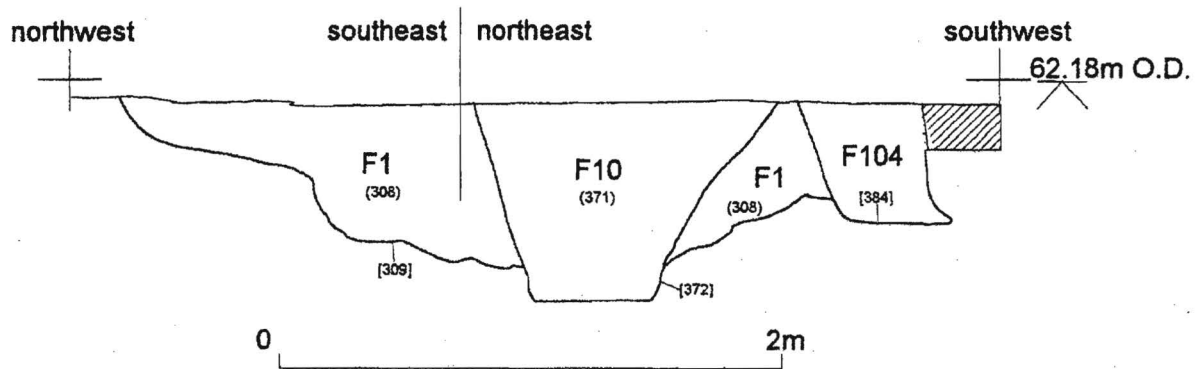


Figure 30 Section through Pit F10 (Scale 1:20)

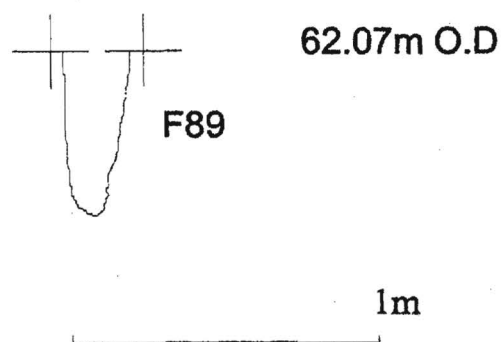


Figure 31 Section through Posthole F89

## Group 2

Feature No.	Diameter (cm)	Depth (cm)	Notes
F34	240	30	
F55	52	22	
F56	46	9	
F63	30	7	
F73	25	16	Stone packing
F91	26	22	
F92	41	22	
F93	45	42	Stone packing
F95	28	16	
F96	45	25	
F97	32	10	
F101	30	25	
F103	29	13	

This group of post holes forms an irregular line on an approximate east-west alignment close to the northern limit of the site. It is most likely that this formed a fence line dividing two distinct areas of pitting, and perhaps two separate properties. Postholes F63 and F93 contained 12th/13th century pottery. Post holes F91 F101 and contained Roman pottery, but this is believed to be residual.

*Phase 5: The 14th - 15th Centuries (Fig. 32)**The Features*

**F33** A circular pit 1.8m in diameter and at least 0.6m in depth, situated to the east of Roman ditch F1. The pit had gradual concave sides near to the top, with a break of slope to near vertical sides. Excavation was not completed due to waterlogging. Two fills were evident. The uppermost, a dark greyish green silt with occasional pebbles contained thirteen sherds of 13th or 14th century pottery. The lower fill, a brown clay silt, contained sherds of early 14th century pottery (21). The pit was truncated by a shallow post hole F34.

**F12** A large circular pit c.3.5m in diameter, and at least 0.75m in depth. Excavation was not continued beyond this point due to waterlogging. Four fills were visible. The possible primary fill (404) comprised silt containing fragments of slate, pebbles and charcoal, tipped against the gradual concave sides. The principal fill comprised a greenish grey cess-like fill, which yielded nine sherds of 14th century pottery. Two shallow fills slumped into the top of the centre of the pit containing large amounts of slate, pebbles and charcoal.

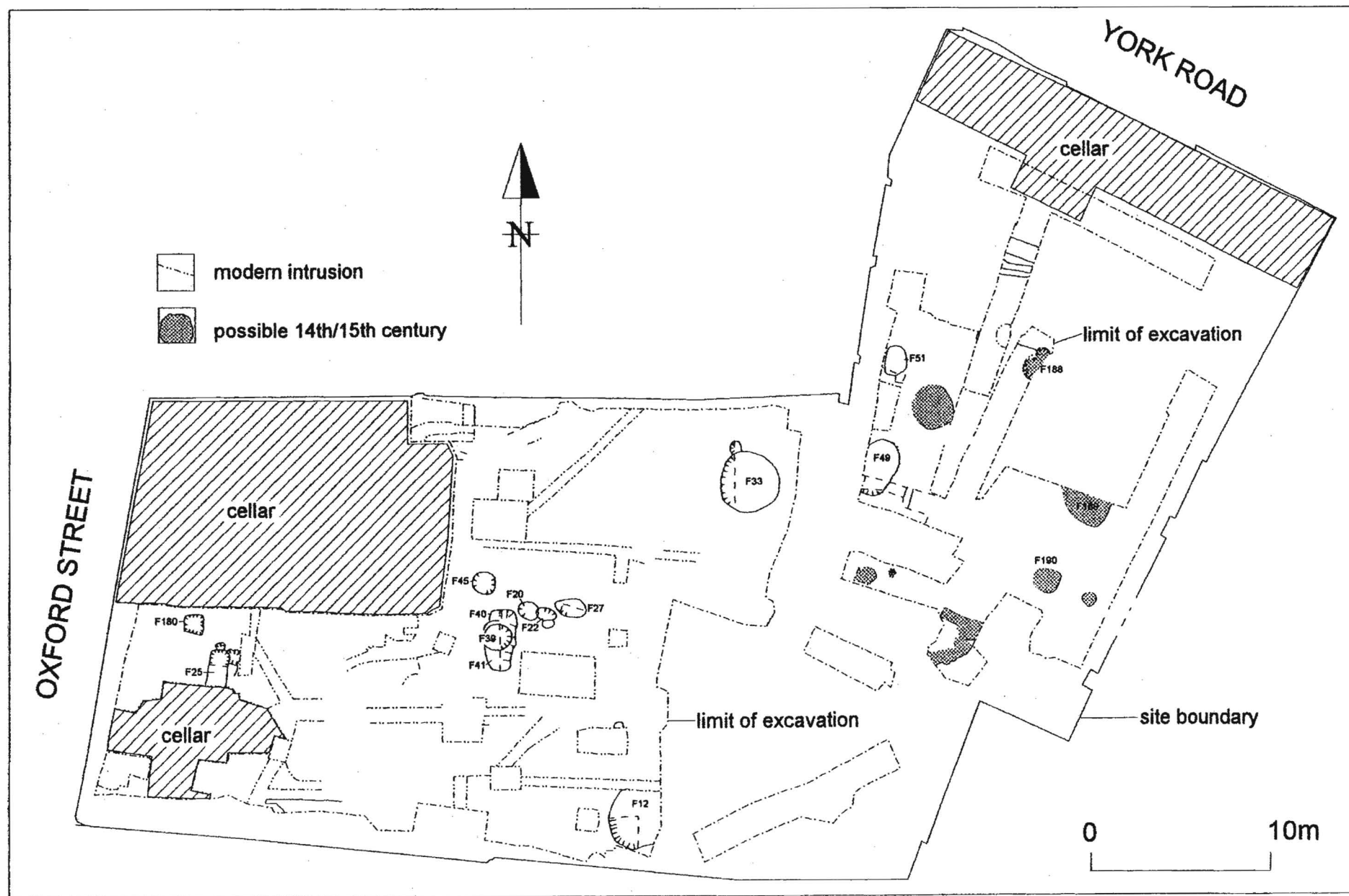


Figure 32 Phase 5: The 14th - 15th centuries



**F20** This comprised a small sub-rectangular pit 0.8m x 0.7m and 0.65m in depth. Four fills were present. The primary fill (93) consisted of greenish grey organic silt containing a sherd of 12th/13th century pottery, apparently 'capped' by a layer of redeposited clay (84) containing 13th/14th century (2). A band of charcoal was above this, followed by the latest fill comprising clay silt with a large quantity of crushed mortar and oyster shells, and two sherds of 14th/15th century pottery. This pit was truncated by pit F22, and phase 4 pit F21.

**F22** A small circular pit cutting F21, 0.8m in diameter and 0.3m in depth. Two brown silty fills were present, the secondary fill containing sherds of 15th century pottery (3) and frequent fragments of bone.

**F25 (Fig. 33)** This comprised a long rectangular straight sided pit, with vertical sides and a flat base, measuring 2m x 1m and 0.75m deep. The main fill was a homogeneous redeposited clay containing lenses of ash and silt. Large fragments of pottery were retrieved from the ash lenses, including the majority of a late 14th - 15th century jug.

**F27** A shallow elongated pit truncating pit F28 and post hole F67, c.1.5m in length, 0.9m wide and 0.24m deep. The sides were steep and the base was rounded. The fill contained two sherds of 14th/15th century pottery.

**F39 (Fig. 34)** This comprised a circular pit 1.3m in diameter and at least 0.8m in depth with almost vertical sides. Excavation was halted at this depth due to waterlogging. The fill comprised a homogeneous brown silty fill containing 14th/15th century (3). The feature was truncated by post-medieval pit F37.

**F40 (Fig. 34)** The severely truncated remains of a pit, possibly sub-circular and c.1.5m in diameter. The pit was 0.25m in depth, but may have been deeper. No finds were recovered from the fill, and the pit could potentially belong to phase 4.

**F49** An unexcavated pit located in area 2, measuring 3m x 2m. Cleaning of the redeposited clay fill recovered 14th/15th century pottery (2).

**F51** This comprised a shallow pit, irregular in form, with concave sides, 1.43m x 0.85m and 0.3m in depth. The feature was filled with deposits comprising ash, charcoal, mortar and brown/black silts. The uppermost fill contained 14th/15th century pottery (3). The pit truncated the backfill of Roman ditch F7 and two post holes F134 and F135 abutted the feature to the east and the west.

**F180** Truncated by gullies F181 and F182, this comprised a square pit with vertical sides and a flat base containing two sherds of late 15th century pottery.

**F188** This was a shallow circular pit truncating ditch F7. One sherd of Roman pottery is believed to be residual.

Two additional pits F189 and F190 were seen in area 2 truncating Roman gullies. These were not excavated but are suggested to date to this phase on the basis of form and proximity to the dateable 14th/15th century features.

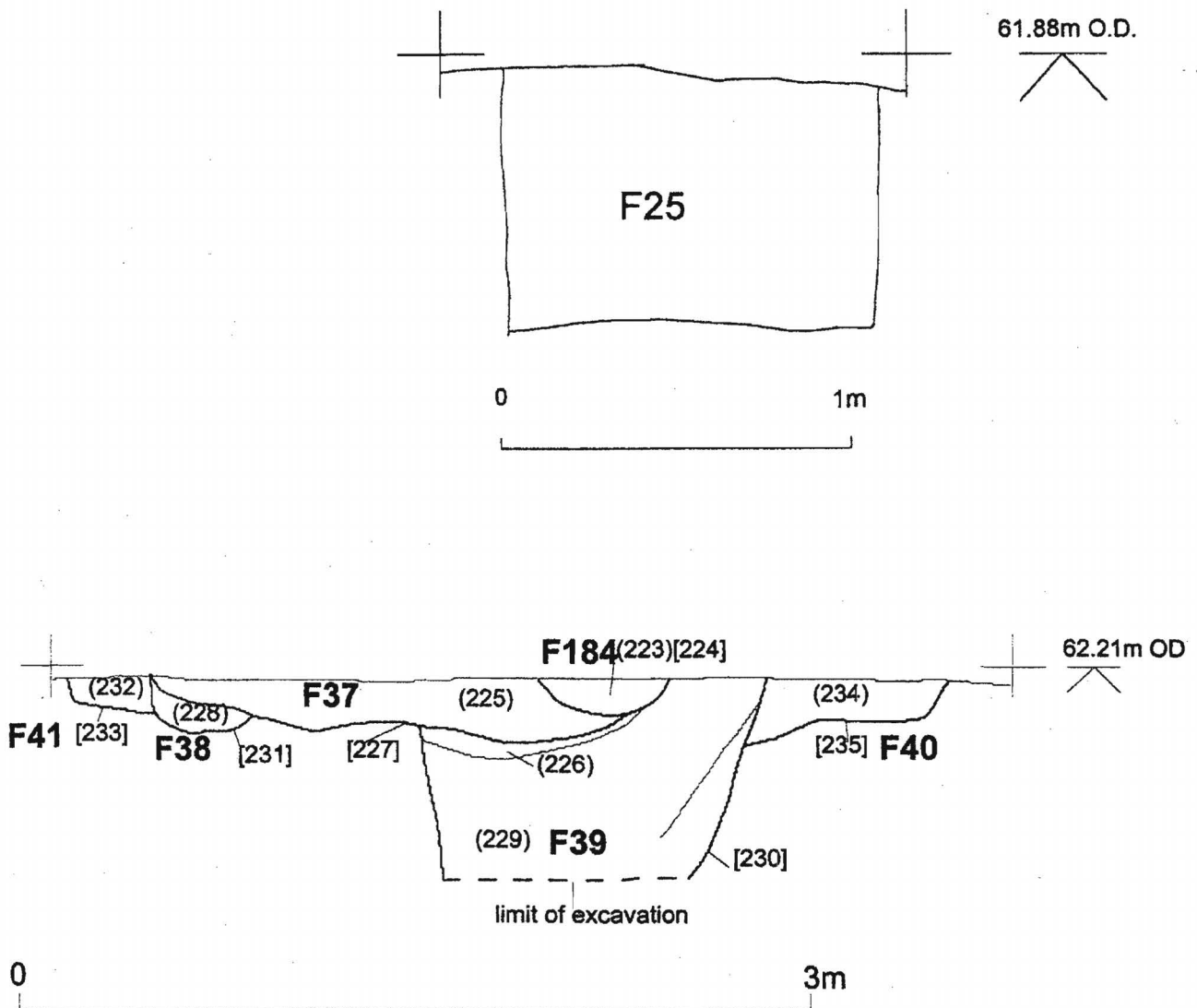


Figure 34 Section through F37, F39, F40 and F184

## ***Discussion of Phases 4 and 5 - The Medieval Suburb***

### ***The Pits***

The evidence for occupation of the site between the 12th and the 16th centuries was characterised mainly by a number of deep rubbish or cess-pits. The pits were mainly circular with slight variations. These are presumed to represent rear yard activity of properties fronting onto Oxford Street which were probably located beyond the western limits of the site (closer to or beneath the modern road). Some of these (F20, F28, F24, F8, F47, F43) had successive episodes of cess deposition separated by cappings of clay or sand which subsequently slumped into the pits. This was no doubt an attempt at maintaining sanitary conditions. Similar processes were seen at the York Road site.

There is little evidence from the pits to suggest industrial activity often associated with extra-mural sites (Bonners Lane - Finn forthcoming). Small amounts of iron slag and coal were recovered from some pits and post holes, but these are believed to represent deposits from background scatters of this material, indicating small scale industrial activity in the area. It is difficult to differentiate spatially distinct areas of pit and post hole activity, although possible structures formed by post holes have been discussed above. The pits may be seen to form two linear groups on approximate north-west to south-east alignments across the middle and close to the northern edge of area 1. The southernmost linear arrangement continues to the east of the post-medieval linear feature F181, F182 and F183. This may indicate the continuation of a property boundary perpendicular to the medieval road as it approached the south gate of the town. The pit clusters are obscured however by a mass of smaller intercutting pits and post holes probably representing additional rear-yard activity. Similar pit formations have been considered to represent separate building plots within Leicester and elsewhere (Connor and Buckley forthcoming; Schofield and Vince 1994, 64). However, techniques adopted at Causeway Lane to analyse the relationship between pits and plots are unconvincing when applied to the weak linearity of the pits at Oxford Street. Pits bear little correlation with 19th century property boundaries, form very weak plots on the grounds of alignment; and linear groups fail to fit the 'two pole' property measurement.

The well, F53, is situated to the south of the southernmost line of pits, or possible property boundary. It would therefore have been located in the centre of the plot rather than along the edge. It is uncertain whether the well would have served only the individual property or the wider local populace.

There is an abundance of examples of pit digging at the rear of medieval and early post-medieval properties. In Leicester, large circular or square rubbish and cess pits have been seen on urban sites such as Causeway Lane, Bath lane and The Shires. In the south suburbs they have been evident at the adjacent sites of 'The Olde Bowling Green', York Road, and Bonners Lane (Finn forthcoming). By the 15th or 16th centuries there appears to be a decline in pit digging on the site. This may have occurred as a direct attempt to improve sanitary conditions by the occupants of Oxford Street. It has been noted in medieval Southampton that cesspit digging was recognised as a health hazard as early as the 14th century when it was seen to decline (Platt and Coleman-Smith 1975). Here, inhabitants were ordered to keep unlined cesspits further away from neighbour's boundaries. This decline in pit digging has

been seen on intra-mural Leicester sites such as Causeway Lane, with domestic waste perhaps being taken away from the town. A contributory cause may have been the threat of plague, prevalent between 1348 and 1485 (more than 30 outbreaks) which was believed to be spread by smell (Connor and Buckley 1999; Platt 1979, 101). The capping of cess-pits with clay or sand at Oxford Street may have been an attempt to reduce smell, although there was no evidence of the use of lime as at Causeway Lane (Skidmore 1999). The decline in pit digging may coincide generally with a reduction of activity in that area, at a time when the suburbs, and population numbers generally, may have been in decline (Courtney 1998, 116).

### *The Medieval Suburbs*

The evidence of building and rear yard activity suggest fairly intensive occupation of the south suburb, at least along the Oxford Street frontage. Similar contemporary activity from the site at Bonners Lane (Finn, forthcoming) supports this theory, although these sites may have been on the very periphery of medieval extra-mural development. Recent excavations on the York Road site 30m to the north, indicate more intense domestic activity during the medieval period just a little closer to the medieval town (Gossip, 1999). The study of extra-mural occupation of other medieval towns has concluded that suburbs often reached their state of maximum growth fairly early in the medieval period (Keene 1975). Leicester's population was larger in 1377 than in 1563, with the medieval suburbs representing a large proportion of this; in 1269-71 suburban dwellers made up 17% of the total population paying tax (Hoskins 1955, 40). This part of the Oxford Street area may have defined the extent of the south suburbs at this time, when there may even have been a period of demographic contraction (Courtney 1998, 116), especially in marginal areas (Schofield and Vince 1994, 213).

There is strong documentary evidence for suburban development outside the south gate at least as early as the 12th century, although its extent was unknown. A 12th century charter shows both burgesses and peasant tenants living beyond the south gate, the existence of bread oven in 1204 is documented, as is a rent of hens (Courtney 1998).

The earliest suburban development in most medieval towns in Britain is seen to cluster along major approach roads and around defences (Platt 1976), the commercial potential of passing, and possibly queuing traffic undoubtedly a factor (Keene 1975). This is likely to have been the case even before there was pressure for space within the town walls (Courtney 1998). The north-south axial street (now Southgate Street and Highcross Street) appears to have been the most important road as early as the late Saxon period (Courtney 1998), and the south and north suburbs may have been the first to develop.

Although no medieval maps of Leicester survive, those of the 16th, 17th and 18th centuries give a good indication of the extent of Leicester's suburbs, which are unlikely to have grown since the 14th century. A map of Leicester made in the late 16th century (LRO BR/II/18/1) shows street frontage occupation, albeit schematically outside all of the towns' four gates. By 1610 Speed shows a well developed street frontage extending south beyond Bonners Lane and in the area of York Road and Oxford Street. Suburban development along the frontages of major approach roads

can be seen on the Speed maps of many medieval towns such as Coventry, Stamford, Norwich, Northampton and Hereford.

While only a small number of environmental samples were taken at Oxford Street, they allow some assessment of the society and environment of the medieval population.

The growth of suburbs has been seen as an indicator of the increase of social stratification (Ottaway 1992). Certain rights and privileges allowed to urban dwellers may have been denied to suburban populations, and there is documentary evidence to support the theory of poverty in some towns such as Oxford (Ottaway 1992, 177). Lay subsidies of 1524 and 1544 show the south suburb to have been the poorest in Leicester (Courtney 1998). The poverty of Leicester's early post-medieval suburbs has also been indicated by tax returns. Whilst the south suburbs may have had the densest population, in 1544 40% of the taxable population were assessed at the minimum level (£1). (Platt 1976, 38; Hoskins 1955, 53).

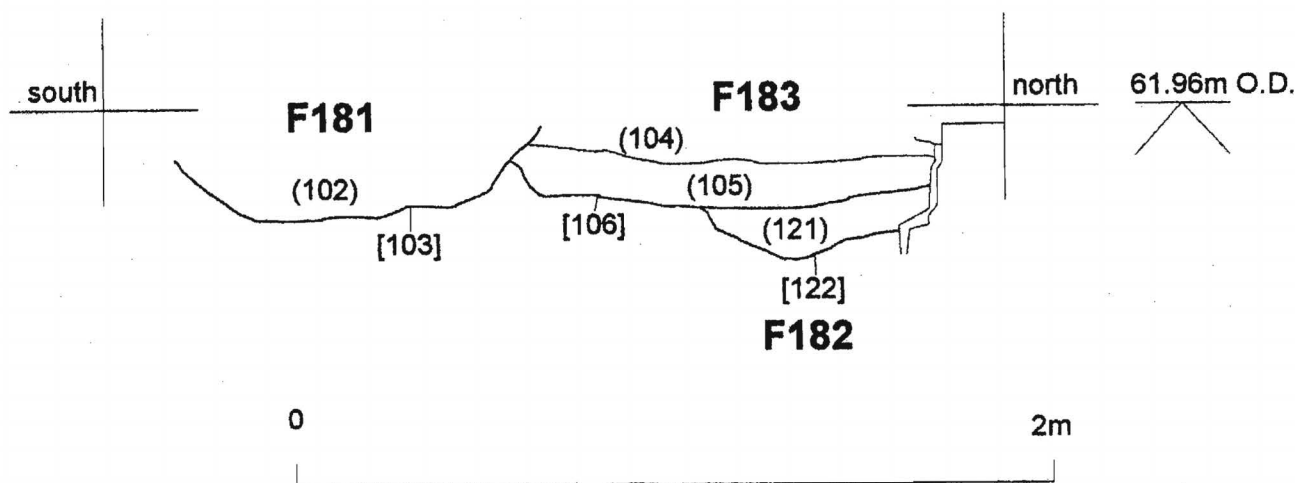
The evidence from Oxford Street is broadly comparable with that of other extramural sites. There is little evidence to provide a great deal of information regarding the social status or living conditions of the inhabitants of this part of the south suburb. The pottery assemblage and variety of plant remains is broadly comparable with those from other extra and intra-mural sites in Leicester.

**Phase 6: The 16th -17th Centuries****The Features**

**F19** This comprised a pit truncated on all sides by modern activity. The shape therefore could not be discerned, but depth was recorded as 0.6m. Fills comprised three organic cess-like deposits, the tertiary fill containing 16th century pottery (8) and medieval ridge tile (2). Also found within the fill was a bone comb dating from the late medieval period onwards (small finds catalogue no. 9).

**F35** A partially visible pit protruding from the eastern limit of area 1, 0.3m deep and truncating pit F36. The fill contained residual 13th century pottery (10) and 17th century pottery (3).

**F181, F182, F183 (Fig. 35)** These features comprised three intercutting gullies on an east-west alignment. A 7m stretch was visible running from the road frontage at the western limit of area 1 to a point at which it was truncated by modern activity. The gullies exceeded no more than 0.25m in depth and had concave sides and rounded bases. Large amounts of rounded pebbles predominated in the fills, in addition to a total of six sherds of 16th century pottery.



**Figure 35** East facing section through Phase 6 gullies



### ***Phase 7: The 18th Century***

#### ***The Features***

**F37** This comprised a large shallow sub-circular pit c. 2m in diameter and 0.30m in depth. The secondary fill contained 18th century pottery (3) and fragments of building material. The pit had been truncated by pit/post hole F184 containing late 17th - late 18th century pottery (7) and clay pipe.

**F54** The cut of a square pit truncating medieval well F53. The feature was 1m x 1m and 0.45m in depth, and contained a single fill consisting of brown sandy clay with frequent tile, slate and brick inclusions. The fill also contained late 18th century pottery (27).

**F179** This comprised a layer of rounded pebbles, tightly packed in a silty clay matrix, extant across large areas of the site where not truncated by modern activity. Probably representing a cobbled surface the layer was 0.08m-0.10m in thickness and sealed all features pre-dating the 18th century. The layer was revealed beneath 19th and 20th century overburden. The cobbled surface was linear on an approximate east-west alignment.

An additional group of intercutting pit-like features were observed truncating the Roman burial F178. These were not systematically excavated, but contained large amounts of 18th century pottery and clay pipe.

### ***Discussion of Phases 6 and 7***

The 16th - 18th centuries saw continued occupation at Oxford Street, represented by the pits, gullies and post holes within and along the edges of these properties. The decline in the number of features suggests that activity was less intense than it had been during the medieval period. Archaeological and documentary sources suggest that the south suburb was largely derelict by and probably demolished during the Civil War, a common practice of Civil War siege tactics (Courtney 1998). Evidence for this has been seen at York Road and the layer of cobbles (F179) sealing all features of the 17th century and earlier suggests that activity may have ceased by this time. Since the only structure of note known to have existed in the vicinity during the 18th century is 'The Old Bowling Green' (possibly shown on the Stukeley map of 1711/1722 and Roberts map of 1741), perhaps the cobbled surface formed a yard area or side lane associated with this building. The pits truncating burial F178 contained pottery types and clay pipe which may have been discarded from 'The Old Bowling Green'.

### ***Phase 8: The 19th - 20th Centuries***

The 19th century saw the redevelopment of the site and directories after 1860 record a variety of small businesses fronting onto both Oxford Street and the newly laid out York Road (Courtney and Gnanaratnam 1997). During the first quarter of the 20th century these small businesses were replaced with larger industrial concerns, and by



1922 the Fox's confectionery factory occupied the entire site. W. Fox had started as a wholesale retailer in 1900 at No.38 York Road. The subsequent factory resulted in the construction of basements and cellars, causing wide scale truncation of earlier features. These cellars extended eastwards from part of the Oxford Street frontage, and were also situated on the York road frontage (possibly the site of a public house, 'The Three Cups'). Many services were also laid at this time, evident on site by the number of drains, inspection chambers and septic tanks dating from the end of the 19th and the early 20th century. The Fox's factory was demolished in 1993, and the entire area levelled for use as a car park.

### **Conclusions**

The excavation at Oxford Street has enabled the further investigation of an area of Leicester neglected by archaeologists in the past in favour, inevitably, of the area within the town walls. Recent excavations at Newarke Street, Bonners Lane, York Road and The Old Bowling Green, in addition to Oxford Street have dramatically increased our understanding of this southern extramural area.

The earliest evidence of occupation occurs in the later first-second centuries, with the establishment of a series of property boundaries defining roadside zones often evident adjacent to the major approach roads of Roman towns. This type of activity is comparable to that at Bonners Lane, York Road and Newarke Street during this period. A change in land use is seen probably in the later third and 4th centuries, when the land is used as a cemetery. This pagan cemetery may represent the southern periphery of the large suburban cemetery so evident at Newarke Street and from surrounding burials, the closest group being York Road, c.40m to the north. The pagan burial rite practised by this section of Leicester's community contrasts with the Christian characteristics observed at Newarke Street (Cooper 1996). A true extent to the cemetery has not been verified, and it may continue further to the south. Evidence of Saxon occupation was observed in the form of the truncated remains of the sunken-featured building. The presence of the larger Saxon building to the west at Bonners Lane suggests that Saxon occupation of this area may have been more intensive than at first realised. It remains unclear whether this occupation took the form of a small rural settlement or was part of a larger proto-urban settlement, perhaps with its centre closer to that of medieval Leicester.

The medieval and early post-medieval periods were a time of intense and continuous activity at Oxford Street, confirming documentary and fragmentary archaeological evidence that the medieval south suburbs were well established by as early as the 12th century. This has been demonstrated by the large number of intercutting cess-pits, rubbish pits, post holes and the well indicative of the rear yard activity of properties fronting onto Oxford Street. A decline in activity during the later 17th and 18th centuries ultimately gave way to the redevelopment of the site for industrial and retail purposes.

## The Roman Pottery

Patrick Marsden

Fabric	Sherd Count	Weight(g)	OW	23	358
Samian	60	309	SW	2	7
C2	32	380	GW	347	4812
C3	1	35			
C5	1	4	GW1	7	15
C12	2	4			
			BB1	143	1522
MO4	2	59			
MO4/18	2	176	CG	3	33
MO6	1	37	CG1	48	746
MO18	1	21	CG1a	56	989
MO19	1	223	CG1b	2	188
			CG2	1	14
AM9A	16	1582	CG3	2	12
AM9B	3	770			
			MD	3	38
WW	88	1207			
WS	2	11	Total	849	13478

Table 2 For Fabric descriptions see Pollard 1994, 112-114

*Phase 1: second century*

Phase 1 contains pottery of a typically second century date. This includes Central Gaulish samian, some of which was from Les Martres-de-Veyre, which dates to 100-120+ AD. Two stamped vessels in Les Martres-de-Veyre and Central/East Gaulish fabrics are described below. Other typically second century pottery includes BB1, such as jars, and colour-coated wares. A stamped mortarium in fabric MO19 dating to 130-170 +AD is described below.

*Phase 2: third/fourth century*

A complete small grey ware jar, of a later Roman date, came from a grave fill of F17 (see *General Discussion*).

*General Discussion*

The date range of the pottery is first to late third-fourth century. The fabric totals are shown in the table above. The assemblage is typical of groups found in Roman Leicester (Pollard 1994 and Clark 1999) and outside the urban core, nearby at Newarke Street (Marsden 1996).

Part of a stamped mortarium (Fabric MO19) of the Mancetter potter MINOMELUS (Reading-MONIM) was present in context 572 (R. Pollard pers. comm.). The date range for this potter is 130-170+AD (K. Hartley pers. comm.). A parallel for this stamp and hooked flange form is known from Corbridge (Birley and Gillam 1948, 187 and Fig. 2.41c), although in this case the stamp was interpreted as MINOMIILVS. Other stamps of Minomelus are known from Leicester at Jewry Wall (Birley 1948, Fig. 58.12A-B) and Causeway Lane (Hartley 1999, 110 and Fig. 59, M21) (Pollard pers. comm.).

A complete grey ware miniature jar was found in between the lower legs of a skeleton in Grave F17 (Phase 2: fig.36). A similar grey ware vessel, of almost identical proportions, in a less sandy fabric, was found in a grave at the 1996 excavations at York Road nearby (Marsden 1999). Apart from this, no parallels in terms of fabric and form are known from previously excavated vessels from grave fills in Leicester at Gallowtree Gate (Dare 1927, 33-57) and Great Holme Street (TLAHS 1974-5, 57-58). The everted rim form and burnishing is characteristic of larger jars of the black-burnished ware tradition. A general date range of later second-fourth century is suggested, the everted rim possibly indicating a late third-fourth century date. The vessels were locally made, perhaps specifically for the purpose of accompanying inhumations. The single vessel is typical of inhumations in the Midlands and North of Britain in the late Roman period. 'By the fourth century whenever pottery was placed in the grave over this extensive area, a single vessel sufficed' (Philpott 1991, 110).

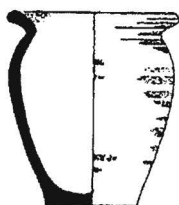


Figure 36 Grey ware everted rim small jar, (52 SF 4, F17, Phase 2) Scale 1:4

## The Saxon Pottery

*Nicholas J. Cooper*

Eight sherds of Early Anglo-Saxon pottery dating to the later fifth or sixth century were recovered from six contexts. Only two sherds were stratified, the remainder being residual. The material was analysed using fabric reference material and descriptions derived from published and unpublished reports on assemblages from the City (Blinkhorn 1999, 165 and The Shires, forthcoming), and work in progress on assemblages in the County (Cooper in prep. Eye Kettleby, Melton).

The material was analysed under x10 binocular microscope and grouped according to the fabric descriptions devised by Blinkhorn. Five of the sherds belong to the coarse granite-tempered Fabric 4 which was also the most common fabric found at Causeway Lane (Blinkhorn 1999, 165), whilst two sherds belong to the finer grained granite tempered Fabric 6. The remaining sherds belong to the calcareous tempered Fabric 7. The predominance of granitic tempering in this area is due to the use of clays and opening materials deriving from the Charnwood district of North West Leicestershire.

## The medieval and later pottery and the medieval ridge tile

Deborah Sawday

The stratified pottery (558 sherds, 11963 grams) and all the ridge tile (18 fragments, 697 grams) was examined under a x20 binocular microscope and catalogued by fabric (Table 3) and context (Tables 4-5). Quantification is by sherd/fragment numbers and weight

### Pottery fabric tables :

Fabric Code	Common Name/Kiln & Fabric Equivalent where known	Approx. Date Range
ST1	Stamford ware 1 - developed Stamford ware, fabrics B/C (1)	c.1150-13th c.
ST2	Stamford ware 2 - fine Stamford ware, fabrics G B/(A) (1)	c.1050-12th c.-
TO	Torksey type ware - ?local/Lincs (2)	c.10th-12th c.
PM	Potters Marston ware, Potters Marston - S.W. Leics (3)	c.1100-c.1300
RS	Reduced Sandy ware unclassified - ?local	c.850-c.1400
OS	Oxidised Sandy ware - unclassified - ?local	c.12th-13th c.
SP3	Splashed ware 3 - ?Leicester (3)	c.1100-1250
LY4	Stanion Lyveden type ware 4 - ?S.E. Leics., Stanion/Lyveden - Northampton fabric T1-2, T2 (4)	c.1100-1400
CC1	Chilvers Coton ware 1 - Chilvers Coton, Warwicks, fabric A/Ai (5)	c.1200-1400
CC2	Chilvers Coton ware 2 - Chilvers Coton, Warwicks, fabric C (5)	c.1200-1475
NO3	Nottingham ware 3 - Nottingham fabric group W13/W14 (6)	c.1250-1350
MS2	Medieval Sandy ware 2 - ?local/Chilvers Coton/Nottingham/Burley Hill-Allestree (7)	c.1200-1400
MS3	Medieval Sandy ware 3 - ?local/Burley Hill/Allestree/Ticknall (7)	c.1200-1400
MP1	Midland Purple ware 1 - Chilvers Coton fabric D (5)	c.1375-1550
MP2	Midland Purple ware 2 - ?Ticknall, Derbyshire (7)	c.1375-1550
TG	Tudor green type ware - unclassified - ?Surrey Whiteware (8)	c.1400-1600
CW2	Cisterican ware 2 - ?Ticknall, Derbyshire (7)	c.1475-1550
CW2/MB	Cisterican ware 2/Midland Blackware - ?Ticknall, Derbyshire (9)	c.1475-1750
MY	Midland Yellow ware - ?Ticknall, Derbyshire (9) (10)	c.1500-1725
EA1	Earthenware 1 - Chilvers Coton/Ticknall, Derbyshire (9) (10)	c.1500-1750
EA2	Earthenware 2 - Chilvers Coton/Ticknall, Derbyshire (9) (10)	17th--8thc. +
EA3/5	Earthen ware 3 - Mottled ware ?Staffs (9) (10)	c.1650-1750
EA6	Earthenware 6 - Black Gazed Earthenware	16th-18th c.
EA7	Earthenware 7 - Slipware - Staffs etc	18th-19th c.
EA9	Earthenware 9 - Pearl ware - Staffs etc	c.1780+
SW3	Stoneware 3 - grey stoneware with white engobe & ferruginous wash - ?Staffs etc	late 17th/early 18th c.
SW4	Stoneware 4 - white salt glazed stoneware - Staffs etc	18th c.
SW5	Stopneware 5 - brown salt glazed stoneware - ?Nottingham/Derby etc	late 17th c. +
EA	Unclassified post medieval earthenware	post med/modern

Table 3: The Pottery and Ridge Tile Fabrics

- (1) Kilmurry 1980, Leach 1987
- (2) Barley 1964, 1981
- (3) Davies and Sawday 1999
- (4) McCarthy 1979, Brown 1993/4
- (5) Mayes & Scott 1984

- (6) based on a fabric series by V. Nailor
- (7) Coppack 1980
- (8) Pearce, Vince *et al* 1988
- (9) Gooder 1984
- (10) Sawday 1989

## *The Pottery*

### *The Stratigraphic Record*

Thirteen sherds (135 grams) of pottery were intrusive in Roman levels. A single sherd of Medieval Sandy ware, fabric MS2 was found in the fill of the grave F17 in phase 2, and part of a Cistercian ware cup rim, fabric CW2, in the post hole (641). The rest of the medieval pottery, including fragments of two late 11th or 12th century cooking pots/storage jars in Potters Marston, and a single sherd of post medieval Slipware, was found in the backfill of the phase 1 ditches, F6, F7, (467), (527) and (641).

### *Phase 4 (313 sherds, 6040 grams) – Tables 4 and 6*

The pits F8, F9, F11, F23, F24, F28, F29, F30, F31, F32, F36, F43, F44, F46, F47, F52, F89, F177, F185 and F200 produced 238 sherds of pottery, weighing 4891 grams. The average sherd weight of 20.5 grams, and the lack of abrasion, suggested that much of this pottery represented primary refuse, although the single sherd of the earliest Stamford ware fabric, ST3, dated from c.900, in F23, and apparently residual in F23 in this phase, weighed only 1 gram. Also present were fifteen sherds in fabric ST2 (average sherd weight - 9.8 grams), including part of a spouted pitcher, approximately half of which were glazed, suggesting a mid 12th century date for this fabric, and some degree of residuality here also (Kilmurry 1980, p.133). A hand made cooking pot/storage jar in the unclassified Reduced Sandy ware fabric, RS, possibly a Coventry Sandy ware (Rylatt and Stokes 1986), was also recorded (fig. 37.2). Potters Marston, generally dated from the 12th - or possibly late 11th, to the 13th century, was by far the most common pottery type, with an average sherd weight of 24.4 grams, and representing 67% of the total by sherd numbers. Of note was part of a jug with notched basal angle paralleled at Causeway Lane, Leicester, (Davies and Sawday 1999, fig 94.122), a sloping shouldered cooking pot/storage jar (fig.37.4), and an upright bowl (fig. 37.3). Also present was a cooking pot/jar rim in OS2 (fig. 37.5). However, the thirty six sherds of the generally wheel thrown and glazed sandy wares, comprising the Chilvers Coton fabric CC1, which included part of a glazed baluster jug base, and the medieval sandy wares MS1, MS2 and MS3, indicate a terminal date in the 13th if not the early 14th century for this group. A total of eight sherds of intrusive post medieval pottery was recovered from F8, F32, and F185.

Fifty five sherds of pottery, weighing 989 grams, with an average sherd weight 17.9 grams, were recovered from the fills (13), (14), (29), (55), (151), (153), (155), (156) and (157) of the well, F53. The small quantity of Potters Marston present - nine sherds in all - and the absence of early medieval fabrics such as the Splashed ware SP3, and the Oxidised Sandy wares, points to a date some time after the mid thirteenth century for the construction of the well. The later 13th century pottery includes internally reduced sherds of the green glazed Nottingham ware, fabric NO3, as well as sherds in the Chilvers Coton fabrics CC1 and CC2, the former including the profiles of two dripping dishes, both with internal glaze and sooting, paralleled in the equivalent Pxii fabric at the Austin Friars, Leicester (Woodland 1981, fig.35.129). The continued use of the well throughout the medieval and later periods is demonstrated by the presence of sherds in the late medieval Midland Purple, fabric MP2, the Cistercian ware fabric CW2, the late medieval/early post medieval Tudor Green type, or Surrey whiteware, fabric TG, and the post medieval Earthenwares, EA1, and EA7. The latter comprised a single fragment, weighing only two grams, of



a press moulded dish, dating from the mid 18th century, which is presumed to be intrusive here.

The garden soil (100) and (214) produced eight sherds (101 grams) of Saxo Norman, medieval and late medieval pottery, including a cooking pot/storage jar rim in Torksey type ware, fabric TO (fig. 37.1). The post holes F38, F84, F85, F86, F89, F198, (90) and (220) contained between them twelve sherds of pottery with a similar date range to the above, weighing 59 grams. Of note were three sherds in the Cistercian ware fabric CW2, decorated with applied white clay pads and a plain circular stamp, unfortunately too fragmentary to illustrate.

*Phase 5 (106 sherds, 2710 grams) Tables 5, 6 and 7*

The pits F12, F20, F22, F25, F27, F33, F39, F41, F45, F49, F51 and F180 produced 105 sherds of pottery, weighing 2693 grams. The relatively high average sherd weight of 25.6 grams again might seem to imply that much of this pottery represents primary refuse, but at least some of this is accounted for by the presence of an almost complete jug in Midland Purple, fabric MP1, with rouletted decoration, in F25 (fig. 37.6). Whilst the vessel and rim form have no close parallels at Chilvers Coton, rouletted decoration dates from the late 14th and 15th centuries at the kiln site (Mayes and Scott 1984).

In fact, the wide date range of much of the material in the pit fills suggests a degree of redeposition for much of the earlier pottery, which dates from the 12th century. However a terminal date in the 15th century or slightly later is indicated by the presence of the Midland Purple fabrics MP1 and MP2 in all of the pit fills save F180, which contained a single sherd of the late medieval Cistercian ware CW2, and F45, which produced post medieval pottery, including three sherds of Mottled ware, fabric EA3, dating from the mid 17th century. Of note was the presence of two wide mouthed bowls or pancheon rims in the Medieval Sandy ware fabric MS3, and several cistern fragments in MP2, including one with a plain bung hole, and another rim with a thumb applied clay strip at the neck. A sherd in CW2 was decorated with an applied white clay pad with a 'wheel stamp' (fig. 37.7). The post hole (79) contained a single sherd of Midland Purple, fabric MP2.

*Phase 6 (19 sherds, 180 grams) Tables 5 and 7*

The pits F19, F37 and F186 produced eleven sherds of pottery, weighing 144 grams. Most of the material was fragmentary, save for six sherds from a wide mouthed bowl rim, weighing 118 grams in fabric MP2 in F19. A terminal date in the mid or later 18th century for the group is suggested by a single fragment of white stoneware, fabric SW4 in F37, which also contained a presumably intrusive sherd of modern Pearlware, fabric EA9.

Eight sherds of pottery, weighing 36 grams, with an average sherd weight of 4.5 grams, were recovered from the gullies, F181 and F182. Sherds of medieval pottery occurred in both features together with fragments of the post medieval Midland Yellow, fabric MY, Cistercian/Midland Blackware, fabric CW2/MB, and Earthenware 1. The absence of later post medieval wares such as the Mottled wares EA3 and EA5, suggests a terminal date in the later 16th or early to mid 17th century for this pottery.

*Phase 6-7 (4 sherds, 105 grams) Tables 5 and 7*

The drain (147) contained 4 sherds of pottery, comprising two sherds of medieval date, one late medieval sherd, and one in the post medieval EA2, or pancheon ware. The relatively high average sherd weight (26.2 grams) is accounted for by a thumbled jug base, weighing 76 grams, in fabric MP2.

*Phase 7 (84 sherds, 2245 grams) Tables 5 and 7*

The pits F37, F54, and (419) produced 52 sherds of pottery, weighing 1542 grams, with an average sherd weight of 29.6 grams. Of interest was a cup fragment decorated just below the rim with very fine circular patches of iron rich slip under the glaze. The fabric is similar to the 'reversed' Cistercian ware, CW3, but the quality of the glaze suggest that the sherd is post medieval in date, and it has been catalogued as Midland Yellow ware, although the slip decoration is not typical of this ware locally. Also present was a glazed upright cup or jug rim in the Midland Blackware fabric, MB, two jar rims in the post medieval earthenware fabrics EA1 and EA2, the base of a rilled mug in the Mottled ware, EA3, and the profile of a glazed bowl in the Blackware, EA6. A terminal date in the mid to later 18th century is suggested for this group by the presence of the Brown Salt Glazed Stoneware, SW5, and a press moulded Slipware dish and bowl in fabric EA7.

The post hole, F184, contained eight sherds of pottery, weighing 88 grams, including residual late medieval pottery, and six jar or bowl fragments in the Mottled ware fabric EA3, dating from the mid or late 17th, into the 18th century. The surface of the road, F179, produced 14 sherds of pottery, weighing 232 grams. Most of this pottery was residual, but also present was a chamber pot fragment in the Blackware, EA6, and the 18th century Salt Glazed Stoneware, SW3. The services, (355) contained a single sherd, part of the base of a mug in EA3, whilst the possible pits (388), (390) and (421) produced nine sherds of residual Potters Marston.

*Phase 7-8 Brickwork (19 sherds, 546 grams) Tables 5 and 7*

The post medieval earthenware fabrics present in the brickwork comprised a pancheon and bowl rim in EA2; a rilled mug base in the Mottled ware, EA3; a single unidentifiable sherd in the Imitation Mottled ware EA5; and the base of a wide bodied vessel and a chamber pot rim in the Blackware, EA6. The two sherds of Slipware, EA7 were from a press moulded dish, suggesting a terminal date in the mid or later 18th century for this group.

*Unstratified*

The only unstratified pottery fragment of note was a single sherd of coarse Stamford ware, fabric ST3, part of an inturned bowl rim. These are uncommon outside Stamford, where they are dated from the 10th to the late 11th centuries (Kilmurry 1980, p.137).

*The Medieval Ridge Tile (18 fragments, 697 grams) Table 8*

Twelve of the ridge tile fragments were recovered from the phase 4 well and post hole, and the pits in phases 4 and 5. The rest, apart from an intrusive fragment in the Roman levels, were unstratified or residual in phases 6 and 7. All but three of the



eighteen fragments were glazed, and eleven were in the Chilvers Coton fabric CC1. Two of the fragments in fabrics MS2 and MP2 showed evidence of a crest, but neither was identifiable.

### Discussion

The single sherds of Stamford fabric ST3 and Torksey type were recovered from the phase 4 pit and garden soil, and the unstratified bowl rim in fabric ST3, may be the result of manuring, as part of horticultural or agricultural activity in the area during the 10th or 11th centuries - there is certainly no evidence for intensive activity on the site at this time.

Much of the pottery from phase 4 pits was evidently primary refuse and suggests that there was occupation in the area from the 12th century, as does the pottery from the garden soil and the phase 4 post holes. The dating of the pottery from the fill of the phase 4 well implies that it was in use by the mid 13th century. The eight fragments of ridge tile from this phase all date from the 13th and, possibly, 14th centuries.

The pottery from phase 5 pits, included redeposited material from phase 4 as well as later material and this, and the single fragment from the post hole (79), provides evidence of continued activity during the later medieval period. Relatively little pottery, only 23 sherds, dating from the late medieval period to the mid or later 18th century, was recovered from the phase 6 pits and gullies and the phase 6 - 7 drain. Phases 7 and 8 also produced pottery with a terminal date in the 18th century.

### Conclusion

The site produced post Roman pottery dating from the Saxo Norman to the modern period, with the notable absence of any Saxon material. The relative proportions of the major ware groups shows that Potters Marston, dating from c1100-c.1300, is the dominant fabric, both in terms of sherd numbers and sherd weight, accounting for 52.7% and 54.9% respectively, of the Saxo Norman and medieval pottery totals (fig.4). This in turn suggests that, as at Newarke Street (Sawday and Davies 1996), in the same medieval suburb, activity on the site was at its most intense during this period, but other factors such as different methods of rubbish disposal in the later medieval period, could also have had an impact on the material evidence.

The range of pottery fabrics and vessel forms is broadly similar to that found within the city - although it appears that some of the minor fabric groups, such as the Saxo Norman Lincoln/Lincolnshire shelly wares, and the early medieval Nottingham Splashed wares are more commonly found on the *intra mural* sites. However, the relatively small size of the pottery assemblages from the *extra mural* sites examined to date may in part, explain the differences.

The medieval ridge tile fabrics are typical of Leicester and its environs. The tile fragments were relatively small, with an average weight of only 38 grams and none was definitely associated with any structure.

FABRIC	ST3	ST2	TO	PM	RS	OS2	OS	SP3	LY4	CC1	CC2	NO3	MS2	MS3	MP1	MP2	TG	CW2	post med	TOTALS
PHASE 4																				
pits	1/1	15/147		161/3939	1/58	3/107	1/1	14/163	10/102	11/184			1/18	12/93					8/78	238/4891
well				9/103						14/401	4/37	3/26	1/5	5/133		12/160	1/3	1/1	5/120	55/989
g.soil			1/42	4/34						1/7						2/18				8/101
p.holes.				4/41						1/1						2/11		5/6		12/59
TOTALS	1/1	15/147	1/42	178/4117	1/58	3/107	1/1	14/163	10/102	27/593	4/37	3/26	2/23	17/226		16/189	1/3	6/7	13/198	313/6040
PHASE 5																				
pits		1/5		43/532	1/6	1/10		2/4		3/15	3/30	14/137	1/6	5/193	8/826	14/761	1/1	3/29	5/138	105/2693
p. hole																1/17				1/17
TOTALS		1/5		43/532	1/6	1/10		2/4		3/15	3/30	14/137	1/6	5/193	8/826	15/778	1/1	3/29	5/138	106/2710

Table 4: The Saxo Norman and Medieval Pottery from Phases 4 and 5, by fabric sherd numbers and weight (grams).

FABRIC	earlier med	MS3	MP1	MP2	TG	CW1	CW2/MB	MY	EA1	EA2	EA3/5	EA6	EA7	EA9	SW3	SW4	SW5	EA	TOTALS
PHASE 6																			
pits				6/118	1/1			3/13	1/12										11/144
gulleys	2/9			1/10			3/6	1/1	1/10										8/36
TOTALS	2/9			7/128	1/1		3/6	4/14	2/22										19/180
PHASE 6-7																			
drain	2/18			1/76						1/11									4/105
PHASE 7																			
pits	1/14			1/12			2/15	1/8	3/138	11/418	13/397	9/421	4/27	1/3		1/1	1/2	4/86	52/1542
p. hole				1/5			1/5				6/78								8/88
road s.	4/54	1/35	1/16	3/53		1/5			2/48			1/10			1/11				14/232
services											1/10								1/10
pit ?phase 7	9/373																		9/373
TOTALS	14/441	1/35	1/16	5/70		1/5	3/20	1/8	5/186	11/418	20/485	10/431	4/27	1/3	1/11	1/1	1/2	4/86	84/2245
PHASE 7-8																			
Brickwork										3/160	12/106	2/263	2/17						19/546

Table 5: The Later Medieval, Post Medieval and Modern Pottery from Phases 6 to 8, by fabric sherd numbers and weight (grams).

FABRIC	ST3	ST2	TO	PM	RS	OS2	OS	SP3	LY4	CC1	CC2	NO3	MS1	MS2	MS3	MP1	MP2	TG	CW1	CW2	CW2/ MB	SITE TOT.
RB PHASES				8/108					2/12					1/1						1/2		12/ 123
PHASE 4	1/1	15/ 147	1/42	178/ 4117	1/58	3/107	1/1	14/ 163	10/ 102	27/ 593	4/37	3/26		2/23	17 /226		16/ 189	1/3		6/7		300/ 5842
PHASE 5		1/5		43/ 532	1/6	1/10		2/4		3/15	3/30	14/ 137		1/6	5/193	8/826	15/ 778	1/1		3/29		101/ 2572
PHASE 6										2/9							7/128	1/1			3/6	13/ 144
PHASE 6- 7													2/18				1/76					3/94
PHASE 7				10/ 379								3/60		1/2	1/35	1/16	5/70		1/5	2/11		24 578
SITE TOTALS	1/ 1	16 /152	1/ 42	239/ 5136	2/ 64	4/ 117	1/ 1	16/ 167	12/ 114	32/ 617	7/ 67	20/ 223	2/ 18	5/ 32	23/ 454	9/ 842	44/ 1241	3/ 5	1/ 5	12/ 49	3/ 6	453 /9353

Table 6: The Saxo Norman and Medieval Pottery Site Totals, by fabric sherd numbers and weight (grams).

FABRIC	MY	EA1	EA2	EA3	EA5	EA6	EA7	EA9	SW3	SW4	SW5	EA	SITE TOTALS
RB PHASES							1/12						1/12
PHASE 4		5/122	3/36		2/20	1/11	2/7						13/198
PHASE 5	1/3		1/86	3/49									5/138
PHASE 6	4/14	2/22	1/11										7/47
PHASE 6-7			1/11										1/11
PHASE 7	1/8	5/186	11/418	19/470	1/15	10/431	4/27	1/3	1/11	1/1	1/2	4/86	59/1658
PHASE 7-8			3/160	11/102	1/4	2/63	2/17						19/546
SITE TOTALS	6/25	12/330	20/724	33/621	4/39	13/705	9/63	1/3	1/11	1/1	1/2	4/86	105/2610

Table 7: The Post Medieval and Modern Pottery Site Totals, by fabric sherd numbers and weight (grams).

FABRIC	PM	SP3	CC1	MS2	MS3	MS	MP2	TOTALS
RB PHASE					1/25			1/25
PHASE 4								
Pits			1/87		1/90	1/42		3/219
Well	1/10		2/77					3/87
post hole			2/21					2/21
PHASE 5								
Pits			4/80					4/80
PHASE 6								
Pit		1/30	1/4					2/34
PHASE 7								
road surface			1/46					1/46
U/S				1/105			1/80	2/185
TOTALS	1/10	1/30	11/315	1/105	2/115	1/42	1/80	18/697

Table 8: The Medieval Ridge Tile from the Site, by fabric, fragment numbers and weight (grams).

*The Pottery Illustrations (fig. 37)*

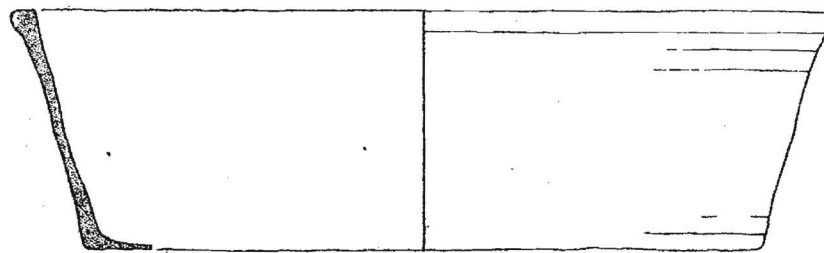
by Sophie Lamb

Illus no.	context	phase	fabric	
1	(100)	4	TO	wheel thrown cooking pot/storage jar rim
2	F24	4	RS	hand made cooking pot/storage jar rim, sooted externally, possibly a Coventry Sandy ware
3	(48) F177	4	PM	hand made bowl, externally knife trimmed at basal angle, sooted externally
4	(48) F177	4	PM	hand made cooking pot/storage jar, coils visible on inner wall, sooted externally
5	(119) F24	4	OS2	wheel thrown cooking pot/storage jar, patches of oxidation & reduction internally
6	(168) F25	5	MP1	jug with rouletted decoration, patchy glaze above shoulder and on top of rim, area of reduction - stacking evidence - under base
7	F22	5	CW2	applied white clay pad with stamped decoration

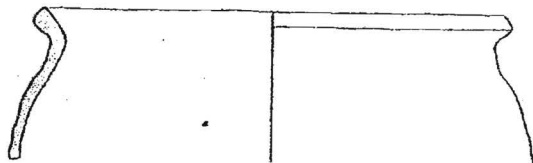
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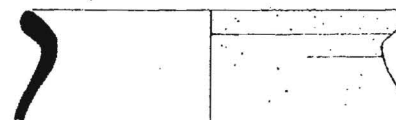
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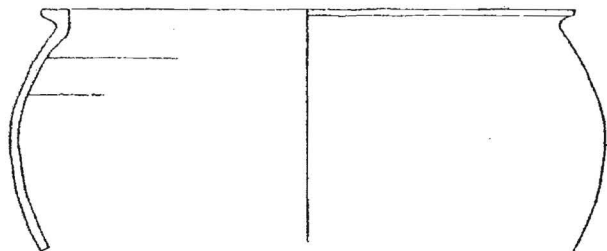
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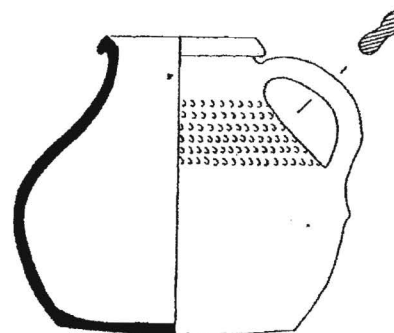
5



3



6



7



Figure 37 The Medieval pottery. Scale 1:4

## The Clay Tobacco Pipes

John Lucas

Context	Stem frags	U/id heel	U/id plain bowl	Plain Spurred Bowls 1780-1820	Early 17 <sup>th</sup> century bowls
T5 S pipe trench	3				
225	3				
140	1				
120	1				
337 338	2				
327	2				
339	1				
U/S	25	1			
TR 8 drain b/f	5			1	
TR2 pipetrench	2			1	
196			1	1	
223				1	
TR2 brickfloor	2			1	
419 420	2			1	
149 150	8			1	
14					2 (join)

Table 9: Catalogue of clay tobacco pipes

*Summary*

There is one early 17th century bowl from context 14 (Higgins 1985, 291 and fig. 1.1), a typical small stubby bowl with rilling just below the top of the bowl, but otherwise plain with a stubby heel. All the rest of the bowls are very similar. There are plain, slender and thinned walled with, usually a round tall heel. One example has a pointed heel (context 149). The bowls are angled forward with slightly curved sides. They are all dated to 1780 to 1820 and are paralleled at the 1978 Elbow Lane excavation (Higgins p.302 & fig. 5.63 to 65) where they were found alongside Midland spur types with scalloped decoration. The stems have no markings and are very undiagnostic.

This is a small collection, but except for the early 17th century example, all the identifiable are very similar.

## The Non-ceramic Building Materials

Tony Gnanaratnam

## The Slate

Context No.	Weight kg	No. of Frags	Date of Form	Pottery Date	Description
US	0.25	2	M+		2 bored frags 8.5mm diam. and 7.8mm diam., one torched
Tr.2	0.15	1	M+		bored frag. 8mm diam.
11	0.15	1	M+	Roman	bored frag. 8.5mm diam.
19	>0.05	1		1475+	
29	>0.05	1	M+	13/14C	bored frag. 10.5mm diam.
61	0.25	3	M+	14-15+	bored frag. 8.9mm diam.
69	0.55	1	Roman?	Roman	possible fragment of pear-shaped tile with torching
70	4.00	12	M+	13C	6 bored frags, 9.8mm, 9mm, 8.5mm, 7mm, 6mm & 5.8mm diam., 6 with traces of torching
83	0.30	2		14/15C	
84	0.55	4		13/14C	
85	0.45	4	M+	12/13C	1 frag. has bored hole @10mm diam.
93	1.15	3	M+	15C	2 retain traces of bored holes, one frag. has torching
105	0.90	2	M+?	15/16C	near complete 215x90mm, not clear if originally bored, could be infill from wall
117	1.05	8	M+	13C	1 bored frag. 6mm diam.
121	2.05	2			1 large frag. of slate? 40mm thick prob. rubble.
143	0.10	1		12C	
168	0.10	1		15C	
232	0.05	1		14/15C	
266	0.20	3	M+		1 frag. with trace of bored hole.
268	0.15	2		12/13C	
307	0.30	1		13C	
322	1.20	1		12/13C	poss. tile fragment with solution holes on reverse
329	1.75	1	M+		large frag. 200x>290mm broken prob. rectangular tile
347	2.20	1		14C	large stone fragment, possibly granito-diorite, 230+ x130 x 40mm
388	0.45	1	M+	12/13C	bored frag. 8mm diam.
447	0.15	1	M+	12/13C	bored fragment 9mm diam.
604	0.20	1		14/15C	
670	0.80	2		Roman	
672	0.35	1		Roman	
<b>Total</b>	<b>19.25kg</b>	<b>65</b>			

Table 10: Catalogue of Slate

## Discussion

The assemblage from Oxford Street consisted of sixty-five fragments of stone weighing a total of 19.25kg. None of the slates was complete. Of these fragments, nineteen had bored holes, suggesting that these were almost certainly pegged roofing slates. The use of bored or augered holes is characteristically medieval or post-medieval in date, rather than Roman. The hole is likely to have made either using an



auger turning less than 360° or a drill. Salzman quotes a 1313 record of the purchase of a spindlethong for boring slates (1967,234) in support of the use of a drill. The diameter of the holes is typically around 8mm and allows the use of wooden pegs rather than nails to secure the slates. It is likely that the bored fragment from context (11) is medieval and thus intrusive.

Clifton-Taylor suggests that the medieval use of roofing slate began in the thirteenth century. The Mayors accounts for 1314 first record the use of slate in Leicester (RBL I,295). The Mayors accounts for 1321, for repairs to the Guildhall, also suggest the use of mortar (torching) in the laying of the slates (RBL I,321). Welsh slate largely superseded the use of local slate in the nineteenth century, although it was still quarried until 1887.

The precise source for the slate could not be determined, although it almost certainly derives from the local Pre-Cambrian deposits of Charnwood Forest, quarried variously at Groby, Woodhouse Eaves and Swithland, (Clifton-Taylor 1987, 166).

#### Abbreviations

RBL I Records of the Borough of Leicester vol. I 1899 ed M Bateson. C.J. Clay and Sons London

#### The Mortar

Context No.	Weight Kg	Number of Frags	Pottery Date	Description
1	0.05	1	12/13C	Abraded lime mortar
5	0.05	4	Mod	Light lime and sand mortar, poss with some organics
13	<0.05	1	1475+	Lime(?) mortar with stone imprint on reverse
19	<0.05	1	1475+	Lime mortar frag.
58	<0.05	1	Roman	Lime plaster with whitewashed face.
121	0.10	4		Lime and sand mortar with reed impressions on reverse. White paint (limewash) on face.
149	0.10	3	18C	Similar to mortar from 121. Wood imprint on reverse.
151	0.10	1	16/17C	As 121 with wood impression on reverse.
153	0.20	1	12/13C	As 121 with wood impression on reverse.
164	<0.05	1	16C	White lime mortar.
268	<0.05	1	12/13	White lime mortar.
302	<0.05	1	13C	White lime mortar.
339	<0.05	1	18c	Lime and sand mortar, could be Roman.
659	<0.05	1	Roman	Very light mortar, possibly lime and dung. Yellow paint on the face.
672	0.15	7	Roman	Very light mortar, possibly lime and dung, two have traces of structural impressions on the reverse.
<b>Total</b>	<b>0.75kg</b>	<b>29</b>		

Table 11: Catalogue of mortar fragments

### Discussion

Most of the mortar fragments were of little note. The mortars from contexts (121), (149), (151) and (153) are visually very similar, and closely resemble a group of mortar from pit fill (98) in the York Road excavations. These mortar fragments bore impressions of wooden and stone structural elements on the reverse. However, these contexts represent a considerable date range and whilst they may represent a dispersed deposit of residual mortar, they need not derive from a single structure. The mortar fragments were not intrinsically datable although their general lack of organic inclusions can be compatible with a Roman date.

The painted fragments were not chemically analysed but are likely to be a lime ( $\text{CaCO}_3$ ) based wash in the case of the white and yellow ochre in the case of the yellow painted fragment. Salzman notes that ochre is recorded as one of the cheaper pigments in contemporary records (1967,168).

The plaster fragments from context (672) appear to contain a high organic content and are likely to be a lime and dung mixture. As such these are likely to be medieval or post-medieval in date, although found within a Roman context and are thus likely to be intrusive.

### The Slag

A number of fragments of slag were recovered from the excavation. The small quantity present suggests that it is unlikely that any industrial activity occurred on site. Provenance of the slag is shown in the table below.

Context	Description	Material	No.	Weight (g)
U/s	Pipe Trench	Iron Slag	1	1
33	Medieval Pit	?Slag	1	5
39	?Gully	?Slag	1	1
73	Medieval Pit	?Slag	2	1
432	Medieval Pit	?Slag	1	1
659	Roman Ditch	?Slag	1	6
689	Roman Ditch	?Slag	1	1

Table 12: Provenance of the slag from Oxford Street

## The Small Finds - Nicholas J. Cooper (based on Archive Record by Dawn Harvey)

### Discussion

The small finds assemblage comprises 80 objects, 69 of iron, seven of copper alloy, two of bone, and two of lead, ranging in date from the Roman to the post-medieval and modern periods.

Of the Roman non-ferrous objects, only two are attributable to a functional category (personal adornment and dress). Sf 1 from (12) is a bone hairpin of Crummy's Type 3 with a spherical head (1983, 22) dating between the later second and fourth centuries. This is the most common later Roman bone hairpin type occurring in the City (Cooper 1999, 255). Sf 8 from (102) is the lower shaft of a copper alloy hairpin; the lack of a head precludes more precise dating.

Footwear from the burial survives as the leather soles of two hob-nailed shoes (*calcei* or *caligae*). In both cases, sf 3 and sf 19 from (52) and (394) respectively the entire sole appears evenly covered in hobnails of Manning's Type 10 (1985). The study of larger waterlogged assemblages such as that from New Fresh Wharf, London, where a variety of patterns was found, indicates that this heavy nailing pattern is confined to adult sizes as supported here (MacConnoran 1986, 218).

Non-ferrous small finds of medieval or later date include five objects attributable to functional categories; two objects of personal adornment or dress, two related to a toiletry function, and one to commercial activity. Sf 12 from (98) is a cast copper alloy belt buckle pin which is closely paralleled by a range of examples from London dating from Ceramic Phases 9-11 c.1270-1400 and all possessing a raised ridged grip on the upper surface close to the loop (Egan and Pritchard 1991, 115, fig.75.541, 547 and 549). Sf.6 is a small copper alloy wire pin with a globular head (Crummy's Type 2) used in dress fastening and on evidence from Colchester, dates from the 15th to 16th centuries (Crummy 1988, 8, fig.4.452).

Sf 9 from (192) is a simple double-sided comb carved from a single rectangular piece of bone presumably from a scapula. The teeth on one side are fine (eight per cm) and on the other coarse (four per cm). Close parallels come from Southampton (Harvey 1975, 274, fig.248.1939 and 249.1944, 46 and 47) ranging in date from c.1375-1425 to 1630-40 and Colchester (Crummy 1988, 23, fig.26.1852) from a context dating between 1648-1819. A similar example came from excavation in St Peter's Lane, Leicester (Cooper forthcoming, no.144). The wide range of dates presented by these parallels emphasises the fact that this standardised simple form becomes the preferred type from the late medieval period onwards with examples being increasingly produced from box-wood in London (Egan and Pritchard 1991, 366).

Sf 17 is a pair of tweezers manufactured from a long thin piece of copper alloy sheet, folded and twisted to form the shaft and arms. A very close parallel comes from London (Egan and Pritchard 1991, 381, fig.243.1774 Type II) dated c.1200-1230. In the London example the other end of the shaft is looped to form what is considered to be an ear scoop but this is not clear on the present example due to damage.

Sf 92 from (355) is the lid of a small, horseshoe-shaped copper alloy container for beeswax. The upper surface is stamped (from the inside) with a horseshoe motif and the legend 'Pure Wax'. Probably of 19th century date.

Sixty two iron nails were identified from Roman, medieval and later contexts. Most of the complete examples range in size from 60mm to 100mm and conform to Manning's Type 1 (1985) used in wooden constructions, including coffins.

### *Coins*

Four copper alloy coins of Roman date were recovered and identified as follows.

Sf 16 (305).   obv: CONSTANTIVS AVG  
                  rev: [G]LORIA EXER[CITVS]  
                  Two soldiers, one standard. AD335-337   14mm

Sf 39 (670).   obv: CONSTANTIVS AVG  
                  rev: [G]LORIA EXER[CITVS]  
                  Two soldiers, one standard. AD335-337   14mm

Sf 91 (308).   obv: CONSTANTINOPOLIS  
                  rev: Victory on prow. AD 330-335   17mm

Sf 93   U/S in cut 158.   Radiate of later third century date. 16mm.

## The Animal Bone

Jennifer Browning

### Summary

*An assemblage of animal bones was recovered from two sites in the southern quarter of Leicester. The majority of bone identified was from the Roman and medieval phases. Although the conclusions drawn must be tentative, it has been possible to identify a difference between the Roman and the medieval period. Cattle bones dominate the Roman assemblage, while the medieval assemblage has a greater variety of food animals suggesting an economy balanced between species imported from the countryside and those raised within the household.*

### Introduction

In 1997, two sites, Oxford Street and York Road, were excavated in the southern quarter of Leicester's historic core. The sites are in close proximity, separated only by the Fullback and Firkin public house, previously the Old Bowling Green. Seven phases of activity have been identified at Oxford Street and six at York Road, spanning the Roman period through to the nineteenth century. A total of 2224 fragments of animal bone were recovered from the excavations. However, few individual phases at either site yielded a sizeable quantity of bone. For example, only five fragments of bone were recovered from features dating to the Saxon phase at Oxford Street. By contrast, nearly six hundred bone fragments were recovered from phase 4 at York Road, which encompasses later medieval features. The tables below shows the phases, their dates and the amount of animal bone recovered from each.

**Table 13:** The amount of animal bone derived from each phase identified at Oxford Street and York Road. The *Identified* column gives the number of bones identified to species level from each phase.

Oxford Street				
Phase	Date (century AD)	Identified	Unident.	Total
1	2nd-4th	175	263	438
2	4th	3	7	10
3	5th-9th	2	3	5
4	12th-14th	138	240	378
5	14th-15th	73	82	155
6	16th-17th	28	42	70
7	18th	31	37	68
1/2	2nd-4th	18	13	31
6/7	17th-18th	6	1	7
<b>Total</b>		<b>474</b>	<b>688</b>	<b>1162</b>

York Road				
Phase	Date (century AD)	Identified	Unident.	Total
1	late 1st-2nd	47	90	137
2	4th	3	5	8
3	12th-14th	103	153	256
4	14th-16th	290	285	575
5	17th	30	43	73
6	17th-19th		6	6
1/2	1st-4th	5	2	7
<b>Total</b>		<b>478</b>	<b>584</b>	<b>1062</b>

A total of 2224 bone fragments was examined, of which 952 (43%) were positively identified. The remainder were not diagnostic enough to identify with confidence. Some attempt has been made to characterise these bones (mostly shaft fragments, ribs and vertebrae) as small, medium and large mammal, and unidentified bird.

Phase 1 at both sites is mainly represented by ditches and a number of pits and post holes dating from the early Roman period (1st century to 3rd century AD). Phase 2 is defined by the use of the area as a cemetery in the later Roman period and it can be



seen from *Table 13* that little animal bone was present in these features, with the exception of two dog skeletons, which will be discussed later. A Sunken Featured Building was identified at the Oxford Street site, suggesting a phase of Saxon activity (3). However, at York Road, phase 3 encompasses a number of medieval pits and a building and is approximately equivalent to phases 4 and 5 at Oxford Street. At this period the sites formed part of the south suburbs of Leicester and excavated features probably represent backyard activity from properties fronting onto Oxford Street (Gossip, 1999). Phase 6 comprises activity taking place during the sixteenth and seventeenth centuries. For the purposes of this report, the bone data from both sites has been amalgamated. The reason for this is that the division between York Road and Oxford Street sites is artificial, created only by the areas defined for development. In reality, both sites form only a sample of the activity taking place in the south suburbs of Leicester. In order to make the results of this analysis more meaningful, it has also been decided to group the bones in broader phases, Roman and Medieval, and to examine the bones from each period as a whole. Due to the low representation of the post-medieval bone (see *Table 13*) it was decided to restrict analysis to identification only.

### Methodology

The bones were identified using comparative modern and archaeological material from the reference collection at the University of Leicester. Bone element, species, state of fusion, completeness and marks or damage on the bones were recorded to elicit information on elements recovered, species proportions and age (epiphyseal fusion and toothwear), as detailed below. The information was compiled onto a computer spreadsheet (Microsoft Excel). Butchery marks were recorded and their position and aspect sketched. Measurements of length and breadth were taken wherever the completeness of the bone allowed, in order to calculate relative size and withers height for the main species. However, this is a fairly small assemblage, particularly when separated into phases, a factor which limits the degree of interpretation. While a number of interpretative methods have been attempted, it has not always proved possible to use the data obtained, usually due to small numbers of bones. Much larger assemblages were recovered from nearby excavations at Bonners Lane (Baxter forthcoming) and Causeway Lane (Gidney 1999), which provide useful comparative data. Pressures of time have meant that it has not been possible to study the material from the sieved samples so a bias towards larger bones can be expected.

### *Species proportions*

Three main methods were used to calculate species proportions from the site, not all of which were applicable to every species in every phase. Firstly, a simple fragment count of every bone that can be identified to species, excluding only ribs and small skull fragments (apart from the petrous temporal and orbit). This method often over-emphasises the importance of larger mammals, whose bones tend to fragment into more pieces than those of smaller animals. In an attempt to reduce this bias, a restricted fragment count was carried out using the epiphyses only method outlined in Grant (1975). To summarise, this method counts only those bones with a fusion surface present. A whole bone has two fusion surfaces and will therefore be counted twice except in the case of phalanges which are rarely broken. Adjustments are made where different species have different numbers of the same bone; for example, the number of horse phalanges is doubled in order to make the results comparable to those of cattle, sheep and pig who have two on each foot. Similarly, sheep and cattle have

one metapodial on each leg, while a pig has four, so for pigs the abaxials are discounted and the remainder halved.

An estimation of the minimum number of individuals present (MNI) was undertaken by identifying the most commonly represented bone for each species and dividing it by the number of times it occurs in the body. For example, if 10 complete metacarpals are present, then at least 5 animals would be required to produce this assemblage. If, however, there were eleven, at least six animals would be required since for the purposes of this count you cannot have half an animal. Although bones were usually sided during recording, it was decided not to use this information for calculating the MNI. It was expected that the majority of recovered bones represent joints of meat rather than whole beasts, therefore any discrepancies between the numbers of left and right bones is probably random. In an urban context, this method provides a further indication of species proportions, although it tends to over-estimate less common species.

#### *Age structure*

Two methods were utilised in order to demonstrate the age structure of the species present; epiphyseal fusion and toothwear. Epiphyseal fusion is a useful aid to estimating age at death, using data from modern species. The actual ages at which bones fuse may have altered, due to selective breeding in the modern period designed to bring animals to maturity more rapidly. However, this is unlikely to have affected the sequence of bone fusion. Therefore by examining the numbers of fused and unfused bones in the order in which they fuse, it is possible to estimate a kill-off pattern for each species. One major disadvantage is that epiphyseal fusion only provides information for sub-adult animals, dying or slaughtered before reaching skeletal maturity.

Examination of toothwear was undertaken using the method by Grant (1982) for the main domestic species, cattle, sheep and pigs. The state of eruption and the degree of enamel wear is noted for each lower molar tooth, providing a numerical Mandible Wear Stage (MWS) for each mandible. Estimates can be made for incomplete mandibles, using comparison with complete examples in a similar state of wear. The results can be grouped by species to provide an indication of the age at which animals were slaughtered. The main advantage to this method lies in the fact that it is applicable to both mature and immature animals. However, these results will provide a relative rather than an exact age at death and it is important to take into account that some tooth wear stages are very brief while others may last for a considerable length of time. For these reasons, it is the overall pattern that is important. In an attempt to maximise the amount of toothwear data available, the wear stages of loose 3rd molars and deciduous 4th molars were recorded, as these teeth that would not be present in the jaw at the same time and do not introduce a marked bias to very young or mature animals.



## The Roman Period

### Phase 1

Deposits from phase 1 yielded a total of 575 bones of which 37% were positively identifiable to species (Table 14). These included the remains of cattle, sheep, pig, red deer and dog. A single limb bone of frog/toad was identified. Four fragments of human bone were also present. A simple fragment count (excluding only skull fragments) shows that cattle were by far the most common species at the site, comprising 59% of the total identified bones. Horse bones were also frequent, accounting for a further 22% of the bone, with only 8% of bone belonging to sheep and 6% to pig. An epiphyses only count increases the percentage of sheep by 4%, but otherwise changes the proportions of animals little. Cattle still account for over 50% of the bones present, while horse provide a further 23%. The majority of fragments in the unidentified category belonged to large mammals which demonstrates that this is a genuine trend. However, the result obtained from calculating the MNI, suggests that there was much less difference in the relative species proportions. Cattle are still the most and pig the least commonly represented, but sheep and horses are found in similar proportions. However, the MNI is not necessarily an accurate reflection of the relative proportions given that the numbers involved are so small. For all species there appears to be no particular bias in skeletal representation (Appendix 1), although this a cautious conclusion in a sample of this size.

Table 14: Fragment count for the Roman phase 1

Species	Fragment Count		Epiphyses Count		MNI		
	Number	%	Number	%	Bone	Number	MNI
Cattle	124	59	47	52	(mandible)	5	3
Sheep	17	8	11	12	(mandible)	3	2
Pig	12	6	5	6	(humerus)	2	1
Horse	47	22	21	23	(metacarpal)	3	2
Dog	2	1	2	2			
Red Deer	3	1	2	2			
Frog/Toad	1	0	1	1			
Human	4	2	1	1			
Total (a)	210	100	90	100			
Unidentified fragments							
large mammal	105	18					
medium mammal	11	2					
skull frags	43	7					
ribs	11	2					
Unidentified other	206	36					
Total (b)	575	100					

Key: MNI = Minimum Number of Individuals

### *Cattle*

Cattle fragments are considerably more numerous than comparable material at Causeway Lane (Gidney 1999, 310) and Bonners Lane (Baxter forthcoming). Unfortunately, little information on age structure was obtained from the phase 1 bones, due to the scarcity of whole mandibles and epiphyses. However, while the size of the sample does not allow a comprehensive analysis, it can perhaps provide an indication. Suitable data for MWS could be obtained from only three cattle mandibles, which had mandible wear stages of 30-34, 37 and 41. The first two of these are likely to have belonged to cattle reaching skeletal maturity, while the third (41) was probably fully mature (Grant 1984, 512). This is consistent with the evidence from epiphyseal fusion, where 25 out of 30 bones were fused. An unfused pelvis and 1st phalange, indicated the presence of an animal killed below the age of 10 and 15 months respectively. However, given the extremely small numbers involved it is enough to say that most of the cattle present in this phase appear to be skeletally mature. The cattle from this sample were horned and a cut mark indicates possible horn working.

### *Horse*

All of the horse bones with fusion surfaces present were fused. Horse bones are remarkably abundant when compared with the results from Bonners Lane (Baxter forthcoming) where they account for 4% of identified bones, they were also infrequently found at Causeway Lane.

### *Sheep and Pig*

Sheep and pig, although present, form a surprisingly small proportion of the bones from this phase. All of the sheep and pig bones with fusion surfaces were fused but there were not sufficient mandibles from either species to attempt any toothwear analysis.

### *Human*

Four fragments of human bone was recovered from two features. Three longbone fragments (humerus, radius and femur - Simon Chapman *pers. comm.*) were recovered from the fill of a ditch F4 (Oxford Street). A single human phalange was found in ditch F49 (York Road). It can only be assumed that these are residual, or more likely intrusive, since they do not appear to have been deliberately deposited, and they may derive from the cemetery activity of phase 2.

### *Phase 2*

Very little animal bone was recovered from phase 2 at either York Road or Oxford Street, (see *Table 13*), with the exception of the remains of two dogs. The first was found within an east west orientated human-sized grave cut during the York Road excavation. No human bones accompanied the dog skeleton, which was articulated and appeared to have been orientated north-east to south-west. The animal was adult; all of the longbone epiphyses were fused and the permanent teeth were erupted suggesting that it was over eighteen months old. The dog appeared to have been small but robust with a shoulder height of 27cm (Baxter 1999, 2).

The second dog skeleton was recovered from a sub-circular pit F5 very close to Oxford Street. It was largely disarticulated and was found amid a number of other animal remains. The longbones were all fused and the permanent teeth erupted, confirming that this was an adult dog. The animal appears to be much larger than the

York Road dog, with a shoulder height of 50cm and was possibly a hunting dog type (Baxter 1999, 3). Unlike the York Road specimen, this appears to have been a disturbed burial rather than a ritual placement (Baxter unpubl).

### The medieval period

The medieval period encompasses bones from York Road, phases 3 and 4 and Oxford Street, phases 4 and 5. A total of 1384 bone fragments was recovered from these medieval contexts of which 544 were positively identifiable (39%). A much wider variety of species were represented in this period than had been observed in the Roman contexts. As well as the three main domestic mammals, cattle, sheep and pig, bird bones such as domestic fowl and goose were present. Small quantities of dog and deer were identified in the assemblage, as well as small mammals such as brown rat and rabbit. *Table 15* below shows the results of the three different fragment counts. The MNI has not been calculated for species only represented by extremely low numbers of bones.

Table 15: Fragment counts for the medieval period.

Species	Fragment Count		Epiphyses count		MNI		
	Number	%	Number	%	Bone	Number	MNI
Cattle	151	29	52	18	(scapula)	7	4
Sheep	172	34	85	30	(mandible/tibia D)	11	6
Pig	83	16	55	19	(mandible)	7	4
Horse	9	2	5	2	(scapula)	1	1
Dog	4	1	7	2	(metapodia)	1	1
Red Deer	4	1	2	1		1	1
Fallow	5	1	3	1		1	1
Roe	2	0	1	0		1	1
Chicken	61	12	53	19	(tibio-tarsus)	7	4
Goose	17	3	18	6	(carpo-metacarpal) P	5	3
Rabbit	3	1	4	1			
Brown Rat	1	0	1	0			
Total (a)	512	100	286	100			
Unidentified fragments							
Bird	23	2					
large mammal	71	5					
medium mammal	44	3					
skull frags	65	5					
ribs	205	15					
Unidentified other	444	33					
Total (b)	1364	100					

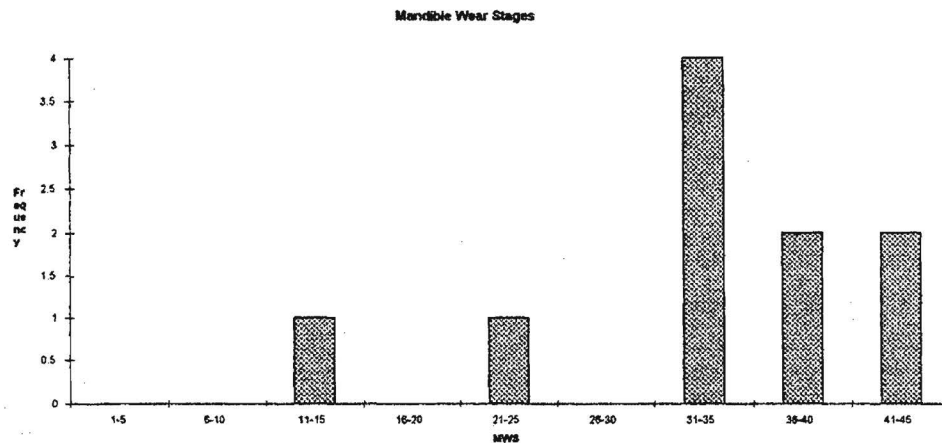
Key: P = Proximal, D = Distal, MNI = Minimum Numbers of Individuals

A fragment count, excluding undiagnostic skull fragments, shows that the three main domestic species, sheep cattle and pig, together accounted for almost 80% of the

identifiable bone. Sheep bones were the most frequent, at 34%, while 29% of bones belonged to cattle and 16% to pig. Horse accounted for only 2% of identified bone. 12% of bones were domestic fowl and 3% were goose. Only 3% of bone belonged to deer, while dog and rabbit each made up 1%. The results were slightly altered by using the "epiphyses only" counting method. This considerably reduced the proportion of cattle bones to 18%, while increasing the numbers of bird bones, which are frequently found whole. Sheep decreased slightly (34% to 30%) and pig increased (16% to 19%) to form a slightly greater proportion of the bones than cattle. The results of the MNI confirm that sheep was the most common animal, with the proportions of cattle and pig roughly similar. No particular bias was observed in the representation of skeletal elements, although mandible fragments and loose teeth appear to have survived better than many long bones (see Appendix 1).

### *Sheep*

There was no evidence for goat at the site, but this is perhaps no surprise given the small quantity of identified bones and the difficulty in separating sheep from goat bones. The sheep appear to be a mixture of horned and polled. This variation is not unexpected, given that they are likely to have come from a variety of different sources within the region. Only limited information could be obtained on the age structure of the sheep represented. Very few whole mandibles were recovered, however, ten Mandible Wear Stages were obtained for medieval sheep, (although half of these have had to be given a range to account for missing teeth (after Grant 1982). For obvious reasons, the results provide a guide only rather than a kill-off pattern (see *Chart 1*). No very young animals were represented, which is consistent with the limited data acquired from the state of fusion of the medieval sheep bones. One mandible has a possible MWS of approximately 10-12, which may indicate an animal younger than 18 months old. However, the MWS value of six of the ten mandibles falls between 30 and 40, while a further two have values of over 40. Although, Mandible Wear Stages cannot be precisely correlated with real age, these are likely to represent fully mature animals, at least 3½ years of age (Grant 1984, 504). Analysis of the state of fusion for sheep bones, has resulted in equally tenuous conclusions. 85% of sheep bones from these phases are fused. All bones that fuse at or before ten months are fused (Appendix 2). Between this age and skeletal maturity a few unfused bones are present but the numbers are generally too low to suggest a pattern of slaughter.

**Chart 1 Mandible Wear Stages for Sheep**

### *Cattle*

Although the cattle remains are proportionally not as great those of sheep in this period, it must be appreciated that their meat yield would be much higher. The cattle bones recovered probably represent animals which were driven to market from the local catchment area. No toothwear analysis was possible for medieval cattle mandibles. However, the small amount of available evidence from epiphyseal fusion shows that 80% of cattle bones from these phases were fused, suggesting that the majority of animals represented in the medieval assemblage were mature. The cattle were horned and a number of horncores were recovered. Four horncores with part of the crania remaining were recovered from a pit F47. Cut marks displayed on one are an indication of occasional horncore working.

### *Pig*

Most of the pig bones derived from immature animals. Thirty four pig bones were recovered from pit F44, including 29 neonatal bones, from all parts of the body, representing at least two animals. All of the longbones were extremely small (approximately 3cm) and unfused and the mandibles both had had just one tooth erupting. These are comparable with the partial skeletons found in the medieval deposits at Causeway Lane and are possibly the result of natural mortality, appearing rather young to be suckling pig (Gidney 1999, 325). The presence of such young bones may suggest that pigs were being bred on or close to the site. Pigs can subsist on refuse and can take up relatively little space and were almost certainly kept on a small scale in the backyards of York (O'Connor 1989, 17). Gidney (1999, 325) suggests pig keeping took place in Leicester in the medieval period. The neonatal bones have been excluded from the epiphyses only count in Appendix 2, to avoid distortion of the pattern. This reduces the number of pig bones dramatically; only 12 have fusion surfaces. Of these 7 (58%) are fused, including all of those that fuse by 12 months of age. Even with such small numbers of bones the frequency, of unfused pig bones as compared to cattle or sheep is noteworthy. Pigs have little economic value other than as meat animals and, except for breeding, were frequently killed before skeletal



maturity. Unfortunately there are not sufficient pig mandibles to compare mandible wear stages with the skeletal data.

#### *Domestic Fowl*

The fragment count demonstrated that a sizeable quantity of identifiable bones derived from domestic fowl. The bones were frequently found whole, with fusion surfaces intact. Only two bones, both from the lower leg, were unfused, suggesting that most of the birds were kept until they were fully grown. At least some of the birds were male, as demonstrated by the presence of the spur on three tarso-metatarsus bones. Only one bone, a proximal humerus, showed signs of butchery. Knife cuts on the articular surface perhaps suggest the removal of the wing. (Feature 95, context 154). The paucity of butchery marks is not in itself surprising, as the relatively small size of a fowl carcass means that dismemberment is not necessary prior to cooking. It is probable that individual birds were reared, killed and disposed of within the bounds of one property (Coy 1989, 31). If this is the case, it is likely that most parts of the skeleton will be represented within one feature. Several contexts in the medieval assemblage, (for example 196 and 68), contain a representative sample of the carcass, not just the main meat bearing bones such as leg and wing. There is ample evidence for the presence of domestic fowl in medieval towns. Unlike most of the larger food animals, little space is required and, provided that there is sufficient food for them to forage, a large number could be kept in a medieval backyard (Coy 1989, 32). The keeping of fowl as a source of eggs should not be underestimated and this may be another reason why fowl were kept to maturity. Eggs were an important part of the medieval diet (O'Connor, 1989, 17).

#### *Goose*

The fragment count indicated that 3% of identified bones were goose. This percentage doubled to 6% when the bones were counted using the epiphyses only method, although the MNI calculation suggests the presence of only three birds. Geese would yield a higher percentage of meat per bird than domestic fowl, in addition to providing eggs and down. Goose feathers were also useful for quill pens and arrow flights (Coy 1989, 35). The bones were of a comparable size to modern greylag, consistent with those of Causeway Lane, where they were thought to be domestic birds (Gidney, 1999, 328). All of the bones with fusion surfaces present were fused.

#### *Deer*

Deer bones are fairly scarce in the assemblage although it is interesting that the fragments were mostly found at York Road. Small quantities of red, roe and fallow deer were identified from which we can infer that deer was an infrequent foodstuff, rather than regularly consumed. The contents of a medieval pit, F66 included two fragments of fallow deer antler and a single piece of red deer antler with cut marks, which is suggestive of occasional antler working. Pit F66 also contained a wide variety of domestic species suggesting that it may have been used for general disposal.

## **Undated**

### *Raven*

The remains of a raven were recovered, apparently deposited intact within an undated context (71) in a pit on the Oxford Street site. A similar bird was recovered from Roman phases at Causeway Lane, where it was interpreted as a tame bird rather than a scavenger, when its bones were more likely to have become dispersed (Gidney 1989, 317).

## **Butchery and Burning**

It is important to recognise that butchery is not a single event. Butchery, as a process, begins at the kill and continues with removal of hide or skin, dismemberment of the carcass, removal of flesh from bone and breaking up of bone for marrow. Even cooking and eating may leave their marks on the skeletal remains. Methods of butchery will also have a profound effect upon bone survival, archaeological recovery and the subsequent identification of bone elements. The butchery marks from York Road and Oxford Street in both periods generally fall into two categories, cut marks and chopping. The former were probably made with a knife and were not intended to sever the bone; they are likely to be the result of either skinning or separating the meat from the bones. Chopping is likely to have been carried out with a heavier, blunter instrument.

### *Roman*

Very little butchery was noted in the Roman bone assemblage. Nine bones of cattle showed signs of butchery, most of which were chopped. One cattle cranium was severed sagittally. Only 1 butchery mark was present in the assemblage of sheep bones, a cut mark, although this is to be expected given the low representation of sheep in this period. Similarly only 2 pig bones bore signs of butchery (1 chop and 1 cut).

### *Medieval*

Most of the butchery marks identified, occurred on the cattle bones from the medieval deposits. The marks almost always occur around the joints, particularly the distal humerus (5 out of 35 in cattle). Chopping was the most frequent type of butchery mark, particularly on the cattle bones, where 28 out of 35 butchered bones were chopped. Of 3 butchered pig bones, only 1 bore a fine cut mark; the others were chopped. The majority of butchered sheep bones from the medieval phases were also severed with a heavy instrument but a slightly higher proportion than cattle showed fine knife cuts (6 out of 16). For example, fine cuts were noted on the upper orbit of a sheep crania, perhaps inflicted during removal of the hide. In both cattle and sheep a high proportion of butchery occurred upon vertebrae, typically chopped through at, or close to, the centre-line of the bone. This may indicate the presence of professional butchers with premises for dealing with large carcasses (Grant 1987, 56). Where butchery occurred on cattle, sheep or pig crania, it generally involved chopping the skull sagittally, possibly to remove the brain or tongue meat. In all instances except one, this feature was found in the medieval phases and particularly on sheep bones. The occipital condyle of one sheep was cut through, possibly to sever the head from the body. A large dent in a cattle cranium, made by a blunt instrument, may represent the killing of the animal by pole-axing. It has been noted that bones recovered from medieval deposits are frequently very fragmented (Grant 1987, 56) and this is



reflected in the medieval bone assemblage from York Road and Oxford Street, where less than 40% of bones were positively identifiable to species.

Little burnt bone was recovered. Only two of the identified medieval bones were found to be burnt, both sheep. However, a further twelve burnt fragments were identified. A single cattle vertebrae from the Roman phases showed signs of burning.

### ***Conclusion***

The small quantity of the bone recovered has limited the conclusions that can be drawn from the assemblage. For example no reliable age profiles for any species could be provided. Nevertheless, a number of differences have been noted between the bone recovered from medieval contexts and that from Roman contexts. There is little evidence for industrial activity in either period, although some remains may be interpreted as craft waste and there may be evidence for a specialised butchery craft. A number of horncores were recovered (mostly cattle) and a small quantity of antler with cut or saw marks originated from the medieval contexts. There were no other significant groups of bone elements.

The frequency of large mammal remains, particularly cattle, in the Roman assemblage is significant. This may partially reflect the theory that cattle dominated the Roman meat market, as observed at both Causeway Lane (Gidney 1999, 318) and Bonners Lane (Baxter forthcoming). Larger bones tend to survive better than smaller ones, which may also be an important factor here. The differences between the Roman and medieval assemblages may be partially accounted for by the types of features from which the bones derive. Most of the Roman material derives from ditches but the medieval animal bone was mostly recovered from pits and probably represents the disposal of household refuse within the bounds of the property.

A far greater variety of species was present in the medieval assemblage. The paucity of rabbit and deer bones in the medieval assemblage suggests that wild game did not constitute a major part of the diet. However, it also demonstrates that a variety of meats were consumed, with sheep being the most commonly recovered skeletal remains. This is consistent with results from other sites, as cattle and sheep bones constitute the largest proportion of urban animal remains, suggesting that beef and mutton were the most frequently eaten red meats (O'Connor 1989, 15). The proportions of cattle and sheep, predominantly rural animals, compared with species possibly raised within an urban context, such as pig and domestic fowl suggests that the inhabitants subsisted on meat from the market supplemented by locally raised stock.

## The Environmental Evidence

Angela Monckton

### Introduction

During the excavation samples were taken from Roman, medieval and post-medieval features for the recovery of plant remains such as seeds and cereal grains which may provide evidence of diet, environment or activities in the past. The site was close to that excavated at Bonners Lane where remains of Roman to post-medieval date were found and which were most abundant in the later phases of the site. The remains found here included charred cereal grains and seeds, charred legumes and a large number of waterlogged seeds preserved in a well. It was hoped that evidence from these remains together with those from the nearby sites of York Road and the Bowling Green Yard would add to those from Bonners Lane to help determine the type of occupation and activity in this suburb of Leicester and to compare with evidence from excavation of sites within the walls of the town.

### Methodology

Features were selected to be sampled if they were datable and had the potential to contain remains. A total of 35 samples was processed including 11 from contexts of Roman date from ditches, pits and graves, one from a Saxon post hole, 16 from medieval contexts which included pits, an industrial feature, a well and a hearth, and finally one from a late medieval pit. This amounted to 189 litres of sediment, about half of which was from Roman features.

The samples were processed by wet-sieving using a 0.5mm mesh with flotation into a 0.5mm sieve. Unprocessed sub-samples were retained from each context. The residue over 4mm was sorted for all finds which are included in the relevant sections of the report. The residue below 4mm was examined for the presence of remains and sorted if remains were present. The flotation fractions (flots) were all examined with a x10 stereo microscope and those with more numerous remains were selected for analysis. A fraction of the whole organic residue of the waterlogged samples was sorted with a stereo-microscope. The plant remains were identified by comparison with modern reference material in the department of Archaeology at the University of Leicester. The plant remains from the analysed samples were counted and tabulated (table x), the plant names follow Stace (1991) and are seeds in the broad sense unless described otherwise. The results from the remaining samples were summarised (tables 13 and 5) and referred to in the text as from scanned samples.

### Results

#### *Roman and Saxon*

The Roman samples produced very small numbers of plant remains (table 16) as was the case at Bonners Lane. The cereals found were wheat, which included evidence for glume wheat either emmer or spelt (*Triticum dicoccum/spelta*) and grains of bread wheat type (*Triticum aestivum* s.l.), together with barley (*Hordeum vulgare*). The seeds found included those of large grasses (Poaceae) and fat-hen (*Chenopodium album*) which are known as weeds of arable or disturbed ground, and clover type (*Medicago*, *Melilotus* or *Trifolium*) often found in grassy vegetation. The small

amount of remains suggest that this is redeposited or residual material from domestic activity, however it does show the cereals present with their weeds and adds to the distribution of Roman material in Leicester. A sample from ditch (454) contained uncharred seeds of duckweed (*Lemna* sp) these, although uncharred, may have been preserved in the sediment as they have been found in other non waterlogged archaeological deposits. They may indicate permanent water present in the ditches in the past as the plant only sets seed in standing water.

The Saxon post hole context (25) was unproductive.

Table 16: Summary of remains from Roman samples

Samp	Cont	Feat Type	Samp Vol. litres	Flot Vol. mls	Gr	Gl	Se ch	Se un	Leg	Nut	Chl	Comments
2	16	Ditch	9	3	2	-	-	2	-	-	fl	Wheat grains ( <i>Triticum</i> sp)
3	31	Ditch	8	2	-	-	-	-	-	-	fl	
6 7 8	41	Pit	17	9	5	1	3	-	-	-	fl	Chaff of emmer or spelt ( <i>Triticum dicoccum</i> or <i>spelta</i> ), cereal grains, one barley grain, grass seeds.
16	314	Grave	13	3	4	-	-	-	-	-	-	2 barley grains ( <i>Hordeum</i> sp), 2 cereal grains, few indet charred fragments.
17	310	Grave	2.5	4	3	-	2	-	-	-	-	One wheat grain, seeds of vetch ( <i>Vicia</i> sp) and clover type ( <i>Medicago</i> , <i>Melilotus</i> or <i>Trifolium</i> ).
18	310	Grave	9	5	9	-	3	-	-	-	fl	4 wheat, 1 barley and 4 cereal grains, 2 large grass seeds ( <i>Poaceae</i> ) and a clover type seed.
22	509	Grave	8.5	3	3	-	1	-	-	-	fl	1 barley and 2 cereal grains.
23	515	Ditch	5.5	3	2	-	-	-	-	-	fl	2 free-threshing wheat grains ( <i>Triticum</i> cf <i>aestivum</i> ).
24	454	Ditch	3.5	3	-	-	-	++	-	-	+	Duckweed ( <i>Lemna</i> sp) seeds suggest standing water in the ditch, small charcoal fragments.
25	513	Ditch	6	2	4	-	1	-	-	-	fl	2 wheat grains, a fat-hen seed ( <i>Chenopodium</i> sp).
26	570	Ditch	11	4	4	-	1	-	-	-	fl	1 barley grain and a clover type seed.

Key: Gr = grain, Gl = glume base (chaff), Se = seed, ch = charred, un = uncharred, Leg = legume, Nut = nutshell, Chl = charcoal; fl = flecks.

#### Medieval plant remains

**Cereals:** Charred cereals were most numerous in three of the samples hearth (606), well fill (152) and pit (98). Hearth context 606 phase 4 contained numerous barley grains (*Hordeum vulgare*) of a hulled form which included a large number of germinated grains identified from the presence of cereal sprouts or the impression or furrow where the sprout had been and also from the dimpled appearance of many grains caused by the digestion of the starch during germination. No twisted grains

were identified suggesting that two-row barley was possibly the cereal present however in the absence of diagnostic chaff this could not be confirmed and the presence of other forms could not be excluded. Only a small amount of wheat was present in this sample but wheat was the most numerous grain in well context (152), the wheat included free-threshing wheat which in the absence of diagnostic chaff could have been bread wheat (*Triticum aestivum* s.l.) or rivet wheat (*Triticum turgidum* type) both of which are free-threshing wheats which have been found in Leicester. An additional cereal found was rye (*Secale cereale*) present as grains and chaff in (152) and grains in pit (98) where it occurred with barley. Oat (*Avena* sp) was present in (606) but this may have been wild oat as a weed of the main cereal. Very little cereal chaff was found on this site.

#### *Cultivated and collected*

The samples also contain legumes including peas (*Pisum sativum*) as at Bonner's Lane although not so numerous. Legumes may also include cultivated vetch (*Vicia sativa* ssp *sativa*) represented by a single seed which adds to that from Bonners Lane. Cultivated vetch has been suggested as an element of crop rotation but there is insufficient evidence from Leicester at present to suggest this here. All the legumes found were charred probably as accidental spillage during cooking so probably represent domestic rubbish. It is thought that legumes are under-represented in the archaeological record as they do not come into contact with fire in their processing and are probably only burnt by chance during food preparation, they are poorly represented in the samples from within the walls of the town at the Shires and Causeway Lane (Moffett 1993, Monckton 1999). Other plants which may have been collected and consumed are represented by a fragment of hazel nut shell (*Corylus avellana*) and stones of sloe (*Prunus spinosa*).

#### *Seeds*

Charred seeds were mainly those of arable or disturbed ground including the numerous seeds of stinking mayweed (*Anthemis cotula*) which is a plant of heavy soils, large grasses (Poaceae) including brome grass (*Bromus* sp), and cleavers (*Galium aparine*) all of which are known as weeds of the cereals. Other weeds of disturbed ground included goosefoots (*Chenopodium* sp), a charred seed of fumitory (*Fumaria* sp) which was unusual as it is often found uncharred, scentless mayweed (*Tripleurospermum inodorum*) was found in a scanned sample from pit context (171) and possibly in hearth (606). Other plants represented grassland such as yellow rattle (*Rhinanthus* sp) and crested dog's-tail grass (*Cynosurus cristatus*) and clover type plants (*Trifolium* type) which, together with some of the plants of damp ground such as buttercups (*Ranunculus* sp), may have been brought to the site with fodder. However some of these plants may have grown in field margins and damp areas of the cultivated fields and so have been brought to the site with the crops.

Waterlogged preservation was found in samples from the well F53 (155, 156 and 271). The remains found included numerous seeds of weld (*Reseda luteola*) which has not been found on an archaeological site in Leicester before. This was found with a variety of other seeds including many weeds of arable or disturbed ground and damp ground plants. Although weld is a dye plant, it also grows on disturbed and arable land therefore it is difficult to show if the plant was being used for this purpose here.

## *Discussion of Medieval Contexts*

### *Hearth (606) phase 4*

This sample contained numerous hulled barley grains many of which showed signs of germination. Those which had cereal sprouts present compared with those described from Norwich (Murphy 1985) which at that site were thought to represent grain accidentally burnt during malting as there was also evidence of malting kilns on that site. There is no such structural evidence here and therefore this may be the disposal of accidentally sprouted grain spoiled during storage. No barley chaff (rachis) was found with the grain although seeds were quite numerous, this may therefore represent partly cleaned stored grain. Other remains with the barley include a little wheat and some charred legume fragments suggesting that other domestic waste was mixed with the barley, perhaps during disposal. Some of the weed seeds in the deposit are those typical of autumn sown crops and include cleavers and corn cockle so may therefore be the weeds of autumn sown wheat as barley is usually spring sown, hence a mixture of seeds cleaned from different cereals for consumption may be present.

### *Well F53 (152) phase 4*

The remains found consisted of charred cereals and weed seeds with small numbers of grains of wheat, rye and barley present with charred legumes. This probably represents domestic waste dumped in the well in disuse.

### *Well F53 (155, 156, 271) phase 4*

These samples have waterlogged preservation of plant remains. On excavation the deposits were thought to be from a cesspit but on analysis there was no evidence from the plant remains to suggest this because no mineralised plant or animal remains were found and few food remains were present. The most numerous seeds were of weld, also known as dyer's rocket, which was found with other seeds giving evidence of arable or disturbed ground together with plants of damp grassy vegetation (table 1). Weld is a plant of disturbed ground so may have been brought to the site with other material. However, when used as a dye plant the parts used are flowering heads, at or just before seeds set, so the expected evidence from dying would be the seeds (Hall 1995, p770). These were found here but in the absence of other textile remains there is insufficient evidence to suggest this use here although this is a possibility.

### *Pit (98) phase 5*

A sample from a late medieval pit has cereals and weeds which compare with those found at this date at Bonners Lane. Seeds outnumber grains in this sample which probably represents waste from cleaning cereal for consumption however fragments of a seed head of stinking mayweed show that this was the source of most of the seeds. This presence of this plant indicated the cultivation of heavy soils such as are found in this area. This was a weed which became more common in medieval times and the increase may have been associated with the use of the mould board plough which enabled the cultivation of heavier soils (Greig 1991, p319). Stinking mayweed was called 'mathes' or 'doggefenell' and was described by Fitzherbert in 1523 as 'the worst weede that is, except terre' (i.e. *Vicia* sp) (Jones 1988, p90).



### ***Comparison with other sites***

Considering the cereals from the medieval phases; those from phase 4 here in well context (152) compare with those from the same period at Bonners Lane, the Shires and Causeway Lane, all of which probably represent domestic waste. The late medieval remains from the pit (98) from phase 5 also compare with these. However, those from the phase 4 hearth (606) differ in barley grains being very numerous with germinated grains being found. In contrast barley was most numerous in the post-medieval period at Bonners Lane which has the highest concentration of cereal grains found on a site in Leicester and some commercial use of cereals was thought to be indicated there.

The waterlogged material from the well contains little evidence of domestic rubbish consisting of a few charred legumes and a charred cereal grain with waterlogged remains including two sloe stones and a fragment of hazel nut shell. No mineralised remains were found such as were found 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. Mineralised remains are preserved in cesspits where the minerals in the sewage cause fruit pips and stones and other remains to become semi-fossilised which provide evidence of the food consumed and of the domestic occupation. Hence there is no evidence that this feature was used as a cesspit after going out of use as a well as was the case Causeway Lane.

The well appears to have been used as a rubbish pit where plant material was dumped consisting of waste fodder or animal bedding or vegetable matter for some other purpose. The upper fill contains some charred domestic rubbish although at these levels above the water table other organic material would not have been preserved. The waterlogged preservation was better than that found on the Shires and Causeway Lane where only the more robust seeds were preserved. Remains from the Guildhall Lane Undercroft were preserved in a similar way but contained more domestic rubbish.

A greater variety of waterlogged seeds has only been found in Leicester at the Austin Friars site which included a similar range of arable weeds and damp grassland plants to this site but contained a wider range of waterside plants from the wet ditches near to the river. This evidence from Austin Friars showed the presence of damp pasture in the 13-14th century, with damp pasture and cultivated land in the 16th century. Both damp grassland and cultivated land are represented in the samples from this site in 12-13th century well with some water plants. This shows that a similar environment in a different location to that of the 16th century at the Austin Friars may have been the source of the plant material in the well here. Waterside fields are suggested as the source of the plant material and the continuity of this type of land use is shown from the 12th to 16th centuries.

### ***Conclusions***

Small numbers of charred plant remains only were recovered from the Roman features showing a scatter of domestic waste with the same cereals as found in other sites of this date in Leicester. The majority of the medieval samples contained charred cereals

## Osteology Report on the Human Bone

Simon Chapman

### Introduction

Excavation demonstrated the presence of human remains from nine conspicuous archaeological contexts, of these eight occupied well defined inhumation graves (Table 18) one was contained within the fill of a ditch (668) and the remainder were retrieved from unstratified contexts within trench 2.

The inhumation graves were found (mostly) to contain a single conspicuous skeleton, represented by varying quantities of surviving bony elements. The one exception to this rule was the presence of a 'charnel' skull (343) within the same grave cut as skeleton (342). The so-called 'charnel' bone, on the other hand, was so named due to its informal appearance, small quantity and lack of association with a source skeleton (Table 19).

Table 18. The Inhumations

Skeleton no.	Grave cuts	Context
52	54	53
273	275	273
313	315	314
342	311	310
391	392	390
393	395	394
409	406	407/8
510	508	509

Table 19. The Charnel Bone

Bones	Cut	Context	Remains
343	311	210	Fragmented adult cranium
-	669	668	adult R. Femur ( 3 joining sections)
-	-	U/S (T.2)	adult prox. L.femur & dist. R.Humerus, juvenile dist humerus & ilium

Full individual records, including photographs, are stored with the site archive.

### Methodology

The osteological analysis of the human remains from Oxford Street was carried out by the author, at the University of Leicester's bone laboratory, between the 26th August - 9th September 1997. The analysis followed standard accepted methodologies employed in studies of this nature, as described by Bass (1987), Brothwell (1981), Ubelaker (1989) and as advocated by the Workshop of European Anthropologists (1980).

A metrical record of all of the bones present was compiled predominantly for archival purposes (Appendix 3). Where possible broken bones were fitted back together for the purpose of measuring, though this only occurred in instances where the joins were very close and inaccuracy was deemed to be negligible. Metrical data in a more substantial and/or less fragmentary collection would have been useful for discussions on dimorphism, nutrition and anthropological variation.



The criteria on which each individual was aged depended largely on the nature of the bones available. Where possible a range of criteria were employed, the several results obtained being combined to produce an *average* (most likely) age for the individual. Skeletal methods based on bone maturation, in terms of linear growth (Sundick 1978 & Fazekas & Kósa 1978) and stages of ossification (Brothwell 1981 & White 1991) were employed alongside dental methods, which assessed stages of tooth development and subsequent wear (Miles 1963), in the assignation of age to the individuals represented.

Sex determination was similarly based upon various criteria, an average being accepted wherever possible. The most reliable criteria based upon cranial and pelvic morphology and long-bone head dimensions, were sought first. Classification of sexes was based upon levels of diagnostic certainty (Male-male-Indeterminate-female-Female).

An eye was given also to the occurrence of certain non-metric/discontinuous skeletal traits (as described by the likes of Finnegan (1978) and Berry & Berry (1967). Such traits are a common feature in all skeletal populations, these usually being non-pathological variations in skeletal morphology, believed to have a basic genetic origin. As such it is suspected that kinship links may be made on the strength of reoccurring traits in associated individuals.

Estimations of living stature were calculated whenever the relevant bones were available for measuring. In the presence of a complete femur no other metrics were sought (since these are believed to yield the most accurate estimation of stature). However, whenever a femur was not available, or was broken/incomplete, alternative complete long-bone measurements were sought, ideally using estimations of stature obtained from the measurements of several long-bones. Calculations were based upon the standard regression equations described by Trotter and Gleser (1952 & 1958).

## **Results**

### ***Bone Condition and Representation***

All bony remains were carefully washed (using fine brushes and lukewarm water) and fully dried, by the author, prior to the onset of full analysis. Also, since the on site methodology involved the routine sampling of hand and foot locations (for complete retrieval of these small bones), a fair amount of wet sieving of grave soils was also carried out in the preliminary stages of analysis.

The condition of the bone as represented in this assemblage was generally of a good nature, in terms of both bone representation and of its physical preservation. Bone/body part representation has been expressed in terms of a percentage of the former skeleton (Table. 20). Physical preservation has been recorded according to its relative condition. Classifications are as follows;

- V.poor** - Highly fragmented bone displaying advanced signs of decomposition
- Poor** - Bone may show considerable fragmentation and/or decomposition (not as severe as above)
- Fair** - Bone may display occasional fragmentation or decomposition (perhaps not both, nor effecting all bones present).
- Good** - Bone displaying very little evidence of neither fragmentation or decomposition
- Excellent** - Bone in perfect condition, unfragmented and displaying no signs of decomposition

Table 20 Showing the relative survival and preservation of the Oxford Street bones.

Skeleton no	Cut	Context	% Bone present	Bone condition
<b>Inhumations</b>				
52 *	54	53	30	Fair
273 *	275	273	15	V. poor
313	315	314	70	Good
342	311	310	85	Fair
391 *	392	390	25	Poor
393 *	395	394	20	Fair
409	406	407/8	80	Good
510	508	509	75	Fair
<b>Charnel</b>				
343	311	210	5	Poor
-	669	668	<5	Fair
-	-	U/S (T.2)	<5	Fair

\* Grave has been truncated since deposition

Condition of bone was fairly consistent throughout the collection with most bones falling into the poor-fair categories. Few bones were preserved in a complete state (which seriously limited the scope of metrical analysis, Appendix 1). However, most bones were strong and retained well preserved sub-periosteal and cortical layers ideal for the diagnosis of pathological conditions and non-metric traits. The variations in preservation observed throughout the assemblage may have arisen from a variety of factors, these include nature of subsoil, depth of grave, presence/absence of coffin, post-depositional disturbance etc. It seems unlikely that age and sex would have had any marked effect on the rate bone diagenesis (Walker et al. 1988). This is indeed born out by the good preservation observed even in the fragile neonate bones of skeleton 510 (Plate 1).

Once laid out it was possible for a full inventory of the surviving remains from each individual to be compiled, such data is represented in this report in the form of a series of stylised drawings showing parts present as shaded areas (see Appendix 2). The remainder of this report will detail the osteological findings obtained from the skeletal population of the Oxford Street cemetery.

#### *Minimum Number of Individuals (MNI)*

Based upon the number of discrete inhumations and the total numbers and ages of certain bones, it can be said that the Oxford street assemblage represents the remains of a minimum number of nine separate individuals. Little of the charnel bone could be assigned to a specific/unique individual since these could feasibly have been disturbed from as many as four inhumations with those elements missing. The exception to this rule was the identification of an unstratified distal humerus and ilium from trench 2, representing a second, previously unidentified infant

**MNI = 9**

#### *Age/Sex*

Sex determination of each conspicuous skeleton was generally based upon at least two or three different criteria. This was regarded as more accurate than single criterion techniques. Only in instances where at least two different sexing techniques were in agreement was the individual assigned a definite, 'M or F', sex. In instances where less reliable techniques had to be used, or when only one technique was possible (due to fragmentation) the individual has been regarded as less certain, i.e. m(?) or f?).

Individuals for whom no sexing technique could be used have had to be regarded as unsexable.

The fairly good overall preservation of the surviving remains has meant that 62% of the conspicuous individuals could be sexed with a high level of certainty. Of the remaining 38% unsexed individuals, one was a neonate (which are rarely sexed) and two had been severely truncated and degraded (Table 21).

**Table 21.** Ages and Sexes.

<b>Skeleton no.</b>	<b>Sex</b>	<b>Age</b>
52	M	50+ yrs
313	M	50+ yrs
393	M	Adult
273	??	indeterminate
391	??	Adult
510	??	c.10 L.months
342	F	40-50 yrs
409	F	20-25 yrs
<b><u>Charnel remains</u></b>		
343	m	40-50 yrs
668 (r.femur)	m	Adult
U/S T.2 (l.femur)	m?	Adult
U/S T.2 (r.humerus)	??	Adult
U/S T.2 (humerus + ilium)	??	c.1yr

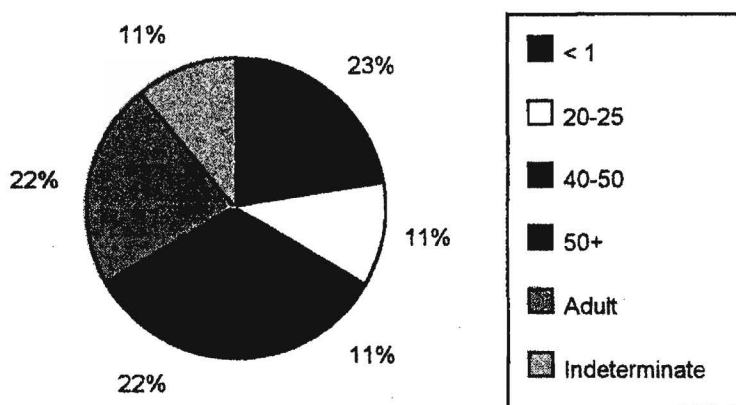
Assignment of individual age at death was possible in five out of the eight inhumation skeletons, while only two ages were identifiable among the charnel remains (as one may expect from incomplete remains). As with the sexing of these individuals, problems with ageing were encountered in cases where bone representation/preservation was poor. More often than not the least well preserved skeletons have had to remain both unaged and unsexed.

In the case of the neonate skeleton (SK. 510) a very accurate estimation of age was feasible using formulae described by Fazekas & Kósa whom state that neonatal age estimation can be calculated to within half a lunar month (Fazekas & Kósa 1978.18) based upon long-bone lengths (Plate 1). That this infant had reached the age of ten lunar months, just outside the period of full term pregnancy, suggests that life was not sustained beyond the first month after birth.

#### *Non-metrical variants*

No unusual incidence of traits were observed in this population (Table 19). The true numbers of traits is probably somewhat under represented in this section due to post-depositional fragmentation of most bones (especially the skulls). In a larger population the overall incidence and distribution of traits may be used in studies of family relationship and biological distance.

In this case the presence of a pair of medium sized septal apertures in the distal humeri of skeleton 409 support the prior conclusion that this individual was female, since they are significantly more common in females than males (Hrdlicka 1932).

**Chart 2.** Distribution of ages (in years) among the nine discrete individuals.**Table 22** Non-metric variations observed in the Oxford Street Skeletons

Trait	Affected Skeleton
Septal Aperture (l & r)	SK. 409
Heterotopic Maxillary Molars	SK. 409+
Parietal Foramen (l & r)	SK. 52
Supraorbital foramen complete (l)	SK. 52
Supraorbital notch (r)	SK. 52
Maxillary torus	Charnel .343

### *Build & Stature*

The males, as observed in most populations, were generally of larger and more muscular build than the females (Table 23). This was apparent by the pronounced development of certain muscular attachments and by the overall robustness of the male bones, resulting from strenuous physical activity, compared to the lighter and more gracile appearance of their female counterparts. However, as can be seen from the metrical analysis (Appendix 3) differences in limb proportions between the sexes was not significant, all falling within the 'normal' range observable in most skeletal populations.

Most of the femora of both sexes displayed platymeria (flattening in an anterior-posterior direction) this being observed in six out of the seven femora examined.

Platycnemia (mediolateral flattening) of the tibia, however, was rarely observed, occurring in only one of the nine tibias examined.

**Table 23.** Build and stature observed in the Oxford Street skeletons

<b>Skeleton no.</b>	<b>Sex</b>	<b>Build</b>	<b>Stature (m)</b>
52	M	medium	-
313	M	heavy	1.71
393	M	heavy	-
273	?	-	-
391	?	medium	-
510	?	-	-
342	F	light	1.64
409	F	light	1.53
<b><u>Charnel remains</u></b>			
668 (r.femur)	m	heavy	1.73
668 (dist. r.humerus)	??	medium	-
U/S T.2 (l.femur)	m?	medium	-

A calculation of living stature, using the formulae described by Trotter and Gleser (1952 & 1958), was attempted for each sexed individual with at least one well preserved femora. Unfortunately, however, the sample size of individuals for whom a stature estimate could be made was small, incorporating only three of the eight inhumation skeletons and one from an indistinct charnel femur. Nonetheless, even in this small sample the sexual dimorphism between the tall males and shorter females can still be observed.

**Table 24.** Mean statures observed among the Oxford Street skeletons compared with individuals from other local and large Roman cemeteries.

<b>Site</b>	<b>Mean Male Stature</b>	<b>Mean Female Stature</b>
Oxford Street	1.72 m	1.61 m
Haymarket, Leicester (Chapman 1997.a)	1.69 m	-
Newark Street, Leicester (Wakely & Carter 1996)	1.71 m	1.59 m
Cirencester (Wells 1982)	1.69 m	1.58m
Poundbury (Farwell & Molleson 1993)	1.66 m	1.61 m

When compared with the mean statures observed among Roman Britons from other Leicester sites and from some not so local but large cemetery sites such as Poundbury and Cirencester, the mean male and female statures from Oxford Street appear comparable with the prevailing average. The males do appear a little taller, though not outside the range of statures observed in any one of the sites cited in table 4 above. The females on the other hand are very close to the means observed at other sites.

During the course of this analysis a range of cranial and post-cranial measurements were taken, these are reproduced as appendix-3 for comparative purposes, however, due to skeletal incompleteness and fragmentation, only a limited range of measurements are available. Cranial measurements are especially lacking, usually limited to just a few from surviving fragments, and are thus of little value. Cranial type (index) was only calculable in one instance, in the case of SK. 409. Craniometric analysis of this single female skull (Appendix 3) indicated a long/narrow skull with a high vault and broad brow, medium facial width, medium width eyes and a narrow palate. These cranial values lie well within the range experienced at Poundbury (Farwell & Molleson 1993. 160), Cirencester (Wells 1982) and at the more local

cemetery at Newark Street (Wakely & Carter 1996.34) though it does appear slightly higher vaulted than most experienced at these sites.

### Pathology

Although the majority of human disease, and indeed trauma, affect only the soft tissues of the victim (rarely causing death), and are consequently very rarely preserved in archaeological specimens, there are certain conditions that leave an indelible mark on the human skeleton. Diseases infecting the skeleton will usually initiate an osteoblastic (bone growth) or an osteoclastic (bone resorption) reaction within living bone cells, similar reactions are commonly observed also as a result of mechanical stress and trauma (if the individual survives).

The following pathological conditions were observed in the skeletons from Oxford Street;

#### Degenerative disease/arthropathies

Degenerative joint disease is the most commonly observed skeletal disease in both modern and archaeological material. The Oxford Street material is no exception to this rule, though its incidence, considering the ages of some of the individuals present, is notably low.

Unsurprisingly, degenerative arthropathy was present in the older members of the population, in this case affecting only skeletons 52, 313 and 342, i.e. the over 40's group (Table 25).

Table 25. Incidence of arthropathy among the Oxford Street skeletons.

Skeleton no.	Joints affected	Severity
52 (male)	r.hip cervical vert. upper thoracic vert.	surface pitting only pitting & osteophytosis (Plate 2) minor osteophytosis
313 (male)	lumbar vert. facets cervical vert.	considerable osteophytosis medium pitting & osteophytosis
342 (female)	lumbar vert. cervical vert. thoracic vert.	osteophytosis minor osteophytosis ankylosis, osteophytosis & Schmorl's nodes

The distribution and nature of the degenerative disease observed in the three individuals detailed in table 22, suggests nothing more than normal joint deterioration arising from the natural joint response to prolonged daily wear and tear (Rogers & Waldron 1995.33). Predominantly the spinal changes observed were a consequence of osteoarthritis, affecting the diarthrodial, synovial and laminal intervertebral joints of the skeleton.

There is some suggestion that skeleton 342 was suffering from *Scheurmann's disease* of the thoracic spine (Ortner & Putschar 1981.323). This is manifest by the presence of several anterior Schmorl's nodes between T8-10, wedging of the thoracic vertebrae, significant osteophytosis (to the point of facet ankylosis) and minor twisting of the cervical spinal processes (Plate 3). This condition, usually developed during



adolescence, would have lead to a minor anterior curvature of the thoracic spine through the herniation of the intervertebral discs and the anterior development of schmorls nodes in the vertebrae. Secondary to this, osteophytosis and ankylosis has developed with advancing age as a means by which to stabilise the spine.

#### Periostitis & exostosis

Growths of new bone can be found on any part of the human skeleton arising from any one of a number of factors. Frequently such growths will arise as a result of trauma in the case of exostoses or infections/trauma with periostitis. The main difference between the two is that exostoses are thought to represent the calcification of haematomas (bleeds) subsequent to injury (Rogers & Waldron 1995:23) while periostitis may be associated with a more complex syndrome/disease which may not be diagnosed palaeopathologically due to the absence of soft tissues in most archaeological specimens.

Table 26. Incidence of Exostoses and Periostitis.

Skeleton no.	Type	Severity	Location
52	Exostosis	medium	l.fibula, r.tibia & fibula
342	Exostosis	light	left dorsal rib end
393	Periostitis	light	r.tibia (anterior)
409	Exostosis	light	l.humerus (olecranon fossa)

For most such lesions of the bone it is difficult and often inappropriate to hypothesise about probable causes for this remodelling, especially since they may be part of a greater clinical picture to which the palaeopathologist is rarely privy (due to the decomposition of the soft tissues). However, the bony growths observed on the lower legs of skeleton number 52 (lateral tibia surface and medial fibula surface) does appear to reflect leg sprains (Plate 4), i.e. the damaging of the interosseous membrane due to pulling stresses (Mann 1990:121).

#### Hyperostosis Frontalis Interna (HFI)

Hyperostosis Frontalis Interna, an internal thickening of the frontal bone of the skull was clearly identifiable in skeleton number 342. The condition is believed to be caused by an endocrinal imbalance predominantly caused by changes in pituitary hormones, at the onset of menopause in women. Such a menopausal link means that women are usually (but not always) more prone to this condition and as such its presence in archaeological specimens can aid sex and age diagnoses. In modern populations its incidence is estimated at between 4% (Henschen 1949:85) and 2-12% (Pawlikowski & Komorowski 1983), with a female to male ratio of 100:1 (Henschen 1949:85).

Skeleton 342 represents a typical case; this individual is female, over 40 yrs of age and, one may suspect, menopausal by the time of her death. The lesion, a ridged build-up of new bone upto 5 mm thick, covers most of the endocranial surface of the frontal bone, restricted to the inner table only. No hyperostosis was noticed anywhere else on the skull.

In clinical cases this condition has been linked with obesity, virilism and mental impairment as just one element in a broader syndrome called 'Morgagni-Stuart-Morel syndrome'. Others have found associations with diabetes mellitus. (Forgacs *et al*



1972), however, it is difficult to prove whether these conditions are interlinked as part of such a syndrome or are individually more plainly linked with the onset of old age. Such associations are rarely possible when dealing with archaeological specimens.

Archaeological findings of HFI are very rare, when Trevor Anderson published his paper on an Anglo Saxon case of HFI in 1994 his review of the literature uncovered only three published cases (Anderson 1994.32). It seems likely that this wide disparity between modern clinical diagnoses and palaeopathological ones has arisen out of a differential use of radiography (Barber & Watt 1997). Certainly in the case of the Oxford Street skull observational diagnosis was only possible due to the fact that the skull was in pieces at the time of analysis. Outwardly normal skulls are unlikely to be X-rayed or more drastically sectioned during routine palaeopathological analysis (T.Anderson pers. com.). Careful examination by Teya Molleson of the Roman skulls from Poundbury did, however, produce twenty six cases of HIF, including six from males (Farwell & Molleson 1993.194).

### *Dental Pathology*

Dental remains from a total of 5 individuals survived from Oxford Street. These incorporated 89 teeth and a total of 121 tooth positions (some being empty sockets resulting from ante-mortem or post-mortem tooth loss). The material thus represented 75.63% of the teeth and 55.63 % of the tooth positions that one would expect from five complete adult dentitions.

Dental attrition was noticed on every individual examined, with the severity increasing with the advancement of age, and as such has been useful in the determination of age. Subsequently the most severe cases of dental attrition were seen in the over 40's age group. Perhaps the worst case being noted on the left dentition of SK. 52 (Plate 6). For some reason, that cannot be accurately ascertained, this individual had apparently strongly favoured chewing on the left side of his mouth. As a consequence both the upper and lower molars have been worn to excess and at an alarmingly steep angle (Plate 6).

**Table 27** Dental representation compared with levels of ante-mortem loss/caries.

<b>Skeleton</b>	<b>Positions represented</b>	<b>Teeth present</b>	<b>AM loss</b>	<b>Caries</b>
52 (M)	32	27	2	1 x RM <sup>2</sup>
313 (M)	19	5	5	0
342 (F)	22	13	9	1 x LM <sub>2</sub>
409 (F)	32	31	1	0
charnel 343 (m)F	16	13	2	0
<b>Total</b>	<b>121</b>	<b>89</b>	<b>19</b>	<b>2</b>
<b>%</b>	<b>75.63%</b>	<b>55.63%</b>	<b>13.23%</b>	<b>2.25%</b>

Data does not include neonate SK.510

Only two cases of dental caries, both of the interproximal molar variety, were noted from Oxford Street. These affected both a mature male (SK.52) and a mature female (SK.342). In relation to the number of teeth available for analysis the rate of caries has been calculated as 2.25%. Other Romano-British groups attest to higher levels; 15.8% at Poundbury (Farwell & Molleson 1993), 5.1% at Cirencester (Wells 1982) and 10.1% at Newarke Street. Such low levels at Oxford Street may, however, be biased by it being such a small assemblage.

Ante-mortem tooth loss has been calculated as 13.23% (19 out of 121 tooth positions present). In the case of the charnel skull (343) two third maxillary molars appear to have been intentionally extracted, with a degree of professionalism that meant that no root fragments were left behind in the process. Compared to an 8.5% AM loss rate at Cirencester (Wells 1982) and 20% at Newarke Street (Wakely & Carter 1996.34) the figure observed at Oxford Street seems acceptable. Certainly, the rate observed here it is well below today's standards, calculated by R.Carter (Wakely & Carter 1996.46) as between 40-60% of modern teeth being either lost decayed or filled.

Slight overcrowding of teeth was noted in only one case, that of Skeleton 409. In this instance the left upper canine displayed a significant lingual misalignment and there was a bilateral incidence of heterotopic maxillary third molars (Plate 7). Heterotopic teeth result from an abnormality in development whereby they are allowed to erupt outside their normal alveolar position, though it remains unclear whether this is a direct result of overcrowding.

Enamel hypoplasias, defects in the structure of the tooth enamel caused by childhood stress (e.g. nutritional deficiency) at the time of enamel production, were only noted in one individual from Oxford Street. Skeleton 409, a female of 20-25 yrs of age at the time of death, exhibited hypoplastic lines on five of her teeth. The most severe of these occupied the incisors (though one canine did display lesser signs). Measurements taken from the incisors (based upon the method described by Huss-Ashmore *et al* 1982.444) reflected two separate phases of childhood stress, the first at c.1.5yrs the second at c.2.5 yrs.

Oral hygiene appears to have been fair. Considering that teeth would have been rarely cleaned, certainly by today's standards, the minimal presence of dental calculus (present, but very light in four cases, medium in one), periodontal disease (two cases: charnel 343 & SK.52) and caries does appear to imply some degree of dental care. However, low incidence of periodontal disease may simply be a product of the lower ages at death, before the disease could properly take hold.

### Discussion

It has been the intention of the current report to catalogue and attempt to interpret the metrical and observational data retrievable from the analysis of the human remains from Oxford Street, Leicester. However, any discussion of the findings from this skeletal population must consider also those from the adjacent plot of land to the north, the York Road site (Chapman 1997.b). One may even argue for the inclusion of the skeletons from Newarke Street (Wakely & Carter 1996), since it is beginning to seem likely that all are part of a single extra mural cemetery outside the Roman town walls. However, since the York Road site is more closely linked with Oxford Street (in the adjacent plot) only this will be included here.

Excavations at York Road (Gossip 1999) uncovered a total of three conspicuous individuals within inhumation graves and various charnel remains (presumably from disturbed contexts), both consistent with the findings from Oxford Street also. The three individuals represented a broad cross section of the community including an adult male, an adult female and a c.5yr old child. Demographically speaking the two

sites appear to represent a homogenic group of individuals from all sections of the community. There appears to be neither an age nor a sex based exclusion from the burial ground (as may have been the case in a soldiers cemetery for instance) suggesting that it served the entire community. Of particular note was the inclusion of at least three children within the cemetery (especially the neonate SK. 510 from Oxford Street) since Roman tradition usually meant that such young individuals were permitted buried within the city walls.

Together, the York Road and Oxford Street Excavations (Gossip forthcoming) produced the remains of a minimum of twelve individuals, though this figure may be higher if only one could assign the charnel remains to separate individuals. The ratio of sexable male to female adults is 4:3, and ageable adults to children 8:3, this further supports the notion that the cemetery was open to familial groups. The closeness of family relationships (if indeed any were present) could not, however, be determined in this instance, due to the lack of genetic markers (non metric traits, section 4.3).

The individuals represented in this cemetery were of average height, compared with other larger contemporary populations. The males were generally well muscled as a result of a physically demanding lifestyle, while the females were typically of medium to slender build.

Diet was typically coarse for the period, being reflected in the high levels of dental attrition observed in all individuals present (especially severe in the over 40's). Such high levels of dental attrition were the norm prior to the introduction of flour sieving, for the removal of grinding grit, in the mid 17th century. Dental hygiene, however, was fair. The population exhibits low levels of decay, calculus (tartar) and periodontal disease, despite the apparently normal rates of ante-mortem tooth loss, some of which reflect intentional, possibly professional, extraction of bad teeth. Low levels of calculus throughout the population may equally, however, have resulted from a low carbohydrate diet.

The population showed no signs of chronic disease nor excessive trauma. The only pathologies noted during analysis were those linked with old age (HIF and Osteoarthritis) and a single minor case of spinal curvature of juvenile origin (Scheurmann's disease). Minor trauma was noted in several cases, but all of these could be explained simply as accidental damage inflicted during the course of a normal life.

The ages at death observed in this population may be considered as normal if the findings of larger cemeteries such as Poundbury (Farwell & Molleson 1993) and Cirencester (Wells 1982) are anything to go by. The specific causes of death in each of the instances detailed above are however unobtainable from the given evidence. Since relatively few diseases and traumas leave their mark on the skeleton the potential for dry bone studies, such as, this to identify cause is very low.



Plate 1. Neonate bones of Skeleton 510. Age = c.10 lunar months, depicting (from left to right) ulna, humerus, femur, tibia & fibula.

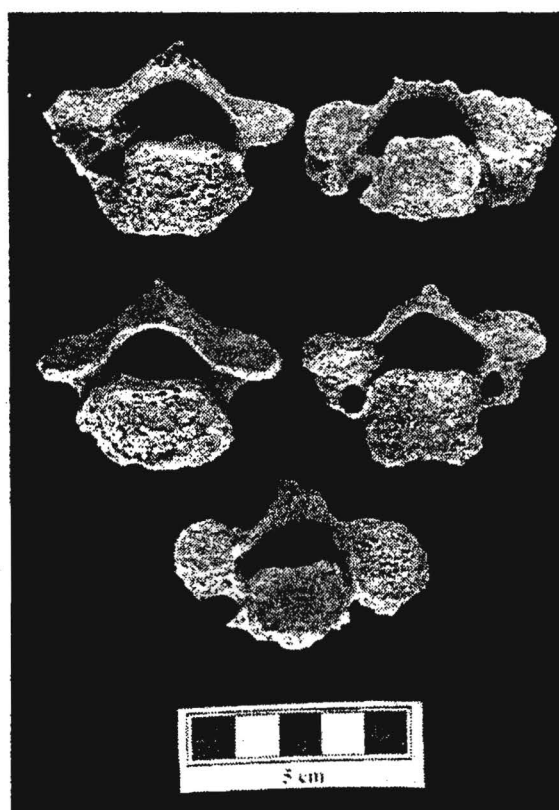
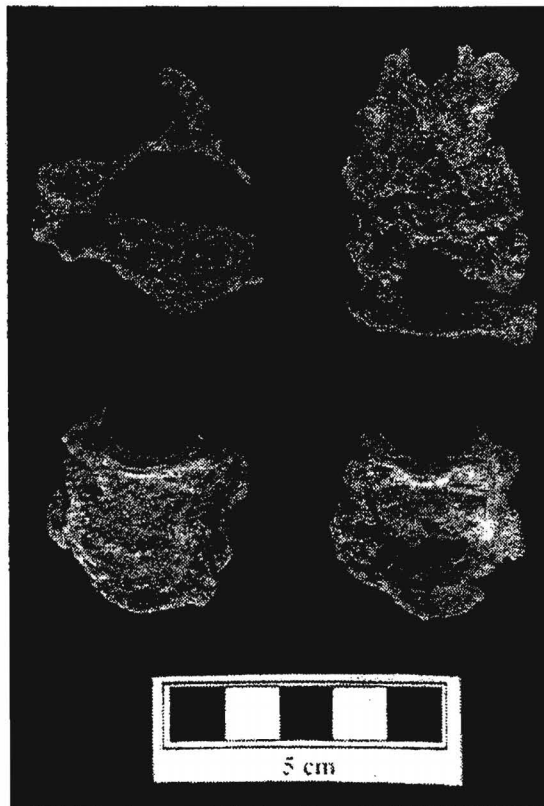
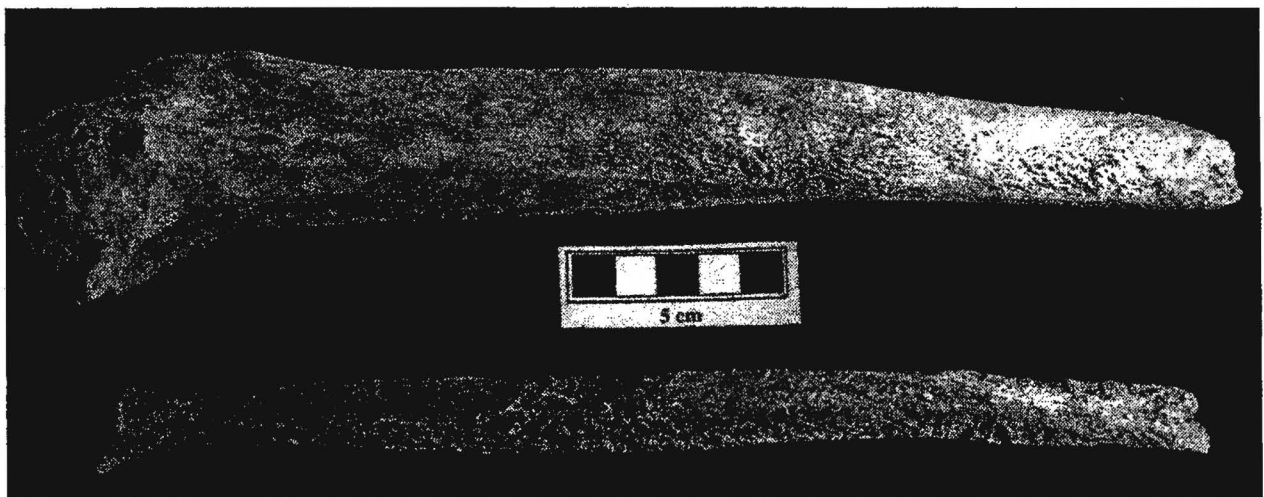


Plate 2. Osteoarthritic pitting and osteophytosis of the cervical vertebrae of skeleton 53.



**Plate 3.** Probable Scheurmann's disease in Skeleton 342. a) twisting of cervical vertebral spinous process b) ankylosis of T5-6 vertebral facets c) marginal osteophytosis of thoracic vertebrae d) anterior Schmorl's node and osteophytosis of thoracic vertebrae.



**Plate 4.** Exostoses observed on the lower right leg of skeleton number 52. Involving the lateral tibia surface and medial fibula surface. Probably reflecting leg sprains i.e. the damaging of the interosseous membrane, due to pulling stresses.



Plate 5. Hyperostosis Frontalis Interna. Endocranial thickening of the frontal bone of skeleton 342 (female, 40+ yrs old).

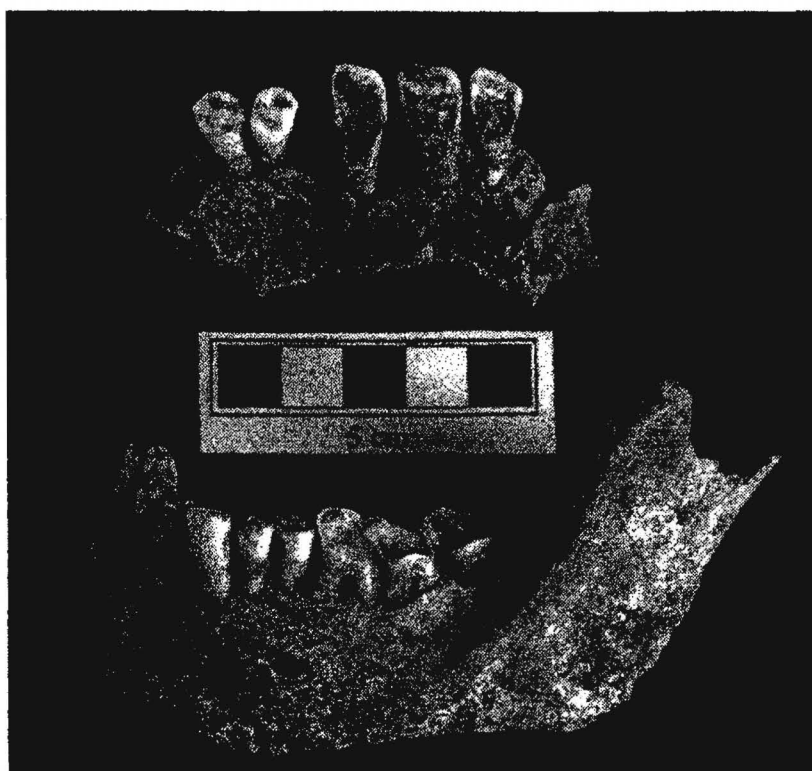


Plate 6. Severe and uneven dental attrition in the left molars of skeleton 52.





Plate 7. Heterotopic maxillary third molars observed in Skeleton 409 .

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**Appendix 1.1 Representation of bone elements for most common species.**

<b>Ox</b>	<b>Roman</b>	<b>Medieval</b>	<b>Sheep</b>	<b>Roman</b>	<b>Medieval</b>
Horn Core	7	7	Horn Core	0	3
Upper orbit	0	2	Upper orbit	0	2
Lower Orbit	4	2	Lower Orbit	0	4
Occipital Condyle	0	2	Occipital Condyle	0	5
Petros	3	4	Petros	0	2
Maxillae +tth	2	1	Maxillae +tth	0	9
Mandible +tth	5	1	Mandible +tth	3	11
Scapula D	4	7	Scapula D	1	5
Humerus D	2	6	Humerus D	2	6
Humerus P	0	2	Humerus P	0	2
Radius P	2	2	Radius P	1	8
Radius D	3	1	Radius D	0	4
Ulna P	0	3	Ulna P	0	2
Metacarpal P	5	3	Metacarpal P	0	8
Metacarpal D	7	3	Metacarpal D	0	7
1st Phal	4	2	1st Phal	0	2
2nd Phal	1	1	2nd Phal	0	0
3rd Phal	6	2	3rd Phal	0	0
Pelvis (acet +illium)	2	4	Pelvis (acet +illium)	0	13
Femur P	0	1	Femur P	0	3
Femur D	0	0	Femur D	0	1
Tibia P	0	2	Tibia P	0	2
Tibia D	1	4	Tibia D	1	11
Calcaneum	1	3	Calcaneum	1	2
Astragalus	1	3	Astragalus	0	1
Metatarsal P	4	2	Metatarsal P	0	8
Metatarsal D	3	4	Metatarsal D	0	4
Atlas	0	1	Atlas	0	2
Axis	0	0	Axis	0	0
Vert frgs	12	16	Vert frgs	1	9
Loose teeth	21	21	Loose teeth	2	15

<b>Pig</b>	<b>Roman</b>	<b>Medieval</b>	<b>Horse</b>	<b>Roman</b>
Upper orbit	0	0	Upper orbit	0
Lower Orbit	0	0	Lower Orbit	0
Occipital Condyle	0	2	Occipital Condyle	0
Petros	0	0	Petros	0
Maxillae +tth	0	2	Maxillae +tth	0
Mandible +tth	2	7	Mandible +tth	0
Scapula D	0	3	Scapula D	2
Humerus D	2	4	Humerus D	2
Humerus P	0	3	Humerus P	1
Radius P	0	3	Radius P	2
Radius D	0	3	Radius D	3
Ulna P	0	4	Ulna P	0
Metacarpal P	0	0	Metacarpal P	3
Metacarpal D	0	2	Metacarpal D	4
1st Phal	0	0	1st Phal	0
2nd Phal	0	0	2nd Phal	0
3rd Phal	0	0	3rd Phal	1
Pelvis (acet +illium)	1	3	Pelvis (acet +illium)	1
Femur P	0	2	Femur P	0
Femur D	0	4	Femur D	0
Tibia P	0	3	Tibia P	1
Tibia D	0	4	Tibia D	2
Calcaneum	0	0	Calcaneum	0
Astragalus	0	2	Astragalus	0
Metatarsal P	0	1	Metatarsal P	0
Metatarsal D	0	0	Metatarsal D	0
Atlas	0	1	Atlas	0
Axis	0	0	Axis	0
Vert frgs	0	10	Vert frgs	0
Loose teeth	2	8	Loose teeth	26

**Appendix 1.2: Epiphyseal fusion (cattle, sheep and pig)**

The following tables refer to species from Roman contexts:

<b>Roman Bone</b>	<b>Cattle Prox/Dist</b>	<b>Age (mo)</b>	<b>Fused</b>	<b>Unfused</b>	<b>% Fused</b>	
Pelvis (acet)		7-10 mo.		2	1	67
Scapula	D	7-8 mo.	4	0	100	
1st Phal	P	13-15 mo.	3	1	75	
Humerus	D	15-18 mo.	2	0	100	
Radius	P	15-18 mo.	2	0	100	
2nd Phal	P	18 mo.	3	1	75	
MetaC	D	24-36 mo.	4	1	80	
Tibia	D	24-30 mo.	1	0	100	
MetaT	D	27-36 mo.	0	1	0	
Femur	P	42 mo.	0	0	0	
Calc	P	36-42 mo.	1	0	100	
Radius	D	42-48 mo.	3	0	100	
Ulna	P	42-48 mo.	0	0	0	
Humerus	P	42-48 mo.	0	0	0	
Femur	D	42-48 mo.	0	0	0	
Tibia	P	42-48 mo.	0	0	0	
<b>Total</b>			25	5	83	

<b>Roman Bone</b>	<b>Sheep Prox/Dist</b>	<b>Age (mo)</b>	<b>Fused</b>	<b>Unfused</b>	<b>% Fused</b>
Pelv	acet	6-10 mo	0	0	0
Scapula	D	6-8 mo.	1	0	100
Humerus	D	10 mo.	2	0	100
Radius	P	10mo.	1	0	100
1st Phal	P	13-16 mo.	0	0	0
2nd Phal	P	13-16 mo.	0	0	0
MetaC	D	18-24 mo.	0	0	0
Tibia	D	18-24 mo.	1	0	100
MetaT	D	20-28 mo.	0	0	0
Ulna	P	30 mo.	0	0	0
Femur	P	30-36 mo.	0	0	0
Calc	P	30-36 mo.	1	0	100
Radius	D	36 mo.	0	0	0
Humerus	P	36-42 mo.	0	0	0
Femur	D	36-42 mo.	0	0	0
Tibia	P	36-42 mo.	0	0	0
<b>Total</b>			<b>6</b>	<b>0</b>	<b>100</b>

Roman Bone	Pig Prox/Dist	Age (mo)	Fused	Unfused	%	
Scapula	D	12mo.		1	0	100
Humerus	D	12 mo.		1	0	100
Radius	P	12 mo.		1	0	100
Pelvis	acet	12 mo.		3	0	100
2nd Phal	P	12 mo.		0	0	
MetaC	D	24 mo.		0	2	0
Tibia	D	24 mo.		1	0	100
1st Phal	P	24 mo.		0	0	
Calc	P	24-30 mo.		0	0	
Metat	D	27 mo.		0	0	
Ulna	P	36-42 mo.		0	0	
Humerus	P	42 mo.		0	0	
Radius	D	42 mo.		0	1	0
Femur	P	42 mo.		0	0	
Femur	D	42 mo.		0	2	0
Tibia	P	42 mo.		0	0	
Total				7	5	58

The following tables refer to species from medieval contexts:

Medieval Bone	Cattle Prox/Dist	Age (mo)	Fused	Unfused	% Fused	
Pelvis (acet)		7-10 mo.		4	0	100
Scapula	D	7-8 mo.		7	0	100
1st Phal	P	13-15 mo.		2	0	100
Humerus	D	15-18 mo.		4	1	80
Radius	P	15-18 mo.		0	2	0
2nd Phal	P	18 mo.		1	0	100
MetaC	D	24-36 mo.		2	1	67
Tibia	D	24-30 mo.		3	1	75
MetaT	D	27-36 mo.		3	1	75
Femur	P	42 mo.		1	0	100
Calc	P	36-42 mo.		0	0	0
Radius	D	42-48 mo.		1	0	100
Ulna	P	42-48 mo.		2	1	67
Humerus	P	42-48 mo.		1	1	50
Femur	D	42-48 mo.		0	0	0
Tibia	P	42-48 mo.		2	0	100
Total				33	8	80

Medieval	Sheep					
Bone	Prox/Dist	Age (mo)	Fused	Unfused	% Fused	
Pelv	acet	6-10 mo	8	0	100	
Scapula	D	6-8 mo.	5	0	100	
Humerus	D	10 mo.	6	0	100	
Radius	P	10mo.	7	1	88	
1st Phal	P	13-16 mo.	2	0	100	
2nd Phal	P	13-16 mo.	0	0	0	
MetaC	D	18-24 mo.	5	2	71	
Tibia	D	18-24 mo.	11	0	100	
MetaT	D	20-28 mo.	4	0	100	
Ulna	P	30 mo.	1	1	50	
Femur	P	30-36 mo.	2	1	67	
Calc	P	30-36 mo.	2	0	100	
Radius	D	36 mo.	4	1	80	
Humerus	P	36-42 mo.	0	2	0	
Femur	D	36-42 mo.	0	1	0	
Tibia	P	36-42 mo.	1	1	50	
Total			58	10	85	

Medieval	Pig					
Bone	Prox/Dist	Age (mo)	Fused	Unfused	% fused	
Scapula	D	12mo.	1	2	33	
Humerus	D	12 mo.	1	3	25	
Radius	P	12 mo.	1	2	33	
Pelvis	acet	12 mo.	3	0	100	
2nd Phal	P	12 mo.	0	0	0	
MetaC	D	24 mo.	0	2	0	
Tibia	D	24 mo.	1	3	25	
1st Phal	P	24 mo.	0	0	0	
Calc	P	24-30 mo.	0	0	0	
Metat	D	27 mo.	0	0	0	
Ulna	P	36-42 mo.	4	0	100	
Humerus	P	42 mo.	0	3	0	
Radius	D	42 mo.	0	1	0	
Femur	P	42 mo.	0	2	0	
Femur	D	42 mo.	0	4	0	
Tibia	P	42 mo.	0	3	0	
Total			11	25	31	

## Appendix 1.3: Frequency of butchery marks on bone elements

Ox	Medieval	Roman	Sheep	Medieval	Roman
Skeletal Part			Skeletal Part		
Horncore	1	1	Horncore	1	
Cranium	1	1	Cranium	3	
Maxilla			Maxilla		
Mandible			Mandible		
Scapula	3		Scapula	1	
Humerus P	1		Humerus P		
Humerus D	5	2	Humerus D		
Radius P			Radius P	1	
Radius D	1	1	Radius D		
Ulna	2		Ulna		
MetaC P	1		MetaC P		
MetaC D		1	MetaC D		
1st Phal			1st Phal		
2nd Phal			2nd Phal		
3rd Phal			3rd Phal		
Pelvis	3	1	Pelvis	1	1
Femur P			Femur P		
Femur D			Femur D		
Tibia P	1		Tibia P		
Tibia D	2		Tibia D	2	
Calcaneum	1		Calcaneum	1	
Astragalus			Astragalus		
MetaT P			MetaT P		
MetaT D	1		MetaT D		
Atlas	1	1	Atlas	2	
Axis	1		Axis	2	
Cerv	5		Cerv	2	
Thor			Thor		
Lumb	2	1	Lumb		
Tarsals	2		Tarsals		
Carpals			Carpals		
Patella	1		Patella		
Total	35	9	Total	16	1

Other species, including pig, are not represented due to infrequency of butchery marks.



## Appendix 2: The Medieval and Later Pottery, Ridge Tile and Clay Pipe Catalogue

Site/Parish: Republic Car Park, Oxford St, Leicester	Submitter: James Gossip
Accession No: A54 1997	Identifier: D. Sawday
Material: Medieval & Later Pottery, Ridge Tile & Clay Pipe	Date of Id: spot dating 26.8.97, full id. 30.3.99
Site Type: Extramural medieval suburbs	Method of Recovery: Excavation
	Doc. repoxfl.doc

context	feat/phase	fabric	sherd nos.	weight grams	comments
					MEDIEVAL/POST MED/MOD POTTERY
Sophie's pit 2nd layer	F24/4	PM	2	65	includes thin wide strap handle, thumbled along edges
		RS	1	58	cp/stj half profile, hand made, everted & thickened rim, pos. a Coventry Sandy ware, dr 2
		MS3	2	20	later 13th/early 14th?
Area 2 upper fill of pit	F49/5	PM	4	33	
T2 brick work	-/7/8	EA7	2	17	c.1750+, press moulded slipware
		EA2	3	160	pancheon & bowl rim, black glaze int
		EA3	11	102	incl. rilled mug base
		EA6	2	263	incl. base of wide bodied vessel & chamber pot rim
		EA5	1	4	
1	U/S	PM	1	2	
2	U/S	EA3	3	50	
3	U/S	MP2	1	12	
		EA2	2	4	
		EA3	1	11	
		EA7	1	10	
5	U/S	EA8	1	1	
8	U/S	CG	1	1	?med
13	F53/4	CC1	2	28	
		MS3	1	5	
		MP2	5	43	
		CW2	1	1	
14	F53/4	EA7	1	2	press moulded dish, c.1750+
19	F198/4	MP2	1	10	
		CW2	5	6	3 sherds dec with white clay pads, & one also with a plain circular stamp - not drawable
28	F179/7	MS2	1	2	
		NO3	2	46	green gl, heavily reduced int
		MS3	1	35	wide mouthed bowl rim, sooted ext, gl int
		MP1	1	16	
29	F53/4	PM	1	5	
		CC1	4	168	green glazed strap jug handle stub, triple thumbled at handle base
		NO3	1	8	green glazed, heavily reduced int
		CC2	1	6	

		MS2	1	5	
33	F31/4	ST2	1	2	thick yellow glaze
39	F179/7	CW1	1	5	
48	F177/4	PM	17	1115	profile upright (form 1) bowl, sooted ext, dr 3
		PM	16	465	profile top half cp/stj, sloping shouldered /rounded, coil visible inner neck, dr 4
		PM	9	717	dripping dish profile, sooted ext, + body of thick walled stj, reduced int, with ext. applied thumbled clay strip
52	F17/2RB	MS2	1	1	intrusive
55	F53/4	PM	2	18	one sherd glazed
61	F12/5	MS2	1	6	green glaze ext
		MP2	1	292	cistern base, kt under base, plain bung hole, traces of glaze ext
65	U/S	NO3	1	29	later 13th c.
70	U/S	PM	1	75	cp/stj rim, thumbled applied hor.(at neck) & vertical strips
71	U/S	EA7	1	18	c.1750+
73	F32/4	PM	4	90	flat jug base, ext rd 140mm, notched basal angle, heavily abraded int, paralleled at Causeway Lane, Leicester. (Sawday 1999, fig.94.122)
		SP3	1	10	glaze spots ext
77	F20/5	PM	1	96	jug strap handle. thumbled down both sides
		CC1	1	2	glazed
79	ph/5	MP2	1	17	late med - very highly fired
83	F20/5	PM	1	7	
		MP2	2	255	2 bases, one with additional clay reinforcement on int, ?cistern/jug
84	F20/5	CC1	1	6	later 13th/early 14th c.
		CC2	1	3	
85	F20/5	PM	1	8	sooted ext
87	F22/5	PM	1	12	
90	ph/4	PM	1	25	basal angle, sooted ext
93	F20/5	NO3	1	7	?hand built
		MP2	1	42	semi vitrified flat base frag.
98	F22/5	MP2	1	8	
		CW2	2	28	1 sherd dec. with applied white clay pad, with 'wheel' stamp, 10 spokes, dr 7
100	g. soil/4	TO	1	42	cp/stj rim, dr 1
		PM	3	20	
102	F181/6	CC1	1	4	
		MP2	1	10	gl ext, + incised hor. lines, pos a jug
		CW2 /MB	1	2	
		MY	1	1	
104/5	F182/6	CC1	1	5	
		EA1	1	10	
105	F182/6	CW2 /MB	2	4	
109	F180/5	CW2	1	1	oxidised
117	F43/4	PM	2	32	
		CC1	1	14	green gl
119	F29/4	ST2	2	17	1 with green glaze, both sooted ext
		PM	1	23	sooted ext
119 cont		OS2	3	107	simple everted cp rim, 12th c., dr 5

120	F179/7	EA6	1	10	glazed chamber pot rim
		SW3	1	11	?early 18th c.
123	F27/5	PM	1	20	upright thickened jug rim + traces of glaze
		SP3	1	3	
		MP2	1	20	
125	F28/4	PM	3	26	
128	F30/4	PM	2	23	2 cp/stj collared rims, upright & thickened, 1 ext slashed
130	F27/5	PM	4	17	
		MP2	1	22	strap handle frag
131	F28/4	PM	3	60	convex base sherd
132	F28/4	PM	5	45	upright cp/stj rim, basal angle sooted ext
		CC1	2	20	green glaze
138	F185/4	EA1	1	4	
		EA6	1	11	
		EA7	1	5	wheel thrown. probably 17th c.
139	F185/4	PM	1	3	
140	F186/6	MY	3	13	jar/cup?
143	F46/4	ST2	4	17	3 sooted ext, 1 with thin yellow glaze
		PM	1	10	
		SP3	1	9	
147	drain/6-7	MS1	2	18	green gl int
		MP2	1	76	thumbed jug base
		EA2	1	11	
149	F54/7	NO3	1	14	
		MY	1	8	upright cup rim with circular brown patches of ?slip under glaze - this dec. not typical of local MY
		MB	1	9	upright, glazed rim
		EA1	3	138	upright jar rim
		EA2	8	280	jar, gl int
		EA3	4	47	
		EA5	1	15	cup base
		EA6	1	11	
		EA7	3	17	dish & bowl, press moulded
		SW5	1	2	
		EA	4	86	red body, brown & yellowish brown slip under glaze, v. thin walled, includes. cup/bowl base
151	F53/4	PM	1	8	
		CC1	3	52	includes dripping dish profile, traces of glaze int, sooted ext.
		CC2	1	7	
		NO3	2	18	reduced interior, later 13th century
		MS3	4	128	includes a stabbed strap jug handle
		TG	1	3	unclassified fabric, glazed int & ext
		MP2	7	117	
		EA1	4	118	includes jar rim
153	F53/4	PM	1	10	
		CC1	2	45	green & brown glazed sherds
155	F53/4	PM	1	14	
		CC1	2	20	
		CC2	1	10	
156	F53/4	PM	3	48	
		CC2?	1	14	?early example of this fabric, (pos Coventry) thin green glaze
157	F53/4	CC1	1	88	dripping dish profile, internal & external burning/sooting, green glaze int

164	F19/6	TG	1	1	green glaze, coarse unclassified fabric
		MP2	6	118	wide mouthed bowl rim
		EA1	1	12	?16th century
168	F25/5	ST2	1	5	
		PM	8	84	2 sherds ext. sooted
		TG	1	1	fine fabric
		MP1	8	826	thinly glazed & rouletted jug profile - decoration paralleled at Nuneaton (Mayes & Scott 1984) from late 14th c. (Site 9, F43), 15th c. (Site 18 F103 & F109), and later 15th c. (Site 5 F35, Site 7 K25 and Site 15 K34). dr 6
171	F29/4	ST2	3	87	1 sherd thin green glaze, convex ext knife trimmed base frag
196	F45/5	PM	1	25	upright, simple jug rim
		MY	1	3	
		EA2	1	86	jar rim, glazed int.
		EA3	3	49	rilled mug frags
198	F44/4	PM	1	42	ext sooted base frags
		CC1	2	2	
214	g. soil/4	PM	1	14	
		CC1	1	7	small everted cp rim
		MP2	2	18	
215	F179/7	PM	1	6	
		MP2	2	32	
220	ph/4	MP2	1	1	
223	F184/7	MP2	1	5	
		CW2	1	5	
		EA3	6	78	includes jar/bowl frags
225	F37/7	CW2	1	6	
		EA9	1	3	
		SW4	1	1	
228	F38/4	PM	1	6	
229	F39/5	RS	1	6	possibly a Coventry reduced sandy ware
		MP2	2	48	flat bottomed base frag
232	F41/5	MP2	1	8	
249	F84/4	PM	1	6	
253	F85/4	CC1	1	1	
255	F86/4	PM	1	4	
260	F23/4	ST3	1	1	
		LY4	1	32	
		PM	6	67	
268	F89/4	PM	1	4	
270	F179/7	MP2	1	21	everted cp rim
		EA1	2	48	
276	F11/4	PM	8	150	jug pouring lip & 2 everted bowl rims
		SP3	2	44	1 sherd glazed, the other sooted ext
		CC1	2	2	1 green glazed
277	F11/4	PM	2	16	
302	F24/4	PM	3	71	
		CC1	2	100	baluster jug base
		MS3	10	73	quite hard fired, later 13th c. +
319	F9/4	PM	6	16	
322	F9/4	PM	5	94	2 sherds sooted ext
		EA2	1	14	
330	F200/4	PM	1	1	
337	F36/4	ST2	1	2	
		PM	5	22	

		SP3	4	48	thumbed applied clay strip and incised lines under glaze
		EA2	1	4	
		EA5	2	20	
339	F36/4	ST2	1	6	?spouted pitcher frag
		OS	1	1	
		EA2	1	20	
346	F33/5	PM	8	116	thumbed jug strap handle, + frag with applied clay strip
		NO3	5	18	green glaze, sherds heavily reduced on int.
347	F33/5	PM	10	91	base, sooted underneath
		OS2	1	10	collared cp/stj rim (reminiscent of ST/PM), unusual form in this fabric, patch of reduction on rim
		SP3	1	1	glazed
		CC1	1	7	overfired, glazed int & ext
		NO3	8	112	green glazed, some sherds heavily reduced interior, later 13th/early 14th c.
355	services/7	EA3	1	10	mug base
373	F8/4	PM	4	48	
374	F8/4	PM	21	245	
		SP3	1	12	green glazed later 12th+
376	F8/4	PM	6	90	
388	pit/77	PM	3	48	+ thumbled applied clay strip
390	pit/77	PM	1	27	
396	F47/4	PM	20	313	6 cp/stj rims, 13th c. rims and rounded vessel forms, 7 sherds sooted ext
		ST2	3	16	all with thin pale green glaze
		LY4	8	48	sooted ext
		CC1	1	40	glazed strap handle
		MS2	1	18	glazed & thumbled & notched applied clay strip
397	F47/4	PM	1	13	
398	F47/4	PM	5	73	all ext. sooted
		LY4	1	22	cp/stj upright 13th c. rim
		CC1	1	6	early lead glaze, 13th c.
403	F12/5	CC2	2	27	
		MS3	4	155	wide mouthed bowl/pancheon rim, with an inscribed wavy line dec on the rim flange, which is unusually wide
419	pit/7	MP2	1	12	
		EA6	8	410	profile bowl, glazed int & ext, bd 170mm
		EA3	8	335	rilled mug base and wall profile.
		EA2	3	138	
		EA7	1	10	press moulded
421	pit/77	PM	5	298	
450	F7/1RB	PM	3	17	
467	-/71RB	PM	2	22	cp/stj rim, pos 12th c. intrusive
527	-/71RB	EA7	1	12	press moulded - mid 18th c. + intrusive
574	F49/5	MS3	1	38	wide mouthed bowl rim, ext sooted
		MP2	1	46	cistern rim, with thumbled applied clay strip round neck
604	F51/5	PM	3	23	
		MP2	3	20	
641	-/71RB	CW2	1	2	? cup rim, intrusive
656	F6/1-2RB	PM	1	12	
689	F7/1RB	PM	2	57	cp/stj rim with narrow cylindrical body, coils visible int, sooted ext check //, intrusive



		LY4	2	12	
702	F52/4	SP3	5	40	
U/S	-	ST3	1	18	fragment of a form 14-5 (Kilmurry 1980) inturned bowl rim, uncommon outside Stamford where dated from the 10th to the late 11th century (ibid p.137)
U/S	-	SW5	1	17	small vessel, form uncertain
					MEDIEVAL RIDGE TILE
98	F22/5	CC1	1	2	green glaze
132	F28/4	CC1	1	87	green glazed
138	F185/4	MS3	1	90	
151	F53/4	PM	1	10	green glazed
		CC1	2	77	greenish brown glaze
164	F19/6	SP3	1	30	green glaze
		CC1	1	4	green glaze
270	F179/7	CC1	1	46	
294	F93/4	CC1	2	21	
302	F24/4	MS	1	42	green glaze
403	F12/5	CC1	3	78	green glaze
447	F6/1-2	MS3	1	25	brownish purple glaze
U/S	-	MS2	1	105	part of a large, but unidentifiable crest, green glaze
U/S	-	MP2	1	80	traces of thumbing near crest, and purple glaze
					CLAY PIPE
Context	feat/phase	phase	frags		comments
14	F53	4	2	bowl	undec, roll stamped rim - possibly mid, or perhaps late 17th century
120	F179	7	1	stem	?late 18th/early 19th c.
140	F186	6	1	stem	?late 18th/early 19th c.
149	F54	7	1	bowl	undec. bowl - pointed spur ?c1750-early 19th c.
			8	stems	
196	F45	5	2	bowls	both plain, one unid., the other has a pointed spur - similar to plain slender bowls from Elbow Lane dated from c.1780
			4	stems	
223	F184	7	1	bowl	plain - late 18th/early 19th c.
225	F37	7	3	stems	? as above
327	-	7	2	stems	? as above
337	F36	4	2	stems	? as above
339	F36	4	1	stem	? as above
419	-	7	2	bowl	undec, broken spur, but similar to plain slender bowls from Elbow Lane dated from c.1780
T2 brick	-	7-8	1	bowl	base broken - undec bowl, c.1780+?
			2	stems	
T2 pipe. trench	-	U/S	1	bowl	no rim - app. plain bowl -?late 18th c.
T3 S. pipe trench	-	U/S	1	bowl	unidentifiable
			3	stems	
T8 drain backfill	-	U/S	5	stems	?late 18th - early 19th c.
		U/S	1	bowl	plain bowl - long spur, ?late 18c.+



**Appendix 3: Human Skeletal Metrics/Indices**

Descriptions of all metrics/indices recorded have been published by Bass (1987) and Brothwell (1981). The shorthand codes used are those employed by the above named authors.

**Table 28** Post Cranial Metrics (all measurements given in mm).

		Skeleton no.									
		52	313	343 *	393	668*	273	391	510	342	409
Sex		M	M	m	M	m	?	?	?	F	F
Age		50+	50+	40-50	adult	adult	?adult	neonate	40+	20-25	
<b>Metric</b>											
FeL <sub>1</sub>	(l)	-	454	-	-	-	-	-	76 ‡	-	405
	(r)	-	-	-	-	-	-	-	-	446	400
FeL <sub>2</sub>	(l)	-	451	-	-	-	-	-	-	-	400
	(r)	-	-	-	-	-	-	-	-	443	396
FeD <sub>1</sub>	(l)	-	26.8	-	-	-	-	-	-	27	21.3
	(r)	-	30.2	-	-	27.5	-	-	-	28	24
FeD <sub>2</sub>	(l)	-	36.3	-	-	-	-	-	-	33.2	28
	(r)	-	33.8	-	-	35.8	-	-	-	34.2	30.1
FHD <sub>1</sub>	(l)	-	47.2	-	-	-	-	-	-	41.6	42.5
	(r)	-	48	-	-	-	-	-	-	41	41.7
FeD <sub>3</sub>	(l)	-	29.1	-	-	-	-	-	-	-	25.5
	(r)	-	-	-	-	30	-	-	-	31.1	25.2
FeD <sub>4</sub>	(l)	-	29	-	-	-	-	-	-	-	24
	(r)	-	-	-	-	30.1	-	-	-	27.5	24.2
FeE <sub>1</sub>	(l)	79.8	-	-	-	-	-	-	-	-	-
TiL <sub>1</sub>	(l)	-	-	-	-	-	-	368	67 ‡	-	330
	(r)	-	-	-	-	-	-	-	67 ‡	353	329
TiD <sub>1</sub>	(l)	35	36	-	-	-	26.1	37.2	-	33	28
	(r)	35.2	-	-	39.3	-	-	-	-	32.7	29.8
TiD <sub>2</sub>	(l)	22	25	-	-	-	-	29.3	-	22.8	22.2
	(r)	22.3	-	-	28.5	-	20.5	-	-	23.2	23.2
TiE <sub>1</sub>	(l)	72.8	-	-	-	-	-	-	-	69.5	-
	(r)	73	-	-	-	-	-	-	-	73.2	64
HuL <sub>1</sub>	(l)	-	304	-	-	-	-	-	-	308	-
	(r)	-	-	-	-	-	-	-	-	323	-
HHD	(l)	-	47.5	-	-	-	-	-	-	40.5	-
	(r)	-	-	-	-	-	-	-	-	41.8	-
HuE <sub>1</sub>	(l)	-	61.2	-	70	-	-	-	-	56.5	53.5
	(r)	-	63.2	-	-	-	-	-	-	56	52.8
HU. circ.	(l)	-	70	-	79	-	-	-	-	62.1	56
	(r)	-	67	-	-	-	-	-	-	62	57.5
RaL <sub>1</sub>	(l)	-	-	-	-	-	-	-	-	224	214
	(r)	-	-	-	-	-	-	-	-	229	218
U <sub>1</sub> L <sub>1</sub>	(l)	-	-	-	-	-	-	-	-	246	230
	(r)	-	-	-	-	-	-	-	-	-	236
Phys.L	(l)	-	-	-	-	-	-	-	-	219	207
	(r)	-	-	-	-	-	-	-	-	-	211
Uln.circ	(l)	-	-	-	-	-	-	-	-	30	35
	(r)	-	-	-	-	-	-	-	-	32	38
Clavicle.L	(l)	-	-	-	-	-	-	-	-	136	-
	(r)	-	-	-	-	-	-	-	-	131	-
Glenoid.L	(l)	-	-	-	-	-	-	-	-	38	-
	(r)	-	-	-	-	-	-	-	-	-	31

\* Charnel bone only

‡ Measurement does not include epiphyses

Table 29 Cranial metrics (all measurements given in mm, only skeletons with surviving craniums are included).

		Skeleton no.			
		52	313	342	409
Sex		M	M	F	F
Age		50+	50+	40+	20-25
<b>Metric</b>					
L		203	-	-	187
B		-	-	-	138
B <sub>1</sub>		-	-	-	100
H		-	-	-	146
LB		-	-	-	105
S <sub>1</sub>		130	-	-	130
S <sub>2</sub>		-	-	-	123
S <sub>3</sub>		-	-	-	122
T <sub>1</sub>		-	-	-	222
S <sup>1</sup> <sub>1</sub>		112	-	-	110
S <sup>1</sup> <sub>2</sub>		-	-	-	110
S <sup>1</sup> <sub>3</sub>		-	-	-	103
PO.B	(l)	-	-	-	120
	(r)	-	-	-	128
G <sup>1</sup> <sub>H</sub>		-	-	-	65
GL		-	-	-	100
GB		-	-	-	74
G <sub>2</sub>		-	-	-	35
G <sup>1</sup> <sub>3</sub>		-	43	-	56
J		-	-	-	127
O <sub>1</sub>	(l)	-	-	-	32.5
	(r)	-	-	-	33.5
O <sub>2</sub>	(l)	-	-	-	38
	(r)	-	-	-	40
FL		-	-	-	-
FB		-	-	-	-
NB		-	-	-	23
HN		-	-	-	-
IOB		-	-	-	21
W <sub>1</sub>		-	-	-	115
CyL	(l)	16	-	-	18.5
	(r)	19	-	22	19
RB <sub>1</sub>	(l)	29.8	-	34.9	27
	(r)	30	-	36	28
H <sub>1</sub>		-	-	33.5	27
ZZ		-	-	49.5	44.5
CrCr		-	-	-	106
GoGo		-	-	-	97.2
ML		-	-	-	100
CrH	(l)	61.5	-	66	54
	(r)	62	-	-	55
M <sub>2</sub> H	(l)	24.8	-	-	25
	(r)	26	27	-	24
M <sub>2</sub>	(l)	16	-	-	16.2
	(r)	14.2	13	-	17
Mast.L	(l)	-	-	-	49
	(r)	-	-	-	47
Tot.Fac.Ht	-	-	-	110	-

Table 30 Post cranial Indices

		Skeleton no.					
		52	313	668*	391	342	409
Sex		M	M	m	?	F	F
Age		50+	50+	adult	adult	40+	20-25
<b><u>Index</u></b>							
Platymeric	(l)	-	73.8	-	-	81.3	76
	(r)	-	89.3	76.8	-	81.9	79.7
Robusticity (Fem)	(l)	-	12.8	-	78.8	-	12.2
	(r)	-	-	-	-	13.2	12.4
Platycnemic(l)	62.9	-	-	-	69	79.3	
	(r)	63.4	69.4	-	-	70.9	77.9
Robusticity (Hum)	(l)	-	23	-	-	20.2	-
	(r)	-	-	-	-	19.2	-
Radiohumeral	(l)	-	-	-	-	72.7	-
	(r)	-	-	-	-	70.9	-
Caliber (Ulna)	(l)	-	-	-	-	13.7	16.9
	(r)	-	-	-	-	-	18
Claviculohumeral	(l)	-	-	-	-	44.2	-
	(r)	-	-	-	-	40.5	-

Skeleton 409 (Sex - Female, Age - 20-25 yrs)		
Index	Value	Type
Cranial index	73.8	Dolichocrany
Length-Height index	78	Hypsicrany
Breadth-Height index	105.8	Acrocrany
Fronto-Parietal index	72.5	Eurymetopic
Total Facial index	86.6	Mesoprosopy
Upper Facial index	51.2	Meseny
L.Orbital index	85.5	Mesochochony
Palatal index	62.5	Leptostaphyline