

Bonnors Lane, Leicester:
A multi-period suburban excavation

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with contributions by

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1. Introduction

Between September 1993 and January 1994 Leicestershire Archaeological Unit (LAU), part of Leicestershire County Council's Museums Arts and Records Service, carried out an excavation on the south side of Bonners Lane, Leicester prior to the construction of a new building on the site. Following the County Council's decision in 1995 to axe LAU, responsibility for completing the post-excavation programme of work and publishing the results of the project was assumed by the then newly established University of Leicester Archaeological Services (ULAS).

This report presents a detailed account of the findings of the excavation and attempts to integrate this information with the results of four other excavations undertaken in the same general area between 1993 and 1997.

Site Location (Illus. 1 & 2)

The excavation site (National Grid Reference: SK 5852 0395) encompassed an area of *c.* 0.16 hectares on the south side of Bonners Lane, at its junction with Oxford Street (the medieval Southgates), approximately 250m south of the Roman and medieval walled town (Illus. 1). The excavation area (Illus. 2) was dictated by the footprint of the planned new building and excluded an area in the south of the site and the eastern part of the Oxford Street frontage. This eastern area was subsequently excavated, in order to fully investigate the remains of an Anglo-Saxon building discovered in this part of the site. The total area excavated archaeologically amounted to *c.* 0.1 hectare.

Geology and Topography

The Ordnance Survey's Geological Survey of Great Britain map sheet 156 shows the site on the edge of a river gravel terrace, below which the solid geology is Mercia Mudstone. The site occupies a natural slope, descending at a gradient of approximately 1 in 40 towards the River Soar some 350m to the west (pre-excavation ground level: min. OD height *c.* 60.2m, max. OD height *c.* 62.5m).

The Development

The site was selected as the location for a new de Montfort University building, dubbed at the time the Technology, Transfer and Training (TTT) Centre, although officially titled the Innovation Centre when opened in 1995.

Archaeological Background

Suburban Archaeology in Leicester pre-PPG16

Archaeological excavations in Leicester have traditionally focussed on sites located within the town, as defined by its Roman and medieval defences, for example the Jewry Wall site (Kenyon 1948) and the Bath Lane (Clay and Mellor 1985; Clay and Pollard 1994; Cooper 1993) and St. Nicholas Circle (Mellor 1969-70 and 1971-2) areas; or on the defences themselves (Buckley and Lucas 1987; Cooper 1998).

Where extra-mural excavations were undertaken prior to the introduction of the Government's Planning Policy Guidance Note 16 (PPG 16) in 1990, these usually targeted known archaeological sites, for example, the Augustinian Friary (Mellor and Pearce 1981) and the Norfolk Street Roman villa (Mellor and Lucas 1978-9; Lucas forthcoming a).

FIGURE 1

The extra-mural cemeteries of Roman Leicester have been subject to intermittent archaeological investigation, where development outside the urban core has provided the opportunity for study. For example, in the Gallowtree Gate and Newarke Street areas in the 1920's (Dare 1927), and at Great Holme Street in 1975 (Mellor 1975-6; Lucas forthcoming b).

The potential for the survival of remains associated with suburban settlement, of Roman and later date, was recognised as a result of such excursions beyond the town gates, as at Great Holme Street, noted above, and during a small-scale watching brief carried out on the site of the former Van Damme Public House, on the corner of Northgate Street and Soar Lane (Buckley 1987).

The introduction of PPG16 provided a framework within which it became possible to investigate, as a matter of course, sites of unknown or unproven archaeological potential prior to development, including areas outside the urban core. This was a significant departure from the earlier practice of selecting known or likely sites for excavation. An evaluation on Sanvey Gate, to the north of the town, in 1992, provided an early example of the excellent prospects for the survival of suburban settlement remains in an area of uncertain archaeological potential (Finn 1993).

Since 1990 numerous desk-based assessments and evaluations have been undertaken in response to the proposed redevelopment of suburban sites. Several of these projects have proceeded to full excavation, including a number of sites in the south suburb (Illus. 1), one of which is the subject of this report.

Assessment and Evaluation

The archaeological potential of the Bonnors Lane site was first recognised by Richard Buckley of LAU, who was monitoring planning applications at the time. Following lengthy discussions with the County Planning Archaeologist, Anne Graf, an archaeological condition was applied, requiring formal assessment and evaluation of the area prior to redevelopment.

A desk-based assessment was duly commissioned (Courtney 1993). This identified the potential presence of Roman (probably cemetery, possibly suburban settlement and perhaps the 'Raw Dykes' aqueduct), medieval (suburban settlement), and post-medieval (suburban settlement and possibly Civil War defences) remains within the area.

Assessment of previous land use indicated that a cul-de-sac, Pentonville, laid out in the middle of the 19th century, had most recently occupied the central area of the site. On either side of this short street was a row of terraced houses, along with, on the north side, a bakehouse (Illus. 24). A mixture of small commercial/retail properties and domestic dwellings fronted Oxford Street, Bonnors Lane and Grange Lane. All of these were demolished in the late 1950's or early 1960's as part of the post-war drive to clear Leicester's slum housing. A public house, the Alderman Inn, was located in the unexcavated southern corner of the site, this survived until 1979 before it too was demolished. The site remained undeveloped after that time, in use most recently as a car park. Photographs of the Pentonville houses prior to demolition (Plate 16) showed no evidence of cellars. There was a good chance, therefore, that any buried archaeological remains on the site survived relatively intact, having escaped major disturbance over the past century and a half.

Evaluation in the spring of 1993 uncovered remains of Roman, medieval and post-medieval date (Finn 1994). Roman remains included a previously unidentified road and an adjacent building. Medieval and post-medieval deposits included the relatively well-preserved remains of a number of buildings, in addition to a variety of pits and wells. In the eastern part of the site these remains were located at a depth of just *c.* 0.2m below the modern car park surface. Preservation *in situ* was not a viable option and it was therefore decided that a representative sample of the

archaeological remains located within the footprint of the proposed new building should be excavated and recorded in advance of the development ('preservation by record') (Illus. 2).

Other Archaeological Sites in the Vicinity (1993-1997)

At the same time as the Bonnors Lane excavation, LAU carried out another excavation to the south of the town, during alterations to De Montfort University's Elfed Thomas Law School building on the south side of Newarke Street (Cooper 1996). More recently, three sites on the east side of Oxford Street, directly opposite the Bonnors Lane site, have been investigated by ULAS. The first of these was a watching brief, with limited programme of excavation and building recording, during alterations to the former Bowling Green public house, a Grade II listed early 18th century building (Higgins 1997 and in archive). Construction of new student accommodation was preceded by the excavation of areas immediately to the north (Gossip 1999a) and south (Gossip 1999b) of the former Bowling Green pub. The results of all of these investigations are summarised in the Discussion (below). Information from a number of more recent archaeological interventions in the area is not included, other than one or two specific references.

Excavation Methodology

The site was stripped of overburden: rubble from the demolished buildings which had formerly occupied the site, overlain by hardcore and tarmac forming the later car park surface, using a 360° mechanical excavator. All remaining 'modern' intrusions, such as 19th-century foundations and service trenches, were then removed using hand tools. Broadly speaking the site could be divided into two parts, based on the character of the archaeological remains. In the north-eastern part of the site was a sequence of stratified structural remains, up to about 1m in depth, which ranged in date from the Roman to the post-medieval period. Over the remaining area there was little surviving stratigraphy and, with the exception of the gravels forming the surface of the Roman road (see Period 1, below), archaeological remains mainly consisted of negative features such as pits and wells, cut into the natural substratum. In order to investigate the underlying, earlier deposits it was necessary to fully excavate and record, in turn, all of the features within the stratified sequence in the eastern part of the site. Over the rest of the area, however, features were typically only sample excavated, usually by half section and usually to a maximum safe working depth of 1.2m. Where features exceeded this depth an auger was used to determine their full extent. The relatively tight 'window of opportunity' within the development programme meant that towards the end of the excavation it was necessary to speed up the process of archaeological investigation and recording in order to complete on schedule. As a result the investigation of some of the earliest features, particularly the Roman roadside ditches, was not as exhaustive as it might have been.

At a late stage in the excavation part of an Early Anglo-Saxon building, the first found in Leicester, was discovered. An additional, small area, in the eastern corner of the site (Illus. 2), outside the footprint of the new university building, was opened up in order to recover as much information about the Anglo-Saxon building as possible.

Post-Excavation Programme

Recording on site was by *Context*, whereby each discreet archaeological deposit, structure or event was assigned a unique number. During post-excavation analysis, a hierarchical grouping system was employed in classifying the stratigraphic and structural data. Contexts that could demonstrably be shown to be stratigraphically and interpretatively linked were assigned a *Sub-group* number (eg. a wall, its foundation trench and construction backfill). Sub-groups were amalgamated into *Groups* where these could be shown to be either stratigraphically linked or

were interpreted as being similar or associated. Groups which were similarly dated, based on associated finds, and/or which occupied a similar position within the stratigraphic sequence were assembled into *Phases*. Phases were combined into broader *Periods* where this assisted in the presentation and discussion of the archaeological evidence. The Group and Sub-group numbering system, although a valid analytical tool, was unwieldy and their use has been avoided in this report, the original context numbers being preferred. Cut numbers, in **bold**, are used to identify features; where no cut number was allocated, in the case of surfaces, for example, layer numbers are used, again in bold type. Where fills of cut features are mentioned in the text round parentheses () are used to identify them. Numbers in square parentheses [] refer to quantities of finds recovered, usually numbers of pottery sherds. Small finds are identified by the prefix 'sf' and their catalogue number 'cat.', where appropriate.

In the medieval and early post-medieval periods, where there was evidence for a number of built structures, these were distinguished by the allocation of a sequential series of *Structure* numbers. In the post-Civil War period, where the structural evidence was generally more substantial and more easily interpreted a separate *Building* number series was adopted.

It was considered important to attempt to determine the specific function of the numerous pits/wells located on the site in the medieval and post-medieval periods, based on an analysis of the size, shape, depth, filling and occurrence or otherwise of linings within these features. The distinction between pits and wells was readily apparent, the latter normally being at least three times the depth of the former. The results of this analysis are considered in the Discussion.

Acknowledgements

The excavation was paid for by Leicester City Challenge Ltd., with additional funding from Leicester City Council, Department of Property and English Heritage for the excavation of the Anglo-Saxon building. Leicester City Challenge Ltd., English Heritage, Leicester City Council and University of Leicester Archaeological Services have all contributed towards the post-excavation costs. Thanks are extended to Sue Sandford (Leicester City Challenge Ltd.), Diane Spencer and Chris Ingham (Leicester City Council, Resources Department), Elaine Derrick and Gerry Walsh (Leicestershire County Council, Department of Property), Malcolm Cooper and Tony Wilmott (English Heritage), Vincent Shacklock (De Montfort University), Douglas Smith (Douglas Smith Stimson Partnership), Anne Graf (Leicestershire County Council, Museums, Arts and Records Service) and John Lucas (Leicester City Council, Museums Service).

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The finds from the excavation are held by Leicester City Museum Service, the rest of the archive will also be deposited with the City Museum Service under the accession code A168 1993).

ILLUSTRATION 2

2. The Site Sequence

Summary of the main findings of the excavation

Prehistoric

There was some evidence of prehistoric activity in the vicinity of the site, in the form of stone tools and waste pieces, which mostly occurred as residual finds in later features. Of particular note was a Neolithic polished stone axe, from a Roman context.

Roman

Early in the second century a road was constructed across the site; this probably ran from the south gate of Roman Leicester to Tripontium, a small town on the border between the modern counties of Leicestershire and Warwickshire. This seems initially to have been defined by a series of shallow gullies, which may have predated the road metaling. There was some slight evidence of activity adjacent to the road at this time, including a possible structure of earth-fast post construction. Subsequently, substantial drainage ditches were cut along either side of the road. Ditches running away from the road, at roughly 90° to its axis, divided the land on either side into a series of separate plots. The differential recutting of the roadside ditches either side of these boundaries, in the second quarter of the second century, suggests that the plots may have been in separate ownership, or were put to different uses. Little evidence of activity adjacent to the road was apparent at this time, however, possibly implying that the roadside plots were open fields, possibly cultivated or perhaps pasture. The road itself was resurfaced on at least one occasion, with possible evidence for further resurfacing. In the late second or third century a gravelled surface was laid up to the north-eastern side of the road, covering the backfilled roadside ditch. A possible cereal-drying hearth and an iron-working hearth were constructed and a number of pits excavated, all to the north-east of the road. One of these pits was cut into an earlier plot boundary ditch, apparently indicating that this boundary was no longer respected. No evidence of activity south-west of the road was recorded at this time, or subsequently in the Roman period. Later in the third, or in the fourth century a substantial timber building was constructed in the eastern part of the site. Further pits were excavated, one of which contained a deposit of splintered cattle bones, possibly a by-product of glue making. Two pits, dateable to the second half of the fourth century, post-dated the demolition of the timber structure just described.

Anglo-Saxon

In the 5th or 6th century, a semi-sunken building was constructed on the same site as the earlier, late Roman building. In addition to pottery, finds from the building included a bone comb, beating pin and spindlewhorl, all artefacts associated with textile manufacture. Other evidence of Anglo-Saxon activity was limited to a truncated soil layer and residual finds retrieved from later features.

Medieval

There appears to have been a hiatus in activity on the site between the early Anglo-Saxon period and the 12th or 13th century. By this time the line of the road approaching the town from the south had shifted slightly from the earlier Roman course to its medieval and modern (more or less) route. A series of insubstantial timber structures, post-dating a ditch-defined boundary, possibly represented squatter dwellings along the margins of the road, which encroached upon the adjacent South Field, one of the three medieval town fields. To the rear of these structures a number of pits and wells were dug. Subsequently, the structures were rebuilt and further pits and wells were cut. Later in the medieval period an apparent decline in activity was indicated by a reduction in the number of structures raised and pits/wells sunk.

Post-medieval

In the latter part of the 15th century, a marked change in the character of the occupation of the site was represented by a conspicuously different range of feature types, in addition to unusual finds and environmental assemblages, when compared with the medieval period. A hide-processing workshop was established, manufacturing leather from the skins of sheep, predominantly, but possibly also processing horse hides and cat skins, suggesting that this was the workshop of a whittawyer. A dye works was also in operation on the site at this time, perhaps colouring the leathers manufactured by the whittawyer, or possibly an independent concern finishing cloth. There was also evidence to suggest that grain was being processed in the immediate vicinity, on a commercial scale, and that pigs were kept and bred on the site. The hide-processing workshop had apparently ceased operating by about 1600, after which time the next major phase of activity occurred in the 1640's, during the English Civil War. Two substantial ditches were cut across the site at this time, forming part of the town's defences.

Post-Civil War/modern

The Civil War defences were levelled soon after the end of the conflict and a number of buildings were erected over the earlier ditches, along the Oxford Street and Bonners Lane frontages, in the latter part of the 17th or early 18th century. These structures, generally more substantial than their medieval predecessors, may have functioned as commercial/retail premises, in addition to providing domestic accommodation. Although one of the buildings investigated survived until the late 1950's, the majority were demolished around the middle of the 19th century when a major phase of rebuilding saw the construction of a new cul-de-sac, Pentonville, over the central part of the site, opening off Grange Lane. Houses along either side of Pentonville, along with buildings on the Oxford Street, Bonners Lane and Grange Lane frontages, were demolished in the late 1950's as part of the post-war drive to clear Leicester's slums. A public house, the Alderman, occupying the unexcavated southern corner of the site survived until 1979, when it too was demolished. More recently the area was used as a car park, until De Montfort University's Innovation Centre was built in 1994. The site phasing is summarised in Table 1, below.

Table 1. Summary of the Site Phasing

Period		Phase	
No.	Date range	No.	Date range
-	Natural/Pre-Roman	1	Natural/Pre-Roman
1	Earlier Roman	2	Early 2nd century
		3	2nd quarter of 2nd century
2	Later Roman	4	Late 2nd – 3rd century
		5	Late 3rd – 4th century
		6	Mid – late 4th century
3	Early Anglo-Saxon	7	5th – 6th century
4	Medieval	8	c. 1100 – 1300
5	Later medieval	9	c. 1275 – 1350
		10	c. 1300 – 1375
		11	c. 1300 – 1400
		12	c. 1375 – 1450/1500
6	Early post-medieval	13	c. 1450 – 1550
		14	c. 1500 – 1645
7	English Civil War	15	c. 1645 – 1648
8	Post-Civil War	16	c. 1648 – 1860
9	Victorian and later	17	c. 1860 – 1960

Period: Natural/Pre-Roman (not illustrated)

Phase 1

The surface geology at the site was a pinkish-red clay with pockets and bands of sand and gravel within it, of the Mercia Mudstone Group. A number of sand and sand/gravel filled features: **118**, **148**, **179**, **646**, **647** and **243**, recorded mainly in section during the evaluation, proved during the subsequent excavation phase to be natural in origin.

Overlying the natural clay in the east of the site was a patchy layer of small, water-worn pebbles in a sandy clay matrix **1386**, possibly representing the western periphery of the river gravel terrace shown on the Geological Survey map. A similar deposit overlay the Mercia Mudstone clay on the Oxford Street excavation site 25m to the east (Gossip 1999b) and the Newarke Street site 125m to the north (Cooper 1996). A flint blade (sf335) from **1386** raises the possibility that this deposit had been subjected to some form of human reworking. Thirty nine other struck flints occurred as residual finds in Roman and later features, these included waste and utilised fragments with examples characteristic of both blade and flake technologies. This lithic material suggests some degree of human activity in the vicinity in the pre-Roman period. A Neolithic stone axe (sf154, cat. 41) found incorporated into the Period 1, Phase 2 surface **462** (see below), was probably imported onto the site along with the gravels that formed the surface. Petrological analysis (Implement Petrology Committee No. LE76) identified the stone as Group XX, originating locally in the Charnwood Forest area of north Leicestershire.

Period 1: Earlier Roman (Illus. 3 & 4)

Phase 2 early Second Century

Road

A road comprising a metalled surface between 11.5m and 13.6m wide, with flanking drainage ditches was constructed across the site, on a north-west – south-east alignment, early in the second century (Illus. 3 & 4; Plate 1). Two gullies, **663** and **230** were the earliest features in a sequence of ditches on the south-western side of the road. Both lay parallel with the road line and were narrow and shallow compared with subsequent roadside ditch cuts. A 2m length of gully **663** was excavated; this measured 0.4m wide x 0.1m deep and was filled with a dark grey clay silt. Pottery [31] from the fill was of an early second century date. The excavated section of **230** lay to the north-west of **663**; this had been truncated by later ditch cuts. The surviving portion measured 0.5m at its widest point, was 0.33m deep and was filled with a dark grey-brown sandy clay, overlain by a yellowish-brown clay sand. A single, undiagnostic sherd of Grey Ware, from the upper fill, provided the only dating evidence. No equivalent gullies were located on the north-eastern side of the road.

The earliest road surface consisted of a compact layer of small pebbles in a sand matrix, up to 0.13m deep. This well-made surface was recorded in plan in the south of the site **182**, founded upon a layer of clay sand **183**; and in section in the south-eastern part of the area **206** and **950**, where it lay directly upon the natural clay. Pottery [8] from **182** was second century in date.

Other Features

A compact layer of pebbles set in a sand matrix **462** formed a well made, if badly truncated, surface to the west of the road. Partially overlying this was layer **269**, a dark brown, charcoal rich soil which contained a considerable quantity of early second century pottery [85], as well as a single small sherd of intrusive medieval pot.

ILLUSTRATION 3

Phase 3 second quarter of the second century

Road

The road was resurfaced at least once, evidenced by a compact layer of pebbles **204**, up to 0.2m deep, set in a concreted sand matrix. This was founded upon a levelling/makeup deposit of clay sand **181**, between 0.1m and 0.23m deep, which overlay the Phase 2 road surface **182**. Pottery [31] from **181** was of a broad mid-late second century date. A layer of finer, more compact, gravels **7**, overlying surface **204** in the south of the site, may have been associated with a further resurfacing episode, or possibly a localised repair. From this context was a copper-alloy spoon bowl (sf58, cat. 1) dateable to the first half of the second century. Surfaces **428** and **434**, to the north, were not investigated in detail and may relate to either this phase or Phase 2.

Roadside ditches

The first substantial south-western roadside ditch was a T-shaped cut, with a branch projecting off to the west. Three sections excavated through this ditch: **254**, **310** and **152**, indicated that it was up to 1.6m wide and 0.72m deep (Illus. 4). The earliest north-eastern roadside ditch cut **102** was V-shaped in section, measuring 1.25m wide and 0.72m deep.

A sequence of three subsequent recuts: **253**, **231** & **229** was recorded in the sondage excavated through the south-western roadside ditch complex. The section of ditch branching off to the west was also recut on at least two occasions: **938** & **934**. Layer **207**, a predominantly clay deposit, filling the upper part of ditch **231** and spread over an area to the south-west of that ditch, appears to have been an attempt at levelling or consolidating the ground over this and earlier roadside ditch phases. This layer also sealed a single post hole **559**, cut into the fill (209) of ditch **231**. Stratigraphically this levelling post-dated all but the final south-western roadside ditch phase **229**, which lay just to the east.

Observations of the south-western roadside ditches to the north, in plan, and in section where truncated by later features, indicated repeated recutting along its entire length. In contrast, the north-eastern roadside ditch was recut along only part of its length, although three phases of recutting were again evident. These later ditches were L-shaped cuts, parallel with the road line in the north of the site, but turning north-eastwards through *c.* 90° further to the south.

All of the ditches assigned to this phase, with the exception of **1188**, contained pottery. Despite the careful stratigraphic excavation of these features all produced similarly dated material, attributable to the second quarter of the second century. Layer **207** and post hole **559** both contained sherds that need not be dated later than the mid-second century.

Other features

Stratigraphically later than the Phase 2 layer **269**, although lying mainly to the south of that deposit, was layer **367**. This contained a large quantity of Roman pottery [113], dateable to the early-mid second century, in addition to a few intrusive medieval sherds [4].

Cutting layer **269** was a shallow possible pit **370** and a post hole **438**. The pit was probably originally circular in plan, although the western half had been truncated by a 19th-century service trench. It measured 0.72m in diameter by just 0.07m deep and was filled with a dark grey brown sandy clay. Post hole **641** and a heavily truncated feature **461**, of uncertain form, were cut into the Phase 2 surface **462**. Seven more post holes: **643**, **519**, **503**, **505**, **515**, **533** and **332** were located in areas where this surface had been truncated as a result of later activity. All of the post holes, with the exception of **332**, were broadly comparable in terms of their shape, size, depth and filling, that is: circular or sub-circular, between 0.23m and 0.42m in diameter, between 0.03 and 0.36m deep and filled with a dark brown or grey brown sandy silt clay. Post hole **332** was

ILLUSTRATION 4

somewhat larger and filled with a red brown silty clay. No clear structural pattern was evident in the distribution of these post holes, although a line projected through **332**, **503**, **641** and **643** was roughly parallel with the road line, while a second line projected from **641** through **533** and **519** was at a right angle, more or less, to the first (Illus. 3). Of these features only **461** contained any closely dateable pottery, suggesting a mid-second century date. Post holes **438**, **643** and **519** and the truncated pit **370** contained undiagnostic sherds for which only a general Roman date may be suggested.

Period 1 Discussion

The road is presumably that postulated by Margary (1957, no. 572), running from the south gate of Ratae Corieltavorum to the small town of Tripontium on Watling Street, at the border between the modern counties of Leicestershire and Warwickshire. Street metalling exposed during an excavation beneath the Magazine gateway in 1969 was probably part of the same road (TLAHS 1971, 74), this being the only other recorded observation to date. Projected towards Leicester the road aligns with the position of the medieval south gate of the town. Although the site of the Roman south gate has not been proven by excavation, this is likely to have occupied the same position as its medieval successor (Buckley and Lucas 1987, 52).

The earliest features associated with the road seem to have been the Phase 2 gullies **663** and **230**. These differed from all subsequent roadside ditch cuts not only in their diminutive size, but also in their distinctive filling. Whilst the later, Phase 3, roadside ditches typically contained brown or red brown, predominantly clay fills, the fill of **663** and primary fill of **230** was a dark grey, charcoal rich clay silt, very similar in composition to various Period 1 deposits to the west of the road (see below). It is possible that these early gullies served to demarcate the road line prior to construction of the metalled surface, a similar situation to that recorded at the Causeway Lane site within the town, where ditches defining the *insulae* were significantly earlier in date than the street metalling (Connor and Buckley 1999, 27).

The Phase 3 ditches appear to represent a short but intensive episode of activity during the second quarter of the second century. The ditches running away from the road served to divide the areas either side into separate parcels or plots of land. From the differential recutting of ditches it may be inferred that these plots were in separate ownership, or at least used for different purposes.

Evidence of activity adjacent to the road in the earlier Roman period was limited to the fragmentary remains in the west of the site. The nature of this activity is far from clear, however, and it should be noted that the stratigraphic sequence in this area was not particularly 'tight': none of the post holes in this region, for example, were demonstrably Roman in date. Layers **269** and **367** were seemingly defined to the east by the inferred post-built structure. The form and function of the structure and the process(es) that led to the accumulation/deposition of these layers within/adjacent to it are not obvious. The soil descriptions for layers **269** and **367** and the fill of pit **370**, all to the west of the road, are near identical to the dark, silty, charcoal rich soils recorded from gullies **663** and **230**. These dark soils were quite unlike any other deposits of Roman date encountered on the site and may imply a degree of association between these features.

A significant proportion of the total Roman pottery (62% of all pottery from Roman contexts) and animal bone (32% of all bone from Roman contexts) assemblages was recovered from the Period 1 roadside ditch fills. Since only a small proportion of the total volume of soil filling the roadside ditches was excavated, it may be assumed that the unexcavated parts contained considerably more finds than were retrieved from the excavated sections. What led to the deposition of this quantity of debris within the roadside ditches is not readily apparent. There is

comparatively little evidence for occupation adjacent to the road during Period 1, from which this material could have derived. It would appear therefore that at least some of the finds from the roadside ditch fills might have been redeposited here from elsewhere. One possibility is that domestic refuse from households within the town was being carted away and dumped outside the urban area.

Period 2: Later Roman (Illus. 5 & 6)

Phase 4 late-second – third century

Road

The Road established in Period 1 presumably remained in use throughout Period 2, although the roadside ditches were no longer maintained and, in places, appear to have been deliberately backfilled.

?Yard surface

In the north of the site a compacted surface of gravels and crushed sandstone **176** was laid up to the edge of the road metalling, overlying the earlier roadside ditch **1096**. A clay layer **177** apparently served as a makeup/levelling deposit for this surface. Consolidation of the underlying ditch fills resulted in the subsidence of **176** and a further surface **175**, composed principally of small gravels, was laid over it (Illus. 5).

?Cereal drying hearth

Set into surface **175** was hearth **969**, interpreted as the remains of a possible cereal-drying oven (Illus. 5 & 6.1). This was a narrow, elongated feature with swollen ends. The stoke hole, at the east end of the hearth, was heavily scorched. A roughly circular depression **733**, around the upper edges of the stoke hole, may have resulted from the raking out of spent fuel between firings. The flue was just under 2m in length and averaged 0.4m wide; a large granite fragment was set vertically against either side, part way along its length. Further pieces of granite were positioned across the western end of the flue, separating this from the bowl. A similar arrangement of stones, separating flue and bowl, was recorded in the cereal drying oven at Crown Hills, Leicester (Chapman 2000, 25 & fig. 16). The bowl measured 0.9m in diameter and 0.5m deep and its base was lined with scorched sand. Above the sand layer was a thick deposit of charcoal, which also filled the lower part of the flue and stoke hole. The upper fill of the feature appeared to be a disuse deposit unrelated to its function. Pottery [30], mainly from the upper fill, was dated to the mid-second – third century.

A variety of different heating processes may leave very similar traces on the ground (Morris 1979, 182). Cereal drying ovens can be specifically identified, in some cases, based on their association with environmental evidence. The third or fourth-century hearth at Crown Hills, Leicester, mentioned above, contained a considerable quantity of wheat chaff, a by-product of the threshing process (a threshing floor was also found on the site), used as fuel to fire the oven (Jarvis 2000, 71). The use of cereal chaff as fuel in drying ovens has been recognised elsewhere (Van der Veen 1989). Two cereal-drying ovens near identical in form to **969**, of fourth century date, from the Roman villa site at Star in Avon (Barton 1964, 45), were found in association with deposits of burnt barley suggesting the specific function of these hearths. Although no conclusive evidence for the function of hearth **969** was found - environmental samples contained very little in the way of charred plant remains - the similarity in form and date between this and the Crown Hills example may be sufficient to suggest, tentatively, a cereal-drying function.

ILLUSTRATION 5

Iron working hearth

A small, figure-of-eight shaped hearth **1048** was located just to the south of the cereal-drying hearth described above (Illus. 5 & 6.1). The eastern half of this was lined with clay, which was very heavily scorched, and in places had a crust of burnt sand adhering to it. Above this was a deposit of charcoal, ash and charred wood fragments. The western half of the hearth was packed with fist-sized pebbles, which were heat discoloured. Fired clay fragments in the upper fill may have been a remnant of the superstructure. Two large stone slabs, also found within the upper fill, lying just below the surface in the eastern half of the hearth, showed no signs of having been heated. A metalworking function was indicated by a piece of iron slag recovered from amongst the stones in the western half of the cut. Analysis of the slag (see the *Iron Production Debris*, below) suggests that this was a bloom-refining hearth; the refining process being an intermediate stage between smelting and smithing, which removes impurities present in the 'raw' bloom. Dating evidence was limited to a small number [8] of mid-second – fourth century pottery sherds from the upper fill.

Layer **1388** overlay the Period 1 road surface some 6m to the south of hearth **1048**. Composed mainly of iron-stained sand, this deposit also contained charcoal fragments and lumps of iron slag. It may not be unreasonable to suggest that this deposit and hearth **1048** were related. Five sherds of pottery, of late-second – mid-fourth century date, were recovered. Cutting layer **1388** was a truncated possible post hole **841**.

Pits

Cut into the Period 1 road surface in the north of the site were pits **1107** and **1108**. The first of these was roughly circular in plan with a diameter of *c.* 0.9m and survived to a depth of 0.18m. This was partly cut into the fill of an earlier pit **1108**, which was again circular in plan but was somewhat larger at 1.3m in diameter, and deeper at 0.5m. Finds from **1108** included late-second century pottery [20]. Pit **1108** truncated an earlier, unexcavated feature **1126**.

To the south-east, pit **881** was situated in an area where the road metalling had been eroded or truncated away. The pit was severely truncated, with only the north-east corner unaffected. At 1.37m this was the deepest of all the Roman pits located on the site. Mid-second – fourth century dated pottery [17] was recovered.

In the east of the site was an oval-shaped pit **1373**, 1.1m long, 0.8m wide and 0.42m deep. Early-second century pottery [18] from this pit may have been residual, deriving from the Phase 3 ditch into which it was cut.

Phase 5 late-third – fourth century

Building

The remains of a late Roman building fronting onto the north-eastern side of the road was represented by a series of timber slots (Illus. 5 & 6.2). The complete plan of the building was not defined: the southern part of the structure extended beyond the limit of excavation and it was truncated to the east by the Phase 7 Anglo-Saxon building (see Period 3, below). Only the south-western extent of the building was certainly defined.

The building encroached some way on to the road, the south-west wall line, defined by timber slot **258**, lying 3m west of the Phase 2 roadside ditch **102**. Parallel with and 5.4m north-east of slot **258** was a similarly aligned timber slot **1122**. Three sections of the same truncated foundation slot: **1199**, **1229** & **103** defined one north-east – south-west aligned wall, over 9m in length. Parallel with this was timber slot **978**, which terminated 1.15m short of wall **1122**, defining a corridor to the north-west and a room to the south-east, with a doorway in between.

ILLUSTRATION 6

Three sections of the same, significantly shallower timber slot: **43**, **93** & **104**, lay 1.3m to the north-east of, and parallel with slot **258**, the south-west (front) wall line. The slighter nature of this timber slot possibly indicates that it carried a non load-bearing wall. The narrow 'room' thus defined, along the frontage of the building, may have been an internal veranda or corridor. Timber slot **111** and the north-western continuation of slot **1122**, beyond **1199** defined another room, c. 3m wide. The north-west wall line of this room was not located.

Two further possible timber slots: **37** and **39** were situated within the footprint of the building. The orientation of these differed slightly from the other timber slots, possibly indicating that they were not part of the same structure or were of a different structural phase.

The structural slots associated with this building generally contained only small amounts of pottery, typically of third or fourth century date. Timber slot **1229** also contained two fourth century coins: sf46, cat.70, dated AD337-340; and sf16, cat.78 dated AD364-375.

Pits

Several pits were associated with this phase of activity; in most cases dating evidence was limited to just a few sherds of pottery. Cutting the Phase 4 feature **1373** was pit **1339**, this was oval-shaped in plan, measuring 1.38m x 1.15m x 0.33m deep. In addition to a fair amount of third-fourth century pottery [20] it contained a coin (sf327, cat.46) dated AD253-260. To the south-east of this was a small circular pit **1380**, 0.5m in diameter, the upper part of which had been truncated by a later feature; only the lower 0.26m survived. Another small, oval-shaped pit **946**, 0.76m long x 0.38m wide x 0.09m deep, lay 4m to the west of **1380**.

A series of pits cut the road surface to the north-west of the building described above. Pit **890** was probably originally circular or oval in plan, but was truncated on all but its eastern side; the surviving portion was 0.24m deep. Cutting the Phase 4 feature **881** was pit **879**, this was probably originally circular in plan with a diameter of c. 0.9m, although it had been truncated on its north and south sides. It was 0.4m deep and the base was lined with large angular stones. Pit **996**, truncated on all but its north-eastern side, was probably originally square or rectangular in plan and was 0.36m deep. Pit **1079** cut the Phase 4 layer **1388**; this was rectangular in plan, measuring 1.2m long x 1m wide x 0.72m deep. A deposit of splintered cattle long bones from its upper fill (1077) has been tentatively interpreted as waste from glue making (see the *Animal, Bird, Reptile and Amphibian Bones*, below). This pit also contained a reasonably large pottery assemblage [35], suggesting a mid third – late fourth-century date.

Other features

In the north of the site an isolated post hole **590** was cut into the Phase 4 surface **175**. Cutting the eastern edge of the Phase 4 metal working hearth **1048** was a small, sub-circular pit or post hole **1059**; 2m to the west of this was a similar feature **1074**, the western half of which had been destroyed by a later feature. The remains of a possible pit **1072**, truncated on all but its west side, lay a short distance away. All of these, bar **1059**, contained one or two pottery sherds suggesting a third or fourth century date.

Phase 6 mid – late fourth century

Pits

An oval-shaped pit **58**, 1.7m long x 1.0m wide x 0.47m deep, was cut into the Period 1 road surface, immediately to the south-west of the Phase 5 building. A second, larger, but equally shallow pit **87**, 2.46m long x 1.8m wide, cut both the road surface and the south-western foundation trench **258** of the building. Both pits were filled with a dark loamy soil containing considerable quantities of building materials, including large granite fragments (representing

approximately 40% of the fill of pit **87**), ceramic tiles and slate roof tiles. Both pits cut through the road metalling but not into the clay subsoil beneath and may represent small scale quarrying of the road gravels. Pit **87** produced a sizeable assemblage [109] of late Roman pottery dateable to the second half of the fourth century. Stratified assemblages of such a late date are rare in Leicester and this material is singled out for discussion in the Roman pottery report (see below). Pit **58** contained a broadly comparable assemblage [12] in terms of date, but with few diagnostic sherds. Four coins were recovered from pit **87** (sf22, cat.52; sf36, cat.53; sf44, cat.57; sf45, cat.58), the latest of which provides a *Terminus Post Quem* of AD354 for the filling of this pit. A single coin from the fill of **58** was of late third century date (sf40, cat.55).

Period 2 Discussion

Whatever the nature of the Period 1 remains west of the road, this activity seems not to have continued much beyond the middle of the second century. The road itself presumably remained in use, although there was no evidence of further resurfacing over and above that attributed to Phase 3, Period 1 (although it is possible that later surfaces were removed as a result of subsequent truncation). The roadside ditches were not maintained and in places appeared to have been deliberately backfilled.

The Phase 4 and Phase 5 remains potentially reflect a single episode of activity, spanning the late second/third – fourth centuries. The late fourth century date indicated by the coin evidence from features associated with the Phase 5 building presumably represents the disuse/demolition date of this structure; there is no direct evidence from which to suggest the date of its construction.

The incomplete state of the remains precludes any detailed consideration of the building's plan: the extent of the structure was certainly defined only on its south-west side. Nor is it certain that all of the foundation trenches were of the same phase, in fact the juxtaposition of foundation slots **43 & 93** and **37 & 39** rather suggests multiple building phases, as does the profile of timber slot **104**. It is only possible to state that the building was not of the simplest, rectangular plan form (c/f Lucas 1990, 95 fig. 11). In terms of construction, the timber slots presumably carried the base plates of a framed structure (c/f. de la Bedoyere 1991, 18). The waterlogged remains of Roman timber buildings at, for example, Southwark, London (Brigham *et al.* 1995) and Castle Street, Carlisle (McCarthy 1991) provide possible comparisons. Nothing survived of the building's superstructure and the walling material might equally have been horizontal planking as at Southwark, or wattle and daub as at Carlisle. A fair quantity of tile (19.1kg, representing 48% of all tile from Roman deposits) was recovered from the two Phase 6 pits post-dating the demolition of the building. Only a relatively small proportion of this could be positively identified as either wall tile, tegula or imbrex, however, rendering the interpretation of this material as debris from the robbing of the walls or roof covering of the Phase 5 building a tenuous one. Thatch or timber shingles are other possible roofing materials, which would not normally survive in the archaeological record. The considerable quantity of stone also recovered from the two Phase 6 pits does not readily figure in the interpretation of the Phase 5 structure, implying, perhaps, that these building materials were dumped here from elsewhere.

With regard to the function of the building, the presence of what would appear to be a corridor, and perhaps a veranda along the street frontage, would seem to preclude an agricultural use. The presence of a street-facing veranda, in an urban context, has been seen elsewhere as an indication of some commercial function (de la Bedoyere 1991, 142). It is not inconceivable that this building functioned as a retail outlet, possibly trading in a range of home produced goods, represented by the specialised features and deposits also attributed to this period. A market would have existed in the form of people entering and leaving the town via the south gate. Gossip (1999b) envisaged queuing traffic awaiting entry to the town providing a ready clientele.

Suburban locations such as this may even have been specifically selected by some traders in order to avoid incurring taxes levied on businesses operating within the town walls.

To the north of the building, surfaces **176** and later **175** may have formed an open yard area. Hearths **969** and **1048** indicate that a range of industrial/craft activities were carried out in this area, as does the iron-working debris from layer **1388** and the faunal remains from pit **1079**. At least some of these features would presumably have been covered, by insubstantial timber structures, perhaps, of which little or no evidence has survived. Various other pits (excluding for the moment the Phase 6 pits) were associated with this period of activity. Most were truncated to a greater or lesser degree and it difficult to assign a specific function to any of them. That none was particularly deep, however, precludes the interpretation of any as wells.

Post-dating the demolition of the Phase 5 building, the Phase 6 pits **87** and **58** represent the final episode of activity which may be attributed to the Roman period, dateable to some time in or after the third quarter of the fourth century, based on the coins and pottery. It is not easy to reconcile the considerable quantity of stone and other building materials recovered from these two pits with the remains of the Phase 5 building, possibly indicating the presence of a more substantial, stone-founded structure in the near vicinity. The suggestion that the Phase 6 pits were the result of gravel extraction implies continued activity of some form in the area towards the end of the fourth century, if not later. An unstratified *Siliqua* (sf362, cat. 93) issued in or after AD378 had been clipped, a practice common in the early fifth century (R. Rutland, pers. comm.), tending to support the suggestion that activity in the area continued beyond the end of fourth century.

Period 3: Early Anglo-Saxon (Illus. 7 & 8)

Phase 7

Building

Located in the same area as the Phase 5 Roman structure were the remains of an early Anglo-Saxon sunken featured building (SFB) (Illus. 7 & 8; Plate 2). This lay only partly within the original excavation area and, following discussions with English Heritage and Leicester City Council, the excavation was extended in order to recover as much of the plan of the building as possible. Unfortunately, little more survived than was originally uncovered.

Although truncated on all but its west side, enough remained to indicate that the sunken feature, **1089**, was originally either rectangular or square in plan, with rounded corners. This measured 5.54m along its north-south axis and at least 3.5m along its incomplete east-west axis. The cut was 0.25m deep with vertical sides and a flat base and was filled with a dark grey brown silty clay (1088/1183). Eight substantial post holes were cut into the base of the sunken feature, located at fairly regular intervals around its perimeter. The average depth of these was 0.53m, the deepest being **1214** at 0.66m and the shallowest **1280** at 0.4m. All of the post holes, except **1214**, were filled with a red-brown silty clay. Filling **1214** was a dark grey-brown sandy silt clay. No evidence for post-pipes survived in any of the post holes, although three: **1227**, **1280** and **1231** contained fragments of granite, presumably packing material around posts.

Fifteen stakeholes, located at irregular intervals around the edge of the sunken feature, between the post holes, apparently marked the position of the outer walls. The stakeholes were typically circular, oval or triangular in plan, between 0.12m and 0.16m deep and filled with a dark grey-brown silty clay. One of the fifteen, **1371**, was the impression of a plank, which had been driven into the fill of post hole **1369** possibly to reinforce or secure the post held by that feature. The walls were presumably constructed from wattle panels, fixed to the main timber uprights and covered in daub. There was no clear evidence to indicate the position of the floor, although the

ILLUSTRATION 7

absence of any surfacing within, or compaction and wear of the base of the sunken feature, may be taken to indicate a raised timber floor.

Layer

To the west of the SFB, overlying the consolidated fill of timber slot **1122**, part of the Phase 5 Roman building, was layer **1123**. This was identical in colour and composition to the filling of the SFB and contained a single sherd of Anglo-Saxon pottery.

Dating evidence/finds

Finds from the SFB included 11 sherds of early-middle Anglo-Saxon pottery from the fill of the sunken feature (1088/1183) and a single sherd from the fill (1213) of post hole **1214**. Also from the sunken feature were a near complete double-sided composite bone comb (sf259, cat.33) and a bone beating pin (sf267, cat.34). The comb was a particularly large example, similar to, but still larger than one from SFB 8 at West Stow, dated to the early 6th century (West 1985, fig. 49.3). Post hole **1214** (1213) also contained a bone spindlewhorl (sf271, cat.35).

Residual Roman finds included pottery (164 sherds from the fill of the sunken feature and a further 16 sherds from 5 of the 8 associated post holes), five coins and three pins. None of the Roman finds showed any obvious signs of reuse, as has been seen elsewhere, for example at West Stow (Curnow 1985, 76-79) and Eye Kettleby (Finn forthcoming).

Period 3 Discussion

The Bonnors Lane Anglo-Saxon building is not a typical SFB. Despite being incomplete, which precludes any conclusive comment on the original size and shape of the building, it is readily apparent that this is not a 'standard' SFB form, as found on many excavated settlement sites of the early-middle Anglo-Saxon period. The disposition of post holes around the edge of the sunken feature implies that the north-south axis of the building was not its long axis. SFB's of comparable length to the 5.54m north-south axis of this building have been recorded elsewhere with only a single post setting in the centre of either gable wall, eg. GH68 at Mucking (Hamerow 1993) and SFB15 at West Stow (West 1985). If the north-south axis of the Bonnors Lane SFB were its long axis then the structure would have been massively over-engineered, with the number of load-bearing posts out of all proportion to the size of the building. Based on this rationale it would appear that the long axis of the building was oriented east-west. A few very large SFB's of early-middle Anglo-Saxon date have been found. One example is that from Upton in the adjacent county of Northamptonshire, where the sunken feature measured 9m x 5.6m (Jackson *et al.* 1969, 207). The substantial, closely-spaced (*c.*1.13m centres) post holes of the Bonnors Lane building more closely resemble the remains of an Anglo-Saxon post-built structure or 'hall house', than an SFB. It may be worth observing that, had the horizontal truncation of archaeological strata in this part of the site been only slightly more severe, resulting in the complete removal of the sunken feature, then the surviving post- and stakeholes would probably have been interpreted as the remains of a 'hall house'. The building may represent a hybrid form, incorporating aspects of both SFB and 'hall house' construction.

A considerable number of residual Roman finds were recovered from the fill of the sunken feature. Roman pottery, for example, outnumbered Anglo-Saxon sherds in the ratio of 15:1. The possibility that other features from which only Roman finds were recovered were actually Anglo-Saxon in date must be borne in mind. At Causeway Lane, Leicester an early post-Roman phase of occupation was barely discernible against a 'background noise' of late Roman activity (Connor and Buckley 1999, 61 & 83). The quantity and distribution of residual Anglo-Saxon finds from Bonnors Lane (which included a copper alloy finger ring (sf188, cat.8)) implies, perhaps, that activity of this period was more extensive than might be inferred from the Phase 7 features alone.

ILLUSTRATION 8

Excavations have turned up only one other Anglo-Saxon building in Leicester to date. Also an SFB, but of more conventional form, this was found in 1997 on the east side of Oxford Street, just 30m from the Bonnors Lane site (Gossip 1999b). Given the close proximity of the two buildings it may not be unreasonable to suggest that they were associated, forming part of a settlement of, as yet, unknown extent.

The Medieval and Later Medieval Periods

Introduction

The majority of medieval (Period 4) and later medieval (Period 5) remains may be divided into one of two broad categories:

Structural remains – associated with buildings fronting onto Oxford Street (the medieval Southgates); and

‘back yard’ activity – mainly pits and wells to the rear of the buildings along Oxford Street (Southgates) and possibly also to the rear of buildings fronting onto Bonnors Lane. The street frontage of Bonnors Lane may be broadly equated with the 19th-century frontage line, before this road was widened, which lay *c.* 9m to the north-west of the limit of excavation. The remains of any medieval structures along the Bonnors Lane frontage which were not destroyed in the course of the road widening will lie beneath the road or pavement to the north-west of the site.

A number of previous excavations, in Leicester and elsewhere (Connor and Buckley 1999; Buckley and Lucas forthcoming; Schofield and Vince 1994, 64), have demonstrated the potential for identifying individual medieval properties based on the distribution of pits and wells where little or no evidence of contemporary buildings or related property boundaries has survived. The size of these plots, at the Causeway Lane site, at least, appeared to correspond with standard units of measurement in use in the medieval period (Connor and Buckley 1999, 84-5). Provisional assessment of the medieval and later medieval remains from the Bonnors Lane site suggested a similar potential, with the added advantage of a relatively good survival of structural remains along the Oxford Street frontage. The situation of the excavation site, however, at the junction of two roads meant that in practice it was often impossible to determine whether any given ‘back yard’ feature related to a property fronting onto Oxford Street or Bonnors Lane. Whilst some standardisation of property sizes might be reasonably expected within the medieval town (Courtney 1998), the development of the suburbs seems to have been a less structured, more organic process and it is questionable, therefore, whether the resultant land holdings would have conformed to any sort of recognisable pattern. A further complicating factor is the uncertainty over when exactly Bonnors Lane (and its western continuation Mill Lane) came into being. Whilst it may be suggested that this lane was in existence by *c.* 1400 when the wall around the Newarke precinct was constructed, there is no clear evidence to indicate how long prior to this date it had existed (see also Period 5 Discussion). For the reasons outlined above the series of medieval ‘plots’ inferred during the early stages of the post-excavation programme (see site archive) were subsequently abandoned. No attempt is made in the following account to identify individual medieval properties.

Phasing Methodology

The medieval remains presented some particular problems in terms of phasing. In the eastern part of the site was a relatively complex sequence of stratified remains relating to a number of successive structures along Oxford Street (Southgates). Across the rest of the site, however, there was almost no stratigraphic succession, the remains, for the most part, being earth-fast negative

features such as pits and wells, comparatively few of which were intercut. Whilst in some cases it was readily apparent that particular structural features were related, in other instances such associations were far from obvious. In an attempt to disentangle the structural sequence all of the medieval features were separated into the shortest possible time periods permitted by the artefacts contained within their fills. Since pottery was the most numerous find, this was the principal dating tool; Phases 8-12 are in effect, therefore, ceramic phases. Ultimately, the phasing was based upon a combination of clear structural associations, stratigraphic relationships and finds content. The limitations of this phasing methodology necessarily reflect the limitations of dating medieval pottery. Phase 8 covers a broad timespan, c. 1100-1300, dictated by the broad date ranges attributed to the Saxo-Norman and early medieval wares (although very little of the material seems to be earlier in date than the mid 12th century – see the *Medieval and Later Pottery and Tile*, below). The introduction of a wider range of wares later in the medieval period (Phases 9-12) permits some refinement in dating, although with a considerable degree of overlap in the date ranges of the resultant phases. With the benefit of hindsight it is apparent that, in terms of the structural sequence at least, Phase 8 is too broad. It may have been possible to subdivide this into earlier and later sub-phases, based on the relative chronology of the excavated structures. Since, however, there is no apparent change in the nature of the activity represented by these remains this division has not been made, principally because it would not serve to advance our understanding of the exploitation of the site in the Saxo-Norman/medieval period. In contrast, some of the later medieval phases (Phases 9-12) were probably too narrow in definition, resulting in relatively ‘empty’ phases. The grouping of phases into periods circumvents this shortcoming to some extent, however.

Terminology

The structural remains in the eastern part of the excavation area, although better preserved than at many sites in Leicester, were nonetheless fragmentary and incomplete. The precise location of the Oxford Street (Southgates) frontage in the medieval period is not known (although it *may* roughly equate with the frontage in the 19th century, as shown on the first edition Ordnance Survey map of 1887). The use of the term *Structure* rather than *Building* in the description and discussion of these remains reflects uncertainties over the exact nature of the features under consideration. Are we dealing with dwellings on the street frontage (tangible evidence of this in the form of hearths, for example, was generally lacking)? Or, alternatively, ancillary buildings such as outhouses or sheds, to the rear of more substantial frontage buildings? Or possibly, in some cases, unroofed structures such as animal pens? Use of the term *Building* is reserved for the generally more substantial constructions of post-medieval date (see Periods 8 and 9, below).

Period 4: Medieval (Illus. 9-12)

Phase 8 c. 1100-1300

Boundary Ditches

Possibly the earliest Phase 8 feature was ditch **836/985**. Measuring 1m wide and between 0.3 and 0.4m deep, this was aligned north-west – south-east across the eastern part of the site. Although truncated in the middle, the similarity between cuts **836** to the north-west and **985** to the south-east was sufficient to indicate that these were part of the same feature. 2m to the west of this was a second ditch, three sections of which were excavated: **828**, **1090** and **1118**. This ditch was virtually identical in terms of its size, shape and orientation to **836/985** and seems to have been a redefinition of the boundary represented by the earlier ditch.

Structure 1

Stratigraphically sandwiched between the ditches described above was Structure 1 (Illus. 10.1). Parallel with and 5m to the south-west of ditch **836** was **1034**, a timber slot 2m long and 0.4m

ILLUSTRATION 9

wide. Three stakeholes were recorded in the base of this slot, two at the north-west end and one at the south-east. Lying at a right angle to **1034** was a second timber slot **754/856**, the two sections separated by the later ditch cut **828**. This was also 0.4m wide and at least 3m long, although it may originally have extended as far as slot **1034**. A post setting **752** at the north-east end of **754** was cut into the fill of ditch **836**. Two further post holes: **1027** and **513** might also have been associated with this structure. The first of these may have been a post setting at the south-west end of slot **856**; the second was located close to the centre of slot **1034**.

A timber slot parallel with **754/856**, at the north-west end of **1034**, had it originally existed, may have been completely truncated by subsequent activity in this area. A timber slot parallel with **1034**, at the north-east end of **754**, should have escaped truncation, however; no such feature was located. Structure 1 as recorded, therefore, was an L-shaped arrangement of two timber slots, measuring c. 4.7m x c. 2m, with a number of apparently associated post- and stakeholes.

Structure 2

Evidence of further structure(s) in the immediate vicinity of Structure 1 occurred in the form of some 29 post holes, all of which were sealed by the Phase 9 layer **21** (see below). Fourteen of the thirty were broadly comparable in terms of their shape, size, depth and filling. Structure 2 is a possible interpretation of these features: a roughly rectangular arrangement of post holes measuring approximately 4m north-east – south-west by 3m north-west – south-east (Illus. 10.2). Both ditches **836** and **828** were cut by post holes of this group, suggesting that Structure 2 post-dated Structure 1.

Structure 3

Situated adjacent to and partly beyond the limit of excavation, to the south-east of the structures described above, was Structure 3 (Illus. 11.1). This comprised a rectilinear arrangement of shallow timber slots, **1216**, **1217** and **1222**, describing an area measuring c. 3.5m north-west – south-east by at least 3m north-east – south-west. These slots presumably carried the base plates of a framed timber structure. Timber slot **1217** formed an internal division, defining a room c. 1.5m wide at the south-west end of the structure. Four post holes: **1218**, **1219**, **1220** and **1221**, in a roughly rectangular arrangement, are included here based on their position within the stratigraphic sequence but may not be directly associated with this structure.

Structure 4

Post-dating Structure 3, the excavated remains of Structure 4 (Illus. 11.2) consisted of a stone wall footing **1166** and a floor surface or make-up deposit **1169**. The wall footing, on the same line as the north-west wall of Structure 3, was composed of large, angular stone fragments, plus some smaller pebbles, in a sandy clay matrix. Laid up to the south side of this was layer **1169**, a predominantly sand deposit, which more likely served as a make-up or levelling layer for a floor, than as a floor surface itself. Cutting layer **1169** was a timber slot **1172**, parallel with the wall foundation **1166**; this may or may not have been associated with Structure 4. The Structure 4 features (including slot **1172**) were all truncated to some degree by later terracing (see Phase 9, **1133**), which had also removed any trace of the south-east and south-west walls of this structure. The north-east wall line lay beyond the limit of excavation.

Structure 5

A group of post holes in the eastern corner of the site indicated a third area of structural activity (Illus. 12). No single coherent pattern was evident in the distribution of these and more than one structure was evidently represented. Although several of the post holes contained odd sherds of Roman pottery this is likely to have been residual, derived from Roman features into which a number of the post holes were cut. Where medieval pottery was present (10 post holes) this was not later in date than the 13th century, hence the attribution of these features to Phase 8.

ILLUSTRATION 10

ILLUSTRATION 11

A number of very similar, large post holes in this vicinity are tentatively interpreted as the remains of Structure 5. Aligned roughly north-west – south-east, post holes **1211**, **1195**, **1277**, **1160**, **1129** and **1164** defined the east wall line of this structure. Post hole **1047** marked the likely position of the north-west wall and post holes **822** and **330** the south-east wall. If post holes **1211**, **1164** and **330** represented the north, east and south corners, respectively, then the structure as defined was rectangular in plan, measuring *c.* 7m x 4m. Situated just inside the north corner of this inferred structure a layer of pebbles **1212**, heat-discoloured on their upper surface, was possibly the remnant of a hearth; this was not certainly associated with Structure 5. Conjoining sherds of pottery from the fills of post holes **1160** (1159) and **1047** (1046) of Structure 5 and **851** (852), another post hole in this vicinity, imply a degree of association between these features.

Other structural features

A number of other structural features are attributable to this phase. Three very similar, widely-spaced, post holes **491**, **427** and **632** may have been the remains of a fence. Post holes **301**, **318** and **424** were apparently associated with each other, their function, however, is uncertain. In the north-west of the site a series of heavily truncated features **710**, **482**, **717**, **1162** and **999** may or may not have been structural slots.

Wells

One feature from this phase, **31**, could be confidently identified as a well. Situated in the southern part of the site, this was circular in plan, measuring 1.54m in diameter and 4.71m deep. Three other features, **930**, **576** and **941**, could conceivably have been wells, although none of these was fully excavated.

Pits

A group of clay-lined pits located at the extreme west end of the site were unlike any other features encountered during the excavation and are considered separately below. The other Phase 8 pits were typically circular, square or rectangular in plan and, with a single exception, were all under 1m deep; the exception being pit **551** at 1.29m deep. Only one pit **109**, a sub-rectangular cut measuring 1.48m long, 1.40m wide and 0.47m deep, showed any evidence of having been lined. A series of stakeholes in the base of this feature, located around the edges of the cut, indicated that the sides of the pit had been wattle lined. Two large, flat slabs of stone, one limestone and the other slate, lined the base of the pit. Following their removal a circular socket was revealed in the underside of the limestone slab (sf340), suggesting that this had previously served as a door pivot stone.

Clay-lined pits

This group of features at the western extremity of the site comprised of two separate pit complexes. The southern complex consisted of two pits **348** and **419**, which were linked by a narrow central ‘channel’ **353**. All three features were surrounded by a thick lining of clay contained within a roughly rectangular cut **285/414** measuring over 3.3m east-west, 2.2m north-south and 0.7m deep.

The second complex consisted of pits **351** and **380**, also lined with a thick deposit of clay **283/299/281/282**, although in this case the two central features were not linked. The base of pit **351** was also lined, with tightly packed fragments of stone.

Why this group of pits should have been lined with clay when they were cut into a clay subsoil is not clear. Nor is the function of these pits readily apparent; that they were distinctly different to any other pits encountered on the site suggests a specific, possibly non-domestic function, but neither their form nor the artefactual and ecofactual assemblages contained within their fills indicates what that function might have been.

ILLUSTRATION 12

Period 4 Discussion

Ditch **836/985**, and later **828/1090/1118**, possibly marked the boundary between the road approaching the town from the south and the adjacent South Field, one of the three town fields. The excavated structures suggest that dwellings had sprung up along the margins of the road by the end of the 12th century; this is corroborated by a charter of *c.* 1200, which records burgesses and customary (peasant) tenants living outside the Southgate (RBL, 1, 10-11; Courtney 1993, 6).

The earliest of the excavated structures were of relatively primitive construction, based upon earth-fast timber posts or sill beams. These were short-lived structures which appear to have been replaced or rebuilt before the end of the 13th century, in one case by a more durable construction raised on a stone plinth wall (Structure 4). Judging by the paucity of roofing tiles, either slate or ceramic, in Phase 8 features, it would appear that roofs were thatched or covered in timber shingles. These would presumably have been the dwellings of 'customary' tenants, or possibly outhouses or other ancillary structures.

Given the stratigraphic relationship between Structure 1 and the two phases of roadside boundary ditch, it is tempting to view the cutting of the later ditch as an attempt at preventing or limiting the encroachment of the roadside dwellings onto the adjacent fields. In the long term this measure proved ineffective, evidenced by the pits, wells and other 'back yard' features located to the south-west of the boundary ditch in this and subsequent Periods. The process which led to the formalisation of these land holdings is unknown, but is perhaps more likely to have been a piecemeal procedure, resulting in irregularly sized properties as opposed to the creation, in a single event, of a series of regularly laid out plots.

With the possible exception of the curious clay-lined pits in the west of the site, there is nothing to suggest that the character of the activity represented by the excavated remains of this Period was anything other than domestic in nature.

Period 5: Later Medieval (Illus. 13 & 14)

Phase 9 *c.* 1275-1350

A dark grey/brown silty clay layer: **21** (= **29**, **114**, **174** & **476**), up to 0.21m deep, overlay the remains of the Phase 8 Structure 2, in the north corner of the site. To the south-east of this was a similar, but stonier layer **489**.

Structure 6

Occupying the same site as the Phase 8 Structures 3 and 4 was Structure 6 (Illus. 14.1). The presumably stone-built north-west and south-east wall foundations of this structure had been robbed out, although the position of these was indicated by the robber trenches **846** and **1061** respectively (see Phase 10, Illus. 14.2). Between these wall lines was the remnant of a clay floor surface **1155**, located to the south-west of a slight terrace cut **1133**. The position of an internal, north-west – south-east aligned wall was indicated by another Phase 10 robber trench **1051**. To the north-east of this the south-east wall foundation (represented at this point by the Phase 10 robber trench **1067**) was offset slightly to the north-west of **1061**, perhaps indicating two separate building phases, although the evidence is tenuous. Cut into floor surface **1155** were four post holes: **1135**, **1139**, **1141** and **1143**, which may or may not have been associated with this structure, but are included here based on their position within the stratigraphic sequence. Based on the Phase 10 robber trenches, Structure 6 measured between 5m and 6m wide (north-west – south-east) and at least 8.5m long (north-east – south-west). No trace of the south-west wall was found; the north-east (front) wall line lay outside the excavation area.

ILLUSTRATION 13

No remains of this date were located in the south-east of the site, previously occupied by the Phase 8 Structure 5.

Wells

Three Phase 9 features possibly served as wells. The apparently irregular shape of **484** was due, in part at least, to it having been truncated by several later pits. This feature was excavated to a depth of 1.7m, its total depth of 4.46m being determined by auger. The second feature, **676**, may also have been a well, it was excavated to a depth of 2.35m but was not bottomed; its total depth was not determined. The third, **976**, appeared at the surface as a large, roughly circular cut with a diameter of 3.9m. At a depth of 0.47m this narrowed into a shaft *c.* 1.7m in diameter. This feature was heavily truncated when the Phase 16 well **635** was constructed (see below), its total depth was not determined but was in excess of 1.6m.

Pits

Of the six pits attributed to this phase, **455**, **961**, **873**, **903**, **534** and **1015**, all but one were either rectangular or square in plan. It was not possible to determine the shape of the sixth, **1015**, which was heavily truncated. With a single exception, the pits were all under 1 metre deep; **534**, however, was significantly deeper at 2.31m. There was no evidence to suggest that any of the pits had been lined.

Other features

The vestiges of a soil layer survived where this had slumped into the top of two earlier features: context **86** filled the upper few centimetres of the late Roman pit **87**; and contexts **3** and **40** filled the upper portion of the Phase 8 well **31**.

Phase 10 c. 1300-1375

All of the features assigned to Phase 10 were located within the area of the Phase 9 Structure 6; the majority seemed to be associated with the demolition/robbing of that structure.

'Robber' trenches

A series of trenches: **846**, **1061**, **1051**, **1067** and **1069** apparently resulted from the removal of stonework from the Structure 6 wall foundations, presumably for reuse elsewhere. Fills typically consisted of a brown sandy clay with inclusions of granite, mortar and charcoal. Layer **845** contained a considerable quantity of structural debris, including many large chunks of granite, fragments of mortar and some slate; this may have been upcast from the robber trenches. **1115** was a similar but less stony deposit.

Other features

A handful of other features, including an irregularly shaped pit **1137** and four possible post holes **878**, **908**, **848** and **1111** are included here based on their position within the stratigraphic sequence but may not be directly associated with the robbing episode described above.

Phase 11 c. 1300-1400

Surface

Still within the area of the Phase 9 Structure 6, overlying the fill of the Phase 10 robber trench **846** and rubble deposit **845** was layer **477**. Composed of pebbles in a sandy clay matrix this appeared to be a surface of sorts, post-dating the earlier demolition/robbing episode. A considerable quantity of pottery [128] was recovered from this context.

ILLUSTRATION 14

Well

At 4.44m deep (determined by auger) **772**, a circular feature with a diameter of 1.4m was presumably a well.

Pits

Two pits were attributed to this phase **67** and **674**. The first of these was a small, oval-shaped feature 0.22m deep. The second was larger at *c.* 1.7m in diameter, but only very slightly deeper at 0.26m, it was probably originally circular in plan.

Other features

Also assigned to this phase were a truncated soil layer **871** and a couple of possible post holes **666** and **1022**.

Phase 12 c. 1375-1450/1500

Pits

Five pits were attributed to Phase 12. Three of these, **469**, **740** and **825**, were located in the north-western half of the site; the other two, **636** and **678**, were situated in the south-east of the excavation area. Pits **740** and **825** were both rectangular in plan and were 0.18m and 0.81m deep, respectively. Truncated on its north side, pit **678** would originally have been either rectangular or square in plan and measured 0.26m deep. Pits **469** and **636** were both circular, measuring 0.36m and 0.45m deep, respectively. Several fragments of charred wood located against the western edge of pit **825** appeared to be the remains of a timber lining, burnt *in situ*.

Hearth

Immediately to the south of pit **825** was a roughly circular feature, **830**, 0.6m in diameter and 0.16m deep. With a fill consisting almost entirely of ash and lumps of coal, this apparently functioned as a heath.

Other features

Other features attributed to this phase included an isolated post hole **1162**; a small oval-shaped cut feature **314** and various truncated spreads of soil, **396**, **894** and **937**.

Period 5: Discussion

The Period 5 remains were generally similar in character to those assigned to the preceding Period 4. There was no evidence, in the form of specialised deposits or features (cf. Period 6, below), to suggest that the activity represented by these remains was anything other than domestic in nature.

Taken at face value the evidence would appear to indicate a decline in the level of activity on the site at this time. Phases 9-12 together spanned a period of some two hundred years, comparable to the timespan of the preceding Period 4 (Phase 8). Only one structure was attributed to this period, compared with five in Period 4. Areas in the north and south-east of the site, previously built upon, apparently remained unoccupied: a soil layer, possibly a cultivation soil, sealed the remains of the earlier Structure 2 in the north of the site. The one structure assigned to this period (Structure 6) seems to have been demolished before the end of the 14th century. Fewer pits were excavated at this time, compared with the preceding period. It is tempting, but perhaps overly convenient, to link this decline in activity to the numerous outbreaks of Black Death in the second half of the 14th century, which decimated the population of Leicester along with so many other English towns (Ellis 1976, 46). This area may even have been completely abandoned in the second half of the 15th century, which might account for the change in the nature of the activities

undertaken on the site thereafter (see Period 6, below).

The Period 5 remains need to be considered within the wider context of the development, in the area immediately to the north of the excavation site (between Bonnors Lane and Leicester Castle), of Trinity Hospital and the Newarke in the 14th and early 15th centuries. In 1330/1 Henry, earl of Lancaster and Leicester, steward of England, founded the Hospital of Our Lady, later Trinity Hospital. Following Henry's death in 1345 his son, also Henry (then earl of Derby, but from 1350, following successful French campaigns, Duke of Lancaster), repaired and enlarged the hospital. Subsequently the Duke saw the hospital converted into a college, dedicated to St Mary of the Annunciation, for the repose of the souls of the 'king's progenitors' and of his father (Thompson 1937). The entire complex was enclosed in the years around 1400 by a substantial wall, with gateways on the north (Turret Gateway, built 1423), east (Newarke - later Magazine - Gateway) and south (Rupert's Gateway) sides. The layout of this precinct was clearly influenced by the pattern of pre-existing suburban settlement along the west side of Oxford Street/Southgates (Courtney 1998). Immediately opposite the excavation site, on the north side of Bonnors Lane, was a substantial, high-status domestic building of late 14th century date, known variously as Rupert's Tower or Bishop Bonner's Hall. The southern façade of this was flush with the south wall of the Newarke enclosure, forming part of the precinct boundary. This building was recorded during demolition in 1935 (Herbert 1935). To the south of the Newarke Precinct, probably somewhere to the west or south-west of the excavation site, was the Grange, a farm complex belonging to Trinity Hospital.

The pattern of landholding in this area prior to the development of Trinity Hospital and the Newarke Precinct is not clear, although as noted above there appears to have been pre-existing suburban settlement along Oxford Street/Southgates. Nor is the extent of any alterations to that pattern, which the foundation, subsequent enlargement and eventual enclosure of the 'New Work' may have required, apparent. The line of a pre-existing lane may have governed the position of the south wall of the Newarke enclosure: Mill Lane (the eastern part of which subsequently acquired the name Bonnors Lane). The watermill located at the western end of Mill Lane was built in 1301 (Ashton 1977, 110) and it is not inconceivable that the lane itself, if not already extant, came into being at about that time. Alternatively the present line of Mill Lane/Bonnors Lane may be a later development, governed by the position of the southern wall of the Newarke enclosure.

Period 6: Early Post-medieval (Illus. 15-18)

Introduction

In contrast to the preceding periods, where there was little evidence to suggest that activity was anything other than domestic in character, many of the early post-medieval features were clearly industrial in origin. Spatially the Phase 13 and 14 remains appear to form a single, coherent group with relatively few instances of intercutting features. The discrepancy in date between the two phases, suggested by the finds, may reflect differing depositional processes at work on the site (see Period 6 Discussion, below).

Phase 13 c. 1450-1550

Structure 7

In the south-east corner of the site a shallow, U-shaped timber slot **159** defined the north-west, south-west and south-east wall lines of Structure 7 (Illus. 16.1), the position of the north-east wall was indicated by the Phase 14 robber trench **1156** (see below). This structure was almost square in plan, with an internal floor area measuring c.2.5m x 1.9m. A compact, predominantly clay

ILLUSTRATION 15

deposit **129** served as a floor surface. Four post holes: **563**, **658**, **659** and **668**, were located at or close to the corners of the structure, it is unclear whether these were an original construction detail, however, or represented a subsequent phase of repair. Structure 7 may be best interpreted as a detached outhouse, presumably situated to the rear of a principal building on the Southgates frontage, to the north-east.

Structure 8

Situated approximately 7m to the north of Structure 7 was a linear arrangement of post- and stakeholes, Structure 8 (Illus. 16.2). This seemed to define the south-eastern extent of a working area, within which a series of elliptically shaped pits were located (see below). Structure 8 may be interpreted in a number of ways: as a fence, or as the south-east wall of a roofed structure (the corresponding north-west wall line having been destroyed by the cut of the Phase 16 well **635**), or as some form of vertical racking (see Period 6 Discussion). Several instances of intercut post holes indicate that the structure was rebuilt at least once.

Elliptical pits with stakeholes

Situated immediately to the north-west of the structure just described were 8 shallow pits: **662**, **719**, **1036**, **972**, **1000**, **755**, **756** and **854** (Illus. 16.2). These were typically elliptical in plan (**1036** was a slightly less regular shape), measuring between 1.3m and 2.3m long, 0.6m and 1.05m wide and 0.1m and 0.45m deep. Fills consisted of a distinctive grey-green coloured deposit, described by one of the excavators as being ‘made up of a number of fine layers’, interleaved with occasional bands of darker soil. Numerous stakeholes were located within and around these pits, often occurring as voids (Plates 3 & 4). Several of the pits were intercut. A truncated deposit **584**, of similar colour and composition, was probably the remnant of a ninth pit almost completely destroyed by **755**.

Stone-lined channel

Possibly associated with this episode of activity was a stone-lined channel or drain **1006**. This consisted of a U-shaped cut 0.1m deep, the sides of which were lined with vertically set pieces of granite. The western end of this feature was cut by the Phase 16 well **635** (see below), to the east the channel extended no further than pit **972**.

Hearth

Also partly truncated by the Phase 16 well **635** was hearth **920** (Illus 16.2). The edges of this feature, along with its partially intact stone lining, were heavily scorched. The fill consisted principally of ash and charcoal. Presumably derived from this feature was a similar charcoal and ash layer **936**, spread over an area to the east of the hearth.

Well

Well **657**, in the north-west of the site, was roughly circular in plan with a diameter of 1.3m. Excavation was abandoned at a depth of 1.4m for safety reasons, although its total depth of 5.48m was determined by auger.

Pits

Six other pits were assigned to this phase. Two of these **252** and **34** were situated to the south-west of Structure 7. Pit **252** was sub-circular in plan, measuring 2.18m in diameter x 0.56m deep. Its fill included a considerable quantity of sheep’s foot bones, apparently deposited in a single event. The lower limbs of at least 28 sheep were present and are interpreted as waste from a whittawyer’s workshop (see Period 6 Discussion and the *Animal, Bird, Reptile and Amphibian Bones*, below). The recovery of 158 nail fragments from the pit fill may indicate that the feature was timber lined.

ILLUSTRATION 16

Pit **34** was sub-circular in plan, measuring 1.9m long x 1.76m wide x 0.65m deep. Mineralised seeds and fly puparae in environmental samples indicated the presence of latrine waste within the fill, implying that this feature functioned as a cess pit.

The other four pits were located in the north-western half of the site, three were sub-rectangular in plan **463**, **478**, **508** and the fourth, **1116**, was circular. The first two of these were shallow at 0.12m and 0.29m deep respectively, the latter two were deeper at 0.45 and 0.52m. No specific function could be suggested for any of these pits.

Other features

Evidence of activity in the north of the site occurred in the form of layer **465**, which included numerous slate fragments and pebbles and may have been a dump of building debris. Partially overlying this was a very stony layer **470**. An isolated feature **124**, possibly a post hole, was situated to the west of Structure 7.

Phase 14 c. 1500-1650

'Tanning' pits

Located in the north-west of the site (Illus. 17) were six large rectangular pits, interpreted as 'tanning' pits (the word *tanning* is used here in the broadest sense, as a cover-all term which does not distinguish between the various methods of leather manufacture – see Period 6 Discussion). Four of these pits **361**, **395**, **452** (Plate 6) and **497** (Plate 5) were broadly similar in size, measuring between 2.5 and 3.0m in length and between 1.9 and 2.6m in width. Depths varied considerably (Illus. 18), **361** being the shallowest at 0.3m and **497** the deepest at 1.1m deep; **395** and **452** were both approximately 0.7m deep. Pit **407** had been truncated on its north-west side by a later cellar, it measured 2.2m wide and 1.43m deep. Pit **471** was slightly smaller than the rest at 2.15m long x 1.3m wide x 0.18m deep. All of these pits had vertical, or near vertical, sides and flat bases. A narrow void between one side of pit **497** and its fills appeared to mark the position of a timber lining, which had rotted out. Possibly fixings associated with this lining - 18 iron nails - were found in the pit. Pits **361**, **395**, **452** and **407** contained 7, 16, 20 and 25 iron nails respectively. These may again have related to timber linings, although no other evidence of linings was recorded in any of these features at the time of excavation (note also the following comments concerning the origin of these pit fills). Fills were typically mixed brown clay silts with fragments of charcoal and mortar and lumps of redeposited natural clay, this seemed to be backfill unrelated to the function of the pits. A very similar deposit, layer **335/405**, overlying a number of the pits and spread over the adjacent area, lends weight to the suggestion that all of the pits were backfilled in a single event. Only the lower fills of **407** were significantly different, these being greenish silt clays.

A number of other pits located in the vicinity may also have been associated with the 'tannery'. To the south-east of **497**, and apparently cut by that pit, was **495**, a slightly irregularly-shaped feature 0.3m deep. Cut by **495** was pit **516**. To the south-east of the 'tanning' pit **452** was a small circular pit **346**, 1m in diameter x 0.35m deep, with near vertical sides and a flat base. Its fill was a dark, grey brown sandy silt containing much charcoal and large granite fragments. To the south-west of the main group of rectangular 'tanning' pits were three pits: **416**, **389** and **402**, located close to, and perhaps associated with, the Phase 13 feature **463**. The first of these was oval in plan, measuring 1.05m long by 0.85m wide. It was shallow at 0.13m deep and filled with a similar deposit to the rectangular 'tanning' pits described above, suggesting contemporaneity if not direct association with that group of features. The second pit, **389**, was less regular in plan and was deeper at 0.56m. Its filling comprised of a series of dark brown sandy and silty clay layers interleaved with thick deposits of charcoal. The third pit, **402**, was a slightly irregular oval shape, this measured 1.8m x 1.2m x 0.48m deep and was filled with a very dark brown sandy silt.

ILLUSTRATION 17

Drain/channel

A stone-lined and slate-capped feature **1020/1081** functioned as some kind of drain or channel. The lining consisted of two courses of clay-bonded stones, including fragments of granite, roughly squared blocks of sandstone and large water-worn cobbles. The capping comprised reused Swithland slate roof tiles, typically 0.37m long, 0.15m wide narrowing to 0.12m at the pierced end, and between 10 and 20mm thick (Plate 7). The central channel was 0.1m - 0.2m wide and 0.2m deep, this had partially silted up, to approximately half its depth (Illus. 18.7; Plate 8). In plan the drain resembled a reversed 'L'. The north-east – south-west aligned leg, at least 6m long, was truncated at its south-western end. To the north-east the drain/channel turned through 90° to the south-east. This shorter leg was stone-lined for a length of approximately 2m, beyond which the cut shallowed up and widened into a rounded bowl shape. The base of the channel descended gradually from south-east to south-west, indicating the direction of flow. Feature **832** represented a repair to the stone lining on the north-west side of the drain, effected using larger stones than those of the original build.

Structure 9

Two substantial post holes **1062** and **988**, in section the shape of inverted cones, were situated to the north-west of the stone-lined drain/channel. The first of these was 0.95m deep and narrowed from 0.61m at the surface to 0.29m at its base. The second was 0.74m deep and narrowed from 0.8m to 0.17m. The fills of both contained numerous large stone fragments, representing packing material around posts. The distance between the centres of the two post holes was 2.8m. This may have been a two-post structure, perhaps some kind of vertical racking; alternatively, these may have been the east and west corner posts of a larger, roofed structure, the equivalent north and west post holes having been destroyed by the construction of the Phase 16 Building 4 cellar (see below). The absence of any earth fast features immediately to the north-west of the two post holes (ie. within the footprint of the inferred Structure 9) may support the latter interpretation.

Other features

Half a dozen post holes, **570**, **572**, **574**, **758**, **827** and **861**, may or may not have been associated with this phase of activity. Five of the six formed a roughly north-west – south-east alignment, **861** being offset slightly to the east.

A rectangular feature of uncertain function **823** was located to the south-east of the drain/channel.

In the south-eastern half of the site were three pits **422**, **433** and **57**. The first of these was square in plan and stone-lined, internally it measured 1.1m x 1.1m x 0.8m deep. The fill contained traces of latrine waste, suggesting it functioned as a cesspit. An unusual assemblage of bones was recovered from its fill, including the complete skeletons of three piglets, two ducks and a cat, plus the skull of a foal and the bones of at least 20 frogs/toads (see the *Animal, Bird, Reptile and Amphibian Bones*, below). Adjacent to **422** was **433**; this oval shaped feature measured 3.14m long x 2.40m wide at the surface, but narrowed further down into a circular shaft. It was excavated to a depth of 2.0m but was not bottomed; its total depth was not determined. This may have been a well rather than a pit. Located against and partly beyond the southern limit of excavation was pit **57**. Its fill consisted principally of charcoal, whilst environmental samples contained significant quantities of charred cereal grains (see the *Charred Plant Remains*, below).

Structure 7

As mentioned earlier, feature **1156** apparently resulted from the robbing of the eastern wall foundation of the Phase 13 Structure 7.

Three post holes **96**, **125** and **157**, located close to the southern limit of excavation, were apparently associated, although the nature of the structure to which these related is unclear.

ILLUSTRATION 18

Period 6 Discussion

There was a marked change in the character of the activities undertaken on the site in the early post-medieval period. This was evidenced by a range of feature types not previously represented and by the occurrence of distinctly different faunal and environmental assemblages to those recovered from the preceding phases.

The 'Tannery'

A number of excavated tannery sites provide useful comparative material for the interpretation of the Period 6 remains, although as already noted by a previous writer on the subject, few of these sites have been published in detail (Shaw 1996, 114). The best evidence comes from a number of excavations undertaken in the vicinity of The Green, Northampton (Williams 1979, Shaw 1996). Shaw reviewed the archaeological evidence for tanning available in 1996 (*ibid.*, 114) and reached a number of conclusions regarding the type of evidence that an excavated tannery site might be expected to produce. This included:

'The combination of rectangular and circular water tight pits of a fairly standard size in association with organic matter, oak bark, wood fragments or chips, and leather off-cuts' which 'would appear to be a reasonably good indication of tanning especially on sites where horn cores or sheep's foot bones¹ are associated'. The presence of lime or ash in pits is also cited as a possible indicator of tanning.

The evidence from Bonnors Lane may be judged against these criteria. The rectangular pits are directly comparable with those from Northampton and elsewhere. Clay linings were not necessary in order to render the Bonnors Lane pits watertight, since they were cut into clay subsoil. There was some slight evidence, however, for timber linings, a common feature at other tannery sites. Circular, as well as other less regularly shaped pits, were contemporary features at Bonnors Lane and could have functioned as tanning pits, although there is no clear evidence of this. Neither leather off-cuts nor oak bark were found at the site. Whilst the absence of these may have been the result of preservation biases (cf. Gossip 1999b), the lack of oak bark was perhaps more likely a consequence of the method of skin processing employed at the site, which did not require bark (see below). Articulated sheep's foot bones were a principal constituent of pit 252, representing the remains of at least 28 animals deposited in a single event. A small number of cattle and sheep horn cores occurred in Period 6 features, although there were no significant concentrations.

The deposit of sheep's foot bones at Bonnors Lane suggests that this was the workshop of a whittawyer or a parchment maker, rather than a tanner: whilst the tanner processed the hides of cattle using oak bark, the whittawyer treated the skins of other animals, including sheep, deer, horse and dog, using alum and oil (Thomson 1981, 171). The parchment maker used the skins of goat, sheep or calf that were limed, scraped and dried but not further treated (Shaw 1996, 108). The various stages involved in the processing of hides, both by the tanner and the whittawyer, are detailed elsewhere (Thomson 1981) and will not be repeated here.

Comparable assemblages of sheep's foot bones have been found at St. Peters Way, Northampton (Shaw 1996) and Walmgate, York (O'Connor 1984). The excavation at St. Peters Way in 1987 uncovered six circular, clay- and wood-lined, tanning pits of 15th-century date, one of which contained deposits of lime and animal hair. The animal bone assemblage from the site included deposits of sheep metapodials, cattle horn cores and horse bones. At the Walmgate site were 13 rectangular and one circular tanning pits, all clay-lined. Large deposits of sheep's foot bones

¹ 'Until the middle of the 19th century hides were brought from the butcher with hooves, horns and other appendages still attached' (Thompson 1981, 163).

occurred in three smaller, less regularly-shaped pits. This complex is dated to the early 18th century.

Various horse bones from Period 6 features at Bonnors Lane, including the articulated elements of an equid foreleg from layer **498** and the skull of a foal from pit **422**, (both Phase 14), perhaps indicates that horse hides were also processed at the site. The relatively large number of cat bones from Period 6 features, including a complete skeleton from pit **422** (Phase 14), raises the possibility that cat skins were also utilised (cf. Connor and Buckley 1999, 88). The presence of these remains, in addition to the sheep metapodials, lends weight to the suggestion that this was the workshop of a whittawyer, rather than a parchment maker.

Inferences regarding the size of the hide-processing workshop and scale on which it operated are hampered by the incomplete state of the excavated remains. Within the excavation area related features are likely to have been destroyed by the Phase 16 Building 4 (below), whilst additional features may have lain beyond the limits of excavation. The interpretation of Structure 9 as a roofed, perhaps open-sided, structure is a tentative one, based principally upon the absence of any pits or other features in the area immediately to the north-west of the two surviving post holes. Nor is the specific function of the drain/channel clear. This may have been constructed to carry waste liquid away from the area to the east of the main group of 'tanning' pits (ie. a drain), or alternatively, to channel 'fresh' liquids into one or more of those pits. In either case, the presence of a working area to the east of the main pit group is suggested, no other evidence of which has survived. The drain/channel does, however, provide a useful indication of the contemporary ground level, assuming that the slate capping lay at or just below the surface. If this assumption is correct then the features in this area would appear to have suffered little or no horizontal truncation. The absence of boundary features makes it difficult to determine the extent of the complex. The occurrence of the sheep's foot bones in a pit close to the southern limit of excavation, however, would seem to imply that much, if not all of the area was given over to this activity. This, then, raises the issue of what function the Phase 13 elliptical pits in the east of the site performed, and whether this was related to the processing of hides.

A close parallel for these features are two 16th- or 17th-century pits excavated at Houndhill, near Barnsley, Yorkshire (Ashurst 1979). The pits, of comparable size and shape to the Bonnors Lane examples, were clay lined and contained numerous wooden and iron pegs located towards their extremities. The larger of the two pits was associated with a stone-lined drain. The pits were situated within a building, which, based on a combination of documentary and archaeological evidence, has been identified as a weaver's workshop. The pits themselves are interpreted as dyeing troughs.

The Bonnors Lane pits were very similar to the Houndhill examples, except that they were not clay-lined – an unnecessary measure since they were cut into clay. At Houndhill it was suggested that the raw materials (wool or flax) and/or the finished cloth was staked out using the metal and wooden pegs and agitated in the dyestuff contained within the pits. The Bonnors Lane pits may have functioned in a similar manner. The hearth located in this area could have been related, perhaps used to heat the dye before it was added to the pits: a hearth formed an integral part of the weaver's workshop at Houndhill. Another similarity between the two sites is the presence of a stone-lined drain associated with one of the pits. At Houndhill this was a relatively sophisticated structure, with vertically-set stone slabs acting as a sluice, which carried liquid away from the pit and out of the building through an opening in one wall. At Bonnors Lane the evidence is less clear: drain **1006** was truncated to the degree that it was not possible to determine the direction of flow. The stones which formed the drain lining also defined the northern side of pit **972**, a further vertically set granite fragment was located against the south-eastern edge of this pit; the precise relationship between drain and pit is not certain, however.

It was initially assumed that the distinctive pale green fills of these pits contained lime and that the features were associated with the *liming* stage of the tanning process (Thompson 1981, 163). Chemical testing, however, has indicated that these deposits were actually rich in phosphate. It has recently been demonstrated that the systematic analysis of chemical residues can assist in identifying the specific function of individual pits within a tanning complex (Evans 1996). Unfortunately such tests were not applied to the majority of the Period 6 features at Bonnors Lane.

Thomson (1981, 173) states that, following the tanning/tawing process, 'leathers were then dyed into a wide range of shades using techniques in common with the textile industries'.

The elliptical pits could, it seems by analogy, have functioned as dyeing troughs. It is not clear, however, whether these would have been used to colour cloth or leather. This group of features may, therefore, have been integral to the hide-processing workshop or alternatively may have functioned as a separate business, finishing textiles.

The Oxford Street excavation site, barely a stone's throw away, also produced evidence for both leather working and dyeing, although at an earlier date (Gossip 1999b). The waterlogged fills of a 12th- or 13th-century well contained off-cuts of leather and numerous seeds of Weld, also known as dyer's rocket, a plant used to make dye (Monckton 1999b, 80).

The apparent discrepancy in date between features attributed to Phases 13 and 14, the majority of which, it is suggested, formed part of a single episode of activity (i.e. the 'tannery' phase), may be explained as a result of differential processes of fill deposition. For example, the fill of the Phase 13 pit **252**, with its sheep metapodials, was presumably deposited during the period of operation of the hide-processing workshop. In Northampton, a bye-law was passed in 1566 reaffirming that the tanners should cleanse their quarter of all manner of carrion and bones once every year (Thompson 1981, 162). In contrast, the Phase 14 'tanning' pits would have been maintained as open features during their useful life and the excavated fills of these must represent post-abandonment deposits.

Based on the finds evidence, it may be suggested that the hide-processing workshop was in operation some time between the mid-15th and end of the 16th century. The presence of only a handful of pottery sherds that need be any later in date than *c.* 1600 from Phase 14 'disuse' fills may be taken to indicate that the workshop had ceased to function by that date, or very soon afterwards.

Analysis of the spatial distribution of the various leather-related trades in Leicester has been carried out, based on the 1608 Muster Roll (Allin 1981a). There is no reference to a whittawyer working in the south suburb at that time, which may be taken, indirectly, to support the suggested end date of the Bonnors Lane workshop. A number of general points concerning the distribution of whittawyers and tanners in early 17th century Leicester may be abstracted from this work. Allin was able to locate individuals occupied in all the various leather related trades to particular areas (Wards) of the town. Five whittawyers are recorded, none of who were resident in Ward 6, the area which encompassed the south suburb. It is apparent from this document that whilst the tanners were concentrated to the north of the town by this date, with 20 of the 27 tanners listed resident in Wards 9 or 11, together encompassing the north suburb, and the remaining seven in Wards 3 or 5, both situated within the northern half of the walled town, the whittawyers were not confined to these areas. Although two of the five whittawyers listed were located within Ward 9, the majority were to be found in Ward 4, the south-west quarter of the town. It should be noted,

however, that the Muster Roll records the place of *residence*, rather than the place of *business*, and may not, therefore, present a wholly accurate picture of the distribution of these industries. The north suburb was the ideal location for the tanners, adjacent to the Soar but down river of the town. The North Gate was also the principal point of entry into the town of timber from Charnwood Forest (*ibid.*, 3) – this area is still known today as Woodgate. It seems highly likely that the same source supplied the tanners with the oak bark they required to tan hides. The riverside location and ready supply of raw materials were probably not the only factors that led to the concentration of tanneries in the north suburb, however. Nationally, public concern over health and hygiene standards had grown in response to the numerous outbreaks of plague in the 14th and 15th centuries; a particular concern was the role that noxious odours played in the spread of disease (Platt 1976, 72). Tanning was a smelly business and, therefore, a potential health hazard. Pressure was brought to bear upon the tanners to relocate outside urban centres, a factor which may have contributed towards the nucleation of the Leicester tanneries within the north suburb.

Although the number of whittawyers recorded in the 1608 Muster Roll is small compared with the number of tanners, the apparent discrepancy in the spatial distribution of the two trades that the document implies may be significant (subject to the earlier caveat regarding place of residence as opposed to place of business). It would appear that whilst a position close to the river was essential to the tanners, this may not have been critical for the whittawyers: Ward 4 has only a short stretch of river frontage, either side of the West Bridge. The location of the Bonnars Lane site, some 400m east of the river, tends to support this suggestion.

Other non-domestic activities

Monckton (this volume) suggests that the quantity of cereal remains present within the fills of the Phase 14 pits **452**, **407** and **57** is excessively large to be domestic in origin and more likely represents waste from grain processing on a commercial scale. This may have been for sale for domestic use (in pottage, for example), or alternatively as animal fodder. Since the fills of pits **452** and **407** appear to be disuse deposits (see above), and in the absence of any clearly related features, it is not possible to state categorically that this processing occurred on the site, but if not, was presumably undertaken in the near vicinity. It should be noted, however, that barley and rye are cited as ingredients in the *raising* or *drenching* stage of the tanning process (Thomson 1981, 164), suggesting a possible alternative explanation for the presence of these grain deposits.

Baxter (below & 1998, 61) takes the presence of several complete or near complete pig skeletons in Phase 14 features as an indication that swine were kept and bred on the site at this time.

Period 7: The English Civil War (Illus. 19 & 20)

Phase 15

Two substantial ditches may be attributed to the Civil War period (Illus. 19 & 20). Observed in plan for a length of 11.3m, ditch **1316** was 2.5m deep and over 3.1m wide, aligned roughly north-west – south-east, parallel with Oxford Street (Plate 9). Only the south-western edge and part of the base of the ditch lay within the excavated area; the side of the ditch sloped at *c.* 45° and the base was flat. The lower 1.5m of the ditch was filled with a pinkish red natural-derived clay, probably the remains of an associated bank, apparently thrown back into the ditch when the earthwork was levelled (Illus. 20.1). If the profile of the north-eastern side of the ditch was similar to that of the south-west, then the original cut must have been at least 6m wide. Few artefacts were recovered from the ditch fills, of particular note, however, was a coin of Charles I current between 1625 and 1649 (sf322, cat. 88) and a skull fragment from a young adult male, possibly a Civil War casualty.

ILLUSTRATION 19

The second ditch lay at 90° to **1316**, parallel with Bonnors Lane. A 23.7m length of this was exposed in plan, against the northern limit of excavation. The cut was over 2.2m wide and at least 0.7m deep. Three sections were excavated: **307**, **356** and **379**, in each case the south-eastern edge sloped at approximately 45° down to a flat base, although the cut was less regular than that of ditch **1316** (Illus. 20.2-3). The lower part of the north-western side of the ditch was observed in section **307**, where the base of the feature was just over 1m wide (Illus. 20.3). The total width of the ditch may be estimated at *c.* 2.5m. Fills varied somewhat between the excavated sections, but as with **1316**, the principal constituent was pinkish red clay, possibly derived from an associated bank. Finds were few, but included several large fragments of Danehills sandstone, including at least one moulded piece (sf133).

Period 7 Discussion

A detailed account of the Civil War sieges of Leicester is presented in Courtney and Courtney (1992), from which much of the following information has been abstracted. In summary, Leicester was besieged twice in the course of the war, over a short time period in 1645, first by the Royalists under Charles I and his nephew Prince Rupert who attacked and captured the town on 30th May. Following their decisive defeat at Naseby on June 14th, the remains of the Royalist field army fled to Leicester, with Parliamentary forces in pursuit. Two days later, after a brief artillery bombardment, the Royalists surrendered the town to Sir Thomas Fairfax. On both occasions it was the Newarke which bore the brunt of the attack, from a battery of cannon stationed somewhere in the vicinity of the present day Leicester Royal Infirmary.

From contemporary accounts it is apparent that defensive earthworks erected around the town, prior to the first siege, encompassed large areas of the north and east suburbs, but not the south suburb. The demolition of buildings lying outside the defended area was standard practice in 17th century military engineering and the Chamberlain's accounts for 1643/4 record payments made for taking down houses 'beyond the south gate centry' (RBL 1603-1689, 343). The Grange was also demolished, as recorded in the Chamberlain's accounts for 1644/5 (*ibid.*, 336). It is impossible to assess accurately the extent of the destruction, but it would appear that more properties were razed in the south suburb than in all the other suburban areas combined. This situation may reflect the relative prosperity of these areas: the poorer south suburb, as evidenced by the 1524 and 1554 Lay Subsidies (Hoskins 1962, 92 and Charman 1951, 27), was apparently deemed expendable whereas the more prosperous north and east suburbs were not.

Whilst it may be convenient to view the Period 6 industrial complex as a casualty of this episode of destruction, this cannot be proved, due to the lack of closely dateable demolition deposits as found at Civil War period sites elsewhere, for example at Gloucester (Atkin and Laughlin 1992).

It is possible, up to a point, to reconstruct the form of the defensive earthworks surrounding the town from contemporary accounts. The 19th century historian J.F. Hollings (1840) published a plan showing the defences at the time of the first siege, which may have some basis in fact, but must also be part conjecture.

It is clear from the contemporary accounts that the Newarke was not adequately defended prior to the first siege and work on strengthening the defences in this area was begun by the Royalist garrison after the town's capture. It seems unlikely, however, given the very short intervening period that adequate defences were completed until after the second siege, by Fairfax's Parliamentary garrison. In their final form the earthworks around the Newarke probably consisted of a rampart and ditch with at least four projecting bulwarks or bastions (Courtney and Courtney 1992, 61).

ILLUSTRATION 20

The Chamberlain's accounts for 1647/8 record payment made for levelling the 'bulwark and mount against the end of Mill Lane' (RBL 1603-1689, 378). This is taken to mean the east end of Mill Lane, at the junction with Oxford Street. (The name Bonnors Lane, applied to the end of Mill Lane from the junction of Grange Lane eastwards, was not adopted until some time in the 19th century). It would appear therefore that ditch **1316** formed part of a bastion, incorporating a gun emplacement (the 'mount'). The precise form of this earthwork is not clear, however, and cannot be predicted based on the excavated evidence. It is impossible to ascribe this ditch with any certainty to a particular phase of fortification. Given the scale and precision of execution of the earthwork, however, it might be tentatively suggested that it was not completed until after the second siege, by the Parliamentary garrison.

The ditch parallel with Bonnors Lane was relatively insubstantial and may have formed part of the inadequate pre-first siege defences. The stonework recovered from the fills of this ditch may have derived from the Newarke wall, located 10m to the north, which was breached during both sieges. An associated rampart would presumably have been situated on the north side of the ditch.

An excavation on the southern corner of York Road and Oxford Street in 1997 (Gossip 1999a) located part of a substantial ditch representing a further section of the Civil War defences. This appeared to be a continuation of the ditch parallel with Bonnors Lane and was seen to turn northwards, east of Oxford Street, presumably to pick up the line of the medieval town wall around the south-east quarter. More recently, a watching brief during the renewal of a water main along Oxford Street located one side of a substantial clay-filled feature, possibly part of the same ditch (Warren 2000). If this interpretation is correct then the ditch probably cut right across Oxford Street. Since reference is made in at least one contemporary account of the first siege to a drawbridge on the east side of the town (Ellis 1976, 85), and assuming that the southern approach was similarly defended, it may be suggested with greater confidence that the ditch parallel with Bonnors Lane predated the first siege.

In 2001 an excavation on Mill Lane, to the south-west of the Bonnors Lane site, located a further section of the Civil War period defences around the Newarke (Finn 2002a & b).

Period 8: Post-Civil War (Illus. 21 & 22)

Phase 16: mid 17th-mid 19th century

The Civil War defences were short lived. As early as 1647/8, the earthworks at the Oxford Street/Bonnors Lane junction were levelled (see above). Reconstruction of the southern suburb, however, appears to have been a much slower process. The Chamberlain's accounts record payments made in respect of various properties 'in the Southgates...ruined in the late warrs' well into the eighteenth century (RBL *passim*).

William Stukeley's map of 1722 and Thomas Roberts' 1741 map (the latter possibly surveyed in 1711/2 (McWhirr 1997, 53)) show the extent of the south suburb before the middle of the 18th century. Although the eastern side of Oxford Street (Southgates) remained largely undeveloped, the western side of this road was almost continuously fronted by buildings, as far south as the junction of Oxford Street and Grange Lane. Only a single empty plot is shown on Roberts' map, to the south of the excavation site. The Bonnors Lane and Grange Lane frontages adjacent to the excavation site were also built up at this time.

Both Oxford Street and Bonnors Lane have been widened in the last half century. Comparison of the present day road layout with earlier maps of the area shows the extent of this widening

(compare Illus. 1 and Illus. 24). Whilst Oxford Street at this point is now only slightly wider than it was in the 1950's, the Bonners Lane street frontage was then *c.*9m further north than the present day frontage line.

Excavated remains attributable to the period between the end of the Civil War and the mid 19th century were mainly associated with a series of buildings fronting onto the western side of Oxford Street, and a single building associated with a property on the south side of Bonners Lane.

In addition to the map evidence mentioned above, several photographs of buildings on the site, taken between about 1955 and 1960 (LLRRO photographic collections), have assisted in the interpretation of the excavated remains.

A series of insurance plans dating from the late 19th to mid 20th century (the Goad plans, again held by the LLRRO), which include details of building function, walling and roofing materials, numbers of storeys, positions of cellars, and various other constructional details, was also consulted. Unfortunately, these did not cover the excavation site in detail; a block plan of the area was annotated '2 and 3 storey brick slated dw[ellin]gs'.

Building 1 (Illus. 21)

Situated in the eastern corner of the site, Building 1 lay outside the original excavation area, but was partially exposed in the extension opened up to investigate the Period 3, Phase 7 Anglo-Saxon building. Excavation revealed part of the south-west (rear) wall foundation, two internal cross-walls and a number of other internal features (Plate 10). The north-east (front) wall of the building lay beyond the limit of excavation, but in all probability corresponded with the later frontage line, as shown on the first edition Ordnance Survey map. The south-east wall line also lay outside the excavation area, but again may be tentatively equated with the line of a later property boundary just to the south. The north-western part of the building had been destroyed by the construction of a later cellar (see Building 5, Period 9), but presumably did not extend further than Building 2 (see below). The evidence suggests a single pile structure, its long axis parallel with Oxford Street, apparently divided into three roughly equally-sized rooms. If this interpretation is correct then the building would have measured *c.* 11.8m long by 4.8m wide.

The wall foundations **1298** & **1311** were trench built, consisting principally of uncoursed granite fragments, with lesser quantities of sandstone, slate and brick/tile, set in mortar. The southern of the two cross-walls terminated *c.* 0.4m short of the eastern limit of excavation, apparently defining a doorway between the central and south rooms.

An equivalent doorway in the northern cross-wall, had one existed, would have lain outside the excavation area. A stone plinth **1305**, of similar construction to the wall foundations, projected out from the north side of the southern cross-wall. This may have been associated with a black stain **1300**, possibly a decayed timber, on its east side; the function of both is uncertain, but possibly related to either a fireplace or staircase. Timber slots **1282** and **1303** apparently carried a wooden partition dividing the central room into two unequal parts. To the west of **1282** was the remnant of a clay floor surface **1283**. A gap in the rear wall foundation presumably accommodated a doorway giving access into the yard beyond. A brick-lined well **1399**, situated in this opening, may or may not have been an original feature (cf. Building 3B). In either case it was presumably capped and furnished with a pump.

It is unclear whether the fragments of brickwork, **1286**, **1293**, **1294** & **1307**, carried on the wall foundations, were all that remained of the superstructure of this building or were related to the reuse of the Building 1 foundations in the construction of Building 6 (see Illus. 23). This point is considered in greater detail in the Discussion (see below).

ILLUSTRATION 21

The backfill of the wall foundation trenches contained a range of pottery suggesting a date of *c.* 1670-1750 for the construction of Building 1. A handful of later pottery sherds (all very small, with an average sherd weight of just 1g) must have been intrusive, relating to the later reuse of the foundations. A small number of clay tobacco pipe stem fragments, also from the construction backfill, dated from the late 17th or early 18th century. Timber slots **1282** and **1303** contained a similar range of pottery to the wall foundation trenches.

Associated Pits

Three pits situated to the south-west (rear) of Building 1 were almost certainly associated with the occupation of that building. Pit **155** was sub-rectangular in plan, measuring 1.5m long x 1.05m wide x 0.7m deep. The sides of the pit were vertical and the base was rounded. The seeds of fig, blackberry, apple and grape, in addition to fly pupae and fish scales, recovered from environmental samples, indicate that the pit was used for the disposal of latrine waste. Fragments of what appeared to be mineralised wood might have been remnants of a timber lining, the presence of parasite ova in this material supports the interpretation of this feature as a cess pit.

Pit **94** was rectangular in plan, measuring 1.9m long x 1.28m wide, it was excavated to a depth of 0.74m but was not bottomed, the sides were vertical. Mineralised material in one of the fills suggested the presence of latrine waste, but tests for parasite ova were negative.

The third pit, **25**, was much smaller and shallower, measuring 0.8m long x 0.53m wide x 0.17m deep. Neither form nor filling obviously indicated the function of this feature.

The fills of all three pits contained fragments of clay tobacco pipe for which a deposition date of *c.* 1690-1710 is suggested by Higgins (see the *Clay Tobacco Pipes*, below). A coin of William III, probably issued in 1700, from pit **155** is consistent with this date (sf49, cat. 90). Pottery from **155** [9] and **94** [18] was earlier, however, and without the evidence of the other finds categories these features would have been assigned to Period 6 (Phase 14).

Other finds from pit **155** included a buckle, ascribed a general post-medieval date, three 16th/17th century pins and a whetstone. Pit **94** included a lace end dated to between *c.* 1550/75 and 1700.

Building 2 (Illus. 21 & 22)

Building 2 apparently occupied a narrow plot, just over 6m wide, fronting onto Oxford Street. Only the south-western (rear) part of this building lay within the excavation area. The north-eastern (front) part seems to have been demolished when Building 6 was constructed in the 19th century (see Period 9, below).

Two distinct phases of construction were apparent from the excavated remains, identified in the following account by the subdivisions 2A and 2B. A third range of building, 2C, known to have been added by the middle of the 19th century, left no trace on the ground (see Illus. 22 & Plate 16).

Building 2A

Nothing survived of the external north-west and south-east walls of Building 2A. It seems likely, however, that the wall lines corresponded, approximately, with those of Building 2B to the south-west (see below). A shallow timber slot **493** marked the position of the south-west wall of this range, although this slot could have been associated with either the Building 2A or 2B phase of construction. A paved area **545** composed of waterworn pebbles lay adjacent to an opening in the south-west wall, indicated by feature **166**. Comprising of a short timber slot with a substantial post setting at either end **166** very likely accommodated a timber doorframe. A shallow timber slot **262** was located almost equidistantly between the inferred north-west and south-east wall

ILLUSTRATION 22

lines. Five iron nails (sf466-470) were recovered from the fill of this feature, which presumably carried the base plate of a stud wall. Several post settings, **500**, **510**, **150**, **537**, **186** and **502**, seem to have been associated with this building.

Building 2B

Robber trenches **443** and **445** marked the positions of the north-west and south-east walls, respectively, of Building 2B. A fragment of the south-east wall foundation **448** survived *in situ* at the south-west end of robber trench **445**, this consisted of uncoursed granite fragments bonded with mortar. The south-western part of this building had apparently been destroyed or remodelled when another range, 2C, was added, some time before *c.* 1862. No trace of this later range was found at the time of the excavation, although it appears on Ordnance Survey maps (see Illus. 23 & 24) and its western gable end is visible in photographs of Pentonville taken in the 1950's (Plate 16). Between the Building 2B wall lines a plaster floor surface **105** overlay a series of makeup/levelling layers **446**, **876** and **759**. The floor surface appears to have been laid up against the beam carried by timber slot **493**, the wet plaster seemingly having run down a narrow void between timber and cut, resulting in a vertical 'strip' of mortar **488** which survived against the western edge of the cut, after the timber had rotted out or been removed.

Few finds were recovered from features associated with either excavated phase of Building 2, and none of these was particularly useful in terms of dating the construction of the building. Several features contained odd sherds of pottery, the majority of which was residual medieval or early post-medieval material. The floor makeup layer **446**, Building 2B, contained 2 sherds of the post-medieval fabric EA1 broadly dated to *c.* 1500-1750. Stratigraphically Building 2B must have been constructed after Building 3B (see below), since the north-west wall foundation of the former overlay the backfilled construction cut of well **364**, an integral part of the latter (see Illus. 22).

The fragmentary nature of the Building 2A remains renders any consideration of the original form of this structure somewhat speculative. This said, it is tempting to view the building as a rectangular construction, measuring *c.* 10m by 4.5-5.0m, with its long axis lying at 90° to Oxford Street, gable end on to the road. As far as the superstructure is concerned, there is again very little to go on. Timber slot **493** may be seen as evidence of timber framed construction, although it is hard to imagine that a timber frame was laid directly onto the ground in the late 17th/early 18th century. Building 2B was evidently an addition to the rear of the earlier Building 2A. It measured *c.* 4.5m north-west – south-east and at least 3m north-east – south-west. Its south-western extent was not determined. The nature of the superstructure is uncertain; the stone-built wall foundations may have carried either timber framing or brick. The later extension 2C to the west of Building 2B was brick-built, with a slate roof, judging by its appearance in surviving photographs (Plate 16).

Building 3

Two distinct phases of construction were evident from the excavated remains associated with Building 3 and, as with Building 2, these are identified by the subdivisions A and B.

Building 3A

Part of the south-west (rear) wall of a stone-built cellar lay against the north-eastern edge of excavation, to the north of Building 2. A portion of the backfill was removed in a small sondage, the back wall of the cellar **17** consisted primarily of granite fragments (a few sandstone blocks were also noted), laid in regular courses, bonded with a hard, cream coloured mortar. Against the internal (north-west) face of the south-east wall of the cellar was a skin of brickwork. The cellar floor was paved in brick (no context numbers allocated). Repairs or alterations to the south-west wall of Building 3A were indicated by areas of differing stonework: **1390**, **1393** and **1394**. The

first of these included a reused fragment of moulded Danehills sandstone, seemingly a door or window head, or perhaps a window sill.

A narrow, linear trench **113** located against the south-west side of wall **17** seems to have been an attempt at alleviating problems with water ingress into the cellar: the trench was cut through earlier archaeological deposits, down to, but not beyond the level of the natural clay. Clay was then packed against the external face of the cellar wall and the trench backfilled. The skin of brickwork against the south-east cellar wall noted above may similarly have been associated with an attempt at waterproofing the cellar.

Two photographs of the building that stood above the cellar, taken prior to demolition in *c.*1957 by John Daniell, formerly the Assistant Keeper of Social History at Newarke Houses Museum, are in the LLRO collections. One of the prints, reproduced here as Plate 14, is annotated on the reverse: 'Houses on the south side of Bonners Lane corner 17th/early 18th century now demolished'.

The photograph shows a rendered two-storey building, its long axis parallel with Oxford Street, with a steeply-pitched slate-covered roof. The upper floor windows are horizontal sliding sashes, the one ground floor window that is visible is a vertically hung sash of six over six pane form with external wooden shutters. A shop front towards the north end of the building is clearly an inserted feature, while a doorway situated in approximately the centre of the Oxford street elevation may be original. A cellar light is just visible towards the southern end of the building, partially obscured by a tree in this photograph.

Comparison of the photographs with early Ordnance Survey maps indicates that the building (but not necessarily the cellar) measured *c.*13.4m long (north-west – south-east) by 6m wide (north-east – south-west). Although sub-divided into three separate dwellings by the late 19th century, this may originally have been a single house (see Discussion).

Building 3B

Building 3B was an addition to the rear (south-west) of Building 3A, at its southern end (Plate 11). The wall foundations **41** were constructed mainly from fragments of granite bonded with lime mortar, although small quantities of sandstone, slate and brick/tile were also used. Part of the south-west wall foundation had been rebuilt in brick at some stage **381**, and the north-west wall foundation was probably also replaced, although no trace of this remained. The position of the north-west wall is known, however, since the building appears on early Ordnance Survey maps. Measuring 5m north-east – south-west and 4.3m north-west – south-east the structure was almost square in plan.

Construction of this range appears to have involved fairly major alterations to Building 3A, since the north-east wall foundation of 3B was partly constructed upon cellar wall **17**, meaning that part of the south-west wall of Building 3A must have been dismantled. The evidence for repairs/alterations to Building 3A, noted previously, may, therefore, have related to this episode of building.

Building 3B was erected upon a thick layer of redeposited natural clay **16**, apparently derived from the excavation of a well **364**, which opened out inside the southern corner of the building. The construction cut for the well was a large, irregularly-shaped pit measuring 5.2m long, 3.25m wide and at least 2.2m deep, which extended beneath part of the, evidently later, Building 2B, to the south-east (Plate 12). The well itself was 5.69m deep (determined by auger) and stone lined, with an internal diameter of 1.6m. The lining consisted of roughly hewn fragments of granite, bonded with clay. The 'construction' cut may, in fact, have been an attempt at maintaining a pure

water supply by removing contaminated earth – earlier archaeological deposits – from around the well. The cut was backfilled with ‘clean’ redeposited natural clay, which contained numerous fragments of granite, presumably left over from the construction of the lining and, interestingly, over 27kg of Roman tile. The well seems to have been constructed as an integral part of Building 3B, designed to be accessible from within the building. The well mouth was finished with several large, moulded fragments of Danehills sandstone (sf329-331), reused from an earlier building, in addition to smaller pieces of granite and slate. One of the slate pieces was a reused door pivot stone (sf332). Fragments of a plaster floor surface **119** survived at the same level elsewhere within the building.

Various alterations and additions to the Building 3B structure were evident. The internal floor level was raised at some time to correspond with the level of the wall foundations. A new floor surface **15** was of beaten earth. A hole in this surface was later patched with mortar **341**. The well lining was raised accordingly, with the addition of fragments of granite, sandstone, slate and oolitic limestone, bonded with mortar **365**. The well mouth was re-finished with several large granite slabs, in addition to smaller stone fragments. A paved area **42** was laid around the well opening, using small fragments of granite, sandstone and slate.

A poorly-built foundation **340**, comprising of mortared fragments of granite and brick, presumably carried a partition wall dividing the ground floor of the building into two rooms. A brick-built hearth (no context number allocated) was inserted into the south-east wall. The rebuilding of part of the south-west, and probably also the north-west wall foundation has already been noted.

Subsidence of the ground immediately to the south-west of Building 3B, resulting from the consolidation of the backfill of the well construction cut, was countered by infilling the area with soil **567**, **568**, **725**. The origin of this infill material is uncertain, although a quantity of sheep metapodials, some with knife marks indicating skinning, in addition to other residual finds may imply that it was redeposited from a feature associated with the Period 6 hide-processing workshop.

Dating evidence

There is no direct evidence to indicate the construction date of the Building 3A cellar. That it lay on the line of ditch **1316** as projected northwards implies a post-Civil War date, however.

In addition to residual earlier material, trench **113** contained a few sherds of pottery in fabrics EA2 and MY, broadly indicating a 17th- or early 18th-century date for this feature. Stratigraphically, **113** preceded layer **16**, upon which Building 3B was constructed. Quite a bit of post-medieval pottery was recovered from this layer, although the broad date ranges of the pottery fabrics precludes the possibility of dating the construction of the building precisely. A post-1650 date is suggested by sherds of Staffordshire mottled earthenware, fabric EA3, and the ‘imitation’ mottled ware, fabric EA5. A few clay tobacco pipe stem fragments from this layer are broadly dated to the 17th or early 18th century. A comparable range of pottery and clay tobacco pipe fragments from **15** provide a similarly broad late 17th- or early 18th-century date for the reflooring of Building 3B. The repair **341** to floor **15** produced, amongst other things, a sherd of stoneware, fabric SW5, not earlier than *c.* 1670.

Building 4

A stone-built cellar, Building 4, lay partly within the excavation area, in the north-west of the site (Plate 13). This measured 10.15m north-east – south-west and at least 4.2m north-west – south-east, the north-west wall lying outside the excavation area. An internal wall, **13**, divided the cellar into two unequally-sized rooms. The cellar walls **12**, including the internal wall **13**, were

of one build, comprising fragments of granite, sandstone, slate, tile and flint nodules, laid in rough courses and bonded with clay. Larger stones were used for the wall faces and smaller fragments for the core. A thick layer of lime plaster rendering covered the internal wall faces. The walls were between 0.42 and 0.52m thick and survived to a maximum height of 1.32m.

At the south-east end of the internal wall was a low archway, 1m wide and 0.8m high. This had been infilled with small fragments of granite, bonded with mortar (Plate 13), with, on the east side, a facing of bricks laid on edge. The archway was apparently superseded by a doorway, inserted into the wall adjacent to the infilled earlier opening. This doorway was 1m wide and finished in brickwork, with a large slate slab forming the threshold.

The north-east room was floored with a mixture of waterworn granite pebbles, large slate fragments, brick and tile **220**. A thick deposit of charcoal and ash overlay this surface, which, in conjunction with sooting noted on the internal faces of the walls in both rooms, may imply that the superstructure of the building burned down. Patches of mortar overlying the natural clay in the south-west room may have been the remnants of a robbed out floor.

Building 4 appears to have been situated towards the rear of a plot fronting onto Bonnors Lane, some distance back from the frontage. In this position it is likely to have been a detached workshop or storehouse, to the rear of a principal range occupying the street frontage position. There is no direct evidence to date the construction of Building 4, that it post-dated the Phase 15 ditch section **379**, however, indicates a date not earlier than the mid 17th century.

Other features

Two other features, both pits, may be tentatively assigned to this period. Pit **715** was not excavated. Pottery collected from the surface of the feature was of a mid-19th century or later date. Since the pit was situated within the footprint of one of the Period 9 Pentonville houses, it cannot have post-dated *c.* 1862 (see below). It seems likely, therefore, that the pit was of an earlier date and the pottery was intrusive. On these grounds the pit has been attributed to this, the latest possible pre-Period 9 phase. The second pit **968** was excavated but contained no finds. It is assigned to this phase on the grounds that it cut the Phase 14 drain **1081** and was sealed by one of the phase 17 Pentonville houses.

Period 8 Discussion

Where there was evidence to suggest the date of construction of the Period 8 buildings, this was consistently within the latter part of the 17th or early part of the 18th century. This was a period of transition in constructional practices, at the vernacular level, in Leicester and the county as a whole. Brick had become an increasingly popular building material in the 16th and 17th centuries for the homes of the gentry (McWhirr 1997, 47). It was not until the last quarter of the 17th century, however, that brick was widely used for smaller domestic buildings, with the earliest surviving dated brick houses attributable to the 1680's and 1690's (*ibid.*, 49-50). The transition to brick was virtually complete by the end of the second decade of the 18th century, with the latest dated examples of timber framing in the south of the county, at Husbands Bosworth (1712), Bruntingthorpe (1716) and Swinford (1718) (Smith 1992).

The Period 8 buildings were erected during this period of transition. Unfortunately, the excavated foundations provide few clues as to the nature of the superstructures that these supported. In every case but one (Building 2A) stone footings were employed, which may have carried either timber framing or brick. In the case of Building 2A, there is some evidence to suggest a timber structure (e.g. slot **563**), which was laid directly onto the ground. This primitive constructional practice may reflect poor quality, or low status building, or simply an *ad hoc* repair

to a more substantial structure that has not survived. In the absence of more conclusive evidence it would probably be unwise to make too much of this. In the one instance where fragments of a brick superstructure did survive (Building 1), it is unclear whether this was contemporary with the Period 8 foundations, or related to the reuse of those foundations in the later Period 9 Building 6 (see below).

The photographs of Buildings 3A and 3B taken shortly before demolition in the late 1950's are also ambiguous with regard to the walling materials employed. Both structures are rendered in these illustrations, obscuring the walling material. The absence of any tell tale cracks, however, often indicative of concealed timber framing, would seem to imply that the render was applied over brick. As these buildings were some 250 years old by the time the photographs were taken, however, there is no guarantee that this was the original walling material anyway.

The former Bowling Green public house, directly opposite the excavation site on the east side of Oxford Street, is a surviving early brick building very similar in appearance to the photographs of Building 3A. Survey work undertaken in the course of alterations to the Bowling Green (in archive) demonstrated that its builders were not fully conversant with the structural capabilities, nor limitations, of brick.

Photographs exist in the LLRRO collections of the building which formerly occupied the southern corner of Oxford Street and Bonnors Lane (number 39 Oxford Street), immediately to the north of the excavation site (Plate 15; see also *TLAHS* 1957, 59). Tell-tale cracks in the plasterwork of the steeply pitched gable appear to betray the position of horizontal members in a framed timber roof truss. Given the position of this building in relation to the Period 7 Civil War ditches, it is unlikely to be any earlier in date than the mid 17th century.

Some consideration of the status and function of the Period 8 buildings may be worthwhile, although the excavated evidence is generally inconclusive. That Buildings 1 and 3A were constructed with their long axis parallel to the street could be viewed as an indication of wealth or status. Conversely, this may also be taken to reflect a lack of demand for property in the south suburb at this time. Nor is it clear whether these relatively substantial buildings were constructed to accommodate single families in comfort, or comprised a number of meaner dwellings, perhaps the work of speculative developers. The provision of a water supply accessible from within Buildings 1 and 3 (in the latter case within an additional range: 3A) possibly reflects an increasing concern for domestic comfort; or is perhaps indicative of some industrial/commercial function.

Located on the principal approach road to the town from the south, Buildings 1, 2 and 3 were well situated to exploit passing trade and may have served some commercial function, in addition to providing domestic accommodation, although there is no evidence from the excavation to corroborate this suggestion. The reasons for supposing that Building 4 was an ancillary structure, perhaps a store or warehouse, are given above.

A striking feature of the Period 8 activity is the small number of pits encountered, compared with earlier Periods. Concerns over health and hygiene standards have already been alluded to (see Period 6 Discussion), another consequence of which was the introduction of an organised refuse disposal service within the town from as early as the late 16th century; twice weekly collections were made in 1588 (RBL). The lack of pits during this phase was presumably a consequence of the removal of domestic waste to designated disposal sites elsewhere.

Period 9: Victorian and Later (Illus. 23 & 24)

Phase 17 c. 1860-1960

The survival of contemporary documentation, plans and other illustrations permit a relatively detailed consideration of the 19th and 20th century exploitation of the site, despite the fact that very little time was available to investigate the remains of this period on the ground. Primary sources consulted include various small-scale town maps of the 19th century; Ordnance Survey maps; Borough of Leicester Urban Sanitary Authority Building Register plans; the Goad insurance plans, mentioned in the introduction to Period 8; Trade Directories; Census returns; and the various photographs of the area taken prior to demolition.

To place the Period 9 remains in context it should be noted that the population of Leicester rose from about 17,000 in 1800 to 54,000 by 1845 and 120,000 by 1880. By the turn of the century there were over 200,000 people living in the town, a more than tenfold increase in 100 years (Ellis 1976, 111). This sharp rise in population resulted in considerable demand for new housing. Individual properties were bought up by speculative developers who infilled open yards and gardens with new terraces and courts, and subdivided existing housing stock. After the enclosure of the South Field, completed in 1811 following an Act of Parliament passed in 1804, there was much new building and the town rapidly expanded southwards, evidenced by a comparison of the plan published by Throsby in 1791 and the 1828 town map.

By 1860 most of the properties on the development site seem to have been in the ownership of one man: William Dudgeon.

Pentonville

In 1862 Dudgeon submitted plans to the Borough of Leicester Urban Sanitary Authority detailing the proposed construction of a new Cul de Sac, Pentonville, across the centre of the site, opening off Grange Lane (LLRRO ref. 1522D, dated 9/5/1862). The plan shows a row of two storey dwellings on either side of Pentonville, in addition to a bakehouse on the north side (see Building 5, below).

Given the existence of plans and photographs of Pentonville in the LLRRO collections and the tight 'window of opportunity' for the excavation, the decision was made not to record in detail remains associated with this development. The street surface of granite setts, sandstone paving slabs and brick wall foundations were machined away during the initial site strip. It has been possible, however, to reconstruct the precise layout of Pentonville, including its various services, from the 'modern intrusions' recorded on the excavation plans (Illus. 23).

The foundations of the houses fronting onto Pentonville **1396** were extremely shallow; the walls of houses overlying the Period 1 Roman road were built off the road surface, only cutting into it where this was necessary to maintain a level foundation. The houses on the north-west side of Pentonville measured approximately 5.2m long x 3.5m wide, those on the south-east side were slightly larger, measuring 6m x 3.5m. There were two rooms per storey, with the front room on each floor heated. The positioning of staircases is not shown on the development plan. Photographs of Pentonville (Plate 16) show that the brickwork of the frontage elevations was laid in Flemish bond, the cross walls were in stretcher bond, and presumably, therefore, only a brick's width thick. Roofs were covered in Welsh slate and windows were six over six pane sashes. Each house had a boot scraper set into the wall by the front door. Each row of houses had a communal block of three toilets in a shared rear yard.

ILLUSTRATION 23

Building 5 - the bakehouse

On the north-west side of Pentonville, at the south-west end of the row was a building identified on the plan deposited with the Urban Sanitary Authority as a bakery. This was the only part of the Pentonville development recorded in detail during the excavation, mainly because the structure included some reused earlier fabric. The development plan shows three parts to the building: on the Pentonville frontage the bakehouse, behind this the oven, and beyond the oven the baker's coalhouse. No trace of the coalhouse was found and this is likely to have been an insubstantial lean-to structure. The walls of the bakehouse **912** were of mortared brickwork and survived to a maximum height of three courses. In contrast, the remains of the oven walls **911** were stone-built, comprising of two courses of mortared Danehills sandstone blocks, laid on a bed of large, flat Swithland slate fragments **910**. On the development plan of 1862 the oven walls are shown to be about twice the thickness of the bakehouse walls, apparently implying that the stone was specifically sourced for this purpose. The sandstone blocks were mainly large, squared pieces and several of the fragments were reused moulded blocks (sf.232-234, 236-237). Located almost centrally within the oven was a possible timber slot **401**. How this feature functioned in relation to the oven is unclear; its position, however, implies that it was associated with this structure (although the only find it produced was a sherd of, presumably residual, medieval pottery). The interior of both bakehouse and oven were subsequently paved in brick **933** (not illustrated), sealing **401**. It is unclear precisely when the bakery ceased to function as such, but an insurance plan shows that by the middle of the 20th century the bakehouse was in use as a garage and the oven as a warehouse for leather goods.

Building 6

The fragmentary remains of one other building, constructed around the middle of the 19th century, was investigated. A photograph of *c.*1955 in the LLRRO collections (Plate 14) shows a row of four three-storey houses, constructed in one build (Building 6), fronting onto Oxford Street. These occupied the site of the former Building 1 and the front part of Building 2 (this latter just outside the excavation area). Although the superstructure of Building 1 had evidently been demolished prior to the erection of Building 6, the stone foundations of the earlier structure were reused, in part, in the later building. As stated earlier, it is not clear whether the fragments of brickwork **1286**, **1293**, **1294** & **1307** carried on the Building 1 foundations were a remnant of the superstructure of that building, or of this later Building 6.

A brick-built cellar **1288** beneath one of the Building 6 houses (the second from the north, postal address: 45 Oxford Street) lay partly within the excavation area. Parts of the south-east and south-west walls of this were recorded in plan. A portion of the backfill was removed exposing the first two steps of a brick staircase giving access to the cellar. Immediately to the south-east of the cellar was a brick-built vaulted drain **1287**, the line of which is shown on an Urban Sanitary Authority plan of 1863 with the annotation 'drain as now laid', apparently implying that this had been a recent construction.

The two south-eastern Building 6 houses (numbers 47 & 49 Oxford Street), neither of which was cellared, had brick floors **1285**. A Victorian silver Sixpence dated 1858, from the levelling layer of sand **1284** beneath the floor of number 49, may be taken to indicate a construction date after the middle of the 19th century for this row of houses. The Building 6 houses were certainly in existence by 1862, since they are shown in outline on the Pentonville development plan of that year. It seems likely that these houses were also built by William Dudgeon, late in the 1850's or early in the 1860's. A search of the Urban Sanitary Authority records failed to locate a plan for this development; the plan may exist, but, due to the way in which the records were originally indexed, it is not easy to trace plans predating 1863.

Wells

The Urban Sanitary Authority plan of the Pentonville development shows the location of six wells on the site, three of which **1398**, **1400** & **1401** lay within the excavation area. These were lined with curved bricks and had an internal diameter of *c.* 1.2m, all had been infilled and none was excavated. Well **1400** was cut through the backfill (2) of the Period 8, Building 4 cellar.

Soft water storage tanks

Four rectangular brick-lined and vaulted tanks were located on the site. These varied in size and depth, but all appear to have functioned as soft water storage tanks.

Cesspit

A rectangular stone-lined cesspit or soakaway **51** was located beneath a toilet block at the north-east end of the south-eastern row of Pentonville houses. This was linked via a feed pipe **48** to a roughly circular pit **121**, which was located directly below the privy.

Services

Various service trenches, including sewers, water, gas and electricity were located on the site. The arrangement of these is recorded on an archive plan.

The Period 8 Buildings

Building 1 seems to have been demolished to make way for Building 6, possibly around *c.* 1860, but certainly before 1862 (see above). The north-eastern (front) half of Building 2A appears to have been demolished at the same time and for the same reason. The south-western half of Building 2A seems to have remained standing. This need not have posed any major structural problems, particularly if the building was of timber-framed construction. A building in this position was described as 'old' on an Urban Sanitary Authority plan of 1863. Range 2B was apparently a separate dwelling which acquired the postal address 15 Pentonville in the late 19th or early 20th century. The single storey Building 2C range was in use as a garage or store shortly before demolition in *c.* 1957 (Plate 16).

Building 3A stood until *c.* 1960, when it was demolished. The first edition Ordnance Survey map of 1887 shows that by the last quarter of the 19th century this was divided into three separate dwellings, subsequently numbered 39½, 41 and 41½ Oxford Street (Illus. 24). Slightly earlier, the Pentonville development plan of 1862 shows the same building as just two dwellings, with what later became numbers 41 and 41½ as one holding. It seems likely that Building 3A was originally constructed as a single dwelling and may have remained as such into the 19th century, only being sub-divided when William Dudgeon acquired the property around the middle of that century. The use of half numbers in the postal address system appears to reflect this process of sub-division.

Building 3B survived until *c.* 1957 and appears on photographs of about that date as a rendered two-storey structure with a hipped slate roof. Although the walling material is masked by render, the absence of any tell-tale cracks, which might suggest timber framing beneath, may indicate that the walls were of brick. By the 1860's Building 3B had become a self-contained dwelling, to which the postal address 14 Pentonville was subsequently applied. The well **364** was furnished with a pump at some stage, mounted on the external face of the south-west wall of the building. The pump appears to have been covered by a timber structure, absent on the 1862 Pentonville development plan but extant by the time of the 1887 first edition Ordnance Survey. Constructed against the south-west side of Building 3B this measured 4.6m long by 2m wide. Three shallow post holes **566**, **721** & **724** and a fourth, uncontexted post setting appeared to represent the remains of this structure. It was demolished before 1952, indicated by its absence on the Ordnance Survey map of that year (Illus. 24). At some stage the well was infilled with clay **257**.

ILLUSTRATION 24

The Building 4 cellars were backfilled with rubble (2), which was removed using a JCB at the start of the excavation. The backfill contained a considerable quantity of pottery, only a small proportion of which was retained, this amounting to over 200 sherds weighing almost 9.5kg and including a number of complete or near complete vessels. This group included pottery dateable to not earlier than *c.* 1850 (D. Sawday, pers. comm.). The stratigraphic sequence indicates that Building 4 had been demolished prior to *c.* 1862, since well **1400**, associated with the Pentonville development (see above) was cut through the cellar backfill. It is possible, therefore, to suggest a relatively precise date range for the demolition of Building 4 of between about 1850 and 1862.

It is tempting to link Building 4 with one Samuel Wright, a dealer in china and glass (and possibly earthenware at some stage) who operated from premises in Bonnors Lane in the 1840's and early 1850's. From 1854 Wright's business is no longer listed in commercial directories, presumably indicating that it had ceased trading. This ties in well with the demolition date of Building 4 and may account for the quantities of ceramics found therein.

Buildings on the Bonnors Lane frontage

All of the buildings occupying the street frontage on the south side of the Bonnors Lane lay outside the excavation area (Illus. 24). Photographs taken shortly before demolition (Plate 15) show a series of two and three storey buildings, most apparently of late 18th or 19th century date. Only the shop on the corner of Bonnors Lane and Oxford Street appears to be earlier, probably dating to the late 17th or early 18th century (see above).

The Alderman Inn

A public house, The Alderman Inn, was located in the unexcavated southern corner of the site, fronting onto Grange Lane. This was probably constructed in the late 18th or early 19th century judging by photographs in the LLRRO collections.

Period 9 Discussion

The development of the Bonnors Lane site in the second half of the 19th century seems to have followed a fairly typical pattern in response to increasing demand for new housing. Although demolished as slum dwellings in the late 1950's, William Dudgeon's Pentonville development was certainly not the worst sort of housing put up in Leicester in the mid 19th century. This development complied with the bye-law regulations of 1859 governing the construction of new housing, as defined by the Leicester Board of Health following the Public Health Act of 1858 (Elliot 1979, 106). Indeed, the Leicester Board of Health enforced its building regulations more effectively than many other English towns and Ellis states that, for the most part, Leicester's builders not only met with but exceeded the minimum standards laid down by the Board (*ibid.*, 107).

Existing housing stock was a different matter, however, since this was not subject to the same controls. The sub-division of Building 3 provides a good case in point. By the time of the first edition Ordnance Survey of 1887 the frontage range (Building 3A) had been divided into three separate dwellings. The rear range (Building 3B), furnished with a fireplace (and presumably a staircase), constituted another dwelling, which subsequently acquired the postal address 14 Pentonville. With an internal floor area of approximately 18.8 square metres this was actually slightly larger than the new houses on the north side of Pentonville, each of which occupied an area of some 18.2 square metres. Somewhat less salubrious, however, was the adjacent property: 15 Pentonville. Carved out of the Period 8 Building 2, this measured just 5m by 3m externally and would, therefore, have had an internal floor area of less than 15 square metres. All external openings (presumably a single window at ground and first floor levels and a door) must have been in the (narrow) southern elevation, since all other walls were party walls. This does not

appear as a separate dwelling on the first edition OS map but is shown as such on later editions (Illus. 24), indicating that the sub-division of housing continued at least up until the end of the 19th century. The existence of a similarly small dwelling on the north side of Bonnors Lane, opposite the excavation site, (measuring 4.5m x 3.5m externally on the first edition OS map, internal floor area <15.75 square metres), again with only a single non-party wall, implies that such mean dwellings were not especially uncommon.

At the same time as the Bonnors Lane excavation was undertaken, Leicester City Council's Living History Unit invited former residents to share their recollections of the area as it used to be (Living History Newsletter No. 4, Spring 1994). Their conversations were recorded onto audio tape and transcripts are included in the excavation archive. These add an extra dimension to the archaeological study of the site. Recurrent themes include poor living conditions, irregular employment and a certain amount of petty lawlessness. A strong sense of community is a common thread throughout, however.

Post-1960

After *c.* 1960 only the Alderman Inn remained; this was eventually demolished in 1979 and thereafter the site was used as a car park. This seems to have involved some terracing of the area. The latest features identified in the course of the excavation were successive car park surfaces and the steel and concrete foundations of advertising hoardings erected along the Oxford Street frontage.

Plates 1 & 2

Plates 3 & 4

Plates 5 & 6

Plates 7 & 8

Plate 9

Plate 10

Plates 11 & 12

Plate 13

Plates 14 & 15

Plate 16

3. Discussion

As mentioned in the introduction, four excavations, in addition to that at Bonnors Lane, were undertaken in this area of Leicester's southern suburb between 1993 and 1997. The results of these other investigations are briefly summarised below.

Summary of other sites in the vicinity: 1993-1997

At the same time as the Bonnors Lane excavation, a site on the south side of Newarke Street was excavated by LAU (Cooper, 1996). This produced evidence of early Roman (late 1st – mid 2nd century AD) settlement, superseded by a system of repeatedly recut ditches, possibly demarcating property or field boundaries. By the late 4th century the area was in use as a burial ground, part of an extensive extra-mural cemetery, and 39 inhumations were uncovered. Evidence of medieval activity was limited. Following an episode of quarrying in the 15th – 16th century, a series of features interpreted as horticultural bedding trenches was excavated. A range of pits and post holes suggested sporadic activity throughout the 16th, 17th and 18th centuries.

ULAS carried out excavations at three adjacent sites on the eastern side of Oxford Street, opposite the Bonnors Lane site, between 1996 and 1997.

Redevelopment of the 18th century, Grade II listed, Bowling Green public house in 1996 led to a small scale excavation and limited programme of building recording (Higgins 1997 and in archive). Few remains of Roman date were encountered; of note, however, was a ditch aligned roughly east-west, forming part of a rectilinear system of ditches, elements of which have been recorded at all of the sites excavated in the southern suburb. A handful of pits and a number of other features, including possible structural remains, were of 12th – 14th century date. The main episode of activity, in the 15th/16th century, included a building within which three 'keyhole' shaped hearths or ovens were situated. A stone-built cellar was constructed sometime after the middle of the 17th century; the superstructure of this building was apparently replaced by the present brick structure, on a slightly different alignment to the cellar, early in the 18th century. A distinctive ceramic assemblage dateable to *c.* 1770-90, recovered from two pits on the site, implies that the building was in use as an inn at least a century before the earliest surviving documentary reference of 1815 identified it as such.

An excavation on the southern corner of York Road and Oxford Street was undertaken early in 1997, prior to the construction of new student accommodation on the site (Gossip 1999a). A series of early Roman ditches were mainly orientated at right angles, approximately, to the Tripontium Road. In the late 3rd – 4th centuries a small number of inhumation burials were deposited on the site. One of these burials, although in a human-sized grave, contained only the skeleton of a small dog. The next phase of activity, in the 12th – 13th century, included the remains of a building fronting onto the east side of Oxford Street and a range of pits to the rear of this. The finds and environmental assemblages recovered from these pits suggested domestic occupation, with little or no evidence of craft/industrial activity. Further pits, ranging in date from the 14th to the 16th centuries implied continued domestic activity throughout the medieval and early post-medieval periods. A substantial 17th century ditch, comparable with those encountered on the Bonnors Lane site, evidently formed part of the Civil War period town defences. Subsequently, a range of 18th and 19th century buildings were erected on the site, one of which was constructed over a stone-built cellar, possibly of late 17th or early 18th century date. All of the buildings on the site were demolished in 1996 in preparation for the new development.

The construction of more student accommodation, on the site of the former Fox's factory on the east side of Oxford Street, was preceded by archaeological excavation in the latter half of 1997 (Gossip 1999b). Between the 2nd and 4th centuries AD a series of ditches, broadly similar in alignment to the Roman ditches located at the Bonnors Lane and York Road sites, were excavated. A post-built structure was tentatively attributed to the Roman period, although other evidence of settlement, in the form of pits, for example, was generally lacking. In the late 3rd - 4th century a number of inhumation burials were laid down on the site, the alignment of which respected the alignment of the earlier ditches. Eight burials were recognised, although additional human remains probably derived from further burials disturbed by later activity. Several of the burials included grave goods: two contained hob-nailed footwear and one a complete, miniature ceramic vessel. One burial contained the skull of a second individual, buried below the feet of the 'whole' occupant. The grave of a young child apparently lay within a small enclosure or mortuary structure. An early Anglo-Saxon sunken featured building probably formed part of the same settlement as the Bonnors Lane SFB, given the close proximity of the two structures. A typical range of medieval 'back yard' features was found, ranging in date from the 12th/13th to the 15th century. Of particular note, however, was a 12th/13th century pit or well, the waterlogged fills of which contained offcuts of leather, possibly derived from the manufacture of shoes, and seeds of weld, a plant used to manufacture dye. A small number of pits of 16th-18th century date were also found. In the early part of the 20th century the Fox's Confectionery factory replaced a number of smaller commercial concerns.

The South Suburb

Combining the evidence from the Bonnors Lane site with the results of these other excavations it is possible to suggest a broad development sequence for this part of the southern extra-mural area.

Prehistoric

All of the sites produced indirect evidence of prehistoric activity, in the form of residual finds of worked lithics. Sherds of late Neolithic pottery from the Bowling Green site, although again in a residual context, arguably provide more tangible evidence of prehistoric activity in the immediate vicinity.

Roman

The Tripontium road seems to have been laid out early in the second century, at about the same time that the town boundary, or *pomerium*, and the street grid were formally defined; presumably when Leicester was created as a *caput civitas* (Buckley and Lucas 1987, 49; Clay and Pollard 1994, 47). A series of rectilinear ditched enclosures was laid out either side of the Tripontium road at the same time, or soon afterwards. These enclosed areas may have been fields, or alternatively, a series of individual property holdings. Similar roadside zones adjacent to the Fosse Way, on the west side of Leicester, may be inferred from the excavations at Great Holme Street in 1975 (Lucas forthcoming); an interpretation reinforced by the recent confirmation of the supposed route of the Fosse Way as it entered the town (Higgins 1998). Comparable enclosures have been recorded outside other Roman towns, for example, alongside the roads approaching Ilchester from the south and west (Leach 1982; Cleary 1987, 94-6).

Evidence of activity within these southern roadside enclosures in the early Roman period includes the possible structure on the west side of the Tripontium road at Bonnors Lane (Period 1, Phase 2) and the structural remains and domestic pits recorded at Newarke Street (Cooper 1996, Phase 1). At both sites this activity appears to have been relatively short lived, however, not continuing beyond the middle of the second century. An evaluation on the north side of Sanvey Gate, to the north of the town, in 1992 revealed comparable evidence of early Roman settlement

which again did not continue beyond the middle of the second century (Finn 1993, 93-5). Irrespective of the precise location and form of the *pomerium* (Buckley and Lucas 1987, 49), this created a clear distinction between *inside* and *outside* of the town, which may have led to the relocation of some or all of the outlying households to areas within the new town boundary. This might account for the apparent cessation of domestic activity witnessed at Newarke Street and possibly also Bonners Lane, to the south of the town, and at Sanvey Gate to the north, by the middle of the second century (Cooper 1996, 12). Construction of the town defences later in the second century (Buckley and Lucas 1997, 54) would only have served to reinforce this distinction.

The rectilinear enclosures persisted, however, evidenced by the repeated recutting of ditches at the Newarke Street and York Road sites into the late second and third centuries. Only at the Bonners Lane site, immediately adjacent to the Tripontium Road, was there evidence of any activity other than maintenance of boundary features in the late second and third centuries (except, perhaps for the structural features tentatively ascribed a Roman date at Oxford Street (Gossip 1999b, 10)). In contrast to the evidence from the other sites, the late Roman activity at Bonners Lane was accompanied by a cessation in maintenance of the plot boundary ditches, and also of the roadside ditches. The two plots on the eastern side of the road may have been amalgamated into a single larger holding at this time, suggested by the fact that the earlier boundary separating the two was no longer maintained or respected.

The evidence permits no conclusive comment on whether there was a complete hiatus in activity at the Bonners Lane site between Periods 1 and 2, in the two or three decades after the middle of the second century. The lack of continuity between the two periods, in terms of the location and character of the excavated remains, is notable, however, from which it might be inferred that the site was abandoned for a time, presumably for the reasons discussed above.

The evidence for a range of small scale industrial/craft activities, including iron working, grain processing and, possibly, glue manufacture at Bonners Lane in the later Roman period is entirely consistent with Cleary's assertion that:

'the economic base of the extra-mural areas [of Romano-British towns] was manufacture and trade' (Cleary 1987, 197).

The precise nature of the activity encountered at the Bonners Lane site at this time is debatable. Given the current absence of evidence for similar activity closer to the town it might be unwise to automatically suppose that this was one element of a ribbon development strung out along the southern approach road, although this seems the most likely deduction. The location and development sequence of the Norfolk Street Villa, situated little more than 600m west of Roman Leicester (Lucas 1980-81), demonstrates that the relationship between town and hinterland was not always a straightforward one.

Certainly by the fourth century, and possibly earlier, a clear division in land use of the area to the south of the town was apparent. Adjacent to the road there was evidence of domestic activity, along with craft/industrial processing, whilst to the east and north-east burial grounds were established. Within this southern cemetery there is evidence, based on differential burial practises, for the segregation and zoning of different religious groups. Cooper (1996) has argued for the existence of a Christian cemetery of late 4th century date in the Newarke Street area, based on a consistent rite involving supine burial on a west-east axis in stone-lined graves, often in nailed timber coffins, and lacking grave goods. But a short distance to the south, however, at the York Road and Oxford Street sites, the inclusion of grave goods within burials of comparable date to those at Newarke Street, the burial of animals and an example of decapitation, suggest a

pagan rite (Gossip 1999a & b).

It is possible that the late Roman burials encountered on the Oxford Street excavation site were directly associated with the Period 2 settlement remains at Bonnors Lane. The same combination of burials towards the rear of ditch-defined plots with domestic activity along the street frontage has been recorded at a number of other Roman roadside settlements, including suburban sites such as this (Smith 1987, 115-9). It is notable that the Oxford Street burials appeared to cluster along the plot boundary ditches and were aligned with, or at right angles to these, implying a degree of association. A similar arrangement is apparent at the York Road site, although the number of burials in this case is small. The pottery and coins recovered from the Period 2 Phase 6 pits at Bonnors Lane indicate continued activity, in some form, at least into the third quarter of the 4th century, although by this time the timber building fronting onto the eastern side of the Tripontium road had been demolished.

No trace was found of the Raw Dykes, a supposed Roman aqueduct, which survives as an earthwork 1.3km to the south of the Bonnors Lane site (Kenyon 1948, 40-1).

Anglo-Saxon

It seems certain that the Tripontium road itself survived beyond the end of the Roman period and was very likely a recognisable landscape feature when the Period 3 Phase 7 Anglo-Saxon building was constructed adjacent to it on the Bonnors Lane site, probably in the late 5th or 6th century. The road may have provided a focus for the settlement of which this building was part, although the building was aligned not with the road but with the cardinal points of the compass. There is no clear evidence to suggest any direct continuity of occupation from the late Roman into the early Anglo-Saxon period. It is notable, however, that the Bonnors Lane SFB was erected on the same site as an earlier Roman building.

The truncated remains of the Bonnors Lane and Oxford Street buildings are, thus far, the only structures of early Anglo-Saxon date found in Leicester. The close proximity of the two buildings suggests that they formed part of the same settlement site, although nothing more is known of the size and status of this settlement. Nor is the relationship between this extra-mural site and contemporary settlement within the town, evidenced by the recovery of residual early Anglo-Saxon artefacts from a number of urban excavations, apparent. Courtney (1998, 110-114) considered the question of whether the intra-mural settlement of early Anglo-Saxon Leicester constituted a proto-urban centre from which the medieval town developed and was, therefore, intrinsically different in character to the presumably agriculturally driven settlements located outside the town, such as that at Bonnors Lane/Oxford Street. He concluded that Leicester's status as an urban centre was more likely a later development, although ultimately the evidence is lacking and the point remains unresolved. It is notable therefore, that Blinkhorn (see the *Anglo-Saxon Pottery* below) cites cultural identity as a possible explanation of the differences in fabric between the Anglo-Saxon pottery from Bonnors Lane and that from the St. Peters Lane and Little Lane (Shires) excavations within the town.

Whilst our knowledge of the exploitation of the area to the south of the town in the early Anglo-Saxon period may be scant, it nevertheless far exceeds the evidence we have for middle and late Saxon activity, which is almost entirely lacking. With the exception of a few residual pottery sherds of 10th- or 11th-century date there is no evidence of activity before the 12th century from any of the excavations under consideration. It is to this elusive period, however, that we may attribute the reorganisation of land-holding patterns and agricultural practices which saw the establishment of the town fields. It is suggested that, at the Bonnors Lane site, the Period 4 Phase 8 boundary ditches marked the division between the western part of the South Field and the adjacent route-way leading towards the south gate of the town.

Why the line of this southern approach road should differ from its Roman precursor is unclear. Perhaps the line of the Tripontium Road became gradually blurred, through lack of maintenance, and simply ‘wandered’ a little before finally becoming fossilised in its medieval (and modern, more or less) form when its frontages were built up. An alternative, but perhaps less likely explanation, is the possibility that this realignment was associated with the establishment, in the late Saxon period, of a planned street system within the town which took little or no account of its Roman precursor, as mooted by Buckley and Lucas (1987, 56). At London the existence of a street system of pre-Conquest date, unrelated to the Roman street grid, has been demonstrated by excavation (Horsman, Milne and Milne 1988, 110-116).

Medieval

In contrast to the preceding centuries, there is clear evidence of settlement of 12th/13th century date, in the form of buildings along both sides of Oxford Street, with a range of pits and wells to the rear of these. The excavated evidence is validated by surviving, contemporary accounts (Courtney 1998, 124). It is suggested that the earliest structures at Bonners Lane, of primitive, earth-fast timber construction, may have been squatter dwellings, which encroached upon the margins of the road approaching the south gate of the town. These were soon replaced by more substantial stone-founded structures, however, similar to the 12th/13th century building unearthed at York Road.

Offcuts of leather and seeds of dyer’s weld, recovered from the waterlogged fills of a 12th/13th century well at the Oxford Street site, suggest that leather production and dyeing were already established industries in the area by this date. The apparent lack of evidence for industrial/craft activities from the other south suburb sites at this time may be somewhat misleading, since the survival of the Oxford Street evidence seems to have been a consequence of specific, favourable environmental conditions.

A common feature of the medieval period at all of the sites under discussion was a range of pits and wells, typically located in plots to the rear of street frontage buildings. The distinction between pits and wells at the Bonners Lane site was readily apparent, the latter being significantly deeper than the former. Except where some specific non-domestic function could be suggested, based on form or filling, the medieval (and post-medieval) pits were typically interpreted as either cess- or rubbish pits. Cesspits were identified by the presence of latrine waste within their fills, indicated by mineralised seeds, chewed fish bones and the ova of parasites of the human digestive tract. The identification of the remaining pits as domestic rubbish pits may not be an entirely adequate explanation of these features, however. The volume of domestic refuse generated by a medieval household is unlikely to have been great. In addition, it is probable that much of this waste, particularly the organic material, would not simply have been buried in pits. Vegetable matter may have been composted or fed to pigs and any meat or carcass remains fed to dogs or pigs. Whilst the concept of the rubbish pit *per se* is not challenged here, it is suggested that some of the pits conveniently identified as such may, in fact, have served other functions. For example, some pits may have been quarries, providing clay for the construction, repair or re-flooring of buildings, perhaps. The excavation of small, regularly shaped and relatively deep quarries would have minimised the impact of the extraction upon a working garden, in which crop production and small-scale animal husbandry are also likely to have been practised. It is not inconceivable that quarry pits were specifically intended to function subsequently as rubbish disposal pits, representing an economy in effort. The identification of cesspits may not be as straightforward as it might initially appear, either. Since these were intended to be emptied, pits containing little or no evidence of latrine waste, may have been well cleaned cesspits, which, having ceased to function as such, were used as for the disposal of rubbish. At Bonners Lane an attempt was made to determine the function of pits based on their

shape, depth and absence/presence of a lining, in addition to the nature of their fills. Although the results were not totally conclusive some trends were identified, such as the propensity of square or rectangular pits to be lined. As cesspits were designed to be emptied a square shape and lining may have facilitated this process. The lining of cesspits in order to prevent contamination of the surrounding soil is attested in contemporary documentary accounts (Platt and Coleman-Smith 1975). No firm conclusions can be drawn at this stage, although this avenue of research may be worth pursuing at other medieval urban and suburban sites in the future.

It is probable that Leicester's suburban population reached its peak fairly early on in the medieval period, as was the case elsewhere (Keene 1975), and is unlikely to have increased after the early 14th century (Courtney 1993, 7). Certainly the population of Leicester was greater in 1377 than in 1563, with suburban dwellers making up a significant proportion of the total (Hoskins 1963, 40).

It may be overly convenient, however, to equate the lesser number of 14th and 15th century features, including structural remains and pits, with a decline in population at this time. Stone-founded buildings, like Structures 4 and 6 at Bonnors Lane and the Phase 3 building at York Road, would have been more durable than structures of earth-fast timber construction and would therefore have been replaced or rebuilt less often.

The evidence from medieval towns elsewhere indicates that other factors brought about a decline in pit digging at this time, which is recognised as a national phenomenon (Platt 1976, 72). Concerns over health and hygiene standards resulted in the implementation of ever-tighter controls on cesspit digging. At Southampton, for example, it was ordered that unlined cesspits should be positioned further away from neighbouring properties than lined ones (Platt and Coleman-Smith 1975). Given the ever-present threat of Plague from the mid-14th century onwards it seems entirely possible that, at Bonnors Lane and elsewhere, domestic refuse was carted away for disposal rather than being buried on site. This would account for the fewer number of pits of this date revealed by excavation.

The question of the likely impact upon the population of the southern suburb of the establishment of Trinity Hospital and the subsequent development of the Newarke Precinct and Grange has already been raised (Period 5 Discussion, above). The excavation results provide few clues to assist in answering this question, however. Following the Dissolution, the Newarke developed into a wealthy residential area, attracting many of the town's elite (Courtney and Courtney 1992, 50). Exemption from borough rates was no doubt a factor in this (a status it retained until 1835, incidentally). Whatever inequalities may previously have existed, in terms of wealth and social standing, between the south suburb population and those living within the Newarke precinct, it might be suggested that these divisions are unlikely to have narrowed significantly in the post-Dissolution period.

Post-medieval

Despite the earlier argument that a fall in the number of buildings erected and pits excavated in the later medieval period, could not be directly associated with a decline in population, the marked change in character of the remains encountered at Bonnors Lane from the latter half of the 15th century may be taken to indicate a newly-established industry, occupying, perhaps, a previously-abandoned site. It is clear from the disposition of specialised features and deposits that much, if not all of the excavated area was given over to the processing and finishing of animal hides in the 15th/16th centuries; relatively few features of this date appear to be purely domestic in character.

At the same time, on the opposite side of Oxford Street, a series of distinctive hearths were

constructed within a building behind the street frontage (Bowling Green site). These were clearly not domestic hearths, although the nature of the activity to which they relate is not readily apparent. A range of similar, if slightly larger, hearths, of 13th-century date, excavated at Swan Lane, Upper Thames Street, London, close to the waterfront, were interpreted as the remains of a dyehouse (Schofield 1994, 218).

At Newarke Street a series of slightly later, 16th- or 17th-century, features were interpreted as horticultural bedding trenches (Cooper 1996, 32), possibly on the scale of a commercial market garden given their number and regular arrangement. No evidence of industrial/commercial activity was recorded at either the Oxford Street or York Road sites at this time, however.

Whilst the excavated remains, from the Bonners Lane and Bowling Green sites at least, might be taken to suggest a thriving industrial area, contemporary documents paint a somewhat different picture of the southern suburb at this time. The 1524 and 1544 Lay Subsidies indicate that this was the poorest area of Leicester in the 16th century (Hoskins 1962, 92 and Charman 1951, 27). It is probably no coincidence, therefore, that when a century later the town was fortified during the English Civil War, the wealthier north and east suburbs were enclosed within the defensive circuit but the south suburb was largely sacrificed (Courtney and Courtney 1992). Cynically, it might be suggested that the Civil War provided a convenient excuse to clear the run down industrial area bordering the exclusive residential district which the Newarke precinct had become by that time.

Whilst the preceding statement may be no more than speculation, it is clear that factors other than military planning were influential in the location and arrangement of the town's Civil War defences (Courtney and Courtney 1992). One contemporary account indicates that certain residents of the Newarke were quite prepared to place their own interests over and above the safety of the town. The Courtneys (1992, 56) recount that a Mr. Wadland, clerk to the Committee of Militia, refused to have his land adjacent to the south wall of the Newarke 'cut up' to erect a defensive earthwork.

The south suburb excavations have produced no clear evidence of demolition deposits associated with the Civil War, as found at Gloucester, for example (Atkin and Loughlin 1993). At Bonners Lane it would appear that the hide-processing workshop, which occupied much of the site, had already ceased to function prior to this date, possibly as early as *c.* 1600. The impact of the erection of the Civil War defences may, therefore, have been relatively slight in this case, although it is clear from contemporary accounts that the southern extra mural area suffered the greatest degree of destruction in readying the town for war.

Despite the swift dismantling of the Civil War defences following the end of the conflict, reconstruction of the southern suburb seems to have been a protracted and piecemeal process. The buildings raised over the infilled Civil War ditch along the Oxford Street frontage at the Bonners Lane site, for example, may not have been constructed until half a century after the earlier earthwork was levelled.

The Stukeley and Roberts maps provide a clear indication of the extent of the southern suburb in the first half of the 18th century. By this time the western side of Oxford Street was continuously fronted by buildings, from the south gate to just beyond the site of the Bonners Lane excavation. The Bonners Lane/Mill Lane and Grange Lane frontages were also densely occupied. In contrast, there were far fewer buildings along the eastern side of Oxford Street. Both of these maps show a building standing opposite the end of Bonners Lane, this is located slightly too far north to be identified with certainty as the structure which later became the Bowling Green public house, although this seems the most likely candidate. Alternatively, this building may occupy the site of

the later 36-38 Oxford Street; although the superstructure of the building demolished in 1993 was probably constructed in the years between 1792 and 1828 (Gossip 1999a, 38), this was erected over a stone-built cellar, which may well have been earlier in date.

It is apparent from the map published by Throsby in 1792 that the area changed little throughout the course of the 18th century. A comparison of this map with the town map of 1828, however, illustrates the extent of new building in the area to the east of Oxford Street following the enclosure of the South Field. The area between Oxford Street and the river to the west saw little change during this period, although by the time of the 1887 Ordnance Survey a network of new streets had developed to the west of Oxford Street, lined with a mixture of residential and commercial/industrial buildings.

Trade directories of the 19th and early 20th centuries provide information on the range of businesses operating in the area at that time. In the immediate vicinity, for example, were the Fox's confectionery factory (home of the Glacier Mint) on Oxford Street, the mid 19th century Fairfax Mill on Mill Lane and a large boot and shoe factory on the north corner of Bonnors Lane. Smaller businesses included, in addition to a variety of more mundane concerns, a leech vendor and a watercress dealer at 42 and 48 Oxford Street, respectively.

The post-war slum clearance drive swept away almost all of the pre-19th century buildings in this area. Thanks to the efforts of John Daniell we at least have a visual record of some of the buildings that were lost, including, for example, the late 17th/early 18th century houses along Oxford Street, the remains of which were investigated in the course of the Bonnors Lane excavation. More recently, the late Georgian house on the corner of York Road and Oxford Street has also been lost, as have a number of significant 19th and early 20th century industrial buildings. These include the Fox's confectionery factory (commemorated by the City Council with a blue plaque almost before the dust had settled on the demolition debris) and the mid 19th century former Fairfax Mill. At the time of writing the Ivy Thread Mill on Lower Brown Street had just been demolished.

In conclusion, the last decade or so has seen an increased emphasis on the archaeological investigation of the extra-mural areas of Leicester. The result has been the recovery of significant new information on the character of these suburban areas, and in particular the area to the south of the town. The nature of PPG16 has meant less pre-selection of sites for investigation, such that in addition to high status, monastic and cemetery sites, lower status domestic and industrial areas have also been examined. Sufficient information has been gleaned from the fieldwork undertaken between 1993 and 1997 to sketch out a basic model for the development of this part of the southern extra-mural area (above). A number of more recent investigations have provided evidence to support some of the earlier assumptions, as well as suggesting new avenues of enquiry (e.g. Taylor 2000; Finn 2002a & b).

4. The Finds

4.1 Flint (Table 2)

Lynden Cooper

A total of 44 pieces of flint was recovered in the course of the excavation; four of these were natural pieces and have been discarded. All of the flint, except sf335 (1386), was residual in Roman or later features. The raw material used was invariably a brown translucent flint, typical of drift contexts. None of the pieces was chronologically distinctive, although on technological grounds it would seem that most of the material is Neolithic or Bronze Age in date. The assemblage is catalogued in Table 2, below.

Table 2. The Flint

Small find no.	Context	Description
11	5	Scraper
12	1	Chunk
13	1	Blade fragment
14	5	Notched flake
15	4	Scraper
50	64	Retouched blade
54	1	Flake
55	1	Blade fragment
69	211	Flake
70	240	Scraper
71	1	Core
76	1	Scraper
90	1	Core
97	-	Core, very small
110	347	Natural piece (discarded)
112	291	Flake
113	297	Core, keeled
118	24	Core, very small
119	24	Core, keeled and hammerstone
129	16	Flake
145	1	Core (very small)
146	1	Flake
165	269	Core, multi-platform
166	411	Retouched flake (straight, scraper-like)
168	441	Natural piece (discarded)
170	474	Tested nodule
184	465	Flake
192	748	Natural piece (discarded)
227	859	Retouched flake
257	1088	Retouched flake
263	1163	Flake fragment
279	1338	Blade
280	1121	Flake
305	986	Natural piece (discarded)
308	1115	Retouched flake
310	210	Retouched flake
313	1119	Flake
335	1386	Blade
336	1192	Blade fragment
344	174	Bladelet
374	1088	Flake
376	973	Flake
377	32	Flake
378	252	Flake fragment

4.2 Roman Pottery

Patrick Marsden

with contributions by Richard Pollard, Kay Hartley, Brenda M. Dickinson and Mark Hassall

A total of 1,539 sherds of Roman pottery, weighing 32,593 kg, was recovered from Roman contexts. 2,051 sherds, weighing 29,309 kg, were found in unstratified and post-Roman contexts.

Table 3. Roman Pottery: Percentage of Total Sherd Count and Weight by Phase

Phase	1	2	3	4	5	6	P-R/US
% Count	0	3.4	29.5	2.4	4.3	3.3	57.1
% Weight	0	3.1	35.1	3.5	6.1	4.9	47.3

Key - P-R: Post-Roman

US: Unstratified

Table 4. Roman Pottery Phase Totals (Sherd Count and Weight) Phases 2-6 = Roman

Phase	Sherd count	Weight (g)
1	0	0
2	121	1907
3	1059	21750
4	87	2131
5	153	3794
6	119	3011
7	180	1007
8	367	4193
9	222	2830
10	41	1055
11	43	525
12	66	926
13	145	2699
14	141	1811
15	51	1148
16	148	2062
17	17	212
Unphased/US	630	10841
Total	3590	61902

Methodology

The pottery was analysed using the LMARS form and fabric series. A combination of macroscopic and microscopic (x 20) fabric analysis was used. Sherd count and weight were recorded. In the text % weight figures are cited. Analysis was undertaken to fabric level for pottery from Roman contexts and all traded wares, and to ware group level for contexts of a post-Roman nature. Material produced by environmental processing was also analysed. Shape was recorded to form, and type level if possible, for material from Roman contexts, and to vessel class for post-Roman and unstratified pottery: the LMARS Form Series is hierarchical, descending from Class through Form to Type. EVEs were used in analysis of the roadside ditch contexts in Phases 2 and 3 and the late pit: 87 in Phase 6 (see Tables 6-9), so as to allow comparison with other Leicester sites. Decoration, stamps, graffiti, re-use, and sooting were all recorded, together with ceramic links across the site. This information was inputted onto "data-ease" database.

Illustration was only selective, due to the existence of large numbers of drawings from previous sites in Leicester (Kenyon 1948 and Pollard 1994) and well established typologies for wares such as Samian and BB1. The illustration undertaken concentrated on the material from the roadside ditches and late pit 87.

Abbreviations

Wares

C	Colour-coated ware	GW	Grey ware
MD	Mica dusted ware	BB	Black-burnished ware
MO	Mortarium fabric	CG	Calcite gritted ware
AM	Amphora fabric	GT	Grog tempered ware
WW	White ware	DS	Derbyshire ware
WS	White slip ware	MC	Miscellaneous coarse ware
OW	Oxidised ware		

Common name wares

C12	'Rhenish' wares	WW5	Verulamium region white ware
C13	Oxfordshire red/brown colour-coat	GW1	grey ware derivatives of BB1
MO1	Oxfordshire white ware mortaria	CG1A	Harrold-type early Roman shelly ware
MO2	Oxfordshire white slip mortaria	CG1B	Harrold-type mid/late Roman shelly
MO3	Oxfordshire colour-coat mortaria	WW1	Northants hard grogged ware
MO6	Lower Nene Valley white ware mortaria		

Sources of Samian and colour-coated wares

SG	South Gaul	MV	Les Martres-de-Veyre
CG	Central Gaul	NV	Nene Valley

Fabric descriptions: see Pollard 1994 (112-114); for MO28, MO33, AM2A and AM24 see Pollard forthcoming a.

Results

Phase 2 Early 2nd century

Phase 2 represents the earliest pottery groups at the site, though the quantities are small. Samian, which constitutes 18.3% of the pottery, is SG or MV in source. Drag 18, 18/31, 33 and 33a forms all are present in the latter fabric. One possible CG fragment is also present. This broadly implies a date range of 1st century to Trajanic. BB1 constitutes only 3.7% of the pottery, including short everted rim jar and pie-dish forms. 26.6 % of the wares are WW fabrics, with Cs amounting to only 0.1%. GW forms include the necked bowl-jar and short everted rim jar with acute lattice. No later calcite-gritted fabrics are present, diagnostic vessels being in fabric CG1A or CG2A. Amphora fabrics 24 and 29 are present, these being rare in Leicester.

Phase 3 c. AD 125-150

The pottery is almost entirely made up of roadside ditch material (see Tables 6 and 7, and section below). Discussion will therefore concentrate on this group.

The datable Samian not produced by the roadside ditches includes CG Drag 27 (c.125-150/160), Drag 37R (2nd century), Drag 31? (c. mid-late 2nd century), and Drag 40 (late 2nd century) forms.

The Roadside Ditches (including the Phase 2 gullies 230 and 663)

As mentioned above the pottery from the roadside ditches is recorded in detail in two Tables (6 and 7) with the forms listed also (after Table 7). Much of the illustrated material is from this phase of activity (see Illus. 25 & 26).

Samian ware constitutes 8.9% of the pottery from the roadside ditches. In terms of sources by EVEs the samian breaks down as SG 0.7%, MV 4.2% and CG 3.6%. Within the MV and CG groups several forms typical of the 2nd quarter of the 2nd century are represented. These consist of a MV Drag 37, CG Drag 18/31, 27 and 37 forms, Lezoux Drag 37 (one signed in mould, Stamps Report no. 4, below) and 38. Amphora fabrics are made up of AM9A and AM12/13, the absence of AM9B fitting in with the date range of the group. A graffito is present on one AM12/13 vessel (G2 below). The mortaria are of Mancetter-Hartshill, Gallo-Belgic and Colchester sources. The 3 stamped vessels in Phase 3 have a date range of AD 90-130 (see Stamped Mortaria, nos. M1-3, below), generally of an earlier date than the diagnostic vessels described above.

BB1 makes up 3.6% and includes a Gillam 219 'pie-dish' form, which dates *c.* AD 120-150. Other 2nd century BB1 vessels are 2 plain rim dishes (Gillam 316/318 and 318) and an everted rim jar (Gillam 129) dating to AD 140-180. The presence of CG1(B) necked jars and bowl-jars in the CG category, however, implies an at least mid 2nd century date.

GW forms include necked jars and bowl-jars with beaded lips, implying an at least mid 2nd century date. A necked jar(?) is also present in GW/OW (Illus. 26, no. 27). One of the necked jars is narrow-mouthed, a form not generally seen in Leicester until the mid to late 2nd century, and displays some distortion (Illus. 26, no. 24). The medium angular everted rim jar (1.91 EVEs), expanded bead rim neckless jar with burnished lattice decoration (Illus. 26, no. 19), and cavetto rim jar (Illus. 25, no. 8) all suggest a date of AD 120s+; perhaps the forms were attempting to imitate those of the BB1 industry.

The roadside ditch contexts produced 62.0% of the pottery from Roman levels. The material, which mainly dates to AD 125-150, indicates a considerable degree of activity in this period. The re-cutting of the roadside ditches is not reflected in different dating for the pottery from the fills of the re-cuts even though these recuts were recognised at the time of excavation. There appears to have been a narrow time span, from the initial ditches demarcating the road to the last recut of the roadside ditches. This time span ranges only from early to mid 2nd century. There are parallels for these proportions and ranges of fabrics and forms at other Leicester sites. These include a north-south aligned ditch at Causeway Lane (Clark 1999, Phase 3, Sub-phase 1.21, F433). The large size of many of the pieces and the amount of material may suggest deliberate dumping of rubbish from adjacent properties and/or an additional function in aiding the drainage of the ditches.

Phase 4 Late 2nd Century

Pottery recovered included Samian of a mid and late 2nd century date. This included CG Drag 31 and bowl forms and CG/EG Drag 33. In addition a Rheinzabern Drag 33 and Rheinzabern(?) bowl (Drag 37?) date to the late 2nd to early 3rd century. BB1 represents 6.5% of the pottery, its highest proportion of any Roman phase, products including a plain rim dish (Gillam 329) of a date range *c.* AD 190-340. An MO4 beaded hammerhead mortarium is also present which dates to AD 170-230 (Illus. 26, no. 28). An amphora handle fragment in fabric AM2A (Pollard forthcoming a) is rare in Leicester (Illus. 26, no.29).

Phase 5 Late 3rd-4th century

The proportion of C fabrics (12.3%) suggests a later Roman date. Forms amongst these include a NV C2 hemispherical bowl with beaded rim (Howe *et al.* 1980, Fig. 7, no 82) dating to the late 3rd to the 1st half of 4th century; a costrel in fabric C11 (4th century?: Illus. 26, no. 30); and a C2 pentice moulded rouletted beaker (*ibid.*, Fig. 5, nos. 55-56), datable to the 4th century. The overall dominance of the later Roman utilitarian forms and presence of white paint decoration on Cs implies a late 3rd-4th century date. Amongst the BB1 are plain rim dishes (Gillam 329, 190-

340); a jar with obtuse lattice, of AD 230-370 date; and two cavetto everted rim jars, dating from late 2nd to late 4th century. GW forms include the cavetto/oversailing everted rim jar, dating late 2nd to 4th century; and a bead and flange dish, of AD 290-400 date. These forms have been dated on the basis of BB1 analogies. Oxfordshire products are represented in the form of mortaria fabrics MO1 and MO3, the latter including type C100 (Young 1977) dating 300-400+. The complete rim of a jug with a pinched, triangular plan pouring lip in WW5 was also present in Phase 5 (Illus. 26, no. 31). The latter vessel is an example of the residual material, mainly of a 2nd century date, present in Phase 5.

Phase 6 2nd half of 4th century

Cs constitute 19.4% of the pottery by this Phase (C2/3/11 16.0% and C13 3.4%); CG1B 7.4%; BB1 3.5%, half of the Phase 4 total; Samian 2.1% and WW 0.2%. These ware and fabric totals are typical of a very late phase of activity in Leicester. The pottery from pit 87 is discussed below. The other pit: 58 produced only 10.7% of the pottery from Phase 6. However, forms included a late 3rd-4th century NV C3 plain rim dish (Howe *et al.* 1980, Fig. 7 no. 87), a GW cavetto everted rim jar dating to the late 2nd to 4th century, and a bowl with a thick triangular flange copying BB1 Gillam 228, likely to be of an AD 290-400 date, if BB1 form dating is paralleled. Also present in pit 58 was a mortarium base in a fabric (MO33) not found previously in Leicester, perhaps of a Northamptonshire origin. As was the case with the C3 dish there is post-breakage burning evident on this vessel. Although no pottery definitely belonging to the 2nd half of the 4th century was found in pit 58, late forms are present, and the burnt condition of the C3 dish may suggest it is a residual vessel. In addition this pit seems to be broadly contemporary with pit 87 on stratigraphic grounds.

Pit 87

Most of the pottery (89.3%) from Phase 6 came from this pit (see Tables 8 and 9 for detailed record of fabrics and forms represented). Forms in fabrics C2/3 are datable to the late 3rd to 4th centuries (*ibid.* Fig. 7 nos. 82, 83, and 87) and the 4th century (*ibid.* Fig. 7 nos. 79 and 85), with the later utilitarian forms being dominant. C13 vessels are a stamped C45 with a date range of AD 270-400+ (Young 1977; Illus. 27, no. 32 here); C75 dating to AD 325-400+ (*ibid.*); and C52.1, which dates to AD 350-400+ (*ibid.*). Amongst the BB1 the incipient flange/flanged dish forms date between AD 210 and 370. The only discernible GW forms are bowl-jars and bowls, which is characteristic of very late Roman groups in Leicester. The bowl with a short high flange (Illus. 27, no. 33) is characteristic of a late 3rd to 4th century date and may be an example of 'East Midlands Burnished Ware' (Todd 1968). Although some burnished GW vessels are present, this sample may show that burnishing of the 'East Midlands Burnished Ware' type is not necessarily present on large amounts of late Roman GWs in Leicester. In summary, a general date for the pit, on the basis of the pottery evidence, would be 2nd half of the 4th century. The pottery from this pit, although small in size (2690g), represents a rare survival of a stratified assemblage in Leicester in this period.

Unstratified and post-Roman levels

These strata contained considerable amounts of Roman pottery representing the truncation of Roman deposits, similar in date range to that shown by the pottery in Roman levels, with a bias toward later Roman vessels. BB1 constitutes 5.1% of the Roman material. Amongst the forms are the obtuse lattice jar, "incipient flange" dish (Gillam 227, AD 210-260) and several plain rim dishes (Gillam 329, AD 190-340). These may represent early to mid 3rd century activity not shown by Roman features. The 3rd and 4th centuries are well represented in other wares. The GWs include copies of most of the above BB1 forms, including Gillam 329 and 228 dishes, and jars with obtuse lattice decoration and oversailing everted rims. Cs constitute 5.9%. These are mainly fabrics C2 and C3 of a NV source, and dominated by the later utilitarian forms recovered from later Roman levels. Two "scale" beakers are present however, one dating to the mid 2nd to

late 3rd (Howe *et al.*, Fig. 4, nos. 35-39) the other mid to late 3rd century (*ibid.*, Fig. 4 nos. 38-39). Also a small proportion of rouletted Trier 'Rhenish' (C12) vessels were present (0.1%), of a 3rd century date.

In addition, other fabrics were present not represented in the Roman levels. These consisted of DS, again of a later Roman date, including a ledge everted rim jar, and WW1.

Samian Richard Pollard

A total of 475 sherds, weighing 4139g, was recovered. Five stamps on plain ware, and a Drag 37 signed in the mould, are reported on by Brenda Dickinson, and graffiti by Mark Hassall (Illus. 28, G1). The pottery from Roman contexts was catalogued, and the remainder scanned for links and unusual pieces, by the author. The assistance of Geoff Dannell in the identification of decorated sherds is gratefully acknowledged. The catalogue is held in the site archive.

There appears to be a relative dearth of 1st century material and a contrasting abundance of later 2nd/early 3rd century wares. The western suburb site at Great Holme Street was considered by Dannell, on the basis of the decorated ware, to have been first occupied in the late Neronian/early Flavian period, but there material post-dating the mid-Antonine (*c.* AD 150-160) 'is fairly scant, with only one piece from East Gaul, and that is not late' (1990). This is reflected in the stamps from that site, on the basis of which Dickinson commented that 'the proportion of South Gaulish ware is lower than might be expected for Leicester'; she also noted a rapid drop beginning *c.* AD 160, with very few East Gaulish stamps (1990). It is possible that the southern suburb, sampled here and at Newarke Street (Pollard 1996), began to develop at the same time as the western suburb, but received a comparatively large quantity of samian towards the end of the 2nd century, when samian supply as a whole was in a state of decline from a peak *c.* AD 140-160 (Marsh 1981).

The roadside ditch sequences, particularly the west, contain high proportions of Trajanic, Les Martres-de-Veyre, ware, a fact of especial significance considering that the period *c.* AD 100-120 represented a trough in supply to Britain (*ibid.*). The latest pieces from the ditches are datable to the second quarter of the 2nd century, possibly extending to *c.* AD 160, and are Central Gaulish.

The latest material of all includes two sherds with pitted surfaces suggestive of a late 2nd to early 3rd century, Rheinzabern, origin. A ribbed bowl in orange, micaceous ware is almost certainly from an East Gaulish source and possibly is as late as the mid 3rd century; it may be a Curle 21 variant (*cf.* Lutz 1986, Fig. 6, from the Mittelbronn factory). One uncommon form, Ludowici Sn, is illustrated (Illus. 27, no. 34).

Samian Potter's Stamps Brenda M. Dickinson

Each entry gives: potter (i, ii, etc. where homonyms are involved), die number, form, reading of the stamp, published example, pottery of origin, date, followed by Museum extension no. and stratigraphic information.

(a) and (b) indicate:

(a) Stamp attested at the pottery in question;

(b) Potter, but not the particular stamp, attested at the pottery in question.

Phase 3

1. Arcanus 3c Drag 38 ARC OF (Vanvinckenroye 1968, 24, 23) Lezoux (a) *c.* AD 125-140 (.2466) ditch 1097, context (1070).

2. Ioenalis la Drag 27 [IO]ENALISF MV (a) *c.* AD 100-120 (.2000) ditch 253, context (240).
3. Vitalis iii 2a Drag 18/31 [V+ALI]SM SF (Hartley 1972, S58) MV (a) *c.* AD 100-120 (.2470) ditch 253, context (802).
4. Attianus ii Drag 37 cursive Attian[retrograde, from a mould signed below the decoration, before firing. A signature of Attianus ii of Lezoux. *c.* AD 125-145 (.2024) ditch 934, context (309). Illus. 28, S4 & D5.

Unphased

5. Crestio Incomplete 2 Drag 27g CRE[retrograde, La Graufesenque (b) *c.* AD 45-65 (.2053) unstratified, context (1).
6. FVS[? on Drag 15/17 or 18, SG. Flavian or Flavian-Trajanic (.2571) unstratified, context (1).

Selected Decorated Samian Richard Pollard (Illus. 28)

Phase 2

D2. Drag 30, SG. Double-bordered ovolo, with tongue to right ending in a 4-pronged tip bent to left. The cupids, O.406 and O.435 flank a vine scroll and poppyhead composition to form a panel closely resembling Hermet (1934) Pl. 75.11: the general arrangement of this is mirrored also on Pl. 76.9, with parallels on Drag 30 from the Museum of London collection (12240L) and the Verulamium Car Park (B III (23)). The eagle, O.2175, is superimposed on a saltire. The geese are associated with a bowl stamped OFCVLVI from Bregenz (Knorr 1919, Taf 18 nos. 39 and 40). The potter responsible for these Drag 30s is anonymous, but seems to have been behind an extensive series of Drag 29s studied by Dannell, who comments that the earliest work of Calvus may have been the inspiration. I am grateful to Geoff Dannell for information on the parallels, and the proposed date of *c.* AD 55-70 (.1590, .2195) layer (269), + Phase 17 layer, context (368).

Phase 3

D1. Drag 37, MV. In the style of the Potter of the Rosette. The ovolo is Rogers B44. Diana and hind, O.103C, on the pedestal, Rogers Q74, is featured on S&S Fig. 8 and Pl. 24.306; the incomplete Diana and hind occurs in an identical arch, astragalus and circles construction on *ibid.* Pl. 23.292. The arch is an inverted festoon, Rogers F1. The bear is O.1607, with bifid leaf and bud Rogers, G99 as wreath separating it from wavy line-and-leaf tip panel as S&S Pl. 20.253. The basal wreath is Rogers G169. *c.* AD 100-120 (.2049, .1994, .1712, .2052) ditch 254, context (981), + ditch 253, contexts (240) & (802), + unphased, context (1).

D3. Drag 37, MV. The ovolo is Rogers B39, used by Potter X-9. *c.* AD 100-120 (.1501) road surface, context (7).

D4. Drag 37, CG. Caryatid, O.1207, used by potters spanning the 2nd century from the Trajanic (Libertus) to the mid- to late Antonine (Advocisus). The small bead row borders are compatible with the latter's work, e.g. S&S Pl. 112.2, 5, as is the general high quality of workmanship. The lime rich fabric should rule out a Trajanic MV origin. *c.* AD 160-190? (.2035) ditch 938, context (596).

D5. Drag 37, Lezoux. The dog may be O.1979; it and the 3-lobed leaf appear on S&S Pl. 85.1. Cursive signature, Dickinson's no. 4 above (Illus. 28, S4). ditch 934, context (309).

D6. Drag 37, CG. Rogers ovolo B24. The head could be featured on S&S Pl. 91.6, attributed to Docilis, not catalogued by Oswald. *c.* AD 130-150 (.1977) ditch 229, context (210).

D7. Drag 37, CG. Geoff Dannell reports: ‘the rosettes looks like Rogers C59 attributed there to potter P-12, and the bifid, G282, forming a wreath, was used by a number of early Lezoux exporters. The strong mouldings below the decoration were a feature of the boels of the Quintilianus group, *cf.* S&S Pl. 71.27 and 31, and the fabric and slip would suit. *c.* AD 125-145’ (.2001) ditch 229, context (247).

Post-Roman phases

D8. Drag 37, CG. In the style of Geminus. The dancer is O.355; the lower legs may be from the same figure type, *cf.* S&S Pl. 66.18. The vulcan is not catalogued by Oswald: see S&S Pl. 66.21 and p.139. The trifid leaf is Rogers G112, the rosette his C297, and the astragalus, characteristically straddling the border, R91. *c.* AD 120-140 (.2248, .2383, .2052) Phase 9, layer, context (476) + Phase 9 pit 976, context (975) + unphased, context (1).

D9. Drag 37, CG. Pugnus style: his ovolo, Rogers B223, and bifid leaf, K20. The caryatid, O.1199, is recorded as being associated with his style. For the plain terminals, with festoon-and-astragalus, see S&S Pl. 155.22. The straight line under the ovolo is a feature of some mid-Antonine Lezoux work. *c.* AD 150-165 (.1829) Phase 9 layer, context (1115).

D10. Drag 37, Montans. Identical to a vessel from Little Lane, Leicester (Dannell forthcoming, no. 79), in the style of Chresimus. *c.* AD 120-140 (.2214) Phase 14 pit 395, context (397).

D11. Drag 37, MV. In the style of Igocatus. The ovolo appears to be Rogers B37, but here it has a dot in the rosette tongue. The unidentified motif in the festoon appears on S&S Pl. 18.225 and 234, and the back-to-back bifid leaf Rogers G284 on Pl. 17.219. The vase is Rogers T9, the candlebre his Q50, and the rosette C280. *c.* AD 100-120 (.2227, .2052) Phase 16 robber trench 445, context (444) + unphased, context (1).

Abbreviations:

Gillam	Gillam 1970
O.	Oswald 1937
RIB ii	Frere and Tomlin 1990
Rogers	Rogers 1974
S&S	Stanfield and Simpson 1958

Amphorae

The collection is dominated by the south Spanish fabrics for which Dressel 20 is the most common form (AM9A-B), with south Gaulish ware (AM12/13) the next most significant group. One vessel in the latter category displays a graffito (G2, Illus. 25, no. 6). Other fabrics include AM3 (Baetician/Catalonian/north African), together with a handle of uncertain source and vessel form in AM2A (Illus. 26, no. 29). All the fabrics recovered have been found previously at excavations in Leicester.

Mortaria

Stamped Mortaria Kay Hartley (Illus. 27)

M1. MO12 Mancetter-Hartshill source. The retrograde FECIT counterstamp and a tiny fragment of namestamp survive from the paired dies of G. Attius Marinus. The crisp state of the

impressions suggests that the die was still in a fairly fresh state. AD 100-130. Illus. 25, no. 5. (.1995 + .2002) Phase 3 ditch 253, context (240) + Phase 3 ditch 229, context (247).

M2 A&B. MO15 Colchester source. 2 joining sherds making over half the rim of a mortarium with namestamp of Viator 1 reading left to right and most of his retrograde FECIT counterstamp. Viator began stamping mortaria at Colchester and later moved north, perhaps initially to Caister St Edmunds; it may well be the same Viator who later still worked in the lower Nene Valley. Stamps from this die are now known from Brough-on-Humber; Caistor St Edmunds (in a pit, whose filling was dated to AD 70-110, Atkinson 1938, 210-11, no 6); Colchester (5); Corbridge; Leicester (2); Rocester and Winterton. There is no reasonable doubt that the mortaria associated with this die were made c. AD 90-120. It is thought that the Caistor mortarium may have been made at Caistor and possible that the Winterton one was - virtually identical fabrics could be produced at Colchester and Caistor St Edmunds. Very heavily worn in the bottom and heavily burnt. This vessel is quite unlike most 2nd century Colchester fabrics, which tend to be powdery *cf.* Canterbury Castle fabric 1 (Hartley 1982a). Hard, very fine-textured cream fabric, almost silky to touch. Inclusions: few, very sparse, tiny, orange-brown with any quartz there might be too small to show at x20 magnification. ?Self-coloured slip. Trituration grit: angular, medium-to small-sized, quartz (transparent, translucent and white), flint, opaque red-brown material. Illus. 25, no. 9. (.2015) Phase 3 ditch 934, context (290).

M3. MO12 The stamp is from one of the 4 dies used by a semi-literate potter, one of whose dies was found in the stokehole of a kiln at Mancetter (Wright and Hassall 1973, item 36). 8 of his mortaria are now known from occupation sites: Leicester (4), 1 of which is from Causeway Lane (Hartley 1999, M23); Lincoln; Wall and York. (The York example is unusual in being in a red-brown fabric probably with slip). Optimum date AD 100-130. Illus. 25, no. 13. (.1958) Phase 3 ditch 231, context (208).

M4. MO12 Retrograde stamp of Victor of Mancetter. Optimum date AD 100-130. Illus. 27, no. 35. (.2397) Unphased post-Roman post hole 1033, context (1032).

Discussion (See Table 5. Totals of Roman pottery fabrics (by sherd count and weight))

Mancetter is by far the most dominant source for the mortaria. Other sources include Oxfordshire, the Nene Valley (1 vessel in Phase 16, context 15, identified to this source by Maggi Darling), the Midlands, Colchester, Gallia Belgica, the south-west, and Northamptonshire (suggested as a possibility, Maggi Darling pers. comm.). The latter burnt vessel is in a fabric (MO33) for which this is the first record in Leicester. Generally the range of mortaria in terms of fabric and form is very similar to that found at previous excavations in Leicester. 2nd century forms dominate due to the concentration of features in this period at the site. Some rare vessels, such as the two in fabric MO15 are represented. The lack of Verulamium material may indicate an absence of 1st century activity at Bonnors Lane. The lack of later wall-sided forms is notable, however there is little in the way of late Roman features and associated pottery for such vessels to come from.

The Graffiti

These items have been published in *Britannia* (Hassall and Tomlin 1994, items 18-19), and are included here for the sake of completeness. The vessel identifications are by Richard Pollard.

G1. CG Samian, base probably of Drag 33. Slip totally worn away on int. of cup. Hadrianic to Antonine. (.2469) Unstratified. Mark Hassall reports:

‘Cut after firing on the underside within the footing: CIM. Perhaps the initial letters of the owner’s tria nomina, for instance *G(aius) I(ulius) M(...)*. The first letter might also be L, for *L(ucius)*, but this seems less likely’. Illus. 28, G1.

G2. AM12/13, bodysherds probably from a South Gaulish *Gauloise* amphora, with the weak ridging of this series; Gauloise 4 (Pelichet 47) is by far the most common in Britain. (.2036) Phase 3 ditch 938, context (596). Mark Hassall reports:

‘Cut after firing: VIII, ‘eight’. This cannot be the capacity in *modii* if the identification of the form is correct, as Pelichet 47 is said to hold only three or four *modii*: see the note in *RIB* ii fasc. 6, p.33, and compare *RIB* 2492.7’. Illus. 25, no. 6.

For explanation of abbreviations see Samian report (above).

Discussion of the Roman Pottery Assemblage

(except Samian, mortaria and amphorae - see these headings for individual discussions)

2nd century activity is discussed above, although this begins in the early 2nd century with the construction of the road, the pottery is mainly represented by the roadside ditches of a *c.* AD 125-150 date. At the Newarke Street site nearby the 2nd century activity is mainly represented by 2 pits of an early 2nd century date (Marsden 1996). At Bonners Lane there is very little pottery present to suggest any activity at all in the vicinity of the site before the 2nd century, unlike at West Leicester (Pollard 1994). Fabrics/wares such as WW5, MC, GT, MO28, diagnostically 1st century CG, and ‘native wares’ in general, are present, but in small amounts. In addition, the early SG Samian vessels represented could well have been deposited a considerable time after their date of manufacture. As mentioned above, Verulamium region mortaria are absent. On the basis of the previously mentioned evidence then, the overall lack of residual earlier material makes the pottery from the roadside ditches a reliable example of a 2nd century assemblage.

As discussed above, although earlier to mid 3rd century features are not represented, some pottery of this period is present in later and unstratified levels. This could imply the truncation of 3rd century deposits by subsequent activity, although amounts of pottery involved are small, and there may have been a lack of activity in this period at Bonners Lane. Phases 5 and 6 contain late 3rd to 4th century pottery, with Pit 87 representing a rare example of *c.* AD 350-400+ activity in Leicester, perhaps contemporary with the cemetery at Newarke Street site (*ibid.*). Material from the late 3rd to 4th century present in post-Roman and unstratified levels may also indicate truncation of late Roman features.

The range of fabrics represented is reasonably wide, compared with other Leicester sites within the Roman urban core, such as the ‘West Bridge’ group (Pollard 1994), the Shires (Pollard forthcoming a) and Causeway Lane (Clark 1999), and outside the core Norfolk Street and Great Holme Street. Rare fabrics present in the assemblage include continental Trier ‘Rhenish’ ware (C12), Oxfordshire colour-coats (C13), and GW8.

The diversity of wares in all phases and functional areas of the site, but notably that produced by the roadside ditches and to a lesser extent the late pit 87, may imply a close relationship with the Roman town, and comparable trading links and status.

Acknowledgements

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Table 5. Totals of Roman pottery fabrics (by sherd count and weight)

Fabric	Sherd Count	Weight (g)	Fabric	Sherd Count	Weight (g)
Samian	475	4139	WW2/3	216	3453
			WW4	40	524
C(2/3/5/7/11)	280	2777	WW5	13	510
C12 Trier	2	3			
C13 Oxon	4	107	WS	12	377
MD4/6	7	85	OW	207	2531
			OW3	1	10
MO1 Oxon	1	12			
MO2 Oxon	2	19	GW	1510	22503
MO3 Oxon	2	22	GW1	26	463
MO4 Manc	29	1025	GW8	1	55
MO4/18 Manc	13	372	GW/OW	7	125
MO6 LNV	2	157			
MO12 Manc	22	1064	BB1	192	2656
MO12/19 Manc	2	35			
MO13 Mids?	2	77	CG1	265	3573
MO15 Colch	2	1090	CG1A	62	1688
MO15 G-B	1	75	CG1B	21	1296
MO18 Manc	2	230	CG2	4	73
MO19 Manc	4	222	CG2A	1	11
MO28 SW	1	20	CG3A	35	694
MO33 North?	1	85			
			GT	12	143
AM2A	1	135	WW1	1	15
AM3	1	14			
AM9A	49	5527	DS	8	83
AM9B	14	2622			
AM12/13	28	936	MC	4	51
AM24	3	172			
AM29	2	46	Total	3590	61902

Key:

Oxon: Oxfordshire
Manc: Mancetter-Hartshill
LNV: Lower Nene Valley
Mids: Midlands

Colch: Colchester
G-B: Gallo-Belgic
SW: South-West
North: Northamptonshire

Table 6. Roadside Ditches (Phases 2 and 3) - Vessel Classes by Fabrics and EVEs

Classes	1	2	3	4	5	6	7	8	9	10	11	VU	Total Eves: Fabric/ware	Total Eves%: Fabric/ware
Fabrics														
Samian SG								0.14					0.14	0.7
Samian MV					0.69		P	0.09					0.78	4.2
Samian CG					0.44	P		0.23					0.67	1.59
														3.6
														8.5
C2				0.14									0.14	
C3													P	0.14
														0.8
														0.8
MD 4/6							P						P	P
														P
														P
MO12													0.58	3.1
MO12/19													P	P
MO15													0.61	1.19
														3.3
														6.4
AM9A													P	P
AM12/13													P	P
														P
WW2/3	P				P								P	P
WW4	P												0.21	1.1
WW5													P	P
														1.1
WS	P												P	P
														P
														P
OW			0.52	0.39	1.84					P			2.75	14.7
OW3			P										P	2.75
														P
														14.7
GW			6.52	1.28	1.39	0.05				0.45			9.69	51.9
GW1													P	P
GW8													P	P
GW/OW				0.28									0.28	9.97
														1.5
														53.4
BB1			0.63			P							0.63	0.63
														3.4
														3.4
CG1													P	P
CG1A			1.80										1.80	9.6
CG1B			P	P									P	P
CG2													P	P
CG3A			0.39										0.39	2.1
														2.1
														11.7
MC													P	P
														P
														P
TOTAL			9.86	2.09	4.36	0.05		0.46	0.45		0.21			18.67
														100.0

Key to classes: 1 - flagons and jugs

2 - flasks

3 - jars

4 - bowl-jars and
bowl/jars (undifferentiated rims)

5 - bowls

6 - dishes and bowl-dishes

7 - platters

8 - cups

9 - beakers

10 - lids

11 - miscellaneous classes

VU - vessel type unknown

P - Present

Table 7. Roadside Ditches (Phases 2 and 3) - Vessel Classes by Fabric and Weights (g)

Classes	1	2	3	4	5	6	7	8	9	10	11	VU	Total Weight (g): Fabric/ware	Total Weight %: Fabric/ware			
Fabrics																	
Samian					769	P	P	94					1796	1796	8.9	8.9	
C2				32									32		0.2		
C3												1	1	33	0.1	0.3	
MD 4/6							13					26	39	39	0.2	0.2	
MO12													654		3.2		
MO12/19													35		0.2		
MO15													1165	1854	5.8	9.2	
AM9A													1174		5.8		
AM12/13													124	1298	0.6	6.4	
WW2/3	103				21								1779	1903	9.3		
WW4	28										100		386	514	2.5		
WW5													5	5	2422	0.1	11.9
WS	174												144	318	318	1.6	1.6
OW			107	201	688				4				289	1289		6.3	
OW3			7										9	16	1305	0.1	6.4
GW			2173	309	682	8			178				4443	7793		38.6	
GW1													32	32		0.2	
GW8													55	55		0.3	
GW/OW				125									125	8005	0.6	39.7	
BB1			201			334							194	729	729	3.6	3.6
CG1													437	437		2.1	
CG1A			881										152	1033		5.0	
CG1B			42	160										202		1.0	
CG2													30	30		0.2	
CG3A			694										694	2396	3.4	11.7	
MC													10	10	10	0.1	0.1
TOTAL	305		4105	827	2160	342	13	94	182		100			20205		100.0	

Detailed Breakdown of Forms Represented

Samian SG	Drag 27 g : 0.14 ; Drag 29 : P ; Drag 37 : P ; Drag 81 : P ; cup : P ; bowl : P
Samian MV	Drag 18 : P ; Drag 18/31 : 0.24 ; Drag 18/31R : 0.45 ; Drag 27 : 0.09 ; Drag 33 : P ; Drag 33a : P ; Drag 37 : P ; plate/bowl : P
Samian CG	Drag 18/31 : 0.05 ; Drag 27 : 0.08 ; Drag 35 : P ; Drag 37 : P ; Drag 38 : 0.39 ; Drag 46 : 0.15 ; Curle 23 : P
C	C2 Bowl-jar : 0.14
MD	MD 4/6 Platter with convex walls and simple rim : P
WW	WW2/3 Flagon : P ; collared rim flagon : P ; hemispherical bowl with curved flange and bead rim : P ; hemispherical bowl with simple rim : P
	WW4 Flagon : P ; tazza with frilled flange rim and carination : 0.21
WS	Flagon : P

- OW** OW Angular everted rim jar : P ; angular medium everted rim jar, with squared-off lip : 0.52 ; necked bowl-jar : 0.39 ; necked bowl : 0.27 ; carinated bowl with biconical profile and everted rim : 0.50 ; carinated bowl upright upper body : 0.21 ; hemispherical bowl with flanged rim : 0.06 ; hemispherical bowl with curved and beaded flanged rim : 0.80 ; globular/bag-shaped beaker : P
- OW3 Necked jar with beaded lip : P
- GW** Expanded bead rim neckless jar : P ; bead rim jar with carinated shoulder : 0.13 ; lid-seated/angular everted rim jar : P ; angular everted rim jar : 0.14 ; short angular everted rim jar : 1.64 ; medium angular everted rim jar : 1.91 ; straight/slightly curved short to medium everted rim jar : 0.33 ; curved slightly everted rim jar with thickened lip : 0.19 ; curved everted/cavetto rim jar : 0.45 ; angular rim jar with straight upper body : 0.16 ; necked jar with beaded lip : 1.57 ; jar : P ; necked beaded lip bowl-jar : 1.13 ; bowl/jar : 0.15 ; necked bowl with everted lip : 0.79 ; carinated bowl with beaded rim : 0.16 ; carinated bowl with upright upper body and cupped rim : 0.14 ; reeded bowl : 0.07 ; bowl with curved flange and bead : 0.23 ; dish with reeded flange : 0.05 ; beaker with carination and beaded rim : 0.45
- GW/OW** Necked bowl-jar : 0.28
- BB1** Curved slightly everted rim jar with thickened lip : 0.32 ; jar : P ; plain rim dish, with groove defining lip : 0.19 ; straight flange (slightly curved down) "pie-dish" : 0.12
- CG** CG1A Triangular profile ledge rim jar : 1.80
- CG1B Necked jar with beaded lip : P ; necked bowl-jar with beaded lip : P
- CG3A Necked everted rim jar : 0.39

Table 8. Pit 87 (Phase 6) - Vessel Classes by Fabrics and EVEs

Classes	1	2	3	4	5	6	7	8	9	10	VU	Total Eves :		Total Eves%:		
												Fabric/ware	Fabric/ware	Fabric/ware	Fabric/ware	
Fabrics																
Samian CG ?					P			P					P	P	P	P
C2					0.30	0.09							0.39		25.3	
C3						0.10							0.10		6.5	
C11													P		P	
C13					P								P	0.49	P	31.8
MO4													P	P	P	P
AM9A													P		P	
AM9B													P	P	P	P
WW													P	P	P	P
OW													P	P	P	P
GW				0.32	0.26								0.58		37.7	
GW1													P	0.58	P	37.7
BB1						0.09							0.09	0.09	5.8	5.8
CG1													P		P	
CG1B			0.38	P									0.38	0.38	24.7	24.7
TOTAL			0.38	0.32	0.56	0.28								1.54		100.0

Table 9. Pit 87 (Phase 6) - Vessel Classes by Fabric and Weights (g)

Classes	1	2	3	4	5	6	7	8	9	10	VU	Total Weight (g) :		Total Weight % : Fabric /		
												Fabric / Ware	Fabric / Ware	Fabric / Ware	Fabric / Ware	
Fabrics																
Samian CG ?					P			P					55	55	2.1	2.1
C2					164	92						78	334		12.4	
C3						44						84	128		4.8	
C11												4	4		0.1	
C13					103								103	569	3.8	21.1
MO4													65	65	2.4	2.4
AM9A													227		8.4	
AM9B													290	510	10.8	19.2
WW												5	5	5	0.2	0.2
OW												8	8	8	0.3	0.3
GW				151	99							767	1017		37.8	
GW1												4	4	1021	0.1	37.9
BB1						64						41	105	105	3.9	3.9
CG1												122	122		4.6	
CG1B			218	5									223	345	8.3	12.9
TOTAL			218	156	366	200								2690		100.0

Detailed Breakdown of Forms Represented

Samian	CG/CG ?	Drag 30 : P ; Drag 31 : P ; Drag 33 : P : Drag 37 : P ; bowl : P
C		C2 Hemispherical flanged bowl : 0.21 ; hemispherical bowl with simple rim : 0.09 ; plain-rim dish : P ; flanged bowl : 0.09 C3 Plain-rim dish : 0.10 C13 Necked bowl : P ; hemispherical flanged bowl : P ; simple rim bowl
GW		Necked bowl-jar : 0.32 ; hemispherical bowl with flanged rim : 0.09 ; bowl with short high flange : 0.17 ; hemispherical bowl with simple rim : P
BB1		Plain-rim dish : 0.09 ; “incipient flange”/flanged bowl : P
CG		CG1B Necked jar : 0.38 ; necked bowl-jar : P

Catalogue of Illustrated Pottery (Illus. 25-27)
(excluding the decorated Samian – see above & Illus. 28)

Codes in brackets (3.F.4) refer to LMARS Form Series

Phase 3

1	GW	Angular everted rim jar (3.F.4) with barbotine decoration, sooted ext. (Museum extension no. 2050) Ditch 254, context (981).
2	GW	Angular rim lid seated jar (3.K.1) with spiral groove on lower body and multiple girth grooves. (.1923) Ditch 102, context (64).
3	OW3	Necked bowl or jar with beaded rim (4.B.2), sooted ext. and int. (.1925) Ditch 102, context (64).
4	GW	Everted rim necked bowl (5.A.1), virtually complete. (.2575) Ditch 1097, context (1070).
5	MO12	Hooked rim mortarium of G. Attius Marinus, Mancetter-Hartshill work. Stamped (Report no. M1 above). (.1995 and .2008) Ditch 253, context 240 and Ditch 229, context (247).
6	AM12/13	Amphora sherds with graffito (Report no. G2 above). (.2036) Ditch 938, context (596).
7	OW	Necked bowl-jar (4.B.2) (.2039) Ditch 938, context (595).
8	GW	Cavetto everted rim jar (3.H.2) with burnished lattice decoration. Fine, smooth fabric. (.2040) Ditch 938, context (596).
9	MO15	Hooked rim mortarium of Viator, Colchester work. Stamped (Report no. M2 A-B, above). Heavily worn and burnt after breakage. (.2015) Ditch 934, context (290).
10	OW	Short angular everted rim jar (3.F.4). Burnished overall ext., but worn lower ext. (.2020) Ditch 934, context (290).

- 11 GW Short everted rim jar (3.F.3) (.2025) Ditch 934, context (309).
- 12 GW Bowl with cupped rim (5.E.2), sooted ext. and int. (.2021) Ditch 934, context (290).
- 13 MO12 Mancetter hooked rim mortarium. Stamped (Report no. M3 above). (.1958) Ditch 231, context (208).
- 14 WS Carinated bowl with slightly flaring upper body (5.E.2). Slipped overall. (.1971) Ditch 231, context (209).
- 15 OW Hemispherical bowl with curved flange rim and bead (5.H.3), scratched pattern on internal surface, perhaps knife cuts from use. (.1961) Ditch 231, context (208).
- 16 OW Bowl with low carination and everted rim (5.D) (.1961) Ditch 231, context (208).
- 17 GW Base, re-worked with hole partly drilled in centre, following smoothing down of tump. Broken edge also smoothed. (.2573) Ditch 231, context (208).
- 18 GW Base, highly fired and poorly finished vessel in sandy fabric. Possibly a misfired 'second'. (.1962) Ditch 231, context (208).
- 19 GW Expanded bead rim jar (3.B.2) with burnished lattice on body. Rim depressed by finger at least one point, probably inadvertently. (.1962 and .1973) Ditch 231, contexts (208) and (209).
- 20 CG1A Triangular profile ledge rim jar (3.D.2), lightly rilled. Buff fabric, heavy sooting, having blackened much of the fabric wall. Coil built. (.1965) Ditch 231, context (208).
- 21 CG3A Necked everted rim jar (3.M.1), partially sooted ext., coil built. This is a rare type in Leicester. Similar vessels have been found at Werrington, Cambridgeshire (Mackreth 1988, 127, Fig. 29.113, Phase 2 dated AD 50/60-100) and Maxey Field East, in the lower Welland Valley (Gurney 1985, Phase 8, 138, Figs. 88.171 and 142, and 92.235, dated AD 50-150). (.1966 and .1975) Ditch 231, contexts (208) and (209).
- 22 MO15 Hooked rim mortarium with trituration grit on flange. Type is Bushe-Fox 26-30 (Bushe-Fox 1913, 77, fig.19), of Gallo-Belgic origin, datable to AD 80-150. The type is not common in Leicester (e.g. Todd 1973, Fig. 29.46). (.2003) Ditch 229, context (247).
- 23 WW4 Tazza with frilled flange rim (11.C.1), sooted int. (.1983) Ditch 229, context (210).
- 24 GW Necked jar with beaded rim (3.M.2), sagged during firing. Burnished lattice. This is a 'second', one of several jars of this narrow mouthed form to have been found in Leicester, evidently functional despite warping of rim. (.2010) Ditch 229, context (247).

25	GW	Carinated beaker (9.J.2), knife trimmed lower ext. (.1986) Ditch 229, context (210).
26	GW	Flanged bowl or dish (5.F/6.B), single reeding on rim int. (.1986) Ditch 229, context (210).
27	GW/OW	Necked jar(?) (3.M.2), sooted. Very highly fired, only partially reduced. Parallels exist in both GW and OW. (.1992) Ditch 229, context (210).
Phase 4		
28	MO4	Hammerhead mortarium, paralleled at the forum (Hartley 1982b, dated there <i>c.</i> AD 170-230 (.1765 and .1702) Hearth 969, context (973) and Phase 8 feature 710, context (710).
29	AM2A	Handle remnant, type uncertain (.1826) Pit 1108, context (1106).
Phase 5		
30	C11	Costrel (1.K). The handle may loop over the top (or end) of the vessel. Core divided into dark grey (N4) int. and reddish yellow (5YR 6/8) ext., with very dark grey (5YR 3/1 slip ext. over thin dark grey margin, and dark grey surface int. Very fine sandy fabric, hard, with Mo white mica. General resemblance to Much Hadham wares. Source unknown. (.1905) Pit 1339, context (1338).
31	WW5	Jug with sub-triangular pinched pouring lip (1.H), Gillam 59. Residual. (.1743, 891) Pit 890, context (891).
Phase 6		
32	C13	Oxfordshire source. Base with part of stamp (fig.00.32A), probably C45 bowl (5.O.2) dating AD 270-400+ (Paul Booth pers. comm.). (.1513) Pit 87, context (24).
33	GW	Bowl with high flange and curved wall (5.K.2), typical of late grey ware in the East Midlands (Todd 1968). (.1518) Pit 87, context (24).
Phase 9		
34	Samian	Bowl, type Ludowici Sn. The fabric appears to be East Gaulish, possibly from Rheinzabern. A variant of Walters 81, which is most common in the Hadrianic-Antonine period; perhaps into the 3rd century in view of the possible origin. (.1562) Layer (174).
Unphased		
35	MO12	Mancetter hooked flange mortarium. Stamped (Report no. M4 above). (.2397) Post hole 1033, context (1032).
36	MO13	Hooked rim mortaria with spout remnant. Midlands source. Likely to date to <i>c.</i> AD 80-130. (.1536) ?Post hole 60, context (59).

ILLUSTRATION 25

ILLUSTRATION 26

ILLUSTRATION 27

ILLUSTRATION 28

4.3 Early/Middle Saxon Pottery

Paul Blinkhorn

A total of 37 sherds (436g) of Early/Middle Saxon pottery occurred, with five different fabrics present. All the sherds were undecorated, apart from four burnished sherds, two of which appear to be from the same vessel. It is impossible to ascribe a date to the assemblage, other than to place it in the Early/Middle Saxon period (AD450-850).

Approximately half of the assemblage (19 sherds weighing 176g) was derived from contexts associated with the Phase 7 building, with a further 25% (by weight) of the total derived from later features cut into this building. Most of the sherds were very small, although a few large rimsherds were present (eg. BLS7, Illus. 29).

Fabrics

These fabrics are very typical of the pottery of the period from Leicester and the surrounding area. The granite tempered sherds appear to be part of the tradition which is thought to have been centred on the Charnwood Forest area of Leicestershire. Pottery of this type has a widespread distribution throughout the southern and eastern midlands of England, although whether this represents an industry or the movement of people and their possessions is, at this time, unclear. It has been suggested in the past that such wares date only to the fifth century AD, but whilst they have been found in such contexts (Mackreth 1978), they have also been found in later contexts at sites such as Pennyland, Bucks. (Blinkhorn 1993) and North Raunds, Northants. (Blinkhorn in press).

This small group from Bonnors Lane is comparable with other assemblages from the town, eg. the St. Peters Lane and Little Lane 'Shires' excavations (Blinkhorn forthcoming) and Causeway Lane (Blinkhorn 1999), apart from fabrics BL2 and BL4, which resemble Iron Age fabrics. When those groups were first analysed, there appeared to be some evidence from sites in the south-east midlands to suggest that pottery of this type could be dated by the technique of temper preparation used. It now seems more likely, in the light of new evidence (Blinkhorn 1993), that the reasons are cultural rather than chronological. It was suggested that the lack of chaff-tempered wares were one factor for supposing that the Leicester pottery was early in date, based on the evidence from Mucking, Essex (Hamerow 1987). However, it appears that chaff-tempering was not very common on sites in the south-east midlands, as finds of the material are relatively rare when compared with sand- or mineral-tempered pottery.

The Bonnors Lane assemblage does show some differences when compared to other Leicester sites. Crushed mineral tempered pottery (fabrics BL1 & BL3, total 34 sherds) is far commoner than the sand tempered wares (BL5, one sherd), whereas at the St. Peters Lane and Little Lane sites, the ratio of mineral to sand tempered pottery is approximately 6:4 in both cases. This may have significance with relation to the cultural identity of the occupants of each of the settlements, or may simply be a statistical anomaly due to the small assemblage sizes.

The five fabrics were:

BL1: Granite temper. Dark grey to black fabric with moderate to dense temper of angular lumps of granite up to 5mm. 30 sherds, 266g.

BL2: Shell temper. Dark grey to black fabric with sparse to moderate crushed shell up to 5mm, although the majority is 2mm or less. Many of the inclusions are leached out. Sparse sub-rounded quartzite up to 1mm. One sherd, 26g.

BL3: Granite and shell temper. Dark grey to black fabric with moderate angular lumps of granite up to 2mm and sparse to moderate crushed shell up to 10mm. Surfaces oxidised brown. 4 sherds, 102g.

BL4: Limestone and white quartzite temper. Moderate to dense temper of sub-angular pieces of white quartzite and limestone up to 3mm. Rare rounded red ironstone up to 1mm. 1 sherd, 36g.

BL5: Quartzite temper. Moderate to dense temper of pale grey, orange and black sub-rounded quartzite up to 1mm. One sherd, 6g.

The Illustrated Pottery (Illus.29)

BLS1: Fabric BL3, context 1167. Grey-brown fabric with orange-brown surfaces.

BLS2: Fabric BL4, context 685. Uniform dark grey fabric.

BLS3: Fabric BL5, context 575. Uniform dark grey fabric.

BLS4: Fabric BL1, context 35. Black fabric.

BLS5: Fabric BL1, context 759. Black fabric.

BLS6: Fabric BL1, context 633. Black fabric with dark brown, lightly burnished outer surface.

BLS7: Fabric BL1, context 1183. Dark grey fabric with slightly paler inner surface.

Table 10. The Early/Middle Saxon Pottery

Record No.	Con-text	Phase	Shrd No.	Wt (g)	Fabric	RimF	RimD	Base	BaseD	Vess	Inc	Lug	Comments
1	32	13	1	3	BL1	-	-	-	-	-	-	-	
2	35	13	1	5	BL1	4	14	-	-	1	-	-	
3	196	8	1	2	BL1	-	-	-	-	-	-	-	
4	325	8	1	2	BL1	-	-	-	-	-	-	-	
5	507	13	1	16	BL1	-	-	-	-	-	1	-	
6	507	13	1	2	BL1	4	14	-	-	1	-	-	
7	575	8	1	6	BL5	-	-	-	-	-	-	-	
8	633	8	2	30	BL1	-	-	-	-	-	-	-	
9	633	8	1	8	BL1	4	16	-	-	1	-	-	
10	685	8	1	36	BL4	1	22	-	-	1	-	-	
11	759	16	1	15	BL1	7	13	-	-	1	-	-	
12	1060	10	1	6	BL1	-	-	-	-	-	1	-	
13	1088*	7	10	30	BL1	-	-	-	-	-	-	-	
14	1088*	7	2	17	BL3	-	-	-	-	-	-	-	
15	1123§	7	1	26	BL2	-	-	-	-	-	-	-	
16	1128	8	1	4	BL1	-	-	-	-	-	1	-	Same vessel as 1060
17	1167	8	1	52	BL3	5	18	-	-	1	-	-	
18	1179	8	1	9	BL1	-	-	-	-	-	1	-	
19	1181	8	1	15	-	-	-	-	-	-	-	-	Medieval
20	1183*	7	4	48	BL1	-	-	-	-	-	-	-	
21	1183*	7	1	32	BL1	3	18	-	-	1	-	-	
22	1183*	7	1	33	BL3	5	20	-	-	1	-	-	Same vessel as 1167
23	1213*	7	1	16	BL1	7	13	-	-	1	-	-	Same vessel as 759
24	1312	15	1	38	BL1	-	-	-	-	-	-	-	

Key:

* = Context associated with Phase 7 Saxon building

§ = Saxon layer

ILLUSTRATION 29

4.4 Medieval and Later Pottery and Tile

Sian Davies and Deborah Sawday

Introduction

The pottery (2900 sherds, weighing 7790g, including the intrusive pottery in Roman layers) and tile (153 fragments weighing 8082g) from stratified contexts was examined under a x20 magnification binocular microscope and catalogued by fabric and context. A key to the fabric series is shown in Table 11. Quantification is by sherd/fragment numbers and weight. Tables 12, 13 and 21 give the Saxon and later pottery and medieval roof tile totals for the post Roman Phases 7 to 17.

The Stratified Ceramic Record

Sherds of intrusive medieval pottery occurred in the Roman Phases 2, 3 and 5. Residual Roman pottery was also found in all the later phases, and residual Saxon pottery in Phases 8, 10, 13, 15 and 16.

Phase 8 - 339 sherds of post Roman pottery - Tables 12 and 14

The early boundary ditches produced only very small fragments of pottery, with no diagnostic forms, predominantly in Potters Marston, fabric PM, save for a sherd of the presumed local Splashed ware, SP3, and an unglazed body sherd in Chilvers Coton ware, fabric CC1, in 985. The equivalent fabric at Chilvers Coton, fabric A, is dated generally from the 13th century at the kiln site (Mayes and Scott 1984, 40). Other sherds of CC1 were found in the Structure 5 post holes 330 and 1164, and in the pit 930 and post hole 491.

The post holes 251 and 614, in the area of Structure 2, produced only two fragments of pottery in the Lyveden/Stanion fabric LY4, dating from the 12th or 13th centuries, and a fragment in CC5. The latter, fabric B at Chilvers Coton, is generally dated to the 13th century at Chilvers Coton (Mayes and Scott 1984, 41) and is rarely found in Leicester. The other post holes in this vicinity contained only undiagnostic fragments of PM, and the pit 1076, a fragment of fabric SP3, dating from the 12th to the mid 13th century.

Two features relating to Structures 3 and 4 respectively, the timber slot, 1222, and the stone footing/foundation, 1166, produced only three undiagnostic sherds of PM. The pit in the same area, 1173, also contained fourteen sherds of PM, including a storage jar fragment thought to date from the 13th century in this ware (Sawday 1989 & 1991).

The post holes relating to Structure 5 included part of a pipkin handle in CC1. Chronologically, pipkins first appeared in fabric A at Chilvers Coton at Site 3 kiln 16, dating from the later 13th century (Mayes and Scott 1984). The post hole 1160 included fragments of two jug necks in PM, the lack of surface finishing on the interior may be a characteristic of the jugs dating from the 13th rather than the 12th century in this ware, as with the vessel, Illus. 30.2, noted below. The post hole 851 and the associated layer 1174 included fragments of the green glazed Nottingham wares, NO1 and NO3, similar pottery at Nottingham dating from *c.* 1250.

Table 11: Key to the Post Roman Pottery and Ridge Tile fabrics

Code	Common Names/Sources/Kiln & Fabric Equivalent where known	Approx Date Range
ST1	Stamford ware 1 – Stamford fabrics B/C (1)	1150-13th C
ST2	Stamford ware 2 – Stamford fabrics G B (A) (1)	1050-12th C
ST3	Stamford ware 3 – Stamford fabrics E F/H A/D (1)	900-1050+
TO	Torksey type ware – ?local/Lincs (2)	10th-12th C
PM	Potters Marston ware – Potters Marston s.w. Leics (3) (4)	1100-1300
SP1	Splashed Ware 1 – coarse Nottingham Splashed ware (5) (6)	1180-1250
SP2	Splashed Ware 2 – fine Nottingham Splashed ware (5) (6)	1075-1180
SP3	Splashed Ware 3 – ?local (4)	1100-1250
LY1	Stanion/Lyveden type ware 1 – ?SE Leics/Northants, Northampton fabric T2 (7)	1200-1400
LY4	Stanion/Lyveden type ware 4 – as above, Northampton fabric T1-2, T2 (7)	1100-1400
LY	Stanion/Lyveden type ware – unclassified	
RS	Reduced Sandy ware – unclassified, possibly local (4)	850-1400
OS	Oxidised Sandy Ware – unclassified, possibly local (4)	12th-13th C
CC1	Chilvers Coton ware 1 – Warwicks, fabric A (8)	1200-1400
CC2	Chilvers Coton ware 2 – Warwicks, fabric C (8)	1200-1475
CC5	Chilvers Coton ware 5 – Warwicks, fabric B (8)	1200-1475
NO1	Nottingham ware 1 – Nottingham (6)	1250-1300
NO2	Nottingham ware 2 – Nottingham (6)	1230-1300
NO3	Nottingham ware 3 – Nottingham (6)	1250-1350
NO4	Nottingham ware 4 – Nottingham (6)	1275-1325+
MS1	Medieval Sandy ware 1 – ?local/Chilvers Coton/ Derbys (5)	1200-1400
MS2	Medieval Sandy ware 2 – ?local/Chilvers Coton/ Derbys (5)	1200-1400
MS3	Medieval Sandy ware 3 – ?local/Chilvers Coton/ Derbys (5)	1250-1475
MS	Medieval Sandy ware misc. – ?local	1200-1475
MP1	Midland Purple 1 – ?Chilvers Coton, fabric D (8)	1375-1550
MP2	Midland Purple 2 – ?local/Ticknall, Derbys (5)	1375-1550
TG1	Tudor Green type ware 1 – ?Chilvers Coton fabric F(8)/Oxford or possibly Surrey or assoc. whitewares (9)	1400-1600
TG2	Tudor Green type ware 2 – ?Surrey whiteware (9)	1400-1600
TG	Tudor Green type ware – unclassified	1400-1600
CW1	Cistercian ware 1 – ?Chilvers Coton, fabric E (8)	1475-1550
CW2	Cistercian ware 2 – ?Ticknall (5)	1475-1550
CW3	Cistercian ware 3 – ?Ticknall (5)?Chilvers Coton (8)	1475-1550
MB	Midland Blackware – ?local/Ticknall (10)	1550-1750
MY	Midland Yellow – ?Ticknall (10) (11)	1500-1750
EA1	Earthenware 1 – ?Chilvers Coton/Ticknall (10) (11)	1500-1750
EA2	Earthenware 2 – ?Chilvers Coton/Ticknall (10) (11)	1600+
EA3	Earthenware 3 – Mottled ware, Staffs (10) (11)	1650-1770
EA5	Earthenware 5 – ‘imitation’ Mottled ware - ?local (11)	1650-1770
EA6	Earthenware 6 – Blackwares – ?local (11)	1550+
EA7	Earthenware 7 – Slipwares – ?Chilvers Coton/Ticknall Staffs etc., (10) (11)	1600-1850
EA8	Earthenware 8 – Creamware	modern
EA9	Earthenware 9 – Pearlware	modern
EA10	Earthenware 10 – fine White Earthenware	modern
EA11	Earthenware 11 – English Tin Glazed Earthenware	1650-1800
EA	Earthenware – unclassified Post Med Earthenware	modern
SW1	Stoneware 1 – Drab/Crouch ware	1680-1700
SW3	Stoneware 3 – English - Drab ware	1750-1770
SW4	Stoneware 4 – English - White Salt Glazed Stoneware - Staffs etc.	1730-1770
SW5	Stoneware 5 – English - Brown Salt Glazed Stoneware	1670-1900
SW	Stoneware – unclassified	modern
PO	Porcelain	modern
MA2	Martincamp type 2 Stoneware (12)	16th C
RA	Raeren Stoneware (12)	16th C
FR	Frechen/Cologne Stoneware (12)	16th/17thC
WE	Westerwald Stoneware (12)	17th/18th C

(1) Kilmurry 1980, Leach 1987

(2) Barley 1964, 1981, Mainman 1990

(3) Haynes 1952, Sawday 1989, 1991

(4) Davies and Sawday 1999

(5) Coppack 1980

(6) Original id. of fabrics by V. Nailor, Brewhouse Yard Museum

(7) McCarthy 1979, Brown 1993/4

(8) Mayes & Scott 1984

(9) Pearce, Vince *et al* 1988

(10) Gooder 1984

(11) Sawday 1989

(12) Hurst *et al* 1986

Table 12. The post Roman pottery, Phases 7 to 13, by fabric, sherd numbers and weight (g) per phase

Phase/ Fabric	7	8	9	10	11	12	13
Residual RB	180	353	222	41	43	67	146
Saxon	13/181	8/108		1/10			4/26
Late Saxon/Early Medieval							
ST3					1/11		
ST2		3/20	1/3		1/5		2/3
ST1		1/5	2/66				2/30
TO			6/112				
PM		291/6025	298/5715	63/1200	264/4185	19/132	105/1164
SP2			1/12		1/8		
SP3		3/24	2/14		2/26		
LY4		14/125	3/74	3/54	6/195	1/4	5/75
RS			1/15		2/26		
OS			1/5		1/10		1/3
Medieval							
CC1		12/130	40/647	16/164	21/300	23/277	26/434
CC2			20/343	1/10	13/214	4/25	19/196
CC5		1/11	1/1		1/61		
LY1			1/16				2/20
NO1		1/10					
NO2		1/1					
NO3		1/5	22/263	8/157	11/190	2/21	12/122
NO4							2/2
MS1		3/27	6/80		33/335	5/98	10/120
MS2			14/179	4/55	33/473	2/15	19/138
Late Medieval/Post-medieval/Modern							
MS3			6/144	1/14	11/186	14/245	52/1026
MP1							6/340
MP2					2/35	15/428	150/3875
TG2							13/16
CW2							14/189
EA1							1/5
EA10						1/1	2/6
SW1			1/6				
RA						1/5	
MA2			1/5				
Post RB Totals	13/181	339/6491	427/7700	97/1664	403/6260	87/1251	447/7790
Av. Sherd Wt	13.9	19.1	18.0	17.1	15.5	14.3	17.4

Table 13. The post Roman pottery, Phases 14 to 17 and site totals, by fabric, sherd numbers and weight (g) per phase

Phase/Fabric	14	15	16	17	Site Totals
Residual RB	138	51	151	17	
Saxon		1/40	1/15		28/380
Late Saxon/Early Medieval					
ST3					1/11
ST2	2/8				9/39
ST1	1/2		2/24		8/127
TO					6/112
PM	73/913	14/177	89/1481	19/242	1235/21234
SP2	1/15				3/35
SP3	1/1	2/24			10/89
LY4	1/10		2/21		35/558
RS					3/41
OS					3/18
Medieval					
CC1	13/169	3/15	18/361	4/35	176/2532
CC2	11/138		15/265		83/1191
CC5					3/73
LY1					3/36
NO1					1/10
NO2			1/5		2/6
NO3	7/70		18/234	3/40	84/1102
NO4					2/2
MS1	5/76	2/40	7/209		71/985
MS2	7/51	4/31	21/175		104/1117
Late Medieval					
MS3	58/ 1497	2/66	22/462	1/5	167/3645
MP1	21/592		2/70		29/1002
MP2	45/ 1389	5/182	28/651		245/6560
TG1	5/157				5/157
TG2	52/264	2/2	2/2		69/284
TG			1/10		1/10
CW1				1/40	1/40
CW2	12/71	3/10	43/324		72/594
CW3	1/4				1/4
Post-medieval/Modern					
MB	5/37		6/38		11/75
MY	8/336	4/54	22/210	1/5	35/605
EA1	19/778	6/207	22/447	1/30	49/1467
EA2	2/16	6/199	31/552	21/1837	60/2604
EA3			7/41	2/29	9/70
EA5			8/155		8/155
EA6			12/81	2/30	14/111
EA7			1/25		1/25
EA8			11/39		11/39
EA9			4/75	3/10	7/85
EA10	3/12		14/60	68/1022	88/1101
EA11				1/1	1/1
EA				55/2235	55/2235
SW1					1/6
SW3			2/1		2/1
SW4			½		1/2
SW5			6/20	73/4389	79/4409
PO			1/1		1/1
MA2					1/5
LA	2/14				3/19
RA	1/65				1/65
FR			1/15		1/15
WE	1/14				1/14
Post-RB Totals	357/6699	54/1047	421/6071	255/9950	2900/55104
Av. Sherd Wt.	18.7	19.3	14.4	39.0	19.0

Pits in the immediate vicinity of Structure 5 produced, in PM, residual 12th century as well as 13th century vessel forms. The latter comprised a moulded cooking pot/storage jar rim and evidence for a minimum of at least three jugs in 1325, two with plain and complex rims respectively. The pit 1180 also contained a fragment of a storage jar in PM.

The complex of pits in the west of the site contained very small fragments in PM. The identifiable forms, predominantly 13th century in date, included a plain upright bowl rim, in 419 and the thumbled and externally sooted base of a jug in 351, and a moulded cooking pot/storage jar rim in 285. A sherd of the medieval sandy ware, MS1, also of 13th century date, was found in 414.

The remaining pits in this phase contained PM vessel forms, typically 13th century in date with convex bases (Illus. 30.1). These included cooking pots/storage jars with shouldered profiles and moulded rims (Davies and Sawday 1999) in 712, and 326; jugs with complex rims and a jug with a shouldered profile with the coils visible on the interior neck, (Illus. 30.2) in 31; and fragments from a storage jar and a dripping dish from the pit 576. Possibly residual pottery in this fabric was also present. The other coarse wares in this phase, SP3 and LY4, could also date from the 12th or 13th centuries and included a bowl (Illus. 30.3) from the pit 941 in LY4.

The pit 551 also produced a 13th century jug body sherd in fabric CC1, with an applied iron rich clay strip on the exterior under the glaze – a typically early decoration at Chilvers Coton (Mayes and Scott 1984, 41, fig. 46.328). A fragment of the glazed Nottingham fabric NO2, dating from circa 1230 at Nottingham, was found in 930.

The local coarse ware, PM, predominated in this early medieval phase, forming 86% of the total by sherd numbers, the relatively high proportion of jugs in this ware also suggesting a date in the thirteenth century for this group as a whole (*op. cit.*).

Table 14. The post Roman pottery, Phase 8, by fabric, sherd numbers and weight (g)

Fabric	Early boundary ditches	Structures 1&2 and area	Structure 3	Structure 4	Pit 1173	Structure 5 and area	Pit complex west of site	Other features
Saxon	4/47					1/10		3/51
Late Saxon/Early Medieval								
ST2							2/15	1/5
ST1								1/5
PM	5/25	8/62	¼	2/20	14/390	53/991	77/635	131/3898
SP3	1/5	1/6					1/13	
LY4		2/20				1/5	3/7	8/93
Medieval								
CC1	1/5					1/54		10/71
CC5		1/11						
NO1						1/10		
NO2								1/1
NO3						1/5		
MS1						2/25	1/2	
Post-RB Totals	11/82	12/99	1/4	2/20	14/390	60/1100	84/672	155/4124
Av. Sherd Wt.	7.4	8.25	4.0	10.0	27.8	18.3	8.0	26.6

Phase 9 - 427 sherds of post Roman pottery - Tables 12 and 15

The layer 21 (etc). was contaminated and contained fragments of Martincamp, fabric 2 and the Drab/Crouch ware, fabric SW1, dating from the 16th and 17th centuries respectively. This layer also produced N03, dating from the mid 13th century, and a jug rim (Illus. 30.4), in CC1. The latter was similar to jug rims in fabric A found at the earliest kilns at Chilvers Coton, notably Site 12, Kiln 30 (Mayes and Scott 1984). The generally small average sherd size of much of the material suggests a degree of residuality here.

There was relatively little evidence of residuality in the pottery from Structure 6, which had a large average sherd weight of 20.4 grams. In terms of fabrics, PM was predominant comprising 46 out of a total of 62 sherds, representing 74% of the assemblage from the layers 1115, 1155 and

cut feature 1008. The abraded fragments of two plain jug rims and a plain upright bowl rim in PM may, however, have been residual. The other identifiable PM vessels consisted of two thick walled cooking pot/storage jar fragments with upright moulded rims, generally thought to date from the 13th century (Davies and Sawday 1999). Several body sherds with thumb applied clay strips on the exterior, suggesting the presence of storage jars, were also noted.

There was, interestingly, a relatively high proportion of NO3 associated with Structure 6. The ten sherds of this fabric, with a suggested terminal date in the late 13th or early 14th centuries, included a stabbed jug handle fragment (Illus. 30.6). Decorated handles occur at Nottingham from at least the second half of the 13th century, but decoration generally seems to become more common on the medieval fine wares by the mid to late 13th century (Coppack 1980, fig. 68.99, fig. 70). A thumbled jug base fragment in CC1, in 1115, may also be of similar date, although this feature occurs from the earliest kiln sequences at Chilvers Coton, for example at Site 12, Kiln 30 (Mayes and Scott 1984, fig. 46, Table 1). Many of the sherds in fabrics CC1 and CC2 were relatively thick walled, the latter with a yellow brown glaze and knife trimming on the exterior. Fabric CC2, fabric C at Chilvers Coton, becomes more common in the 14th century at the kiln site (*op. cit.*, p.40), as does knife trimming, for example, at Site 2 Kiln 10c (*op. cit.*, fig. 23, table 1).

The pits 534, 676, 903, 873, 455 and 976 produced a range of pottery dating from the 13th century. The PM included a predominance of jugs, including a vessel with a thumbled base and with sooting opposite the handle, a dripping dish from 676 and a glazed body sherd, vessel type unknown, from 455, all characteristic of 13th century in this ware (Sawday 1989, 1991, Davies and Sawday 1999). The Chilvers Coton wares included a wide mouthed bowl rim fragment in CC2, in 534, paralleled at Site 13 F70 and dating to the late 13th century at Chilvers Coton (Mayes and Scott 1984, Table 1, fig. 84). The Nottingham wares, generally dating from the mid to late 13th century, included a jug with a highly decorated handle fragment in NO3 (Illus. 30.7). In terms of proportions, PM accounted for 75%, by sherd numbers, of the total of 148 sherds from the pits. The fine glazed medieval wares from Stanion/Lyveden, fabric LY1, Chilvers Coton, CC1 and CC2, the Nottingham ware, NO3 and the Medieval Sandy wares, MS2 and MS3, accounting for only 20% of the total.

Identifiable vessel forms from the well, 486/823, included a fine cooking pot/storage jar rim (Illus. 30.5) in CC1, not paralleled at the kiln site. Also a slashed jug handle fragment in CC2, typical of this fabric and paralleled at Chilvers Coton at kilns dated from the 13th century, for example, Site 1 F3 (Mayes and Scott 1984, 49, Table 1), and in the 14th century. Moreover, the assemblage contained a relatively high proportion of fabric CC2, which became more common during the 14th century. The presence of knife trimmed sherds in both CC1 and CC2, and the sherds of NO3, all suggest a terminal date in the late 13th or early 14th century for this group.

The remaining features in this phase, the layer 86, the slump layer 3 and the slot/gully 999, produced material dating from the 12th and 13th centuries. And also a fragment of NO3 with heavy reduction on the interior surfaces, dated to the late 13th or early 14th centuries at Nottingham (V. Nailor, pers comm). A few hard fired sherds in MS3 were also present in layer 86 suggesting a terminal date in the 14th century for this group as a whole.

Table 15. The post Roman pottery, Phase 9, by fabric, sherd numbers and weight (g)

Fabric	Layers over Structures 1&2	Structure 6	Pits	Well 486	Other features
Late Saxon/Early Medieval					
ST2			1/3		
ST1	1/60			1/6	
TO					6/112
PM	32/355	46/966	112/2339	24/310	84/1745
SP2			1/12		
SP3	1/10		1/4		
LY4	1/10		1/30		1/34
RS	1/15				
OS					1/5
Medieval					
CC1	1/10	4/110	9/96	5/121	21/310
CC2		2/60	4/69	11/204	3/10
CC5			1/1		
LY1			1/16		
NO3	2/10	10/130	5/67	3/33	2/23
MS1				6/80	
MS2			9/132	5/47	
MS3			3/49		3/95
Post-medieval					
SW1	1/6				
MA2	1/5				
Post-RB Totals	41/481	62/1266	148/2818	55/801	121/2334
Av. Sherd wt.	11.7	20.4	19.0	14.5	19.2

Phase 10 - 97 sherds of post Roman pottery - Table 12

Amongst those features associated with the robbing of Structure 6, the pit, 1137 produced only four sherds of PM, including a sloping sided bowl fragment with a plain rim (Davies and Sawday 1999) and a sherd of NO3, again with heavy reduction on the interior, characteristic of the late 13th or 14th century pottery at Nottingham. The layer 845/65 produced a range of fabrics, including MS3, which was quite hard fired with a yellowish green glaze, suggesting a date from the second half of the 13th into the 14th century for this group.

The robber trench 1061 contained a jug strap handle fragment in NO3, dating from the second half of the 13th century. The trenches 1190 and 1051 and the post holes 878 and 848 also contained Chilvers Coton and Nottingham wares of the same date, including part of a green glazed spouted pitcher or aquamanile in CC1, the latter form dating from the 13th century at Site 1 F3 at Chilvers Coton (Mayes and Scott 1984, 49, 144, Table 1).

Phase 11 - 403 sherds of post Roman pottery - Tables 12 and 16

Even allowing for some residuality in the layer 477, the thirty three sherds in PM represented only 33.3% of the total, an indication of a degree of residuality and of a 14th, rather than a 13th century date for the group as a whole, which included the almost complete profile of a rounded cooking pot/storage jar in MS1 (Illus. 30.10). Also present, in CC2, which becomes more common in the 14th and 15th centuries at Chilvers Coton (*op. cit.*, 41), was a necked cooking pot/storage jar fragment with an upright, flat topped rim. A similar, but not identical rim was found at Site 5, F.35 at Chilvers Coton (*op. cit.*, fig.75.2380.192), dating from the 15th century. Other late medieval pottery present included six sherds of relatively highly fired MS3, and one sherd of highly fired Midland Purple ware, fabric MP2, probably originating in Derbyshire (Coppack 1980), which is not thought to date earlier than the late 14th or early 15th century.

Of the pits, only 772 contained a significant amount of pottery, forty sherds. Many of these sherds were small and abraded and clearly residual, and included the thumb base of a jug in

fabric CC5 (Illus. 30.8), the latter more commonly dated from early in the industry, at Chilvers Coton (Mayes and Scott 1984, 41). This fabric, unlike CC1 and CC2, does not seem to have been commonly traded to Leicester, where it is rarely found. Two other pits, 67 and 674, between them only produced five sherds of pottery, including CC2 and MS3 dating from the 13th or 14th centuries.

The layer 677, thought to represent slumping into the top of the Phase 9 pit, 676, contained 256 sherds of pottery, most of it apparently residual judging by the presence of a sherd of the late medieval fabric MP2. Only one sherd of pottery, in CC2, was recovered from the layer 871. The post holes 1022 and 666 produced two sherds of MS2.

Phase 12 - 87 sherds of post Roman pottery - Tables 12 and 16

The layer 937 produced a single sherd of MP2, part of a glazed cistern rim, with a thumbled applied clay strip around the neck. Similar vessels were found in the phase 9A drain at the Austin Friars, Leicester, where the pottery had a terminal date from the mid to late 15th century (Mellor and Pearce 1981, fig.41.198).

The six pits 636, 678, 825, 740, 469 and 830 only produced sixty four sherds of pottery, the later medieval hard fired sherds in MS3 and MP2 equalling 35% of the total present by sherd numbers. A late medieval date for this group as a whole is confirmed by the presence of sherds of MP2, in all the pits save 678 and 830, whilst a sherd of Rhenish Stoneware, possibly from Raeren, dating from the 15th or 16th century was found in the latter. The identifiable forms were few, but included, in MS3 in 636, a wide mouthed bowl or pancheon rim with an inscribed wavy line decoration on the inner rim, a typical late medieval form and decoration in Leicester (Woodland 1981, fig.39.188); and a fragment of a possible ridged jug strap handle in MP2 from 469. A sherd of the modern Earthenware, EA10, is considered to be intrusive in context (824) in the pit 825.

Layer 396 contained a jug rim in fabric MS3. The cut feature 314 and the post hole 762 also each produced single sherds of MS3, the former being part of a bowl. A similar vessel was found at Elbow Lane, Leicester (Sawday 1989, fig 10.27). The slump layer 904 produced nineteen sherds of pottery, including residual wares as well as MP2.

Phase 13 - 447 sherds of post Roman pottery - Tables 12 and 16

The layers 465 and 470, post-dating the earlier medieval structures in the north-east of the site, together produced pottery ranging from the Stamford fabric ST1, to a hollow ware fragment in the early post-medieval Earthenware EA1. The only identifiable vessel form was part of an underfired cup base, glazed on the interior, in the Cistercian ware fabric CW2, which like fabric MP2, is thought to originate in Derbyshire.

In the eastern part of the excavation area, the stake-lined pits/scoops contained a total of fifty nine sherds, a terminal date in the late 15th or first half of the sixteenth century being suggested by the presence of MP2 and CW2 in pit 662. Five tiny fragments of the possible Surrey Whiteware, fabric TG2, dating from *c.* 1400, were also present in pits 662 and 755. Hard fired fragments of MS3, also suggesting a late medieval date, were present in 755, as well as much residual medieval pottery. The only identifiable vessel forms occurred in CW2, in 662; the bases of two small two handled cups, two body sherds decorated with an applied white clay slip, and a salt or candlestick base fragment (Illus. 30.11); the latter with applied white clay pads decorated with wheel stamps. Similar cups and decoration, but not identical stamps, were found at the Austin Friars in Leicester (Woodland 1981, figs.41 and 42).

The hearth 920 and a possibly associated post hole, 918, produced only six sherds of pottery, including fragments of the late medieval MS3 and MP2, sherds of the latter fabric in 920 linking with 662. There was only a residual fragment of Nottingham ware in the post hole 682, whilst the post/stake holes contained eight sherds of pottery, some residual and MP2 and MS3. Two of the post/stake holes, 785 and 779 contained sherds from a wide mouthed bowl rim in MS3, similar to vessels found in late medieval contexts at the Austin Friars (Woodland 1981, fig.41.203). The twenty nine sherds of pottery from layers 936, 895, 896 and 953 dated from the early medieval to the late medieval period, only four of the sherds being in MP2, and there was one fragment of MS3.

The Structure 7 foundation trench, 159, contained residual pottery well as two sherds of late medieval pottery in MP2 and CW2.

Residual Saxon and/or Late Saxon pottery was found in the pits 252, 34 and 508. All the pits (save 914 which contained no post-Roman pottery) also contained medieval material, except for 463 which only produced a single sherd of MP1, thought to be comparable to the Chilvers Coton Midland Purple, fabric D (Mayes and Scott, 1980). However, MP2 was clearly dominant with 42.5% of the total by sherd numbers. Other late medieval wares were also present in MS3, TG2 and CW2. Identifiable vessels were few, but included in MP2, part of a mortar (Illus. 30.12).

The pit 34 contained a particularly high proportion of MP1 and MP2, accounting for 79% of the total of 97 sherds. Unfortunately, much of the material was very fragmentary and no vessel forms could be identified in TG2 and CW2. Sherds in MS3 included a wide mouthed bowl or pancheon in 34, similar to vessels from the 15th century phase 9A drain at the Friary in fabric pxviii, now reclassified as MP2, (*op. cit.*, fig.139.189 and 191). A jar or cistern rim in MP1 and two unglazed jar or cistern rim fragments in MP2, similar to vessels in the same fabric from Donnington le Heath (Liddle 1977-8, fig. 1.15) and a cistern rim, glazed both internally and externally, with a thumbbed applied clay strip around the exterior neck of the vessel (Illus. 30.13) were present in pit 34.

The other pits produced few sherds of pottery between them. The only identifiable vessels were part of a jar in MP2 in 657, with a simple everted rim, paralleled in the same fabric at the site of medieval tenements in Leicester (A302.1971.8655), and an unglazed jug fragment in 1116 also in MP2.

The post hole 124 contained a sherd each of PM and MP1. Two fragments of the modern earthenware EA10 are considered intrusive in (246) pit 252, and (26) pit 34.

Table 16. The post Roman pottery from selected groups, Phases 11, 12 and 13, by fabric, sherd numbers and weight (g)

Fabric	Layer 477	Pits	Pits	Soil layers in NE of site	Stake-lined pits/scoops	hearth 920 & post holes 916 & 918	Structure 7	Pits
Phase	11	11	12	13	13	13	13	13
Saxon							1/5	3/21
Saxo-Norman/Early med								
ST3	1/11							
ST2								2/3
ST1				2/30				
PM	33/450	34/800	12/61	20/220	17/278	4/32	7/74	56/554
SP3		1/11						
LY4	2/50				1/25			4/50
RS		1/15						
OS							1/3	
Medieval								
LY1				1/5				1/15
CC1	8/85	2/70	16/209	4/100	3/41		2/5	17/288
CC2	6/150	2/40	3/21			1/4		18/192
CC5		1/61						
NO3	2/80		1/18	3/10	3/74	1/6		5/32
NO4								2/2
MS1	33/333		5/98	1/20			1/6	8/94
MS2	7/250	2/12	2/15		2/3		1/9	16/126
Later Medieval/ Post-med/Modern								
MS3	6/140	2/16	11/175		12/165	4/150		36/711
MP1								5/330
MP2	1/5		12/344	2/12	5/21	5/90	2/24	136/ 3728
TG2					5/6			8/10
CW2				1/5	11/181		1/1	½
EA1				1/5				
EA10			1/1					2/6
RA			1/5					
Post-RB Totals	99/1554	45/1025	64/947	35/407	59/794	15/282	16/127	320/6164
Av. Sherd wt.	15.6	22.7	14.7	11.6	13.4	18.8	7.9	19.2

Phase 14 - 357 sherds of post Roman pottery - Tables 13 and 17

The robbing of the east wall of Structure 7 produced residual medieval pottery and one sherd of the post medieval earthenware, EA2, dating from the late 16th or 17th century. The post hole 1207 produced a sherd of Midland Blackware, fabric MB, of a similar date.

The rectangular pits in the industrial complex all produced residual medieval pottery, save 471, which contained a sherd of the late medieval fabric CW2. The latter is also probably residual, as a terminal date in the 17th century is suggested by the presence of a glazed grey stoneware jug handle fragment in Westerwald Stoneware, fabric WE, and by single sherds of the early post medieval Earthenwares EA1 and Midland Yellow, fabric MY, in pit 395; and also by a sherd of MY in pit 452. Three sherds of Rhenish Stoneware, thought to be Raeren, fabric RA, in 452, included part of a frilled jug base, dating from the 16th century.

The presence of the fine late medieval tablewares in TG1, TG2 and CW2 in all the rectangular pits which produced pottery is of interest. Some of the sherds in CW2 had a decoration consisting of a line of stamped circles on the exterior body of a small cup in 497, and another small cup fragment was found in the same fabric in 407. The MY included, in pit 395, part of a salt or savoury dish, glazed both internally and externally, with a pierced lug just below the rim, Woodfield form B (Woodfield 1984); and a fragment of a pedestal vessel with a sooted base, and internal glaze, perhaps a candlestick or salt, Woodfield form A/B (*op. cit*) (Illus. 30.14) in pit 452. The EA1 included a jar or cistern rim fragment in 395.

The stone-lined drain produced 27 sherds of pottery, all residual save perhaps for the MP1 and MY. The MP1 comprised 19 sherds from a very highly fired vessel, a small handled jar (Illus. 30.9). The relatively high average sherd weight, of this vessel and of the two sherds of MY from the drain, which weighed 29.5 grams and 39 grams respectively, together with a single base sherd, also in MY, weighing 150 grams from the repair to the drain, 823, suggest that this pottery is contemporary. Unfortunately no vessel forms were identifiable in the MY. The Structure 9 post hole 1062 contained three sherds of medieval pottery, including a sherd of very highly fired MP2, possibly part of a jug, weighing 22g. The layer 335/405 also contained residual Late Saxon and medieval pottery as well as MS3, MP2 and TG2. Two intrusive sherds of the modern Earthenware, EA10, were also found in 405.

The pits 416, 389 and 346 produced only 25 sherds of pottery, in predominantly late medieval and early post-medieval wares. There were few identifiable vessels forms save for part of a wide mouthed bowl from 416 in EA1 and an unglazed shallow vessel in the same fabric in 389. Fine ware fragments in TG2 were found in 416 and fragments of CW2 in 389 and 346 and of MB in 346.

The pits 433, 422 and 495 contained residual medieval pottery. However, both 433 and 422, and the pit 57 also contained fragments of one or more of the post medieval Earthenwares EA1, MY and MB suggesting a similar terminal date to the industrial complex noted above. The sherd of EA2 present in 433 (411) may be intrusive, whilst an intrusive fragment of the modern Earthenware, EA10 was present in (391) in the same pit. Few vessel forms were identifiable. The pits also produced some fine wares, TG2 and CW2 in 495. Two body sherds in the latter fabric were decorated, one with an applied pad of white clay and another with white slip in a 'leaf' pattern (Woodland 1981, fig.41.216 and 217). A jug handle fragment was present in TG2 in 495 and fragments of MB in 433.

The post hole 125 produced one sherd of MP2 and the 'reversed' Cistercian ware CW3, the latter in a white/buff body showing yellow under the transparent lead glaze and possibly residual in this context. The post hole 96 contained a single fragment of EA1.

Table 17. The post Roman pottery from selected features in Phase 14, by fabric, sherd numbers and weight (g)

Fabric	Structure robber trench	Industrial complex					Pits
		Rectangular pits	Other pits	Structure 9	Layer 335/405	Drain & repair	
Late Saxon/Early Medieval							
ST2	1/2		1/5				2/8
ST1							½
PM	2/32	28/222		1/5		2/8	42/678
SP2		1/15					
SP3							1/1
LY4							1/10
Medieval							
CC1		6/86	1/10		1/3	1/10	4/60
CC2		5/103				1/11	3/20
NO3	1/3	2/11			1/1		4/58
MS1		2/21		1/15		1/25	1/15
MS2		6/47					¼
Late Medieval							
MS3		46/1201	10/190		5/80	½	6/214
MP1						19/586	2/6
MP2		30/1076		1/22	2/91		1/5
TG1		5/157					
TG2		49/255	1/5		1/2		½
CW2		5/47	4/19				3/5
Post-medieval/Modern							
MB			1/6				3/30
MY		2/54			1/150	2/78	3/54
EA1		4/89	11/725				6/225
LA		2/14					
RA		1/65					
WE		1/14					
EA2	1/11						2/16
EA10					2/10		½
Post-RB Totals	5/48	195/3477	29/960	3/42	13/337	27/720	88/1415
Av. Sherd wt.	9.6	17.8	33.1	14.0	25.9	26.7	16.0

Phase 15 - 54 sherds of post Roman pottery - Tables 13 and 18

The two supposed Civil War ditches produced residual medieval and earlier pottery, as well as sixteen sherds of the early post-medieval Earthenwares, EA1, EA2, and MY, dating from the 16th or 17th centuries. The absence of any English Salt Glazed Stonewares or Mottled Wares possibly suggest a terminal date prior to the mid 17th century for the group. Unfortunately the material was very fragmentary, but included two wide mouthed bowl rim fragments in EA1, and the rim of a jar in EA2. Both the jar and one of the bowls was glazed on the interior. Similar jars have been referred to as butter pots and have been dated from the 1640's at Staffordshire (Greaves 1976, 6, figs. 18 & 19), although the latter appear to be generally unglazed. Both the bowls and jar forms commonly occur in fabrics EA1 and EA2 in Leicester from the post-medieval period (Woodland 1981, fig 41.203; Woodland 1987, fig 39.49-53; Sawday 1989, fig 2.32-34), EA1, being thought to be the earlier of the two fabrics. Similarly MY is characteristic of early post-medieval assemblages in Leicester (*op. cit.*, 35). This ware was also very fragmentary, but included part of an upright rim with a narrow mouth, possibly from a cup or mug (Woodfield form G/I); part of a wide mouthed bowl rim with a horizontal flange (Woodfield form Na); and, unusually, a hollow ware body sherd glazed both internally and externally, with a thumb applied clay strip on the interior, of uncertain form.

Table 18. The post Roman pottery, Phase 15, by fabric, sherd numbers and weight (g)

Fabric	Ditch 1316	Ditch section 307	Ditch section 356	Ditch section 379
Saxon	1/40			
Early -Late Medieval				
PM	10/143	3/24	1/10	
SP3	2/24			
CC1	2/13	1/2		
MS1	2/40			
MS2	4/31			
MS3	2/66			
MP2	1/10	4/172		
TG2	2/2			
CW2	2/4			1/6
Post-medieval				
MY	4/54			
EA1	4/106	1/19		1/82
EA2	2/100	1/19	2/15	1/65
Totals	38/633	10/236	3/25	3/153
Av. Sherd wt.	16.6	23.6	8.3	51.0

Phase 16 - 421 sherds of post Roman pottery - Tables 13 and 19

Unfortunately the material from this phase was extremely fragmentary, and few vessel forms could be identified. In particular, the post-medieval Earthenwares EA1, EA2, MY and MB, though not necessarily residual here, provided no clear dating evidence.

The Building 1 construction trenches produced only residual medieval and early post-medieval pottery. Similarly the make up/levelling layers for Building 3B produced much residual medieval and later pottery. Also present was a sherd each of the Staffordshire Mottled ware, EA3; the presumed local 'Imitation' Mottled ware, EA5 and Frechen/Cologne Stoneware, FR – all dating from the second half of the 17th century. This ties in with the late 17th or early 18th century date for the clay pipes from layers 15 and 16 (see below). The layers, 341, 567, 568 and 725 also produced pottery dating from the latter part of the 17th century in fabrics EA3 and EA5, and the English Brown Salt Glazed Stoneware, SW5. A similar terminal date is suggested for contexts associated with the construction of well, 364, which included a sherd of EA5.

The floor make up of Building 2B, 446, produced mainly residual medieval pottery as well as two sherds of the early post medieval fabric EA1. The fills of the timber slots 493, 166 and 262; the robbing of the north and south walls 443 and 445; the layers 158, 549 and 759; and the post hole 502 all produced only residual medieval pottery.

Layer 1306 and timber slots 1282 and 1303, relating to Building 1, produced residual pottery as well as Creamwares, fabric EA8, and two sherds of Pearlware, EA9 in 1282 (1281), suggesting a terminal date towards the late 18th century for this group. The fills of the wall foundation trenches 1298, 1305 and 1311 produced residual material as well as EA8, White Stoneware, fabric SW3, hard paste porcelain, fabric PO and the modern Earthenware, EA10, the latter dating from the mid 19th century. The later 18th and 19th century ceramics may relate to the reuse of the Building 1 foundations in the construction of Building 6, in the mid 19th century, however. The late 17th/early 18th century clay pipes in 1298, 1311 and layer 1306 may more accurately reflect the construction date of Building 1. The pits, 94 and 155 produced only residual medieval and early post-medieval pottery, but again contained late 17th/early 18th century clay tobacco pipes (see The Clay Tobacco Pipes, below).

The slump layer 296, filling the upper part of the Phase 8 pit 295, contained residual medieval and later pottery as well as sherds of EA9 and EA10. The pit 715 also produced a range of pottery dating from the medieval to the modern period, including the Brown Salt Glazed Stoneware, fabric SW5, and the Earthenwares EA9 and EA10.

Table 19. The post Roman pottery in selected groups, Phase 16, by fabric, sherd numbers and weight (g)

Fabric	Building 1 foundation trenches	Building 1 timber slots 1282 + 1303	Building 1 layers	Pits 94 & 155	Building 2	Building 3A construction trench 113	Building 3B make-up & floor layers	Building 3B well (incl. paving 42)
Saxon/Medieval	3/21		9/108	24/299	41/573	6/78	125/1826	57/1298
Post-medieval								
MB							6/38	
MY			1/6	1/1		1/45	18/153	1/5
EA1	1/19		1/82	1/24	2/51		14/238	3/80
EA2	2/10	6/390	1/65			2/15	18/119	1/10
EA3		3/30					4/11	
EA5		4/80					2/24	1/50
EA6		3/23	1/2	1/1			5/50	
EA7	1/25							
EA8	6/5	4/19	1/15					
EA9		2/8						
EA10	3/5							
PO	1/1							
SW3	2/1							
SW4		1/2						
SW5	4/12						1/5	
FR							1/5	
Total Post-med	20/78	23/552	3/23	3/26	2/51	3/60	69/643	6/145
Av. Sherd wt.	3.9	24.0	7.6	8.6	17.0	20.0	9.4	24.1

Phase 17 - 255 sherds of post Roman pottery - Tables 13 and 20

The backfill of the Building 3B well, 257, and the post hole, 566, seemingly part of a timber structure on the west side of that building, produced only two sherds of residual medieval pottery.

The backfill (2) of the Building 4 cellars produced a range of pottery dating from the early to mid 19th century, including a bread pot (Brears 1971, 63) and wide mouthed bowls or pancheons in EA2, and several other bread pots in SW5. One of the latter had the name of the Derbyshire pottery 'C. SILCOCK' dating from the 1840's (*op. cit.*, 173-174) engraved on the shoulder. Both the bread pots and pancheons may reflect the presence of the bakery on the site, built in 1862, though these vessels would have been in common domestic use in the 19th century. Several ink pots also occurred in SW5. Also present was a 19th century teapot in Church Gresley ware, in the unclassified fabric EA, another Derbyshire product (*op. cit.*, 174). The cut feature 390, the drainage feature 121, and the slump fills 357 and 368 in the upper part of the Phase 14 pit 389, produced residual medieval as well as modern pottery.

Table 20. The post Roman pottery by fabric, sherd numbers and weight (g) from selected features, Phase 17

Fabric	Building 3B well backfill 257	Building 4 cellar backfill 2	Building 5 timber slot 401	Cesspit/soakaway 121
Medieval			1/5	1/7
Post-medieval				
MY				1/5
EA1				
EA2		18/1789		1/21
EA3		1/15		1/14
EA6		2/30		
EA9	1/5			
EA10		64/992		
EA11				1/1
EA		55/2235		
SW5		73/4389		
Total Post-med	1/5	213/9450 *	1/5	4/41
Av. Sherd wt.	5.0	44.3	5.0	10.2

* Only a sample of the pottery from the backfill of the Building 4 cellar (2) was retained for analysis

Discussion

As at other extra-mural sites in Leicester, notably Elfed Thomas, the relatively small amount of Stamford and the other Saxo-Norman wares suggests only minimal activity in this area during the 11th and early 12th centuries. The earliest pottery apart from the residual Roman and Saxon material included three sherds of the Stamford fabric ST2, in the Phase 8 pits 31 and 419. However, a remarkably high proportion of the Stamford ware, although generally residual in later medieval contexts, is in the 'developed' fabric ST1 with the copper glaze, dating from the mid/late 12th century at Stamford. This copper glazed pottery is relatively uncommon amongst the Stamford wares found in Leicester (Sawday 1989, 34; Davies and Sawday 1999, 168), though Kilmurry thought it was the major traded Stamford ware (Kilmurry 1980, 164).

Though there is evidence of some residual 12th century Potters Marston here, most of this pottery appears to date typologically from the 13th century. The very high proportion of Potters Marston, fabric PM, Splashed Ware, fabric SP3 and Lyveden Stanion ware, LY4, in Phase 8, accounting for 91.3% of the total number of sherds of pottery and 95.4% of the total weight - is typical of 13th century assemblages in Leicester, both within the town walls, at for example, Causeway Lane (Davies and Sawday 1999), and without eg. the Austin Friars (Woodland 1981).

Also of interest is the presence of a relatively high proportion of the green glazed Nottingham fabrics, NO1-NO4 which, with eighty nine sherds in total, accounted for almost a third as many sherds as the 262 sherds of Chilvers Coton ware, fabrics CC1, CC2 and CC5. More typically, perhaps, Causeway Lane produced only 102 sherds of Nottingham ware, compared to 666 sherds of Chilvers Coton.

Cistercian ware fabric CW2, Midland Yellow, fabric MY, and Midland Blackware, fabric MB in Phase 14 are commonly found in assemblages of this date in Leicester. However, the presence of several fragments of decorated Cistercian ware, fabric CW2, one of which is illustrated (Illus. 30.11) and of the reversed Cistercian ware, CW3 is of note. The early decorated examples of this ware often seem to be associated with monastic sites, witness the quantities of Cistercian ware found at the Austin Friars (Woodland 1981), whilst this is the first fragment of CW3 found in Leicester. The sherd of Martincamp is of interest and, as with the fine wares, the Surrey and associated Whitewares, fabric TG1 and TG2, medieval floor and ridge tile (see below) may originate from high status buildings nearby. The Rhenish wares, the Raeren/Cologne and the Westerwald Stonewares, on the other hand, were imported in huge quantities in the post-medieval and modern periods.

Conclusions

Whilst the average sherd size by weight of the pottery was quite large, this related primarily to the material from the pits in Phases 8, 9, 11 and 14, plus a handful of other medieval and post-medieval features. Most of the pottery was very fragmentary and no significant joins were noted between sherds from different areas of the site. However, links were noted between sherds from three post holes in the vicinity of the Phase 8 Structure 5: 1160, 1047 and 851. Similarly, the fragmentary nature of the pottery meant that few useful comparisons could be made between the pottery assemblages from different structural areas.

Overall, the changing amounts of pottery recovered from these areas during Phases 8 to 13, may have simply been a function of the type of activity going on in each area during this time, and not necessarily a measure of the intensity of the occupation. Thus, the layers possibly representing garden soil in the north of the site, in Phase 9, produced relatively little pottery; whereas, the more densely pitted south-eastern part of the site, not surprisingly, produced the single largest assemblage of pottery from the backfill of these features in Phase 8 (Table 14). Nevertheless, in terms of pottery finds, during Phases 9, 10, 11 and 13, (Tables 15 & 16) the east central area of the site, in the vicinity of structure 6, clearly seems to have been the major focus of activity.

During Phase 14 (Table 17) the bulk of the pottery recovered came from the backfill of the industrial complex in the north of the site. This included much residual material, and indeed, it is quite possible that the dating of the industrial activity in this area is broadly contemporary with the activity represented by Phase 13. Phase 15 produced little pottery, but as with the industrial complex in Phase 14, much of this material appears to be associated with the deliberate backfilling of the site. This becomes more apparent when looking at the relatively high proportions of ridge tile associated with the pottery, especially from Phase 15 (see below).

The pottery assemblages associated with Phases 16 and 17 included a high proportion of residual pottery as well as an interesting range of modern material. However, the pottery dating evidence for the construction of Building 3 in Phase 16 seems to tie in well with the 17th or early 18th century date for the clay pipes from contexts 15 and 16. On the other hand, the Building 1 wall foundation trenches contained later 18th-19th century ceramics, in addition to 17th century material, although this may be explained by the reuse of the Building 1 foundations in the construction of Building 6 in the mid 19th century. It is notable that the pottery recovered from the pits to the rear of Building 1 was mainly residual earlier post-medieval material, the late 17th or early 18th century date for the backfilling of these features being determined by the clay pipe and coin evidence.

The high proportion of Nottingham green glazed wares and the 'developed' Stamford ware noted above, may suggest that the Bonnors Lane site, for some reason, had slightly different trade patterns than other parts of the town and adjacent suburbs during the later 12th and 13th centuries. The presence of three sherds of the coarse Chilvers Coton fabric CC5 is also noteworthy, as this ware, although found on sites near Chilvers Coton, does not seem to have been imported to Leicester.

Similarly, the Tudor Green or Surrey Whiteware type wares (75 sherds, weighing 451 grams) represent the largest assemblage of its kind found to date outside the walled medieval town. It is tempting to relate this fine table ware, the medieval floor tile (discussed below) and the later medieval and early post medieval Cistercian/Midland Blackwares and Midland Yellow Wares, to the disposal of rubbish associated, firstly, with the College of the Annunciation of St Mary, and

later, with the Newarke, a wealthy residential suburb dating from the period after the dissolution of the monasteries, to the north-west of the excavation site.

Illustrated pottery (Illus. 30)

Illus. no.	Pot no.	Phase	Context	Fabric	Vessel class	Comments
1	5598	8	901	PM	Jug	Coil built, knife trimmed/smoothed exterior
2	5039	8	22	PM	Jug	Coils visible on inner neck
3	5613	8	942	LY4	Bowl	Hand/coil built, reduced/burnt exterior
4	5341	9	489	CC1	Jug	Wheel thrown, splashes of yellow/green/orange glaze interior and exterior
5	5334	9	485	CC1	Cp/stj	Wheel thrown, spot of green glaze exterior rim
6	5667	9	1155	NO3	Jug	Wheel thrown, yellowish green glaze ext., stabbed handle
7	5625	9	975	NO3	Jug	Yellowish green glaze, stabbed decoration
8	5823	11	771	CC5	Jug	Wheel thrown, green glaze on exterior base
9	5489	14	774	MP1	Jar	Wheel thrown, glazed interior and exterior
	5487	14	773			
10	5326	11	477	MS1	Cp/stj	Wheel thrown, thumbled applied clay strips
11	5781	13	660	CW2	?Salt	Wheel thrown, stamped applied white clay pads, upper surface glazed
12	5112	13	246	MP2	Mortar	Wheel thrown, glazed interior
13	5046	13	26	MP2	Cistern	Wheel thrown, splashes of glaze interior and exterior
14	5382	14	527	MY	?Candle stick/ salt	Wheel thrown, glazed int, sooted ext base

The Medieval Roof Tile Table 21

The 153 fragments of medieval roof furniture consisted predominantly of ridge tile, though what may be part of a glazed finial from a chimney pot or ventilator in fabric SP3 occurred in Phase 9. The tiles occurred in a wide range of fabrics, paralleling the medieval pottery from the site. Parts of several crests were recovered, but most were too fragmentary to identify, save for a possible pyramid/cockscorn or serpentine crest, dating from the late 14th to the 16th centuries (Allin 1981b), in MP2, which was residual in Phase 16.

Most of the material was found in pits, not directly related to the excavated structures. However, a glazed fragment of ridge tile in PM was found in the layer 1174, in the vicinity of the Phase 8 Structure 5. What may be part of a glazed finial from a chimney pot or ventilator in SP3, noted above, was found in the Phase 9 layer 21, overlying the remains of the earlier Phase 8 Structure 2. Another SP3 ridge tile fragment was found in the layer 1115, and part of a CC1 ridge tile in layer 1155, both associated with the Phase 9 Structure 6. In the same area, in Phase 9, the cut feature 1008 contained a fragment of ridge tile in MP1, which is assumed to be intrusive.

Phase 10 produced fragments of ridge tile in fabrics CC1 and MS3 in the layer 845. The Phase 13 layers 465, in the north-east of the site, and 936 and 896 in the east central area, produced ridge tile fragments in CC1, CC2 and MP1. The Structure 8 post holes 785 and 779, in Phase 13, produced single fragments of ridge tile in MS1, CC1 and MP2, whilst the Structure 7 timber slot 159 contained fragments of ridge tile in PM and CC1. The Phase 14 industrial complex produced quantities of residual medieval ridge tile, as did Phase 16, as well as a fragment of decorated floor tile.

ILLUSTRATION 30

Table 21. The Medieval roof furniture by fabric, fragments numbers and weight (grams) by phase

Phase/ Fabric	8	9	10	11	12	13	14	15	16	17	Totals
PM	1/15	1/10		1/80	1/20	3/39					7/164
SP3	1/55	5/575					2/175	1/55	5/210		14/1070
OS	1/90										1/90
CC1	1/40	2/34	1/55			6/371	11/543	7/627	11/350		39/2020
CC2					1/150	1/66	2/76	1/16	14/666		19/974
MS1					2/30	1/20	1/34		2/79		6/163
MS2							7/380	3/61	10/354		20/795
MS3			1/21		1/10	1/10	8/489		16/876	1/33	28/1439
MP1		1/25				1/45					2/70
MP2						2/164	6/545	2/75	7/513		17/1297
Totals	4/200	9/644	2/76	1/80	5/210	15/715	37/2242	14/834	65/3048	1/33	153/8082

Discussion of the Roof Tile

The ridge tile occurred in a range of fabrics - covering the whole of the medieval period, but the presumed local Splashed ware, SP3 and the Chilvers Coton products in CC1 and CC2 are particularly evident. The material was very fragmentary and, as with the pottery, few links or joins were noted across the site. Most of the tile which can be tentatively associated with excavated structures on the site came from Phases 9 and 10, in the vicinity of Structure 6. However, the bulk of the tile was recovered from residual contexts, in the rectangular pits in the industrial complex, Phase 14, and from the Phase 15 ditches. In particular, the backfill of ditch 1316, in the east of the site, contained only thirty eight sherds of pottery and fourteen fragments of tile. The wide date range and the variety of fabrics present implies that the tile originated from a long sequence of building and/or repairs.

The Floor Tile

Ten fragments of medieval floor tile, in an unclassified medieval sandy ware, MS, were present. Of note was a fragment of a 14th century inlaid floor tile with an unidentified coat of arms (Whitcomb 1956, no. 63), which was residual in the pit 452, Phase 14. Similar examples have been found at the church of St. Mary de Castro in Leicester, and it is tempting to relate this find to the ecclesiastical sites nearby. One fragment of a post-medieval peg tile in the unclassified earthenware, EA, was found in the Phase 15 ditch 1316. Phase 16 produced a single fragment of post-medieval floor tile from well 635.

4.5 Clay Tobacco Pipes

D. A. Higgins

This group of material was excavated by the Leicestershire Archaeological Unit in 1993 (Site Code A168 1993) and examined during 1995. Suggested depositional dates for the pottery associated with pipe groups was provided but not a context matrix.

The excavation produced a total of 71 pieces of pipe from 19 different contexts, comprising of 9 bowl, 59 stem and 3 mouthpiece fragments. Only 3 contexts produced more than 4 fragments of pipe. These were contexts (1), (46) and (154) which produced, respectively, 13, 14 and 11 fragments.

None of the pipes was marked or decorated and only one of the fragments was burnished. The burnished fragment came from context (311), upper fill of the Civil War period ditch 307, and had an average burnish on it. The stem had a bore of 8/64" and is of a seventeenth century form, but it is impossible to say whether it dates from the Civil War period or was a residual fragment included in the backfill of the ditch.

Burnished pipes were occasionally used in seventeenth century Leicester, but there were no other pipes or pottery from this context so it is impossible to draw any conclusions from this isolated piece. The other Civil War ditch 1316 produced a small fragment from a seventeenth century spur pipe in context (1315) with a stem bore of 7/64". Unfortunately, this is too fragmentary to date closely or to provide a form from a Civil War context.

Apart from a nineteenth century bowl (discussed below) in context 1 – the number allocated to finds recovered during the initial clearance of overburden from the site – all of the other bowls were spur types of a distinctive late seventeenth or early eighteenth century form. These came from contexts (19), (46), (154) and (289) (Illus. 31, nos. 1-6). Context (19) was the fill of the Phase 16 pit 25; (154) and (289) were both fills of pit 155, also Phase 16 (this pit also contained a William III farthing minted between 1695 and 1700). Context (46), also recorded as a pit, is not located. All of these pipes had milled rims, with between one- and three-quarters of the rim being so treated, the average being 2.5 quarters milled. The rims had all been smoothed (bottered) and three of them (Illus 31, nos. 3-5) had internal knife cuts to provide a finer finish to the lip. All of the surviving spurs had been trimmed or flattened to give a smooth base. Contexts (19), (46) and (154) all included large pipe fragments and a number of joining pieces were found within contexts (19) and (46). Although no complete pipes could be reassembled the fragments were of sufficient size to suggest a complete stem length of about 300mm for these pipes. This falls in the mid-range of recorded lengths for complete pipes of this period from elsewhere in the country (Higgins 1987, 64).

The large, plain form of these pipes is typical of the Leicester industry at this period and it is only the subtle differences in bowl curve and spur shape which show that these examples were probably all made in different moulds. It is likely that a number of workshops would have been producing pipes of this form, as is suggested by the differences in rim finish and the style of milling. The bowls are generally of a smooth, well designed form and neatly finished. They represent the products of a well established and thriving industry.

Three of the six bowls joined stems from the same context and that most of these groups contained large, 'fresh' pieces of pipe suggests that they had been little disturbed since burial. The pipe evidence from all of these groups would be consistent with a depositional date of c.1690-1710. Although not so closely dateable many of the stems recovered from other contexts

would fit with this date and, collectively, this provides evidence for a considerable amount of activity on the site at this time.

As noted above, a number of post-Civil War buildings were discovered on the site. Construction and flooring contexts directly associated with these only produced 10 stem fragments (contexts 15 and 16, Building 3B; and 1296 and 1310, Building 1) but these would all fit with a late seventeenth to early eighteenth century date for these deposits. It seems reasonable to suppose that building work and the associated deposition of material was taking place on the site at this time and that most of the pipe-bearing deposits are connected with this work. It is notable that, despite the proximity of the Town, earlier and later pipes were almost entirely absent from the excavation site. The most likely explanation for the lack of later pipes is that rubbish was being removed for disposal elsewhere. It has been suggested that the site may have been abandoned for a period, from *c.*1600 until the excavation of the Civil War ditches in the mid-1640's, which would account for the absence of early seventeenth century pipes.

Later material was present only in the clearance context 1, including two mouthpieces and a bowl, which are certainly of nineteenth century or later date. These finds may reflect a later demolition and rebuilding phase on the site. The nineteenth century bowl (Illus 31, no. 7) is a plain spur pattern of a type produced locally. Similar forms were recovered from a kiln group excavated at Causeway Lane in Leicester. The kiln group has been dated to *c.*1865 and attributed to the workshop of John and Martha Chennery (Higgins 1999, 222). Comparison of the Causeway Lane and Bonnors Lane bowls did not locate any identifiable mould flaws although some of the Causeway Lane pipes are very similar and might have come from the same mould.

The two mouthpieces from context 1 were also interesting as they can be shown to have come from the same mould since they shared distinctive mould flaws. They would have been from short stemmed 'cutty' pipes of the type produced from the mid-nineteenth century onwards. The stems terminated with a diamond-shaped section and a nipple mouthpiece.

Illustrated pipes (Illus. 31)

1. A168 1993 (19). Spur pipe of *c.*1680-1710, very smooth, well finished bowl in a slightly glossy fabric, bottered rim, three-quarters milled, stem bore 7/64". Two joining stem fragments give a surviving stem length of 19.5cm.
2. A168 1993 (19). Spur pipe of *c.*1690-1710, bottered rim, one-quarter milled, stem bore 7/64". 12.5cm of stem survives.
3. A168 1993 (46). Spur pipe of *c.*1690-1710, bottered and internally cut rim, three-quarters milled, stem bore 7/64". One joining stem fragment gives a surviving stem length of 7cm.
4. A168 1993 (46). Spur pipe of *c.*1690-1710, bottered and internally cut rim, a little over half milled, stem bore 7/64". One joining stem fragment gives a surviving stem length of 9cm.
5. A168 1993 (154). Spur pipe of *c.*1690-1710, bottered and internally cut rim, three-quarters milled, stem bore 7/64". Context (154) was from the same pit: 155 as (289).
6. A168 1993 (289). Spur pipe of *c.*1690-1710, bottered rim, three-quarters milled, stem bore 7/64". Context (289) was from the same pit: 155 as (154).
7. A168 1993 (1). Spur pipe of *c.*1850-1900, very similar to examples made by the Chennerys of Leicester, working *c.*1855-86. Simple cut rim, the base of the spur has not been trimmed, stem bore 4/64".

ILLUSTRATION 31

4.6 Small Finds

Dawn Harvey

Including a catalogue of the coins and tokens by R.A. Rutland

Introduction

In total 522 small finds were recovered from the Bonnors Lane excavation. Not all of the material is identifiable or useful in terms of dating and a selected catalogue of 95 items is presented below. Full details of all the finds are included in the site archive. Descriptions are included where the finds provide evidence of date, or seem to indicate the function of a phase or area of activity. No significant groups of finds were identified and the report format will discuss individual phases, followed by wider conclusions and interpretations.

Phase discussion

Roman

Phase 2

Of note from Phase 2 was a Neolithic polished stone axe [42], recovered from surface 462 west of the Roman road. The axe, of local manufacture originating in the Charnwood Forest area (Group XX), was probably imported on to the site along with the gravel that formed the surface.

Phase 5

Nineteen iron nails were recovered from contexts associated with the Phase 5 timber building. Important dating evidence in coinage was recovered from timber slot 1229, the coins were Valentinian I, AD 364-375 [79] and Helena, AD 337-340 [71]. Most of the other finds from this phase were recovered from pits. Pit 1339 produced an antoninianus of Valerian I, AD 253-260 [47], though slightly earlier than the other coins it falls within the pottery date range for this phase. A bone needle [30] from pit 1079 and a pin (not included in the selected catalogue) were of types common throughout the Roman period. Although few objects were identifiable these two bone items may tentatively suggest a domestic function for the adjacent building.

Phase 6

The two Phase 6 pits produced between them a total of five late 3rd to mid 4th century coins. Pit 58 contained a single antoninianus, posthumous issue of Claudius II, AD 268-270 [48]. The second pit, 87, contained four coins: Gloria Exercitus, AD 330-335 [65]; Constans as Caesar, AD 335-337 [60]; Constantius II, AD 337-340 [68] and Fel Temp Reparatio (fallen horseman) issue AD 354-361 [73]. Amongst the considerable quantity of animal bone there was an incomplete incised rib [40], possibly a grafitto but certainly not butchery marks. The coinage suggests continued activity on the site into the second half of the 4th century.

Anglo-Saxon

Phase 7

One of the most interesting areas for small finds was Phase 7. In addition to Anglo-Saxon items there was also a collection of residual Roman finds. Five Roman coins were recovered from the fill of the sunken featured building: Urbs Roma issue 330-335 [64]; Valens 367-375 [80]; denarius of Elagabalus 218-222 [46]; Constantius II 337-340 [67] and an unidentified antoninian [55]. Other Roman finds included a decorative handle, possibly from a toilet instrument [4]. None of the Roman finds showed any obvious signs of reuse as has been seen at Anglo-Saxon sites elsewhere, for example West Stow (West 1985).

Phase 7 produced significantly more worked bone than the preceding phases. A double-sided composite bone comb [34], a beating pin [35] and spindle whorl [36] all came from deposits associated with the sunken featured building. All of these items were employed in the industry of weaving, considered to be a domestic activity during this period. A similar range of finds was recovered from the Anglo-Saxon settlement site at Harston, Leicestershire (Dunning 1952) and, more recently, from Eye Kettleby, Leicestershire (Cooper forthcoming). The comb is a particularly large example, similar to, but still larger than one from SFB 8 at West Stow, dated to the early 6th century (West 1985; fig. 49.3). In addition there are two bone pin stem fragments one of which is hipped and decorated with a series of punched dots [33], for which no parallels have been found.

Medieval

Phase 8

Phase 8 produced two residual Roman coins; from the boundary ditch 836 (634) a coin of Urbs Roma issue 330-335 [63], and from post hole 318 (317) an unidentified antoninianus [54]. A jet spindle whorl [44] from one of the Structure 3 timber slots was presumed to be a residual Roman item, although no parallels have been found and this may be medieval in date. A horseshoe fragment, [25], dates post hole 424 (362) to the 13th/14th century.

Later Medieval

Phase 9

A rowel spur [23], possibly dating to the late 14th century, was recovered from pit 455 (267) in Phase 9. This type of spur was in general use by the 14th century, the date is not secure as the rowel is missing, the style of which is a more useful dating tool. Saxon workmanship was evident in a residual find from another Phase 9 pit, 676. The wire finger ring, [8], was formed by twisting the copper alloy wire around itself. This method has parallels in Saxon jewellery on rings, armlets and necklaces, often of silver as well as copper alloy (Jessup 1974, pl.23, fig.1) and (Brown 1915, pl.CVII, fig.5 and p.45).

Early Post-medieval

Phase 13

One of the stake-lined scoops/pits, 755, in Phase 13, produced a quill holder [37]. This was fashioned from a goose radius, the point of which has been sharpened. Such items may represent extension bodies added to quills as they wore down, an example from the Austin Friars, Leicester was recovered from a phase dating to the 14th century (Clay 1981, 144 no.109). This group of pits contained a notable quantity of iron objects, however positive identification is impossible due to poor preservation, although the items are not all one type of object.

Two pits from this phase produced good dating evidence for the 14th/15th centuries. The first, pit 252, produced an annular brooch [9] and a pin [14], both common in the 13th/14th centuries. Also from this pit was a lace end [15], of a type common from *c.* 1375 to 1550/75; a pin [12] dating to the 14th/15th century; and an iron key [19], of a type which probably dates from the 14th to late 15th century. Other miscellaneous finds were recorded, but notable due to their quantity are 158 nail fragments.

The second pit, 34, also produced a sizeable assemblage, although the material was noted for its poor state of preservation and fragmentary condition. The only dateable objects were a lace end of *c.* 1550/75 to 1700 and the handle of a toilet instrument of probable Roman date. An interesting find was a small iron buckle/brooch [18], resembling an annular brooch but only 9mm

in diameter. Four of these were recovered from the excavation, although their function is uncertain. If these were intended for securing clothing, they seem too small to be used on thick outer garments, which implies use with under garments such as hose. Also surviving in a fragmentary condition was a medieval strainer [17]. Few of the finds are dateable or identifiable, for example there were eleven fragments of copper alloy sheet and three possible tags, hinges, or clasps. In addition there were twenty iron nails, significant in comparison with the rest of the site though considerably less than pit 252.

Phase 14

The six rectangular industrial pits from Phase 14 all produced small finds. Pit 361 produced a 14th or 15th century pin, a quill holder similar to [37] in Phase 13, a whittle and tang blade fragment and seven iron nails. Pit 395 produced a 16th to 18th century lace end and three post-Roman pins, one dateable to the 14th/15th century. Sixteen iron nail fragments, a possible iron pin and an iron buckle similar to [18] from Phase 13 were also recovered from this pit.

The third pit 497 also contained lace ends, two of which were identified as dating from *c.* 1375 to 1550/75; an undated iron blade; a small annular buckle similar to [18] in Phase 13; a bone awl [31]; and eighteen nail fragments. Of note was a lead pilgrim flask [29] from 'Our Lady of Walsingham' shrine (Museum of London 1967, 259).

Pit 452 also produced a significant quantity of material, including a large copper alloy disc, the function of which is unknown, and a 14th/15th century pin. A complete iron hook [27], recovered from the upper fill (451), may have been associated with the original industrial function of the pit. Long-handled *hauling hooks* were used to move hides in to and out of pits in the *handling* stage of the tanning process (Thompson 1981). An iron key of the 13th century [20], a horseshoe probably of the 13th to 14th century, and twenty nail fragments were also recovered.

Pit 407 produced a lace end dating from *c.* 1375 to 1550/75, a pin of the 16th to 17th century and 25 nail fragments. The final pit 471 only produced two iron nails. The evidence suggests the pits were filled in shortly after use, as dateable finds concentrate in the earlier part of the phase.

Of the many smaller pits in this phase, 422 produced two pins of 14th/15th century date, two lace ends dating from *c.* 1375 to 1550/75, six iron nails and a horn core. Pit 57 also produced good dating evidence, in the form of a rowel spur [24], possibly of late 15th to early 16th century date and a lace end of *c.* 1550/75 to 1700.

Civil War Period

Phase 15

The Civil War period ditch 1316 produced a Charles I copper farthing dating from 1625 to 1649 [89] in context (1312) and a Nuremberg type jeton of the late 16th/early 17th century [91] in (1313).

Post-Civil War

Phase 16

Building 1 produced seven pins, two of 14th/15th century date, two of the 16th or 17th century, and a two-pronged fork probably dating to the 18th century.

Reused in the lining of the Building 3B well were three dressed stone fragments and a pivot stone. From the backfill of the well construction cut were two pins, one of which is attributable

to the 16th/17th century, an iron blade [22], and a plate probably of pewter. The plate, in an advanced state of decay, was 150mm in diameter with a 20mm wide rim.

A total of seven pits were recorded in this phase. Pit 155 produced a William III copper farthing [90] probably dating to 1700, a post-medieval buckle [10], three pins of 16th or 17th century date, eleven nail fragments and a whetstone. From pit 94 was a lace end of *c.* 1550/75 to 1700 date and seven nail fragments.

Conclusion

The small finds from Bonnors Lane frequently provide evidence of date, but are not generally informative in highlighting particular areas or episodes of activity. Many of the objects were in general use throughout society and do not assist in determining the social standing of the site. Several of the objects, such as the pilgrim flask and the Anglo-Saxon material, are of intrinsic interest.

Tangible evidence of craft/industrial activity was provided by the collection of horn cores and antler offcuts. Of the assemblage nine were examples of horn removal and five were of antler offcuts. The material was scattered across seven phases, two Roman, three medieval and two post-medieval. This quantity cannot have been the result of an organised industry, though was possibly a result of dumping or sporadic, small-scale horn working.

Selected catalogue

Listed in order are the catalogue number; small find number (prefixed SF); context number; context type; feature (cut) number; phase; and phase date range (in brackets).

Copper alloy

1. SF 58; 7; road surface; -; 3; (2nd quarter of 2nd century)

Spoon bowl, length of bowl 27mm, maximum diameter 19mm.

Crummy (1983) type 2, pear shaped bowl offset from the handle by a horseshoe loop.

1st half of the 2nd century AD. Other examples of this type of early Roman spoon in Leicester come from Causeway Lane (Cooper 1999, 267, fig.129.139-140).

2. SF 91; 274; cleaning layer; -; u/s; n/a

Spoon handle, length 123mm.

Clockwise twist for 64mm of the length of the handle; begins close to the horseshoe loop. Handle terminates in a point. Probably from a Crummy (1983) type 2 spoon, though the barley-sugar twist is not paralleled elsewhere.

3. SF 64; 181; road makeup; -; 3; (2nd quarter of 2nd century)

Handle of unknown implement, length 68mm.

Indented pattern along surviving length with circular cordons. Similar to handle recovered from South Shields (Allason-Jones and Miket 1984, 170).

Roman.

4. SF 265; 1183; SFB; 1089; 7; (5th-6th century)

?Decorative handle, incomplete, length 72mm, diameter 3mm.

Five rectangular blocks, the central one and the two at the extreme ends have an indentation, therefore dividing the blocks at either end into two and the central one into three. The decoration sits 8mm below the end of the handle which is not neatly finished, appears to be clipped and

unfinished. The decorated head looks small for the robustness of the stem which is incomplete. Another possibility is an unfinished hairpin.
Probably Roman.

5. SF 328; 1372; pit; 1373; 4; (Late 2nd-3rd century)

Hairpin, Cool (1990) group 26, complete, length 91mm.

The lowest decoration is a plain angular block, sitting above is an angular block with incised vertical lines. A narrow angular block which is separated by a concave baluster, above is an angular block with incised vertical lines. A square flattened, slightly curved top also with the incisions. The incised decoration appears to have been undertaken after casting as it affects the blocks below. The decoration is haphazard so possibly unfinished.

Roman.

6. SF 178; 558; pit; 756; 13; (1450-1550)

Brooch, knee, complete.

The spring is housed in a case with a curved front and a small cast-on pierced tab above. The bow is cabriole-shaped, plain with a long, narrow projection below the catch-plate. Mackreth (1996) shows that the chief floruit is from c. 125-225.

7. SF 221; 845; layer; -; 10; (1300-1375)

Tweezers, incomplete, length 54mm.

Three globular clasps hold the two strips together to form the handle. Each one is decorated with diagonally incised lines. No definite parallels - from Colchester a Roman example with a single clasp (Crummy 1983, 59), but also with a single clasp is a medieval example from Northampton (Williams 1979, 255).

8. SF 188; 677; pit; 676; 9; (1275-1350)

Finger ring.

Double coil twisted around a wire band, with coiled bezel. There are several examples of this type of design for all types of jewellery throughout the Anglo-Saxon period. A silver thumb ring from richly furnished mid 6th century grave (4), Savre, Kent in 1862 (Jessup 1974, pl.23, fig.1). Also example from Kings Field, Faversham (Brown 1915, pl.CVIII, fig.5). The design was also noted on an armlet found in 1840 at Cuerdale, Lancashire (Brown 1915, 45).

Anglo-Saxon, ?6th century.

9. SF 61; 246; pit; 252; 13; (1450-1550)

Annular brooch, diameter 40mm.

Plain robust ring with complete pin with single crested hump. A similar example from House 4, St. Peter's Street, Northampton (Williams 1979, 249) was recovered from layers dated AD 1250-1400. Similar example from Museum of London catalogue (1967, pl.LXXVII) also suggests use during the 13th and 14th centuries.

10. SF 66; 154; pit; 155; 16; (1648-1860)

Buckle, length 29mm, width 23.5mm.

Double buckle with one section D-shaped with double pronged tongue. Double raised strips at each end of the crossbar and centre of curved D.

Possibly post-medieval.

11. SF 189; 677; pit; 676; 9; (1275-1350)

Object, incomplete.

Hook at one end flattens out with two rivet holes. Flattened bar steps down in size. Probably a medieval hook of unknown function.

12. SF 194; 246; pit; 252; 13; (1450-1550)

Pin, Crummy (1988) type 1, complete, length 57mm.

Medieval, 14th-15th century.

13. SF 138; 16; layer; -; 16; (1648-1860)

Pin, Crummy (1988) type 2, complete, length 42mm.

Medieval, 14th-15th century.

14. SF 99; 246; pit; 252; 13; (1450-1550)

Pin, Crummy (1988) type 5, complete, length 61mm.

Medieval, 13th-?14th century.

15. SF 382; 246; pit; 252; 13; (1450-1550)

Lace end, Crummy (1988) type 1, single iron rivet, complete, length 29mm.

Medieval, 1375-1550/75

16. SF 111; 16; layer; -; 16; (1648-1860)

Lace end, Crummy (1988) type 2, complete, length 28mm.

Possibly indented decoration along the upper part of the lace end, in poor condition, however, therefore difficult to verify.

Post-medieval, 1550/75-1700+.

17. SF 401; 26; pit; 34; 13; (1450-1550)

Strainer/scoop, incomplete.

On the reverse the marking out for the holes is visible, these have been punched through from the reverse. The large surviving rivet was probably used to attach the handle. A similar object was found at the Austin Friars (Clay 1981), dated to the 16th century; also pictorial evidence in the Museum of London catalogue (1967, fig.68, 206).

Iron

18. SF 500; 32; pit; 34; 13; (1450-1550)

Annular brooch/buckle.

A further three identical examples were recovered, their function is unknown.

19. SF 60; 246; pit; 252; 13; (1450-1550)

Key, type VII A (Museum of London Catalogue 1967).

Narrowing to a point with the wards perpendicular to the stem. The bow is incomplete though probably oval.

Possibly 14th-late 15th century.

20. SF 495; 451; pit; 452; 14; (1500-1645)

Key, iron, length 55mm.

Circular bow, solid, projecting shank.

13th century.

21. SF 173; 520; pit; 497; 14; (1500-1645)

Knife blade, incomplete.

Only blade remains, where the handle was attached appears to have been snapped.

22. SF 409; 567; layer; -; 16; (1648-1860)

Blade, incomplete.

Scale-tang knife, only one rivet hole remaining.

23. SF 82; 267; pit; 455; 9; (1275-1350)

Rowel spur, though no rowel, shank or terminals surviving. Appears to have been white metallised. Parallel from Finsbury Circus (Museum of London Catalogue, fig. A22537).

Possibly late 14th century.

24. SF 408; 56; pit; 57; 14 (1500-1645)

Rowel spur, incomplete.

Rowel is missing, terminal type FF invariably found throughout the 15th century. Short shank. (Museum of London Catalogue 1967)

25. SF 116; 362; post hole, 424; 8 (1100-1300)

Horseshoe, incomplete.

Rectangular nail holes, which have not been countersunk, the outline is smooth. There are also surviving caulkins.

13th to 14th century.

26. SF 255; 1104; layer; -; unphased; n/a

Horseshoe, incomplete.

Smooth outline with rectangular nail holes, which have not been countersunk. It is a heavier shoe than the other examples from the site, which suggests a later date, circa 15th century.

27. SF 161; 451; pit; 452; 14; (1500-1645)

Complete iron hook of circular section. Tang flattened and flared with three perforations set longitudinally to allow attachment to (now missing) wooden handle, presumably with iron nails. Length 190mm, width of section 16mm.

Recovered from the backfill of one of the tanning pits this may be a *hauling hook*. These long-handled hooks were used to move hides into and out of *handling* pits, during the handling stage of the tanning process. This example is larger than the hooks illustrated by Thomson (1981, Fig.3D), however.

Lead

28. SF 62; 1; clearance layer; -; unphased; n/a

Token, complete.

Cast lead token. Eight-pronged star with raised points between. The four prongs in a cross appear to have raised points at the terminus. Reverse has illegible design.

Probably late 17th century (Yolanda Courtney pers. comm.).

29. SF 171; 520; pit; 497; 14; (1500-1645)

Pilgrim Flask, incomplete.

Probably 'Our Lady of Walsingham' shrine, this enjoyed an international reputation. Signs were made in stone or iron moulds; one for 'OloW' can be seen at King's Lynn Museum. An ampullae found at Cirencester bears the crowned W of Walsingham, another recorded from Dunwich (Archaeological Journal XIII, 1856), has a crown on the reverse, 'W' on the front.

Bone and antler

30. SF 339; 1077; pit; 1079; 5; (Late 3rd- 4th century)

Sewing Needle, Crummy (1983, 65, fig.70.1982) type 2a, incomplete, length 70mm, eye dimension 9mm by 1mm. Flat rounded head with countersunk rectangular eye, rounded section and well polished.

Common throughout the Roman period. At Colchester, type 2 sewing needles were recovered from 3rd-4th century contexts. Examples from Roman Leicester include one from Causeway Lane (Cooper 1999, 265, fig 128.127) Further examples from South Shields Roman Fort (Allason-Jones and Miket 1984, 66).

31. SF 164; 496; pit; 497; 14; (1500-1645)

?Awl, complete, length 75mm, diameter of head 5mm.

Faceted, polished and resharpened tapering shaft. Similar to an example from Great Holme Street, Leicester (A77 1975) (Boothroyd 1994).

?Roman

32. SF 51; 1; clearance layer; -; unphased

Pin, Crummy (1983) type 2, incomplete, 4 fragments, length 111mm.

Conical head with double groove around the neck. Polished.

Dates from the early 1st century with a terminal date of *c.*200. This early date is based on stratigraphic evidence from Colchester. The end date is suggested by the absence of type 2 pins in late Roman Colchester types and supported by evidence from Church Street sewer, York (Crummy 1983, 21). This type with the double groove is the most common hairpin type across Roman Leicester (Cooper 1999, 254, fig.121.38-42).

33. SF 258; 1088; SFB; 1089; 7; (5th-6th century)

Pin, incomplete, length 22mm.

Only the point remains of a fine well polished pin. This is decorated with tiny incised holes, the pattern consisting of a double row of dots joined to a single row by two diagonal rows. At this area of decoration there seems to be a slight swelling.

34. SF 259; 1088; SFB; 1089; 7; (5th-6th century)

Comb, double sided composite comb. The components are held together by three small bone pegs and eight iron rivets. Along the rib are ten incised dot and single ring decorations, approximately 15mm apart. This is a particularly large example, similar to, but still larger than one from SFB 8 at West Stow, dated to the early 6th century (West 1985; fig. 49.3).

Probably 5th or possibly 6th century (S. Glasswell, pers. comm.).

35. SF 267; 1183; SFB; 1089; 7; (5th-6th century)

Beating pin, complete, length 90mm.

Double pointed pin with a swollen shaft, which demonstrates uneven wear due to use. Similar example from Harston, Leicestershire (Dunning 1952). A comparable example from Leicester comes from Causeway Lane (Cooper 1999, 267, fig. 128.131).

36. SF 271; 1213; post hole; 1214; 7; (5th-6th century)

Spindlewhorl, complete, dimensions 42mm by 46mm, height 25mm.

Hole for spindle is slightly off-centre. Fashioned from hemispherical head of a femur. Possibility of grooves on the flat surface. Similar to an antler spindlewhorl from Colchester (Crummy 1988, 31) recovered from early medieval layers.

37. SF 405; 548; pit; 755; 13; (1450-1550)

Quill holder, complete, length 142mm.

Goose radius sharpened to a point. Similar objects from medieval sites have been described as pens although the lack of flexibility makes this unlikely. A discussion in Moorhouse (1972) suggests that they may have been used as extension bodies added to quills as they were worn down. Examples were found at Austin Friars, Leicester, phase 3B, also phase 9A (Clay 1981, 144, no.109)

38. SF 86; 1; clearance layer; -; unphased

Knife handle, incomplete, length 88mm, width 14mm to 23mm.

Incised cross-hatched decoration down either side, with diagonal lines down the central panel. A total of three rivets are present, two along the length and one in the end. All are placed slightly off-centre. Well polished.

Probably post-medieval.

39. SF 77; -; unstratified; -; unphased

Brush, incomplete, length 32mm, width 15mm.

Possibly a toothbrush? The holes for the tufts occasionally pierce the head, with the back groove to allow the wire holding the tufts to be passed through and trimmed neatly. The bone is stained green on the back, which suggests the use of organic bristles tied together with copper wire.

MacGregor (1985) suggests that bone brushes made their first appearance in the 17th century.

40. SF 485; 24; pit; 87; 6; (Mid-late 4th century)

Cattle/horse rib with incised grafitto/tally marks.

Stone

41. SF 67; 24; pit; 87; 6; (Mid-late 4th century)

Quernstone, incomplete.

Rotary quern, lower stone with bi-directional parallel grooving.

42. SF 154; 462; surface; -; 2; (Early 2nd century)

Polished stone axe, incomplete, length 108mm.

Group XX, originating locally, probably in the Charnwood Forest area.

Neolithic.

Dr. R.V. Davis of the Implement Petrology Committee writes:

LE 76: Bonnors Lane, Leicester

A fragmental rock consisting mainly of crystals of altered alkali feldspar and plagioclase in a fine-grained tuff groundmass. Rounded and sub-angular quartz grains are less common and small flakes of muscovite are distributed randomly throughout the rock. Epidotization occurs along some fractures but is relatively minor. The quartz fragments show comparatively little straining. Small fragments of other rock occurs, mainly a consolidated ash of cryptocrystalline texture.

The rock falls within the boundary for Group XX of probable Charnwood Forest origin.

43. SF 270; 7; road surface; -; 3 (2nd quarter of 2nd century)

Rotary quern, fragment, diameter 134mm, width of outer raised rim 52mm, thickness at rim 48mm. Internal area has bi-directional parallel grooves at right angles to each other. Roughly triangular in section. Decorative vertical grooves around edge. (Buckley and Major 1983)

Shale/jet

44. SF 334; 1222; timber slot; -; 8; (1100-1300)

Shale/jet spindlewhorl, diameter 37mm, hole diameter 6mm.

One side has a single incised line along the outer edge with three concentric lines around the centre. The reverse is a repeat of the design though the external is a double line. Not complete, one line appears to have been worn away. The other side has flaked away; about 75% of the face is missing.

Probably Roman.

Coins and Tokens

Identified and catalogued by R.A. Rutland

The Roman coins are identified by reference to Roman Imperial Coinage (RIC) or Sear (1988) where it is not possible to identify the exact RIC type.

45. SF 6; 1; clearance layer; -; unphased

Denarius of Septimius Severus, AD 202-210, Rome mint (RIC 308)

Obverse	Head right, laureate SEVERVSPIVSAVG
Reverse	Severus left sacrificing over tripod altar VOTASVS/CEPTAXX

46. SF 348; 1088; SFB; 1089; 7; (5th-6th century)

Denarius of Elagabalus, AD 218-222

Obverse	Bust right, laureate and draped [IMP ANTONINVS PIVS AVG]
Reverse	[SACE]RDDEISOLI[ELAGAB]

47. SF 327; 1338; pit; 1339; 5; (Late 3rd-4th century)

Antoninianus of Valerian I, AD 253-260, Rome mint (RIC 116)

Obverse	Bust right, radiate, draped and cuirassed IMPCPLICVALERIANVS[PFAVG]
Reverse	Valerian standing left raising kneeling female figure RESTIT[VTOROBBIS]

48. SF 40; 55; pit; 58; 6; (Mid-late 4th century)

Antoninianus, posthumous issue of Claudius II, AD 268-270, Sear 3228.

Obverse	Head right, radiate Illegible
Reverse	Large altar [CONSE]CRA[T]IO

49. SF 68; 1; clearance layer; -; unphased
Antoninianus, posthumous issue of Claudius II, AD 268-270, Sear 3228

Obverse Head right, radiate
 Illegible
Reverse Large altar
 CONSECR[ATIO]

50. SF 37; 48; pipe trench; -; 16; (1648-1860)
Antoninianus, possibly of Tetricus I, AD 270-273

Obverse Bust right, radiate (draped and cuirassed?)
 Illegible
Reverse Illegible

51. SF 357; -; unstratified; -; unphased
Unidentified antoninianus.

Obverse Bust right, radiate
 Illegible
Reverse Largely obscured by corrosion. In exergue a sphere

52. SF 358; unstratified; -; unphased
Unidentified antoninianus (incomplete)

Obverse Bust right, radiate
 Illegible
Reverse Illegible

53. SF 5; 1; clearance layer; -; unphased
Unidentified antoninianus (incomplete and probably irregular)

Obverse Bust right, radiate
 Illegible
Reverse Illegible

54. SF 121; 317; post hole; 318; 8; (1100-1300)
Unidentified antoninianus (incomplete and/or irregular)

Obverse Bust right, radiate
 Illegible
Reverse Illegible

55. SF 351; 1088; SFB; 1089; 7; (5th-6th century)
Unidentified antoninianus

Obverse Bust right
 Illegible
Reverse Figure standing left
 [P]ROVID...

56. SF 137; 16; layer; -; 16; (1648-1860)

Unidentified antoninianus

Approximately a quarter present in several pieces

Traces of radiate crown, otherwise illegible

57. SF 139; 391; pit/well; 433; 14; (1500-1645)

AE 3 of Constantine I, AD 310-318, Trier mint (Mint mark worn but perhaps PTR), (Sear 3881)

Obverse Bust right, laureate (shoulders missing)

...ONSTANTINVS...

Reverse Sol standing left, holding globe

SOLIIN[VICTOCOMITI]

58. SF 2; 1; clearance layer; -; unphased

AE 3 of Constantine I, AD 323-324, London mint, Sear 3871

Mint mark PLON

Obverse Bust left, helmeted (?) and cuirassed (?)

CONSTA...

Reverse Altar surmounted by globe inscribed VOT/IS/XX

BEATTRA/NQLITAS

59. SF 3; 1; clearance layer; -; unphased

AE 3 of Constantine I, AD 330-334, Lugdunum mint, Sear 3886

Mint mark worn, either PLG (AD 330-331) or a variant

Obverse Bust right, diademed (shoulders worn)

CONSTAN

Reverse Two soldiers standing either side of two standards

GLORIAEXERCITVS

60. SF 44; 24; pit; 87; 6; (Mid-late 4th century)

AE 3/4 of Constans as Caesar, AD 335-337, mint unknown, Sear 3962

Mint mark largely off flan

Obverse Bust right, laureate, draped and cuirassed

[FLC]ONSTANSNOB[CAES]

Reverse Two soldiers standing either side of one standard

GLOR/IAEXER [CITVS]

61. SF 7; 4; clearance layer; -; unphased

AE 3/4 of Constantius II as Caesar, AD 335-337, mint unknown, Sear 3987

Mint mark off flan.

Obverse Bust right, laureate, draped and cuirassed

FLIVLCONSTA[NTI]VSNIBC

Reverse Two soldiers standing either side of one standard

GLORIA EXERCITVS

62. SF 43; 1; clearance layer; -; unphased
AE 3/4 Constantinopolis issue AD 330-331 (?), Trier mint, Sear 3890
Mint mark worn, possibly TRP (RIC Trier no. 523, AD 330-331)

Obverse Helmeted bust left wearing imperial mantle and holding sceptre
 CONSTANTINOPOLIS

Reverse Victory on prow, holding sceptre and leaning on shield
 No legend

63. SF 222; 634; ditch; 836; 8; (1100-1300)
AE 3/4 Urbs Roma issue, AD 330-335, Sear 3894
Mint mark T...

Obverse Helmeted bust left wearing imperial mantle
 [VRBS ROMA]

Reverse She-wolf suckling Romulus and Remus
 No legend

64. SF 264; 1183; SFB; 1089; 7; (5th-6th century)
AE 3/4 Urbs Roma issue, AD 330-335, Sear 3894
No visible mint mark

Obverse Helmeted bust left wearing imperial mantle
 VRBS [ROMA]

Reverse She-wolf suckling Romulus and Remus
 No legend

65. SF 36; 24; pit; 87; 6; (Mid-late 4th century)
AE 4 GLORIA EXERCITVS (2 standards), AD 330-335

Obverse Bust right, worn
 Illegible

Reverse Two soldiers standing either side of two (?) standards
 Illegible

66. SF 297; 162; pit/well; 676; 9; (1275-1350)
AE 4 GLORIA EXERCITVS (1 standard), AD 335-340

Obverse Bust right, laureate, worn
 Illegible

Reverse Two soldiers standing either side of one standard
 Illegible

67. SF 354; 1088; SFB; 1089; 7; (5th-6th century)
Ae 4 of Constantius II, AD 337-340, Sear 3998
Mint mark illegible

Obverse Bust right, diademed, draped and cuirassed
 CONSTANTI/VSPFAVG

Reverse Two soldiers standing either side of one standard
 [GLORI]AEXER[CITVS]

68. SF 22; 24; pit; 87; 6; (Mid-late 4th century)
AE 4 of Constantius II, AD 337-340, Lyons Mint (?), Sear 3998
Mint mark possibly PL

Obverse Bust right, laureate and cuirassed
...O...IVSAVG
Reverse Two soldiers standing either side of one standard
Illegible

69. SF 363; unstratified; -; unphased
AE 4 GLORIA EXERCITVS (1 standard), Trier mint, AD 335-340
Mint mark PTR...(?)

Obverse Completely worn
Reverse Two soldiers standing either side of one standard.
Illegible.

70. SF 187; unstratified; -; unphased
AE 4 GLORIA EXERCITVS (1 standard), Trier mint, AD 335-337
Mint mark TRP

Obverse Bust right, diademed, draped and cuirassed
...PFAVS
Reverse Two soldiers standing either side of one standard
GLORIA EXERCITVS

71. SF 46; 20; timber slot; 1229; 5; (Late 3rd- 4th century)
AE 4 of Helena, AD 337-340, Trier mint, RIC 78
Mint mark TRS

Obverse Diademed and draped bust right
[FLIVLHE] LENAEEAVG
Reverse Pax standing left
PAX [PVBLICA]

72. SF 256; 1128; post hole; 1129; 8; (1100-1300)
AE 4 VICTORIAEDDAVGGQNN issue AD 347-348, Trier mint (?)
Mint mark possibly TR...

Observe Bust right, worn
...VS...
Reserve Two victories standing facing each other
VICTORIAEDD...

73. SF 45; 24; pit; 87; 6; (Mid-late 4th century)
AE 3 FEL TEMP REPARATIO (fallen horseman) issue AD 354-361

Obverse Bust left, helmeted, worn
Illegible
Reverse Worn, possibly soldier advancing left, spearing fallen horseman
Illegible

74. SF 356; unstratified; -; unphased
Centenionalis, FEL TEMP REPARATIO (fallen horseman) issue AD 348-354
Mint mark illegible

Obverse Bust right, diademed, draped and cuirassed
..N...
Reverse Soldier advancing left, spearing fallen horseman
[FELTEMPREPA]RATIO

75. SF 360; unstratified; -; unphased
AE 3 FEL TEMP REPARATIO (fallen horseman), issue AD 354-361

Obverse Bust right, diademed, worn
...NST...
Reverse Soldier advancing left, spearing fallen horseman
Illegible

76. SF 143; 275; pit; 380; 8; (1100-1300)
AE 4 FEL TEMP REPARATIO (fallen horseman), issue AD 354-361
Mint mark illegible

Obverse Bust right, worn
Illegible
Reverse Soldier advancing left, spearing fallen horseman
...TEMPRE...

77. SF 4; 1; clearance layer; -; unphased
Centenionalis FEL TEMP REPARATIO (figure with standard), issue AD 348-351

Obverse Bust right
Illegible
Reverse Standing figure with standard (labarum?)
...REPA...

78. SF 338; unstratified; -; unphased
AE 3 of Valens, mint mark illegible, AD 364-378, Sear 4118

Obverse Bust right, diademed, worn
DNVALEN/SPFAVG
Reverse Victory advancing left
SECVRITAS [REI]PVBL[ICAE]

79. SF 16; 20; timber slot; 1229; 5; (Late 3rd-4th century)
AE 3 of Valentinian I, mint mark illegible, AD 364-375, Sear 4102

Obverse Bust right, diademed, worn
DNVALENTINI[ANVSPFAVG]
Reverse Valentinian advancing right, dragging captive and holding labarum
GLORIA [RO] MANORVM

80. SF 266; 1183; SFB; 1089; 7; (5th-6th century)
AE 3 of Valens, AD 367-375, Siscia mint, Sear 4118
Mint mark: , associated with Valens in second period of AD 367-375

Obverse Bust right, diademed, worn
Legend indistinct
Reverse Victory advancing left
SECVRITAS [REIPVBLICAE]

81. SF 176; 549; layer; -; 16; (1648-1860)
AE 3 GLORIA ROMANORUM, issue AD 364-387, Siscia mint (?)
Mint mark ...ISC...

Obverse Bust right, worn
Illegible
Reverse Emperor advancing right, dragging captive and holding labarum
Illegible

82. SF 272; unstratified; -; unphased
AE 3 GLORIA ROMANORUM, issue AD 364-387
II in right field, ie. OF II, but mint illegible

Obverse Bust right, worn
...S...A...
Reverse Emperor advancing right, dragging captive and holding labarum
Illegible

83. SF 362; unstratified; -; unphased
Siliqua VIRTUS ROMANORVM issue (?), AD 378 onwards
Mint mark OPS..(?). Incomplete, probably clipped. Mint possibly Siscia (..CPS) or Milan (..DPS)

Obverse Bust right, diademed and draped
...VSPFAVS
Reverse Figure seated left holding spear
...NORV...

84. SF 260; 1174; layer; -; 8; (1100-1300)
AE 4/minim of fourth century type, 12mm in diameter
Fragmentary and worn coin

Obverse Illegible
Reverse Possibly two figures (soldiers, Victories?)
Illegible

85. SF 239; 975; pit/well; 976; 9; (1275-1350)
AE 4 of fourth century type, 15mm in diameter
Worn coin

Obverse Bust right, worn
Illegible
Reverse Illegible

86. SF 359; unstratified; -; unphased

AE 4 of fourth century type

Both sides completely worn but generally appearance of fourth century coin, 14mm in diameter

87. SF 355; unstratified; -; unphased

An as(?) of 1st to 2nd century AD, 23mm in diameter

From appearance and size probably an as

Obverse Bust right (?), very worn

Illegible

Reverse Standing figure

Illegible

88. SF 364; unstratified; -; unphased

Silver hammered penny, post AD 1279

Standard Edwardian silver penny, exact type not researched but likely to be Edward I, 1279-1307

Obverse ED...RANGLDN[S]HYB

Reverse CIVITAS [LON]DON

89. SF 322; 1312, ditch, 1316; 15; (1645-1648)

Charles I copper farthing, 1625-49

A 'Maltravers' round, mint mark worn

90. SF 49; 154; pit; 155; 16; (1648-1860)

William III copper farthing, 1695-1700

Normal type, date very worn but possibly 1700

91. SF 323; 1313; ditch; 1316; 15; (1645-1648)

Jeton, Nuremberg type of later 16th/early 17th century

92. SF 85; 270; unlocated; -; unphased

Jeton, Nuremberg type of Hanns Krauwinckel, 1562-1635

93. SF 252; 1052; post hole; 1062; 14; (1500-1645)

Worn Jeton, unidentified

94. SF 1; 1; clearance layer; -; unphased

Jeton, copper alloy, unidentified

95. SF 361; unstratified; -; unphased

17th century token halfpenny

Obverse Arms on a bend; three fleur-de-lys

RICH. MATHEW. AND. JOHN

Reverse POTTERILL. OF. OAKHAM THEIR ½

ILLUSTRATION 32

ILLUSTRATION 33

ILLUSTRATION 34

ILLUSTRATION 35

ILLUSTRATION 36

ILLUSTRATION 37

ILLUSTRATION 38

ILLUSTRATION 39

4.7 Glass

Sian Davies

A total of 102 fragments of glass were recovered from the site, 46 of which came from soil samples. Diagnostic pieces were few due to the fragmentary nature of much of the material. The overall condition of the glass was fair, although heavy iridescence and in some cases devitrification was noted on a number of fragments making identification difficult. A minimum of 14 vessels were identified, 6 Roman, 7 post-medieval and 1 of unknown date. A selected catalogue is presented here, full details of all the material is included in the site archive.

Roman glass

A total of 14 fragments of vessel and window glass were identified. The vessel glass fragments indicate a minimum of 6 vessels, however only one identifiable stratified fragment was recovered. From the Phase 2 layer (269), this was part of the base of a cup or beaker in light green glass (cat. no. 3), possibly from an indented beaker – one of the commonest drinking vessels of the Flavian period (Cool and Price 1994, nos. 385-93). Two other stratified vessel fragments came from the Phase 3 layer (367); these were a body fragment in yellow/brown glass (cat. no. 2) and an unidentified fragment in blue/green glass.

The remaining identifiable fragments were residual in post-Roman contexts, but consisted of common tableware forms of mid first to third century date. These included fragments from a pillar moulded bowl (cat no. 1; Cool and Price 1994), a globular or conical jug dating to the second century (cat. no. 4; Isings 1957, form 52/55), and a fragment from a small flask (cat. no. 6). Two fragments of cast window glass were also identified, recovered from post-Roman contexts.

Post-medieval glass

A total of 78 fragments were recovered, the majority of which (51 pieces) were identified as olive green window glass, mainly from Phases 14 and 16. The identifiable vessel fragments were mainly unstratified and came from bottles and phials, both common late post-medieval forms. One fragment of interest was recovered from the Phase 15 Civil War ditch 1316 (1309), this consisted of the base of a wine bottle (cat. no. 7). The vessel appears to be free blown in light green glass. The base is unusually flat and does not have the typical kick-up, as a result the pronounced pontil scar on the base would have made it quite unstable on a flat surface. The fragment is possibly from an early 'onion style' bottle dating from the mid to late 17th or early 18th century (Dumbrell 1992, 44-45). The light weight and colour of the glass also indicate an early date, however precise identification is impossible from the base fragment alone.

Selected Catalogue

Roman

Pillar Moulded Bowls

1. Body fragment with one rib extant, wheel polished internally, context (1) unstratified

Blown Vessels

Yellow/Brown

2. Body fragment, layer (367) Phase 3

Light Green

3. Base fragment of cup or small bowl, simple concave base with remains of pontil scar. Poor quality, devitrified glass, layer (269) Phase 2

Blue/Green

4. Handle fragment of jug, pinched lower extension trail with 8 ribs extant, good quality glass, cut feature 113 (112) Phase 16

5. Body fragment of cup or beaker, very thin bubbly glass with opaque white horizontal streaks in 3 bands, pit 109 (143) Phase 8

6. Rim fragment of small flask or ungentum, fire rounded, rolled and flattened with remains of ?accidental trail on interior, pit 980 (979) unphased post-Roman

Post-medieval

7. Base fragment of a free blown bottle, flat base with crude pontil scar in light green glass, heavy iridescence, Civil War ditch 1316 (1309) Phase 15

8. Rim and neck fragment of a small phial in light green glass, everted funnel mouthed rim with constricted neck, context (4) unstratified

9. Base fragment of small bottle in blue/green glass, slight concave base with flattened outer edge, Building 4 cellar backfill (2) Phase 17

10. Rim fragment of mould blown bottle, flattened irregular shaped rim in thick blue/green glass. Rim diameter 43mm, context (1) unstratified

11. Base fragment of ovoid mould blown bottle in very thick blue/green glass, Building 4 cellar backfill (2) Phase 17

Period Unknown

12. Rim fragment of ?flask, everted lid seated rim, brittle devitrified glass, rim diameter 85mm, pit 497 Phase 14

4.8 Roman Tile and Post-medieval Brick

Neil Finn and Dawn Harvey

Introduction

The ceramic building material can be divided into Roman tile and post-medieval brick (the medieval floor tile and the medieval and post-medieval roof tile is considered along with the medieval and later pottery (see 4.4 above).

The Roman material is represented by the occurrence of wall tile, tegula, imbrex and box tile. Given the quantity of identified Roman material in the assemblage the unclassified tile type is also considered to be Roman, although it is acknowledged that a proportion of this material may be later in date.

The total assemblage weighed 174.2 kgs, with 7.4% of this derived from unphased contexts. Table 22 details quantities of material type by phase. The wall tile/brick category includes identified post-medieval bricks.

Table 22. Range and quantity of Roman tile and post-medieval brick by phase (weights in kgs)

Phase	W-tile/brick		Tegula		Imbrex		Box tile		Unclass.		Total	
	Frag	wt	Frag	wt	Frag	wt	Frag	wt	Frag	wt	Frag	wt
2	1	0.3	1	0.1	1	0.1	2	0.2	6	0.3	11	1.0
3	7	3.0	9	2.0	6	1.9	9	1.8	49	3.4	80	12.1
4	4	0.3	3	0.8	2	0.5	-	-	14	1.2	23	2.8
5	7	1.1	4	0.8	5	0.3	1	0.1	31	2.1	48	4.4
6	27	8.6	12	3.4	4	0.8	6	1.0	53	5.3	102	19.1
7	3	2.4	-	-	2	0.3	1	0.1	11	0.8	17	3.6
8	31	8.6	12	2.3	7	0.6	4	0.3	146	8.2	200	20.0
9	20	5.8	7	1.2	4	0.5	6	0.4	101	6.0	138	13.9
10	3	0.5	2	0.3	-	-	-	-	14	1.0	19	1.8
11	12	2.7	3	0.5	3	0.1	1	0.1	22	1.2	41	4.6
12	2	0.3	1	0.2	-	-	-	-	8	0.4	11	0.9
13	13	3.8	7	0.9	2	0.3	-	-	64	2.9	86	7.9
14	21	5.2	8	1.3	4	0.6	2	0.3	59	3.2	94	10.6
15	12	2.5	-	-	5	0.4	2	0.2	49	3.4	68	6.5
16	91	27.6	8	2.4	14	1.3	8	1.1	273	16.2	394	48.6
17	13	2.9	1	0.3	-	-	-	-	13	0.3	27	3.5
Total	267	75.6	78	16.5	59	7.7	42	5.6	913	55.9	1359	161.3

Classification of the material by tile form was undertaken in context groups and later studied by phase. Much of the material was residual, or was recovered from contexts that do not assist in site interpretation, only significant groups will be discussed here.

Roman

Two significant concentrations of ceramic building material occurred in the Roman period. A relatively large group of tile from Phase 3 included some material incorporated into the road as metalling, although the majority came from the roadside ditch fills. This does not appear to have been deliberately deposited, as crocking at the base of a ditch to assist with drainage, for example, since the material was spread throughout the ditch fills. Rather this tile appears to have been an incidental inclusion when the ditches were backfilled.

The two Phase 6 pits: 87 and 58, contained over 19kg of tile (11.8% by weight of the total assemblage), including wall tile, imbrex, tegula and box tile fragments. This may have derived from the demolition of the Phase 5 building, or may have been dumped here from elsewhere.

Medieval

Over 12% by weight of the total assemblage came from Phase 8, with all of the identified fragments being residual Roman tile. Most of this material, however, was recovered from the fills of pits and the early boundary ditches, in no particular concentration. Five Phase 8 post holes in the north-east of the site: 251, 592, 626, 1027 and 1085, contained Roman building material reused as packing. Further Roman material was re-used in the wall foundation 1166 and floor makeup 1169 of Structure 4, and in post hole 822 of Structure 5.

Significant quantities of Roman tile were recovered from two Phase 9 features: 676 and 976, both interpreted as wells. It is notable that 976 was truncated by the Phase 16 feature 635, which also contained a quantity of residual Roman tile. It is possible that a structure of some sort was located in this area in the Roman period, which was subsequently truncated by post-Roman activity.

Post-medieval

Phase 14 produced the earliest identifiable post-medieval bricks. At this time the use of brick in vernacular buildings is likely to have been restricted to the construction of chimneys, or the replacement of timber chimney hoods. The earliest surviving vernacular brick-built houses in the county date from the last quarter of the 17th century (McWhirr 1997, p.49-50).

Phase 16 produced 30% of the total assemblage. The largest group came from Building 3, with 23.7 kgs from the construction cut of well 364, including much Roman tile. Most of the Phase 16 and 17 buildings included some brick, in most cases however, the brickwork was recorded on site but not retained for subsequent analysis. Some reused Roman tile was recovered from Building 1, in addition to post-medieval brick. Building 4 included reused tile incorporated into the cellar floor of the eastern room. Two complete triangular tiles are probably post-medieval floor tiles, but could conceivably be reused Roman bricks (*lateres trigones*).

Conclusion

Despite the quantity of Roman tile recovered this cannot be certainly associated with any structure on the site. It is possible, however, that the large quantity of material from Phase 6 was derived from the demolition of the Phase 5 building. Earlier in the Roman period tile was apparently used in the construction and repair of the road. A large assemblage of residual material was also recovered from the roadside ditches.

In the medieval period Roman tile was reused as packing material in structural features. A significant quantity of Roman tile was also recovered from the fills of a number of medieval and post-medieval features in the eastern central part of the site, possibly deriving from a Roman structure in this vicinity.

Post-medieval brick was evident from the 16th century onwards. By the end of the 17th century brick appears to have been in common use.

4.9 Non-Ceramic Building Materials

Dawn Harvey

The term non-ceramic building materials covers a number of categories: slate, mortar, plaster, *opus signinum*, *tesserae* and stone. With the exception of the slate and mortar, the other categories were found scattered across the site with no significant concentrations or interesting associations, meaning that no useful conclusions could be drawn from the analysis of these materials.

Table 23. Range and quantity of non-ceramic building materials by phase (weights in kgs)

Phase	Slate		Mortar		Plaster		Op. Sig.		Stone		Tesserae	
	Frag	Wt	Frag	Wt	Frag	Wt	Frag	Wt	Frag	Wt	Frag	Wt
Un-ph.	-	-	25	0.374	1	0.005	-	-	1	2.050	1	0.007
2	-	-	-	-	-	-	-	-	1	2.778	-	-
3	1	0.336	-	-	-	-	-	-	-	-	-	-
5	1	2.500	3	0.201	2	0.016	-	-	-	-	1	0.017
6	1	2.588	22	0.819	-	-	2	0.048	-	-	1	0.004
7	-	-	-	-	2	0.003	1	0.004	1	4.722	1	0.009
8	3	2.914	41	0.862	1	0.012	3	0.014	-	-	-	-
9	4	2.325	22	0.557	-	-	-	-	-	-	3	0.055
10	-	-	1	0.079	-	-	1	0.012	-	-	-	-
11	4	2.742	3	0.057	-	-	-	-	-	-	-	-
12	5	3.327	3	0.069	-	-	-	-	-	-	-	-
13	23	7.602	152	1.745	1	0.005	-	-	-	-	1	0.020
14	90	49.097	79	1.544	1	0.004	-	-	-	-	1	0.012
15	9	1.662	9	0.199	3	0.036	-	-	-	-	-	-
16	16	5.838	75	2.655	4	0.023	1	0.084	-	-	-	-
17	9	10.190	3	0.040	1	0.003	-	-	1	1.000	1	0.020
Total	166	91.121	438	9.201	16	0.107	8	0.162	4	10.55	10	0.144

Slate

In the course of the excavation the collection and retention of slate was selective; only pieces which showed signs of working, for example perforations, or were sufficiently complete to permit an estimation of their original shape/size, were retained. Typically, small fragments lacking any diagnostic details were discarded, although their presence was noted in the context record.

Perforations normally indicate use as roofing tiles. Roman slate roofing tiles are readily identified by their diamond or triangular shape, whilst medieval/post-medieval tiles are typically rectangular. Table 24 outlines the dateable roofing tiles recovered from the site, which constitute 21.7% of the total slate tile assemblage

Table 24. Complete slate roofing tiles in the assemblage by Phase

Phase	Roman tiles	Post-Roman tiles
5	1	-
6	2	-
9	-	1
11	-	1
12	2	-
13	1	-
14	8	13
17	3	4

The concentration of slate in the post-medieval phases is paralleled by a similar concentration of ceramic building materials (see the *Roman Tile and Post-medieval Brick* above). Phases that produced the largest amount of material, by weight, were 13, 14, 16 and 17 (see Table 23). Whilst there were structures of Roman, medieval and post-medieval date on the site, from which the slate roof tiles may have derived, no direct associations were apparent. In one instance (see the Phase 14 drain, below) roofing tiles were clearly reused for another purpose, that is to cover a drain.

Most of the material from Phase 13 was recovered from layer 465, interpreted as a demolition deposit, or possibly a levelling or make-up layer. By far the largest group of slate (54% of the total assemblage) came from Phase 14, which also produced a sizeable assemblage of mortar fragments. It is tempting to link this debris with documentary accounts recording the demolition of houses in the south suburb, during the Civil War, although this cannot be proven. Also in Phase 14 was a stone-lined drain, capped with reused medieval roofing slates, accounting for 30 of the 90 fragments recovered from this phase.

Most of the material from Phase 16 came from the construction cut of the Building 3 well 364. The recovered slate from Phase 17 was all from the backfill (2) of the Building 4 cellars. The walls of the mid-19th century Building 5 were raised on foundations composed of large, irregularly-shaped slate fragments, probably of local origin, although these were not retained for analysis.

Mortar, plaster, *opus signinum* and *tesserae*

Many of the mortar pieces are shaped or have impressions suggesting they originally formed the basis of walls or ceilings. Some of this material may have derived from structures identified on site. The mortar from late Roman phases may be tentatively associated with the Phase 5 building, although the quantity of material is relatively small. The majority of the mortar came from late- and post-medieval phases. Together, Phases 13, 14 and 16 produced almost 70% of the assemblage. As with the roofing slates, however, none of this can be certainly associated with any given building or structure on the site. Definite examples of wall plaster and *opus signinum* were few. The 10 *tesserae* were spread throughout Roman, Anglo-Saxon, medieval and post-medieval phases, the only 'concentration' being 3 examples from Phase 9.

4.10 Iron Production Debris

Irene Schrüfer-Kolb

Abstract

Examination of the iron production debris from Bonnors Lane suggests bloom refining and forging for the Roman period, with a potentially related hearth. Further samples from the medieval and post-medieval periods again suggest forging, although evidence for bloom refining is less pronounced. A small number of finds from these contexts also appear to indicate smelting, but the evidence is too scarce to confirm this with certainty. At least some of the material from medieval and post-medieval contexts is likely to be residual Roman material.

Archaeological analysis

A total of 110 samples of iron production debris from the Roman and post-Roman contexts was examined in the laboratory. Individual pieces were grouped together by type, resulting in 67 sub-samples. The material recovered for analysis has a total weight of *c.* 2746g. Details of individual samples can be found in Tables 25 and 26. Various types of material were identified as definitely or potentially relating to iron production: smithing slag/hearth slag, hearth bottom, silicate slag, potential bloom refining slag, smelting/furnace slag, cinder, fuel ash slag, vitrified furnace lining, grains of slag spheroids and/or hammer-scale. A small amount of copper alloy slag was also recovered. In classifying the slag, the term hearth slag was preferred to smithing slag. At first sight, there appears to be no difference between the two but detailed examination of the material yielded indications of possible bloom refining, which can also take place in a smithing hearth. Some of the slags potentially formed during this process and for this reason the less technologically definitive term hearth slag has been used in most cases. It should be noted that the classification of the slag is merely external and out of context. To understand the true nature of the slags it is necessary to take into account the excavation context, which may affect the external classification.

1. The Roman contexts

Features potentially related to iron production

The majority of the material comes from the medieval and post-medieval contexts, with less than half of the total number of samples originating from Roman features (31 pieces). However, the Roman pieces are more substantial in weight (1654g = 60% of the site total) and some may be related to a furnace or hearth structure: 1048, Phase 4. This feature was excavated in detail, with two levels recorded (1049 = upper fill; 1057 = lower fill), but unfortunately no section was drawn (Illus. 5 & 6.1). The only slag sample recovered from the hearth originates from the upper fill of the feature. Nothing was retrieved from the lower fill. The feature measured 1.2m long (east-west) and was figure-of-eight shaped. It comprised two bowl-shaped pits, with the eastern pit measuring *c.* 0.6m across externally (0.43m internally) north-south. This pit also showed scorching of the base and walls. The latter consisted of three bands of sand, clay and charcoal (from the interior to the exterior). From the excavation photographs it can be seen that the internal clay lining extended into the western pit and was fired red. While the red fired clay indicates firing under oxidising conditions typical for an open (smithing) hearth, the extension of the lining to the west may indicate a flue (cf. Pazda 1976, fig. 4). Potentially, in the space between the two pits a vertical division wall can be recognised, with an opening to the north. This might have been the opening of the hearth for the air inlet. The western pit was slightly elliptical measuring *c.* 0.4m north-south. No scorching was observed in it. Of particular interest were 12 or more large cobbles (up to 15cm in size) that were packed tightly into its base, several of which showed signs of scorching. The space between the two pits measured about 0.2m

square. The fired feature was preserved to a depth of 0.42m, with vertical, occasionally slightly undercut edges. Towards the narrow centre of its figure-of-eight shape the feature shallowed up a little. A stratigraphically later pit: 1059 (Phase 5) partially cut through the eastern pit at its north-eastern side, and on a picture of the feature before excavation a slight band of red hearth lining seems to continue from the eastern pit to this cut. However, no functional relationship was noted during excavation. At the eastern end of the feature a layer of charcoal (1057) was found beneath the upper fill (1049), which in turn overlay the cut. This layer of charcoal measured 0.44m by 0.4m across and was preserved to a depth of 5mm. It included patches of a pale creamy deposit, probably ash, and fragments of charred wood. The fuel was identified as oak and hazel. Oak is the most common fuel wood for charcoal in the Roman period, but archaeological evidence elsewhere suggests that most suitable species locally available were indeed used for fuel (Cleere, pers. comm.). This deposit was confined to the eastern pit of cut 1048. The upper fill (1049) spanned both the western and eastern pits and was of a very dark greyish brown colour, clearly different to the charcoal layer below. It consisted of a mixture of sand, silt and clay and contained abundant charcoal pieces and burnt clay patches. In the eastern pit, two large granite slabs were laid flat within the fill just below the surface. There were no signs of scorching on either of these.

The fired feature is unusual with its different levels of infill, and the stone packing and slabs in particular. No slag was recovered *in situ* and therefore any relation with iron production must remain hypothetical. From its size, thickness of the lining and the ashy charcoal fill in the lower layer (1057), the feature is best interpreted as an open hearth, potentially multi-purpose, with smithing or repair work also having been carried out in it. The threefold lining of the eastern pit also suggests a hearth, with the sandy material on the inside being suitably heat resistant for forging. It is not clear whether the sand lining continued around the entire interior surface or was applied only to certain areas. Similarly, it is not known whether the outermost charcoal layer was related to the lower charcoal layer (1057) or was separate from this. Unfortunately, no piece of hearth lining was recovered to determine the nature of this and the conditions to which it had been exposed. The feature becomes less easy to interpret as regards the stone packing at the base of the western pit. With a section drawing of the feature lacking, it is difficult to establish the exact location of the stone packed layer in relation to the lower charcoal layer and to determine whether there was any relationship between the two. Similar stone packing, interspersed with slag, is known from a working pit of a smelting furnace at Site 1, Wakerley, Northants. (Jackson and Tylecote 1978, 151; 152 Fig. 22). At that site limestone was interpreted as having been used in the furnace construction, but this is very unlikely with the rounded pebbles and the simple nature of the hearth at Bonners Lane. Again, limestone fragments were found at the base of furnaces 2 and 7, Site 4, at Wakerley (Jackson and Tylecote 1978, 155; 157 fig. 27 and 161 fig. 31; 162). However, as no substantial furnace lining or vitrified material was found at Bonners Lane such an interpretation is also rather unlikely. At Wakerley, in all cases the limestone consisted of flat slabs, unlike the pebbles found at Bonners Lane. It should be noted, however, that the natural geology at Wakerley was limestone whereas no readily available source of suitable stone occurs in the vicinity of Bonners Lane, possibly explaining the use of pebbles. Whilst the possibility that the pebble layer served as a foundation for some fired feature, with the charcoal filled pit being the working pit, cannot be ruled out, it is more likely to have been the other way round. The clearly defined charcoal layer could have been the bottom of a hearth and the cobbled surface some kind of working platform. This may have been used directly as a working surface for forging, with the signs of scorching the result of hot iron having been placed on the pebbles. Comparable evidence was found, in a different part of the world and dating to the 1st millennium BC, at the iron production complex at Cholchis in Georgia. There, the platforms were square and much larger, but apparently served the same potential purpose (Pleiner, forthcoming). However, it remains debatable whether rounded pebbles would have provided a stable enough surface for iron working (but cf. Pazda 1976, 92). At Cholchis, slabs were used. Finally, it is possible that the bellows, which are required in connection with any metallurgical

installation, rested on this stone fundament. This interpretation is to be favoured if the small area with its preserved hearth lining between the two pits of the hearth at Bonners Lane is interpreted as a flue. It is worth noting, however, that burnt pebbles are also found in the context of food preparation, for keeping water warm and for heating rooms. Therefore, the interpretation of the feature as a domestic hearth cannot be entirely excluded, although the presence of slag both within and around the hearth indicates that iron production was undertaken in the immediate vicinity. The two slabs of granite represent some later phase of usage of the hearth and potentially are not related to it at all. They cover the fill of the eastern pit near the surface and perhaps created another working surface.

Another, elongated fired feature: 969, also in Phase 4, was located 1m north of hearth 1048 but no iron production debris was found in it, although the sides do show signs of scorching. The entire feature is about 3.2m long, with a long, narrow channel (c.40cm across and 2.4m long) to the east and a circular extension with the stokehole to the west (diameter c.80cm). Pieces of granite were found in the channel. These may have been used to regulate the heat in the channel by opening and closing parts of it. Features of a similar shape, so-called channel hearths, occur on iron production sites in Rockingham Forest, where they are interpreted as ore roasting (Jackson 1979) or charcoal burning (Tylecote 1986, 225) channels. However, these interpretations are unlikely in a densely settled suburban context. The feature rather resembles dumb-bell shaped hearths excavated in the vicinity of the Roman villa at Whitwell, Rutland, which are interpreted as corn-drying ovens (Todd 1981, 18 Fig. 11 F41 and F47; 20-21). A similar interpretation is suggested for the feature here. It is interesting to note that granite slabs like those in hearth 1048 were also found in this possible corn-drying oven, immediately to the north. Perhaps some related functional interpretation can be derived from this, although it is also possible that the slabs were taken from the corn-drying oven and reused in the hearth, or *vice versa*.

Other potentially related features in the vicinity include a layer of concreted sand (1388), Phase 4, which contained patches of iron staining and several pieces of slag. This deposit overlay the surface of the Roman road, towards its eastern side and may represent patching of the road in late antiquity, with debris from a nearby workshop. The iron staining is interpreted as rust, which comes from corroded pieces of iron. Two samples of slag were recovered for analysis. One is a fayalitic slag with fuel and ash remains and areas of more silicate material. There is one vitrified silicate area with silica grains preserved next to a piece of potential hearth lining (grey to brownish sandy clay). These white grains of silica are typical for bloom smithing (Sim 1998, 103-104) and could also represent heat-transformed welding sand that was used as a flux to remove surface impurities in the iron during forging (Rural Development Commission 1995 – welding fluxes; Joosten et al. 1995; Sim 1998, 26). Such a slag could derive from bloom refining/smithing or the earlier stages of forging. This sample was described by the excavator as a hearth related deposit, but this is difficult to verify as the find context is several meters away from the hearth. The other sample is a typical conglomerate smithing slag, containing fuel remains and corrosion products. In the smaller of the two pieces, beside fragments of red-fired industrial ceramics (hearth lining?), two small lithics were included. This is very interesting evidence indeed, and can be interpreted either as flint chips used for fire making or for their silica content which can be used during forging to remove surface impurities in the iron (I. Keesmann, pers. comm.). Evidence for flint used in fire making has been found in the context of iron smelting at the Roman villa at Whitwell, Rutland (Schrüfer-Kolb, forthcoming).

Finds of iron production debris and their interpretation

Several other samples of iron production debris were recovered from late Roman pits in the vicinity (in Phases 4 & 6); however, most of the Roman material came from the Phase 3 roadside

ditches. This finds context would appear to indicate the dumping of material when the roadside ditches had ceased to be maintained (although this does not mean the road itself fell out of use).

From the material recovered, there is strong evidence for iron forging. A number of smithing slags, typically of a conglomerate nature, rusty and friable, were found in layer 1388, together with one substantial hearth bottom in fill (316) of the Phase 3 ditch 310. This type of slag is a direct indicator of smithing activities. It has a typical plano-convex shape, and a large piece of charcoal is preserved on one side.

The rest of the material is characterised by a mixture of fayalitic ($2\text{FeO}\cdot\text{SiO}_2$) and silicate components, each usually confined to specific areas within the deposit. Often, the silicate areas predominate. There are also several slags consisting almost entirely of silicate material. These light silica rich slags do not form in a bloomery smelting environment, where heavier iron-rich fayalitic slags predominate. Silica is often used as welding sand in forging, and beside that silica can also be given off from the hearth lining. In this context, it is interesting to note that the innermost lining of the above mentioned hearth 1048 consisted of sand. The silica rich slags are often also of a glassy nature, indicating a certain amount of calcium and/or potassium being present. In this, they resemble clinker from a modern charcoal forge (A. Pedersen, pers. comm.).

Most remarkable are small white grains or inclusions in the silicate material. These were observed not only near the exterior surface of the material but also included inside the slag. Initially, they were interpreted as quartz grains from a sandy hearth lining or the relics of fused welding sand (cf. smithing slags from Scole/Norfolk: Cowgill and McDonnell 1995) but the significant number of internal inclusions seems to point towards chemical transformation processes. The white inclusions are therefore interpreted as being characteristic of “free-silica slags”, where silica forms with temperatures above 1375°C and in hearth environments encouraging the conservation or formation of magnetite. Also, hammer-scale promotes the formation of silica inclusions (Bachmann 1998), and some magnetic flakes were found in the bag residues. All these conditions are typical of a smithing hearth environment. Such high temperatures can be achieved locally near the tuyere, where the slag is usually formed. Magnetite forms through re-oxidation of the iron surface during forging, i.e. the formation of hammer-scale. Similar white inclusions have also been noted in experimental slag from bloom refining and welding (Sim 1998, 103-104). Furthermore, a number of slag samples may indicate bloom refining. When studying the conglomerate fayalitic-silicate material more closely, it became obvious that some sample material, notably 938 (596) & 254 (803), both in Phase 3, included significant amounts of fayalite, together with patches of silica rich material. This is interpreted as slag that formed during bloom consolidation, when much smelting slag was still retained in the bloom. During this process, the spongy raw iron produced in a smelting furnace would have been consolidated and, by continuous reheating and hammering, the remaining smelting slag squeezed out. In the early stages of this process, the remaining smelting slag in the bloom would flow out or was mechanically pressed out and this would result in slags resembling true smelting slags forming in a furnace. With the process carried on further, subsequent stages of forging would follow and during this, the silica rich slag patches formed and became fused to the fayalite material. This would indicate that bloom refining and subsequent forging of the iron were carried out in the same hearth. In some samples (eg. 934 (290) & 310 (583), Phase 3) a distinct layering of fayalite in the lower layers and silicate material in the upper layers can be observed, indicating a successive build-up during different process stages. Some samples also display a slightly plano-convex shape, indicating the gradual formation of the slag in a hearth near the tuyere: 934 (290) & 938 (596), Phase 3 and 1048 (1049), Phase 4.

There are also two entirely fayalitic slags present in 1048 (1049) & 1388 but these display signs that they may not belong to iron smelting. Moreover, the evidence is generally too little to

indicate iron smelting. The piece from the upper fill (1049) of the hearth 1048 displays a smooth top and a more irregular bottom surface, and a slightly plano-convex shape. The slag is non-magnetic, a property typical of smelting slag. This would look like a tapped slag cake but there are some fuel concretions and a charcoal piece included and this indicates the slag formed inside a furnace or hearth. Indeed the sample looks like smelting slag of the shape of a furnace bottom. With no clear evidence for smelting present on the site and no true furnace bottoms this piece is interpreted as a slag build-up from bloom refining, and this is supported by similar finds elsewhere (Pleiner forthcoming; Crew 1991, 29-30). The same is probably true for the piece from layer 1388, with its fayalitic areas significantly predominating over small patches of silicate material and a few fuel/ash concretions.

Summary

Whilst it is not easy to reconstruct the function of the Roman fired feature 1048 with entire certainty, it is beyond doubt that the feature was used as an open hearth, potentially for carrying out later work stages in the process of iron production. While the hearth contained only one fragment of potential bloom refining slag from its upper fill, the evidence from the slag material sampled in the vicinity indicates both bloom refining and forging near, or possibly in the hearth. Some later connection of the hearth with a probable corn-drying oven just to the north cannot be excluded and therefore multi-purpose usage of the hearth is suggested.

Bloom refining hearths are among the most difficult features to distinguish in the field. Basically, they are hearths in which the bloom was first reheated to separate it as much as possible from the adhering smelting slag. Then, in a second stage, the bloom was heated and forged in what may much more resemble a smithing hearth (Pleiner, correspondence 15/12/99). At Bonnors Lane, we are more likely to encounter this second phase if our interpretation of the slag proves correct. Indeed, bloom refining hearths are best recognised through finds of distinctive slag assemblages within them, which is in fact very rare. This fill, due to the processes carried out in the hearth, should comprise both smelting and smithing slags (Pleiner 1991, 551-552). It is indeed the entire slag assemblage from Bonnors Lane, with elements of smelting and smithing, that makes such an interpretation possible, and not the hearth in itself. Only very few bloom refining hearths have been identified elsewhere, making comparison of the evidence difficult. They are best recognised together with smelting furnaces from which they differ significantly in shape. In isolation, they are much more difficult to identify, and in most cases may indeed have been smithing hearths (Pleiner, forthcoming). Examples are known from 9th century Moravia, 11th-12th century Poland (Pazda 1976) and 12th century Prague, amongst others (Pleiner, forthcoming). Although these features originate from a later, more eastern context they resemble the hearth at Bonnors Lane in their measurements of *c.*50cm diameter, their total length of slightly exceeding 1m and particularly their figure-of-eight shape. This seems to relate to a hearth and its antechamber or working pit. The example from Piotroniowice in Poland in particular shows several parallels to the hearth from Bonnors Lane. There, two stone slabs were arranged over the flue in a similar way to the granite slabs related to the hearth at Bonnors Lane. As the slabs at Leicester were found just below the surface comparable evidence may have been already destroyed. Moreover, two platforms composed of stones and slag were found, which, although of larger dimensions, resemble the stone packing next to the lower layer (1057) of hearth 1048. These were interpreted as working platforms for refining the bloom (Pazda 1976, 92).

2. The post-Roman contexts

In addition to the samples from the Roman contexts 79 pieces of iron production debris (1091.5g) were examined from post-Roman contexts. At least some of this is suspected by the excavator to

be residual Roman material. No fired feature potentially related to iron production was identified.

Finds of iron production debris and their interpretation

Most of the samples indicate iron smithing, as has already been the case for the Roman period. There is also one piece of copper/copper alloy slag, clearly distinguishable by its green patina, indicating bronze or copper working from context (16), Phase 16. The most obvious sign of forging is one plano-convex hearth bottom from context (635), Phase 16. This is a “classic” piece, most noteworthy because of the three layers visible. The lower layer is of non-magnetic slag, whereas the upper layer comprises magnetic slag and/or metal. The top surface layer again contains partly non-magnetic slag. Through these layers the smithing process can be clearly reconstructed, with first the smelting slag being driven off, then the forging of the consolidated metal with the formation of hammer-scale and iron flakes, and finally the welding. A number of cinder pieces also point towards smithing, but the most extraordinary evidence are tiny (partly) magnetic concretions of slag spheroids and/or hammerscale which are usually not recognised by non-specialist excavators from (406) in Phase 14 and (1088) in Phase 7. These grain-like concretions may have formed by the fusion of the flakes with welding sand. They are usually preserved near the anvil site, unless the soil was removed subsequently. The samples from Bonnors Lane were recovered by wet sieving. The slag spheroids and/or hammerscale are driven off the surface of the forged iron during hammering, usually in the intermediate and later stages of smithing (Sim 1998, 99). Several samples of fuel ash, sometimes vitrified, are also best interpreted in the context of a smithing hearth.

Also, a number of hearth slags have been found, ranging from fayalitic pieces in (1312), Phase 15 to the more typical lighter conglomerate, fuel ash coated smithing slags. Some show a developing plano-convex shape (685), Phase 8 and some have highly magnetic areas (406), Phase 14 and (986), Phase 8. This may indicate a piece of iron is trapped inside, which may be proven through X-radiography. This range of samples indicates the different stages of smithing, from bloom smithing to the final stages of forging. These samples were, to maintain consistency with the Roman material, also named hearth slags but most are more likely to derive from a forge.

A few pieces of smelting slag are present, but the evidence is insufficient to indicate iron smelting and the samples could derive from bloom refining. However, there are also 15 samples of vitrified furnace lining present and these sometimes show a high degree of vitrification (324), Phase 8; (360), Phase 14; (685), Phase 8; (713), Phase 14; (1088), Phase 7. This indicates high temperature processes and may be the result of smelting. With the current lack of true smelting slag, they are difficult to interpret at present and may be perhaps better interpreted as vitrified hearth lining from the hottest part of the smithing hearth near the tuyere (cf. Keys in Charles, Parkinson and Foreman 2000, 54). Generally, iron smelting is unlikely in a suburban context, all the more so as Leicester is somewhat distant from the nearest ore sources. This evidence for potential iron smelting needs to be integrated with the settlement context of the site. This would determine whether we are dealing with an almost rural context at the most distant outskirts of the town, which seems rather unlikely in a medieval and post-medieval context when Leicester had already expanded significantly beyond its urban core.

Potentially related with the furnace lining, but not necessarily so, are a number of smelting and small pieces of tap slag. However, as the evidence is generally too scarce, the samples may also derive from bloom refining, the more so as larger tap slags are missing. The largest piece of smelting slag, from (804), Phase 9 may indeed indicate bloom refining, as it is non-magnetic but highly crystalline. Lacking magnetic properties these indicate fayalitic slag, which is usually formed during smelting, and the highly crystalline texture that the slag cooled slowly in a hearth or furnace. No surface re-oxidation was observed, as the slag is totally non-magnetic. This

would mean the slag was not exposed to an oxidising atmosphere, typical of an open hearth, but rather cooled slowly in a reducing atmosphere, which is more typical of a closed furnace. This would fit in with smelting, however the many charcoal flakes included rather suggest a hearth. Internal scientific analysis would tell us more about the actual formation processes. In addition, there are two smaller pieces of tap slag, a further piece of possible tap slag and one piece of general smelting slag, which is dense and fayalitic. Several smaller pieces of slag, among them two droplets, could also be identified. It is problematic to link this evidence with iron smelting. Indeed, the smaller pieces including the droplets, but also the larger piece, could have formed during bloom refining. With the sample size analysed preference is given to this latter interpretation.

Summary

Whilst no feature related to iron production was excavated a number of samples clearly indicating smithing, including the later stages of forging and welding, were examined. There is also evidence for bloom refining, but the finds of furnace lining are not easily interpreted, as smelting is not sufficiently supported by other samples. There is a theory that dismantled smelting furnaces were used for bloom refining and smithing (Pleiner, forthcoming; Crew 1991, 29-30), but not enough evidence is yet known to support this.

The white silica concretions observed in the Roman material were only seen in one sample from the medieval and post-medieval contexts and may indeed be typical for the Roman period (Sim 1998, 103-104). The later material is distinct from the Roman material in that much of it can be clearly attributed to forging, and the furnace lining to smelting (but see above, vitrified hearth lining). The so-called smelting slag leaves some open questions.

3. Statistical analysis

Statistical analysis of the iron production related material from Bonnors Lane in terms of weight, numbers and location (context) confirms and enhances the results gained from the qualitative archaeological analysis. Residues directly related to a forge environment, such as hearth bottoms or smithing slag, make up the majority of the samples collected both in the Roman and the post-Roman periods (see Table 27). For the Roman period, a substantial percentage of the slags supports bloom refining and primary smithing. This includes hearth slags (slags showing some characteristics of smelting slags but apparently formed in a hearth environment) as opposed to diagnostic smithing slags and hearth bottoms. In the post-Roman periods, evidence for bloom refining is less prominent and the preservation of fuel ash slag, cinder and hammerscale/spheroids rather points toward forging. The percentage of furnace lining is noteworthy and cannot be easily explained at present, as there is no further indication of smelting available. Examination of the spatial distribution of the iron production debris highlighted for the Roman period a concentration in the Phase 3 roadside ditch 310 (316) (Tables 28 and 29). In the post-Roman periods concentrations are less apparent and the material varies greatly in its correlation of numbers and weights. A cluster of finds may be seen in the Phase 8 pit 712 (685), but this is less distinct than for the Roman period (Tables 30 and 31). No marked local concentrations of one particular sample type were observed from the excavation.

4. Potential for further analysis

Several slag samples hold the potential to provide further information on the nature and quality of the processes carried out on site if geo-chemical and mineralogical examinations are undertaken. The hearth-bottoms, especially, would be suitable for thin-sectioning, to obtain further details of the processes leading to their development. Analysis of the so-called smelting slags and the furnace lining by XRF, ICP and thin-sectioning could provide an answer to whether these slags

and clay linings belong to actual smelting or rather to bloom refining. The same range of analytical methods applied to the copper-alloy slag would be suitable to identify what kind of non-ferrous metalworking this represented. Several of the samples contain pieces of charcoal and some are large enough to enable identification and perhaps radiocarbon dating. This would give information on the type of fuel used and potentially more precise dating of the slag material.

5. Discussion

Examination of the samples from Bonnors Lane, from Roman and post-Roman contexts, create the picture of a suburban (semi-)industrial site, where iron production, that is bloom smithing and forging, but perhaps also smelting, were carried out, together with other industrial and domestic activities.

For the Roman period a hearth was found, situated adjacent to the road approaching the south gate of the town. This location may have had some economic significance. During this period bloom refining and forging iron were important activities, and the settlement context of the time indicates that these activities were undertaken in the later Roman period. It is difficult to establish whether the scale of iron production was significant enough to make some profit. However, bloom smithing would rather support this, whereas simple forging or repair work was more likely in a domestic environment. If the former was the case this documents economic life in the suburbs of Roman *Ratae* even in late antiquity. We do not know whether the furnace lining and some of the so-called smelting slag is perhaps residual but if so it is not entirely impossible to imagine iron smelting in a late Roman suburban context, when much of the infra- and town structure had already fallen out of use.

From the excavation there is evidence for Anglo-Saxon occupation (Finn 1994, 167-168 and this volume). Extensive sampling of the fill of the Phase 7 building recovered 11 small fragments of iron production debris, including one piece of tap slag, indicative of smelting and slag spheroids/hammerscale suggesting smithing. This may be residual, however, if the quantity of Roman pottery recovered from this building provides an accurate measure of residuality for the other finds categories.

During the medieval and post-medieval periods iron smithing was again on the agenda. The main concentrations of material occurred in Phases 8, 9, 14 and 16, which together contained 75% of the post-Roman assemblage by fragment count and 85% by weight. It is easy to visualise forging in a suburban settlement context such as this. Iron working was only one of a number of different industrial activities carried out on the site in the post-medieval period, with evidence also for leather production and dyeing.

Comparable evidence from other sites in Leicester

There is evidence for early iron production at several other sites in Leicester. These include:

Bath Lane (Morgan in Clay and Mellor 1985, 78)

Causeway Lane (Connor and Buckley 1999, 307)

Elms Farm, Humberstone (Keys in Charles, Parkinson and Foreman 2000, 53-55)

Great Holme Street (Condon 1996, 346)

Norfolk Street Villa, a villa sub-urbana (Liddle 1982, 37-39; Wachter 1995, 448 footnote 204 with further references; Condon 1996, 345)

Town Defences (Morgan in Buckley and Lucas 1987, 107-108)

West Bridge Area (Clay and Pollard 1994, 155)

The sites that are closest to Bonnors Lane are the Town defences Sites 1 and 2, situated *c.* 250m

to the north, next to the road passing by the Bonners Lane site. All sites provide interesting evidence for iron production that is useful to compare with the finds from Bonners Lane. Unfortunately, some of the older reports lack considerably in detail (e.g. sample weight) and reflect the finds processing and state of knowledge of slag studies at the time. Therefore it is difficult to assess whether apparent indications for smelting are rightly so. As said, tap slag and apparent furnace slag, depending on their size and shape, can also derive from bloom refining. While some scepticism may be justified regarding iron smelting in a town environment it is possible that smelting was undertaken in the LPRIA and early Roman periods, while the town was still developing, and during the decline of the late to sub-Roman period. This taken into account, the evidence from other sites indicates that refining and forging were undertaken to a substantial degree at other sites in Leicester during the Iron Age, Roman, medieval and post-medieval periods. Often, non-ferrous metalworking is connected to iron working activities. This continuity and range of activities fits in well with the evidence from Bonners Lane. In this, Leicester resembles other important town centres in the wider region. Although nothing is known about iron working at Lincoln, it is possible that a coppersmith operated in the town (Wacher 1995, 144 and footnote 145). Further evidence includes several occasions of coin forgery and a crucible fragment associated with slag (Lincolnshire SMR card files). The evidence from *Durobrivae*, unfortunately, is difficult to assess in terms of smelting or smithing, and the evidence is very patchy indeed. At least in the early periods of the town, smelting seems to have been undertaken in Normangate Field but the excavated workshops point to forging rather than smelting, if anything at all (Mackreth 1995, 151).

It is interesting to note that evidence for iron smithing occurs repeatedly at Bonners Lane, in different periods. This might suggest some industrial continuity in the use of the plot. However, forging is one of the most widespread (semi-)industrial activities and the suburbs are an ideal place for a smithy - well away from the urbanised town centre but still near enough important markets. The finds and features documenting iron production at Bonners Lane give us an interesting insight into the activities carried out in the area to the south of the town over time. They add valuable information on the industrial and economic aspects of Leicester, an important regional centre, and indicate how the people who lived there before us made a living of small-scale production.

Table 25. Industrial residues from Roman contexts

Extension	Context	Cut	Sample	No. of pieces	Weight (g)	Type	Comments
10503	24	87		3	22	Cinder	
10507	210			1	78	hearth slag	developing plano-convex shape > hearth bottom? silicate concretions
10508	290			1	64	hearth slag	silicate concretions
10538	290		7.1	1	4	hearth slag	Plano-convex
10510	309			2	48	hearth slag	Highly silicate slaggy material; silicate concretions
10511	309			1	2	hearth slag	silicate slaggy material; silicate concretions
10512	312			1	4	hearth slag?	fayalitic; hearth lining preserved?
10513	316			1	538	hearth bottom	
10513	316			1	349	furnace/hearth slag	on one side reddish clay from hearth lining; silicate concretions
10513	316			3	8	silicate slaggy material	bag residue contains very few magnetic flakes
10514	316			6	66	hearth slag	Highly silicate slaggy material; silicate concretions
10519	583			3	75	hearth slag	from bloom refining? silicate concretions
10520	596			1	32	hearth slag	silicate concretions; plano-convex build-up?
10526	803			1	28	hearth slag	silicate concretions
10555	883		109.1	1	6	hearth slag	Fayalitic
10556	1049	1048	120.1	1	138	bloom refining slag?	Roman hearth
	1388	-		1	112	bloom refining slag?	Hearth related?
	1388	-		2	80	smithing slag	in smaller piece 2 small lithics; pieces of red fired industrial ceramics
Total				31	1654		

Extension no. relates to finds archive

Context & cut no. relate to excavation plans

Sample no. derives from wet sieving

List sorted by context

Table 26. Industrial residues from post-Roman contexts

Extension	Context	Cut	Sample	No. of pieces	Weight (g)	Type	Comments
10502	16	-		1	2	copper-alloy slag	green patina
10504	26	34	34	1	16	Cinder	
10534	56	57	2.1	5	2	fuel ash slag	cindery material
	62	94	3.1	1	1	fuel ash slag	
	62	94	3.1	1	1	Slag	very magnetic
10505	106	107		2	26	fuel ash slag	large pieces of charcoal preserved
10506	122	-		2	32	Cinder	
10536	154	155	50	1	2	Slag	
10537	246	252	6.1	2	3	vitriified fuel ash slag	
10509	297	351		1	48	smelting slag	tap or furnace slag
10515	324	326		1	14	vitriified furnace lining	
10539	328	348	22.1	1	2	vitriified furnace lining	
10540	336	330	18	1	0.5	cindery slag	fuel ash remains; magnetic > hammerscale?
10541	352	353	55.1	1	0.5	slag	Droplet
10542	358	389	122.1	1	0.5	Cinder	
10516	360	361		1	2	vitriified furnace lining	highly vitriified inner surface; cf. 10513 – 316
10543	392	422	70.2	2	0.5	fuel ash slag	
10544	394	395	61.2	1	2	vitriified furnace lining	
10545	406	407	66.1	4	13	Cinder	
10546	406	407	66.3	7	0.5	Grains	spheroids, hammerscale
10547	406	407	66.4	0	0.5	Grains	spheroids, hammerscale
10548	406	407	66.4	1	30	hearth slag	
10517	440	478		1	10	vitriified furnace lining	sandy clay with many sand grains
10549	451	452	74.2	1	1	vitriified fuel ash slag	or furnace lining
10550	494	534	82.2	2	12	smelting slag	
10551	512	513	87	1	0.5	Slag	
10518	520	497		1	42	vitriified furnace lining?	sandy clayey material; dark grey to light green
10521	635	364		1	202	hearth bottom	classic, two layers
10522	685	712		1	12	vitriified furnace lining	
10523	685	712		1	48	hearth slag	slightly plano-convex
10524	685	712		4	22	fuel ash slag	
10533	685	712	102.1	2	10	vitriified furnace lining	one area slightly magnetic
10552	685	712	102.2	5	18	hearth slag	
10553	685	712	102.2	1	1	vitriified furnace lining	Magnetic
10553	685	712	102.2	1	3	fuel ash slag	or vitriified furnace lining coated in fuel ash
10554	709	710	101	1	1	vitriified furnace lining?	silicate material with silica grains
10525	713	1020		1	4	vitriified furnace lining	
10527	804	676		1	352	furnace slag	highly crystalline, heavy but non-magnetic
10528	986	-		1	32	hearth slag	one area very magnetic > piece of iron?
10557	1088	1089	129.2	2	2	vitriified furnace lining	highly vitriified
10557	1088	1089	129.2	1	1	cindery slag	magnetic > hammerscale? with fuel ash
10559	1088	1089	129.1	1	0.5	Cinder	
10560	1088	1089	129.12	2	2	vitriified furnace lining	
10558	1088	1089	129.3	4	0.5	Grains	spheroids, some magnetic
10529	1213	1214		1	4	smelting slag	tap slag
10530	1281	-		1	4	Slag	Droplet
10531	1309	1316		1	22	hearth slag	coated in fuel ash and corrosion products
10532	1312	1316		1	72	hearth slag	coated in fuel/ash remains
10501	1 (u/s)	-		1	14	smelting slag	possible tap slag
Total				79	1091.5		

Extension no. relates to finds archive
Context & cut no. relate to excavation plans
Sample no. derives from wet sieving
List sorted by context

Table 27. The Iron production debris by period

Period	Type	Weight (g)	Percentage (w%)	Number (N)	Percentage (N%)	
Roman	bloom refining slag?	250	15	2	6	
	Cinder	22	1	3	10	
	furnace/hearth slag	349	21	1	3	
	hearth bottom	538	33	1	3	
	hearth slag	407	25	19	62	
	silicate slaggy material	8	0	3	10	
	smithing slag	80	5	2	6	
Subtotal		1654	100	31	100	
Post-Roman	Cinder	62	6	9	12	
	cindery slag	1.5	0	2	3	
	fuel ash slag	54.5	5	15	19	
	furnace slag	352	32	1	1	
	hammer-scale grains	1.5	0	11	14	
	hearth bottom	202	19	1	1	
	hearth slag	222	20	10	13	
	slag	8	1	5	6	
	smelting slag	78	7	5	6	
	vitriified fuel ash slag	4	0	3	4	
	vitriified furnace lining	104	10	16	21	
	Subtotal		1089.5	100	78	100
	Total		2743.5		109	

NB: post-Roman subtotal = 77 + 1 copper alloy slag + numerous tiny flakes of hammer-scale = 79 as in report

These tiny flakes have been reflected in the statistical calculations by number as 0.

The difference in weight and number for the post-Roman period to Table 26 is explained by the omittance of the piece of copper alloy

For the purpose of statistical calculations weight percentages smaller than 1% have been assumed to be 0. This does not reflect the actual value.

TABLE 28

TABLE 29

TABLE 30

TABLE 31

5. The Environmental Evidence

5.1 Human Remains

Ian L. Baxter

Summary

Human bone was recovered from deposits of Roman, Anglo-Saxon and Post-medieval date. Most of this probably derived from disturbed Roman burials. Possible exceptions are a child's tooth from a post-medieval pit and a cranial fragment from one of the Civil War period ditches.

Roman

An adult right fronto-parietal fragment was found in the lower fill of the Phase 3 western roadside ditch 229 (247). This has a small supraorbital, a moderate frontal sinus and a prominent glabella. The fronto-parietal suture is fused and obliterated on the inner surface. This cranial fragment probably belonged to a female. A left parietal fragment found in the same context may belong to this or a second individual.

A left scapula fragment was found in pit 1373 (1372) of Phase 4.

A left mandible fragment came from the Phase 5 pit 1339 (1338). Resorption of the M1 and M3 alveoli and of the bone of the vertical ramus posterior to M3 indicates an aged individual.

A right mandible fragment (sf80) with M1-3 was found at the stripped surface close to the western roadside ditch. Dentine is only exposed on M1 and the individual was probably aged between 17 and 25 years (based on Brothwell 1981). There is some calculus on the lingual aspect of all three teeth but no caries.

Anglo-Saxon

A human distal metatarsal fragment was found in the fill of the Phase 7 Anglo-Saxon sunken feature building 1089 (1088).

Post-medieval

A right upper(?) dM2 with caries from a child of approximately 8 years old was found in a soil sample from pit 497 (520) of Phase 14. This may represent an extraction of similar date to the deposit.

From the Phase 15 Civil War period ditch 1316 (1315) came a left occipital fragment with an unfused occipito-parietal suture. This probably came from a young adult male and may be of similar date to the deposit.

5.2 Animal, Bird, Reptile and Amphibian Bones

Ian L. Baxter

Introduction

A total of approximately 79.0kg of animal bone was recovered from the site. Of this 5366 fragments were identified, comprising 2668 hand-recovered fragments and 2698 fragments from the samples. A total of 161 samples with a combined weight of 2175.9kg were sieved and sorted to coarse (>4mm) level. Four early post-medieval pits were extensively sampled to maximize bone recovery and account for 578.1kg.

Methodology

All bone examined was catalogued and bone fragmentation zones were recorded for the Roman, medieval and post-medieval cattle, sheep/goat and pig bone after the method of Rackham (unpublished) as used by Gidney (1991a & b, 1993, 1999) in the Shires and Causeway Lane reports. Bone measurements are after E von den Driesch (1976). Long bone fragments without diagnostic features, rib fragments and vertebra fragments are recorded as Large Mammal and Medium Mammal. For most purposes these can be considered together with cattle and sheep. Bone from the flots of environmental samples was scanned but not recorded in detail or tabulated. Where significant finds came from the flots, these are referred to in the text.

The animal bones from Roman Phases 2-6

Summary

The Roman deposits at Bonnors Lane produced a small assemblage of animal bone spanning the second to fourth centuries. Throughout this period cattle bones are most abundant. The cattle were horned (shorthorn) and included males, females and castrates. There is some evidence to suggest a cull of second year animals for meat but older beasts predominate. It seems probable that cattle were primarily kept for draught, breeding and dairy products and generally slaughtered as mature beef. A group of highly fragmented cattle bones from Phase 5 may have formed part of an industrial deposit. No goat bones were identified from the Roman deposits, and no cranial elements were recovered to indicate if the sheep were horned or polled. Most of the sheep were killed between two and three years old. Sheep seem to have been primarily exploited for meat. Very few pig bones were recovered but most of these are from young animals. However, all ages were represented from neonates to mature breeding stock. Dog was represented by scattered elements from large, medium and very small animals. Only a few immature cat bones were recovered and it is possible that these derive from wild animals. Horse remains were relatively common in Phases 3, 5 and 6, all belonged to pony sized animals. No remains belonging to wild hunted animals were recovered from the Roman deposits. Few bird bones were recovered, most of these belonging to domestic fowl. Wild or domestic goose and duck were also present. No small mammal bones were recovered despite extensive sampling, which may indicate that the habitat was not attractive to these species.

Introduction

A total of 493 identifiable fragments were recovered by hand from the Roman deposits and a further 48 fragments from the sifted samples, making a total of 541 fragments. Most of the bone derives from contexts in Phases 5 and 6 dating from the late 3rd to the late 4th centuries (49% overall).

Species representation

Table 32. Species present in Phases 2-6

Horse	<i>Equus caballus</i> L.
Cattle	<i>Bos f. domestic</i>
Sheep	<i>Ovis f. domestic</i>
Pig	<i>Sus f. domestic</i>
Dog	<i>Canis familiaris</i> L.
Cat	<i>Felis</i> sp.
Fowl	<i>Gallus f. domestic</i>
Goose	cf. <i>Anser anser</i> L.
Duck	cf. <i>Anas platyrhynchos</i> L.
Indeterminate Bird	<i>Aves</i> sp.
Frog/Toad	<i>Rana/Bufo</i> sp.

Species abundance

Cattle fragments are most abundant from the site as a whole, accounting for 32.5% of identified hand recovered fragments and 65% if combined with Large Mammal. Sheep/Goat are next frequent with just under 12%, 25% if combined with Medium Mammal. Horse bones are relatively common accounting for almost 4% of the total, but are only present in Phases 3, 5 and 6. Pig accounts for less than 3% of identified fragments. All other species are infrequent and sporadic.

Notes on the species

Horse

As noted above horse remains are relatively common in Phases 3, 5 and 6. A fragmentary mandible from the Phase 3 roadside ditch 254 (981) has well worn teeth suggesting an age at death of 14 or more years (Levine 1982). The canine, though present, is rudimentary and this mandible may be from a stallion or mare (Sisson and Grossman 1953, 400). A more definite male is represented by an anterior mandible fragment, also from Phase 3, found in ditch 310 (316). This was from an animal of 6 years or over (Levine 1982). All other skeletal elements seen are from adult animals with fused epiphyses except for an axis, 6th cervical and thoracic vertebra with unfused epiphyses from pit 87 (24) in Phase 6. These would have derived from an animal under approximately five years old (Silver 1969). A complete radius from pit 1079 (1078) of Phase 5 and femur from ditch 102 (101) of Phase 3 give withers heights of 126cm and 131cm respectively using the multiplication factors of Kiesewalter (1888). The horses represented at the site are lightly built riding ponies no larger than their Iron Age predecessors. All the equid gnathic material examined conforms to horse and none of the other skeletal elements recovered from the site suggests the presence of other species, i.e. mule or donkey.

Cattle

As noted above cattle fragments are most numerous in the Roman deposits. However, the only significant groups are in phases 3, 5 and 6. The cattle bones in pit 1079 of Phase 5 seem to have formed part of an industrial deposit. This pit, the only square Roman pit on the site, contained 44 deliberately split and fragmented long bones in its secondary fill (1077). All the identifiable fragments belong to cattle (27%). These resemble much larger concentrations of cattle bone fragments found at Augst (*Augusta Raurica*) which were interpreted as debris from the manufacture of glue (Schmid 1972, 48 fig.10) and at Carlisle, where they have been considered evidence of the boiling of bones to extract bone grease, oils and marrow fats (Rackham 1994, 58-9). The Bonners Lane fragments do not resemble waste and blanks from bone working, in which the ends of bones are sawn off and shafts split to manufacture pins and needles etc., such as have

been found in medieval deposits at the Forum in Leicester (in archive), or comminuted by marrow extraction, canid damage and trampling as is frequently found on prehistoric sites (e.g. Rackham 1987, Baxter forthcoming). Similarly chopped horse bones (medieval) from Causeway Lane have been interpreted as possibly fragmented for marrow extraction or stock (Gidney 1999). The largest group of cattle bones, 49 fragments, came from pit 87 (24), which like 1079 was cut into the eastern margin of the road surface. Cattle account for 75% of bone identified to species. A minimum number (MNI) of 4 individuals is represented in this deposit, including a bull, a cow and a castrate (ox). The horn cores of these animals demonstrate perfectly the criteria established by Armitage and Clutton-Brock (1976) for distinguishing between the sexes (Plate 17). The type of cattle is typical of the shorthorns most frequently found in the Romano-British period. Their age, according to the criteria of Armitage (1982) is Old Adult or 10 years or more. These three cores were the only ones from the Roman levels that could be sexed with confidence. The presence of a younger animal under 2 years old is indicated by long bones with unfused epiphyses. Two metacarpals were sufficiently complete for withers heights to be calculated using the multiplication factors of Fock (1966). These gave withers heights of 111.4cm and 110.2cm, well within the range of Roman cattle from other British sites (Luff 1982; Baxter unpublished a & b; Gidney 1991a & b, 1993, 1999). A further complete metacarpus from pit 881 (883) of Phase 4 also gave a shoulder height of 111.4cm. The skeletal elements from pit 87 (24) derive from all parts of the body and may represent butchery waste. However, no butchery marks were noted on the bones. Also in this deposit were 17 rib fragments and 19 long bone fragments without diagnostic zones that could have come from either horse or cattle. Some of these have cut marks. Up to 32% of the bone fragments from (24) were unidentifiable chips suggesting a relatively high level of bone fragmentation. Only 3 cattle mandibles from the site are sufficiently complete to give mandible wear stages (MWS) after the method of Grant (1982). These comprise one young adult with MWS 29 and two old adults with MWS 46 and 44-46. Upper and lower dentition for the site as a whole consists of 18.5% unerupted/deciduous teeth, 26% permanent teeth with slight wear and 55.5% with heavy wear. The implication that older cattle predominate at the site is largely supported by evidence of epiphyseal fusion, where 75% of early fusing epiphyses are fused, 50% of epiphyses fusing between 2-3 years are fused, and 60% of those fusing between 3.5-4 years are fused. It seems probable that cattle were primarily kept for draught, breeding and dairy products and generally slaughtered as mature beef. This is very similar to the situation at the Shires and Causeway Lane sites (Gidney 1991a, 1999). Most of the cattle horn core fragments recovered have chop marks or saw cuts near their bases and it seems probable that cattle horn was routinely collected as raw material for horn working.

Sheep/Goat

No remains that could be attributed to goat were seen and only three fragments can confidently be identified as sheep. It seems probable that only sheep are represented in the assemblage. No horn cores or diagnostic cranial fragments were recovered, and only one bone was complete enough to give a withers height estimate based on Teichert's (1975) multiplication factors. A metatarsus from ditch 229 (210) of Phase 3 gives a withers height of 63.0cm. This is within the range of Roman material from other sites in Leicester and Leicestershire (Gidney 1991a & b; Baxter unpublished a & b). Four mandibles are complete enough for the MWS to be calculated: 24/5, 28, 31 and 32. These suggest that most of the sheep were 2 years old or over. Upper and lower dentition combined suggest a death assemblage comprising 31% juveniles, 48% from adults with permanent dentition that did not survive long enough for full attrition to occur, and 21% from animals old enough to have M1 and M2 in full wear. That the majority of the sheep are in the 2-3 year range receives some support from epiphyseal fusion data where over 70% of epiphyses fusing during this period are fused. The relative numbers of animals aged 2-3 years would seem to be higher at Bonners Lane than at the Shires or High Street sites (Gidney 1991a; Baxter unpublished a) but numbers are too small to draw any secure conclusions. As at the

Shires and Causeway Lane sites sheep seem to have been primarily exploited for meat (Gidney 1991a, 1999).

Pig

Only 13 pig fragments were hand-recovered from the Roman deposits at the site with a further 9 found in the samples. Too few pig teeth were found to indicate age structure although a mandible fragment from a female with MWS 44 from the Phase 5 pit 1339 (1338) represents an old breeding sow. No epiphyses were fused on any of the limb bone fragments found and very young and neonatal remains were recovered from pits 881 (883) and 1339 (1338), Phases 4 and 5, respectively.

Dog

Domestic dog is represented by scattered elements in phases 3, 4, and 6. Fragmentary remains of the left and right mandibles of a large dog were recovered from ditch 253 (240) in Phase 3. A complete right femur from 881 (883) in Phase 4 gave a withers height estimate of 38cm using the multiplication factors of Harcourt (1974). A proximal fragment of a larger femur was found in layer 207 of Phase 3, and a very small bowed tibia fragment came from pit 87 (24) of Phase 6. These dog remains are typical of the Roman period in Britain and similar to more complete examples from the Shires, Causeway Lane, Norfolk Street, and Great Holme Street sites (Gidney 1991a, 1999; Gouldwell forthcoming a & b; Baxter *et al.* forthcoming).

Cat

The remains of at least 2 immature individuals are represented by four bones from the fore leg found in layer 269 of Phase 2. It is not possible to say with certainty if these derive from domestic cat (*Felis catus*) or its wild relative (*Felis silvestris*). The remains of cats are much less common on Roman sites than those of dogs and at Leicester are generally those of young animals (Gidney 1991a, 1999; Baxter unpublished a & 1993; Baxter *et al.* forthcoming).

Birds

The bones of domestic fowl were found in Phases 2, 4 and 5. The Phase 2 layer 269 produced four fragments including the distal right femur and tibiotarsus of a large cock or capon. Most fowl bones from Leicester sites in both the Roman and medieval periods are of smaller, bantam sized, chickens. A tibiotarsus fragment and a wing phalanx from the Phase 4 pit 881 (884) are indistinguishable from *Anser anser* and may belong to either domestic goose or greylag. All but 1 of the Phase 5 fragments come from immature individuals. A distal ulna fragment found in a sample from pit 87 (24) of Phase 6 is indistinguishable from mallard, *Anas platyrhynchos*, and may belong to a wild or domestic duck. Indeterminate bird bones were found in samples from Phases 3, 5 and 6. From their size they could easily belong to domestic fowl.

Amphibians

A single tibiofibula fragment from either a frog or toad was recovered from a soil sample from 229 (247) of Phase 3.

The animal bones from the Anglo-Saxon Phase 7

Summary

A similar number of animal bones was recovered from the Anglo-Saxon deposits concentrated in the south-eastern corner of the site as from the more widespread Roman deposits. Cattle are the most common species represented in the Anglo-Saxon deposits. There seems to be no change in the type of animal represented from the Roman levels. Most cattle survived to at least two or three years. No goat remains were identified in the Anglo-Saxon assemblage. Sheep are

relatively more common than in the Roman deposits. Most of the sheep were slaughtered between one and two years old, which suggests that they were primarily raised for meat. Pig is more abundant than in the Roman deposits and includes a significant number of young animals from neonatal to about six months old. Older breeding stock is also represented. Only one dog fragment and no cat bones were found in the Anglo-Saxon deposits. Horse bones are very infrequent and red deer was represented by one fragment. The bones of birds are infrequent but include domestic fowl, goose, duck and woodcock. Environmental samples produced the bones of small mammals, including house mouse, wood mouse, field vole and water vole. The relative frequency of field vole suggests that the habitat was primarily grassland. The bones of anuran amphibians were also quite common.

Introduction

A total of 549 identifiable fragments were recovered from Anglo-Saxon features, 214 were hand-collected and 335 came from sifted soil samples. All of the bone came from the sunken feature building and its associated post holes. Compared to the Roman deposits the bones of small mammals, birds and amphibians are relatively common in the Anglo-Saxon samples, which suggests differences in the environmental and taphonomic processes operating in the two periods. Recovery of skeletal elements from all the domestic species was enhanced by sampling, particularly the bones of young pigs.

Species representation

Table 33. Species present in Phase 7

Horse	<i>Equus caballus</i> L.
Red Deer	<i>Cervus elaphus</i> L.
Cattle	<i>Bos f. domestic</i>
Pig	<i>Sus f. domestic</i>
Sheep/goat	<i>Ovis/Capra f. domestic</i>
Dog	<i>Canis familiaris</i> L.
House Mouse	<i>Mus</i> sp.
Wood Mouse	<i>Apodemus</i> sp.
Water Vole	<i>Arvicola terrestris</i> (L.)
Field Vole	<i>Microtus agrestis</i> (L.)
Fowl	<i>Gallus f. domestic</i>
Goose	<i>Anser f. domestic</i>
Duck	Cf. <i>Anas platyrhynchos</i> L.
Woodcock	<i>Scolopax rusticola</i> L.
Indeterminate Bird	<i>Aves</i> sp.
Frog	<i>Rana temporaria</i> L.
Frog/Toad	<i>Rana/Bufo</i> sp.

Species abundance

Cattle fragments are most abundant amongst the Anglo-Saxon hand-collected bone accounting for 14% of identified fragments and 58% if combined with Large Mammal. Sheep/goat are next frequent with just under 11%, 31% if combined with Medium Mammal. Pig accounts for 7% of hand collected bone but 15% of sample bone. This compares with 4% cattle and 9% sheep/goat. Pig remains, particularly those of young animals, are probably under-represented in the hand-collected bone.

Notes on the species

Horse

Only 3 equid fragments were recovered from the Anglo-Saxon deposits: a left scapula fragment, a lower premolar or molar fragment, and a proximal 2nd metatarsal fragment. These all came from 1089 (1088) and are comparable to horse or pony.

Cattle

The basal part of a large adult horn core attached to a frontal fragment was recovered from (1088). This probably came from a castrate (ox). Most of the cattle bone consists of mandible, ankle and foot elements. However, there are 60 Large Mammal rib fragments that are probably cattle. Analysis of the teeth indicates that 13% are unerupted or deciduous, 20% are slightly worn permanent teeth and 67% are permanent teeth with heavy wear. While 80% of epiphyses fused by 18 months are fused, there is a lack of relevant elements for the 2-3 year stage and no epiphyses fusing by 3.5-4 years are fused. What evidence there is suggests that most cattle survived to at least 2-3 years. The only mandibles complete enough to calculate mandible wear stages (MWS) are from old animals with MWS 42 and 42+.

Red Deer

A frontal fragment with attached left antler base was found in (1088). The beam of the antler has been chopped through and it has been removed, presumably to provide raw material for the manufacture of combs, needles etc. The stag represented was a large mature individual. Dimensions of the antler base and pedicle are larger than those of a pair of antlers with eight points in the author's collection and are similar to Iron Age and Romano-British examples from Tixover and Scalford Brook (Baxter forthcoming and unpublished b). The Bonnors Lane specimen is weathered and could be residual although no deer remains were found in the Roman deposits at the site.

Pig

The pig remains include a significant number of young animals from neonatal to around six months old. This bias toward younger animals receives support from epiphyseal fusion data. No epiphyses that fuse by 1 year and none fused by 1-2.5 years are fused and only 1 out of 3 late fusing epiphyses are fused. There are too few teeth to draw any conclusions and no mandibles complete enough to calculate MWS. An anterior mandible fragment from an adult sow indicates the survival of older animals representing breeding stock.

Sheep/Goat

No remains identifiable as goat were recovered from the Anglo-Saxon deposits. A right astragalus and a left radius have been identified as sheep. The unfused distal epiphysis of the radius and four bones of the carpus were found in a sample and all probably belong to the same individual. The withers height of the individual represented by the radius is 55.3cm, which is within the range of Roman and Medieval populations, although as the distal part is unfused further growth may have been possible. The astragalus gives a withers height of 65.3cm, which is taller than any of the Roman or Medieval sheep from the site, but within both ranges for the Shires sites (Gidney 1991a & b). Half of the teeth recovered come from animals with slightly worn permanent dentition, with the remainder equally divided between younger and older animals. None of the teeth erupting between 18-24 months is in full wear. The only mandible complete enough to give a mandible wear stage has MWS 25-26 and like most of the loose teeth came from an animal between 1 and 2 years old. All of the epiphyses preserved that fuse by 1 year are fused but the majority fusing between 2-3 years and 3-3.5 years are unfused.

Dog

An incisor fragment probably belonging to domestic dog was found in a sample from (1088).

Small Mammals

The bones of small mammals are quite common in the fill of the SFB. A total of 25 gnathic elements could be identified to species and 72 post-cranial elements identified as mouse/vole. Field vole is the most common species with at least 3 individuals represented. House mouse, wood mouse and water vole are each represented by a minimum of 2 individuals. The absence of bank vole suggests that the immediate area was open ground with a lack of suitable cover. The presence of water vole may be due to the proximity of the river Soar, although this species may have ventured further from water in the past as it still does on the continent; juveniles are often found away from water in damp woodland and grassy areas (Corbet and Southern 1977; O'Connor 1987).

Birds

The goose bones are both ulna fragments and are indistinguishable from domestic goose. The only bone of domestic fowl recovered is a proximal ulna fragment. The duck remains could be from domestic duck or wild mallard. A distal carpometacarpus fragment of woodcock was found in a sample from the SFB.

Amphibians

The 32 anuran amphibian bones represent at least 2 frogs and probably more. The presence of frog and the apparent absence of toad may suggest damp conditions were prevailing at the time of deposition.

The animal bones from the medieval and early Post-medieval Phases 8-14

Summary

Small assemblages of medieval and later medieval bones from Phases 8-9 and 10-12 were examined. Much larger assemblages were recovered from the early post-medieval Phases 13-14 and several features were extensively sampled to maximize bone recovery. Cattle are the most abundant species in the medieval deposits. There is no change in the form of the cattle during the course of Phases 8-14. Like the earlier Roman and Saxon cattle they are shorthorned relatively small beasts. Most cattle were killed between two and three years although there is an increase in the frequency of calves represented in the early post-medieval. Four goat fragments were identified from Phase 14 deposits but none from earlier levels. There is an increase in the relative numbers of sheep represented at the site in the early post-medieval Phases 13 and 14, where they constitute the most abundant species. No polled specimens were seen from any phase. There is no change in the size of the sheep from the Roman to the early post-medieval period. In both the medieval through to the early post-medieval deposits older sheep are in a majority. This contrasts with the Roman and Anglo-Saxon phases and indicates an increased importance given to wool production. A large deposit of sheep foot elements in a Phase 13 pit represents waste from the preparation of skins, possibly for parchment. Pig numbers remain similar to those from the Roman deposits throughout the medieval and early post-medieval periods. The pigs range from foetal to over two years of age but most were slaughtered before their second year. The complete skeletons of a sow and three piglets were found in two Phase 14 pits. These may have been victims of disease. Equine remains are infrequent and represent both pony sized and larger animals of 14 and over 15 hands. Dogs are represented by scattered elements from small to large and powerful animals, including types similar to modern terriers, greyhounds and bull mastifs. Cat remains are slightly more common than those of dogs and include two skeletons. A specimen from Phase 8 had been skinned. Infrequent deer remains include red deer from Phases

9 and 11 and fallow deer in Phases 13 and 14. Hare and rabbit were only found in Phase 13 deposits. One bone of stoat was found in a Phase 11 pit and a hedgehog bone in a Phase 14 pit. The bird remains are dominated by those of domestic fowl and goose, with goose more numerous in both the medieval and early post-medieval deposits. The duck remains probably came from wild mallards. Two female skeletons were found in a Phase 14 pit. Other birds represented by scattered elements include dove/pigeon, crow, woodcock, house sparrow, great tit and jack snipe. The samples produced bones of black rat, house mouse, wood mouse, field vole and common shrew. Abundant frog and toad bones were recovered from the two Phase 14 pig pits. The vertebrae of a large grass snake were found in a medieval ditch.

The animal bones from the medieval Phases 8 and 9

Introduction

A total of 364 identifiable fragments were hand-collected from the Medieval deposits of Phases 8 and 9. A further 112 fragments were recovered from sifted soil samples making 476 fragments altogether.

Species representation

Table 34. Species present in Phases 8-9

		Phase
Horse	<i>Equus caballus</i> L.	8,9
cf.Red Deer	<i>Cervus elaphus</i> L.	9
Cattle	<i>Bos f. domestic</i>	8,9
Pig	<i>Sus f. domestic</i>	8,9
Sheep	<i>Ovis f. domestic</i>	8,9
Dog	<i>Canis familiaris</i> L.	9
Cat	<i>Felis catus</i> L.	8
Rat	Cf. <i>Rattus rattus</i> (L.)	8
Wood Mouse	<i>Apodemus</i> sp.	8
Water Vole	<i>Arvicola terrestris</i> (L.)	8
Field Vole	<i>Microtus agrestis</i> (L.)	8
Fowl	<i>Gallus f. domestic</i>	8,9
Goose	<i>Anser f. domestic</i>	8
Indeterminate Bird	<i>Aves</i> sp.	8
Grass Snake	<i>Natrix natrix</i> L.	8
Frog	<i>Rana temporaria</i> L.	8
Frog/Toad	<i>Rana/Bufo</i> sp.	8

Species abundance

Cattle account for 19.5% of medieval hand-collected bone, 48% if combined with Large Mammal, sheep/goat for 17%, 35% if combined with Medium Mammal, and pig 6%. Goose is next abundant with just under 4%, followed by domestic fowl and horse. All other species are relatively scarce.

Notes on the species

Horse

The remains of horse are infrequent and scattered in the earlier medieval phases. An upper M3 from pit/well 31 (22) came from an animal approximately 4 years old and a lower P3 from an animal of 5 years or over was found in pit 419 (273). A metacarpal from post hole 1085 (1084)

gives a withers height of 137.8cm or nearly 14 hands using the multiplication factors of Kieswalter (1888).

Cattle

A total of 5 measurable cattle horn cores was recovered from several features in Phases 8 and 9. Of these 1 is male, 1 is female, 1 is a possible ox (castrate) and 2 are indeterminate. All are shorthorn and come from adult or old adult beasts except one specimen from 31 (3), which belonged to a sub-adult of 2-3 years. Only one limb bone is complete enough to estimate stature, a metatarsus from layer 21. This gives a withers height of 118.3cm using the multiplication factors of Fock (1966), which is within the range for cattle at the Shires sites (Gidney 1991b). The metacarpus of a possible dwarf animal was found in post hole 1085 (1084) of Phase 8. Although the distal end has been destroyed by canid gnawing, the fifth metacarpal is fused to the metacarpus III+IV shaft which suggests that the bone may belong to an adult. When complete this bone could not have been more than 150mm long and came from an animal under 1.0m high at the shoulder. No cattle mandibles are sufficiently complete to calculate MWS, and only nine loose teeth were recovered from the Phases 8 and 9. All early and intermediate fusing epiphyses preserved are fused but none of the epiphyses fusing between 3.5- 4 years. The available evidence suggests that most of the cattle represented were aged between 2 and 3 years. A frontal fragment belonging to a calf was recovered from pit 351 (315), possibly waste from mock turtle soup, and a proximal ulna fragment from a neonate was found in feature 1160 (1159). No skeletal element is significantly more common than any other although the number of bones with fragmentation zones is not high.

Red Deer

The calcaneum of a deer was found in pit 903 (905) of Phase 9. This is much larger than the two reference fallow deer specimens available for comparison which are both female. It is only slightly smaller than the female red deer in Leicestershire Museums' collection and may belong to this species.

Sheep/Goat

No goat bones were identified in the assemblage. A total of 11 bones could be confidently attributed to sheep (15% of sheep/goat fragments) and it may be assumed that no goat is present. No polled skulls were seen and it seems that the sheep, like the cattle, were all horned. Also like the cattle, the horns of sheep seem to have been removed after death to provide raw material for the horner. A small sheep horn core from pit 330 (336) has a 'thumb print' on its inner ventral surface near the base. This may have come from an animal that had suffered from malnutrition or milking stress (Albarella 1995). Withers heights could be calculated from six bones using the multiplication factors of Teichert (1975). These range from 48.0cm to 62.0cm with a mean of 56.5cm. Out of 21 teeth available for study 76% are heavily worn permanent teeth including M3 and P4, only 14% are unerupted or deciduous and 9.5% are slightly worn permanent teeth. Only three jaws are complete enough for mandible wear stages to be calculated. These are MWS 36-38, 29-34 and 41-42. Data on epiphyseal fusion also suggests that older sheep are in a majority in the early medieval deposits with all available epiphyses fusing by 2 years fused, 83% of those fusing by 3 years fused and the only late fusing epiphysis present also fused. Anterior mandible fragments, distal metatarsus, proximal metacarpus and distal humerus fragments are the most frequent skeletal elements with zones represented.

Pig

The remains of pig account for 6% of hand-collected bone. Only 3 can be sexed on the basis of canine form: 2 males and 1 female. No bones are complete enough for stature to be estimated. The only grinding teeth recovered are from a single mandible fragment from pit 1164 (1163) with MWS 32 representing an animal approximately 2 years old. Only 1 out of 3 epiphyses fused by 1

year is fused, 50% of those fusing between 2-2.5 years and none of the late fusing epiphyses are fused. This indicates a significant mortality rate amongst young animals with none surviving beyond 2.5 years. The partial skeleton of a foetal pig was found in a soil sample from pit 330 (336). This animal died approximately 80 days after conception (Prummel 1989). A radius fragment from a second foetal/neonatal individual was recovered from a sample from pit 351 (297).

Dog

The remains of domestic dog only occurred in two features of Phase 9. A right innominate fragment found in pit 676 (811) belonged to a small animal. Three bones from the left fore leg of a single individual were found in pit 484 (859). Although all of these bones were incomplete it can be estimated that they belonged to an animal approximately 56cm high at the shoulder and therefore of similar size, though not necessarily build, as a modern Labrador retriever.

Cat

Cat remains were found in pits 351 (315) and 964 (963) of Phase 8. In 351, 35 fragments belonging to the skeleton of a single adult individual were recovered from a soil sample. A fine diagonal cut mark on the right lower anterior mandible indicates that it had been skinned. Cats seem to have been skinned as a matter of routine during the medieval period and there are cat bones with cut marks from several sites in Leicester including the Forum (C. Thawley: papers in archive), High Street (P. Aborri: papers in archive), and Causeway Lane (Gidney 1999). The single bone from pit 964 is a right ulna with a recently fused distal epiphysis from an animal approximately 15 months old (Walker 1982 in Amorosi 1989).

Small Mammals

A left humerus fragment belonging to rat (cf. *Rattus rattus*) was found in a sample from pit 285 (359) of Phase 8. No remains of rat earlier than the 12th century have been found in Leicester to date. These are from the High Street (Baxter unpublished a), Guildhall Lane (Baxter unpublished c), and Causeway Lane (Gidney 1999). Water vole and field vole were found in samples from ditch 836 (634) of Phase 8. Field vole was also found in samples from ditch 828 (633) and pit 351 (344) of Phase 8. Water vole and field vole have been found within the medieval town at Guildhall Lane (Baxter unpublished c), field vole has also been found at the High Street (Baxter unpublished a), and at the Shires (Gidney 1993). An upper M1 of wood mouse was recovered from the flot of a sample taken from ditch 836 (634) (not included in Table 3). The remains of small mammals suggest no significant change in habitat from Phase 7.

Birds

The remains of domestic fowl comprise 2% of hand-collected bone and occurred in both Phases 8 and 9. Only elements from the wing and leg are represented. Domestic goose is slightly more common accounting for nearly 4% of hand-collected bone and occurring only in Phase 8. There is a wider range of goose skeletal elements including rib and sternum fragments. There are cut marks on a left radius from 1160 (1159) and a right ulna fragment from 31 (3). Most of the indeterminate bird fragments are long bone shafts, vertebrae and phalanges that probably belong to the domestic species.

Reptiles and Amphibians

An unusual find from ditch 836 (634) of Phase 8 was the remains of a large grass snake (*Natrix natrix*) represented by 28 vertebrae. Six of these vertebrae are pathologically fused, presumably as a result of healed injuries. The remains of anuran amphibians were found in 836, 285, 348 and 353 of Phase 8. Frog was identified in a single case on the basis of urostyle morphology (Gasc 1966) from pit 348 (328).

The animal bones from the later medieval and early Post-medieval Phases 10-14

Introduction

Bone from medieval and early post-medieval contexts, phases 10-14, accounts for the main bulk of animal bone from the site with 1351 hand-collected fragments and 2172 fragments from samples identified, making 3523 fragments in all. The actual total is somewhat larger as skeletons are counted as 1 fragment in these figures. Four early post-medieval pits were extensively sampled for bone recovery following guidelines established by English Heritage (Payne 1992). A total weight of 264.5kg was sampled from pit 252 of Phase 13 comprising approximately 50% of the fill. Large samples were also taken from 34 of Phase 13 (54.8kg), and 407 and 422 of Phase 14 (224.6kg and 34.2kg).

Species representation

Table 35. Species present in Phases 10-14

		Phase
Horse	<i>Equus caballus</i> L.	12,14
Cattle	<i>Bos f. domestic</i>	11,12,13,14
cf. Red Deer	<i>Cervus elaphus</i> L.	11
Pig	<i>Sus f. domestic</i>	11,12,13,14
Sheep/Goat	<i>Ovis/Capra f. domestic</i>	11,12,13,14
Fallow Deer	<i>Dama dama</i> L.	13,14
Dog	<i>Canis familiaris</i> L.	12,13,14
Cat	<i>Felis catus</i> L.	11,12,14
Stoat	<i>Mustela erminea</i> L.	11
Hare	<i>Lepus europaeus</i> Pallas	13
Rabbit	<i>Oryctolagus cuniculus</i> (L.)	13
Hedgehog	<i>Erinaceus europaeus</i> L.	14
Common Shrew	<i>Sorex araneus</i> L.	14
Rat	<i>Rattus rattus</i> (L.)	14
House Mouse	<i>Mus</i> sp.	14
Wood Mouse	<i>Apodemus</i> sp.	14
Field Vole	<i>Microtus agrestis</i> (L.)	14
Fowl	<i>Gallus f. domestic</i>	11,12,13,14
Goose	<i>Anser f. domestic</i>	11,12,13,14
Duck	<i>Anas platyrhynchos</i> L.	13,14
Crow	<i>Corvus corone/frugilegus</i> L.	11
Woodcock	<i>Scolopax rusticola</i> L.	13
cf. House Sparrow	<i>Passer domesticus</i> (L.)	13
cf. Greenfinch	<i>Carduelis chloris</i> (L.)	14
cf. Great Tit	<i>Parus major</i> L.	14
cf. Jack Snipe	<i>Lymnocyptes minimus</i> (Brunnich)	14
Dove/Pigeon	<i>Columbia livia</i> Gmelin	11
Indeterminate Bird	<i>Aves</i> sp.	11,13,14
Frog	<i>Rana temporaria</i> L.	13,14
Toad	<i>Bufo bufo</i> L.	14
Frog/Toad	<i>Rana/Bufo</i> sp.	13,14

Species abundance

If the sheep foot elements from 252, which form a special deposit of industrial origin, are excluded, sheep/goat is still the most numerous species accounting for 22% of all identified hand-collected bone, nearly 42% if combined with Medium Mammal. Cattle is next frequent with

nearly 18%, or 39% if combined with Large Mammal. Pig accounts for just over 7% of total fragments if complete skeletons are counted as 1. The domestic birds are next common with goose slightly more frequent than fowl with 4.3% compared to 3.6%. All other species are infrequent, except mouse/vole and frog/toad, which have very high concentrations in two Phase 14 features that seem to have acted as pit-fall traps. Cat is four times as common as dog.

Notes on the species

Horse

Equid remains account for under 0.4% of hand-collected bone and only occur in Phases 12 and 14. A lower P2 from pit 636 (637) of Phase 12 came from an animal approximately 10 years old, and a lower P3 from pit 361 (360) of Phase 14 belonged to an animal about 7 years old. A metacarpal III+IV from pit 452 (451) of Phase 14 came from an animal approximately 124cm or 12.5 hands high at the withers based on the multiplication factor of Kiesewalter (1888). Also from Phase 14, in layer 498, the articulating elements of an equid foreleg were found. These consist of the left Mc III - Phalanx III of an animal approximately 150.6cm high at the shoulder (15.5 hands). The complete but fragmented skull of a foal was found in pit 422 (392) of Phase 14. This has dI3 unworn and unerupted M1, and was between 6 and 9 months old at time of death (Getty 1975). The enamel pattern on the grinding teeth is typical of horse or pony.

Cattle

As noted above, cattle are the next most common species at the site after sheep/goat. The contribution of cattle as food would have been much greater than that of sheep, however, as 1 cattle carcass provides 10 times as much meat as 1 sheep (Harcourt 1979). Only 1 measurable horn core was found in the early post-medieval deposits, in pit 395 (393) of Phase 14. This is shorthorn with a forward and downward curve and a pointed tip. It is solid with a flattened base and came from a male animal of over 10 years (Armitage and Clutton-Brock 1976; Armitage 1982). Only one bone was recovered from which a withers height could be calculated, a metacarpus from 1036 (1035) of Phase 13 which gives a shoulder height of 122cm using the multiplication factor of Fock (1966). The most frequent skeletal elements recovered are from the scapula, distal metacarpus and metatarsus, radius shaft, cranium and pelvis, mandible, femur and tibia. Only 4 jaws are sufficiently complete for mandible wear stages to be calculated, two of these have MWS 2 and two are in the range 42-46. One third of all teeth recovered are deciduous or unerupted permanent teeth, 23% are slightly worn permanent teeth and 43% are heavily worn. This contrasts with evidence of epiphyseal fusion where 90% of epiphyses fusing by 18 months are fused, 45% fusing by 2-3 years and 30% fusing by 3.5-4 years. It could be that there has been loss of post cranial elements from younger cattle through pre-depositional destruction. The bones of calves account for 7% of the total and over half of these are from the head. Frontal fragments with horn buds in various stages of development were recovered from pits 497 and 452 of Phase 14. Six caudal vertebrae from the tail of a calf were found in pit 497 (520) of Phase 14. A tibia diaphysis from a foetal animal aged approximately 185 days after conception (Prummel 1989) was found in pit 662 (660) of Phase 13. The cattle remains, therefore, represent a combination of calves culled as a product of dairy farming, prime beef animals, and older animals including dairy cows, breeding stock and draught oxen at the end of their working lives.

Sheep/Goat

Sheep/goat bones account for 1290 fragments from the later medieval and early post-medieval deposits. The foot bones of sheep recovered from pit 252 (246) of Phase 13 account for 928 of these fragments and will be considered separately as an industrial deposit. Of the remaining sheep/goat fragments, 35 could be identified as belonging to sheep (14%) and 4 as belonging to goat (1.6%).

Goat

The four goat fragments identified consist of two frontal fragments from pit 497 (520), a radius and an innominate from pit 452 (451) both of Phase 14. The horn cores have been removed from the frontals in both cases. The radius gives a withers height of 61.5cm using the multiplication factor of Schramm (1967).

Sheep

In view of the relative scarcity of goat all other sheep/goat fragments may conveniently be considered as sheep. As with the goats above, all sheep frontals recovered have had their horn cores removed. Horn cores show evidence of intentional removal. A large horn core from pit 34 (26) has been sawn through medially and snapped off. This core has 'thumb prints' on its lateral and ventral surfaces and may have come from a ram or wether. 'Thumb prints' on sheep horn cores result from resorption of calcium in completely developed cores. As they frequently occur on the horn cores of female animals they are no longer thought to be related to castration but with environmental stresses such as malnutrition, repeated pregnancies and lactations, intensive milking or combinations of these factors. In a male old age and malnutrition are possible causes (Albarella 1995 and pers. comm.). A sheep cranium, complete except for the nasals and horn cores, was recovered from 34 (26) of Phase 13. The skull had been severed from the neck by a blow downwards across the occipital condyles. No polled sheep cranial fragments were seen. The most common skeletal elements, in decreasing order of frequency, are scapula, radius, distal tibia, distal humerus, pelvis and mandible. When account is taken of the relative durability of the different skeletal elements (Brain 1967), the distribution suggests that shoulder of mutton was the most common joint. All the sexable pelvic fragments seen are female. Mandible wear stages could be calculated for 15 jaws with 1 at MWS 19, 1 at MWS 28, 7 between MWS 30-39, and 4 at MWS 40 or over. Under 6% of teeth are deciduous or unerupted permanent teeth, 17% slightly worn permanent teeth (of which 61% are P4 and M3 which may not erupt until 2 years old), and 79% are heavily worn permanent teeth (of which 38% are P4 and M3). All early fusing epiphyses are fused, 86% of those fusing between 1 and 2 years, all of those fusing between 2 and 3 years and 57% of those fusing between 3-3.5 years. Tooth eruption and wear together with evidence of epiphyseal fusion combine to indicate a preponderance of older animals at the site during the later medieval and early post-medieval periods and the consumption of mutton rather than lamb. This suggests that wool production was primary and meat production secondary. This pattern is different from those encountered at the Shires and Causeway Lane sites which had a higher proportion of lambs and younger animals (Gidney 1991a & b, 1999).

Sheep feet from pit 252 (246)

The foot bones from 252 (246) were identified as belonging to sheep on the basis of qualitative and quantitative morphological criteria described and illustrated by Boessneck (1969) and Payne (1969). The plots for the adult metacarpals are illustrated in Table 44. The foot bones derive from a minimum (MNI) of 28 sheep based on the recovery of 56 proximal metacarpals. Illustration 40 shows the totals recovered for each bone. It seems that although skins arrived on site with metapodials and phalanges attached, detachment of the foot in the carpal area took place either by disarticulation at the carpo-metacarpal junction, or by division between the proximal and distal groups of carpals, or in a very few cases by cutting between the distal articulation of the radius and the proximal group of carpals. In the hind foot the joint was either disarticulated between the centrotarsale and the distal tibia or at the tarso-metatarsal junction. Any of these operations would have required skilled manipulation of a small, sharp knife. The slight disparity between numbers of metacarpals and metatarsals may result from some of the later being utilized as raw material for bone working (cf. O'Connor 1984, 37). The evidence from (246) points to the general use of a knife for the removal of the feet, probably as part of the skinning procedure. Detailed examination of the surfaces of metapodials from (246) revealed a number of knife cuts, both singly and in groups. As with the metapodials from Walmgate (O'Connor 1984, 37-8), cuts

are concentrated on the anterior metacarpal, particularly the midshaft, but tend to be more frequent on the posterior metatarsal. Only a few bones had cuts near the proximal articular surface and none on or close to the distal articular surface. This confirms the impression already gained by personal observation *in situ* and frequency of elements recovered that the phalanges were left attached.

Age of the sheep represented by feet in pit 252

Almost 95% of epiphyses fused by 16 months were fused, 78% by 2 years and 89% by 2 years four months. The overwhelming majority of the animals represented were adult. It should be noted, however, that some metapodials with unfused distal epiphyses are smaller and much younger than those with fused and that others are as large or larger. Hence, the deposit consists of some young animals, probable castrates, and animals over 2 years old.

Size and conformation of the sheep

The numbers of intact metapodials recovered from pit 252 (246) are sufficient to give a good indication of the size range of the sheep. The metrical data permit estimations to be made of the withers height, likely build and body weight of the sheep. Estimations of withers height are based on regression factors published by Teichert (1975) and the results should only be taken as approximate. Estimates from metacarpals ranged from 0.51-0.61m reconstructed withers height, with a mean of 0.55m. Estimates from metatarsals ranged from 0.51-0.62m with a mean of 0.56m. This is comparable with the medieval range from the Shires and Causeway Lane sites (Gidney 1991b, 1999). By analogy with the bones of modern sheep of known weight it is possible to suggest that the sheep represented in (246) would have been slow maturing stock and that a mature ewe would have reached around 37.5Kg liveweight (Dobney *et al.* 1996).

Discussion

The sheep foot bones from 252 (246) would seem to have been brought to the site attached to skins and represent the waste of a light leather manufacturer such as a whittawyer, fellmonger or glover (Baxter 1998). This deposit of foot bones is very similar to more extensive 18th century deposits at Walmgate in York, which, like the Bonnors Lane assemblage, were associated with tanning or tawing pits (O'Connor 1984). The sheep feet would have provided neatsfoot oil, which would have been used, along with alum and perhaps other organic ingredients, in the tawing process. There is documentary evidence that the oil could be obtained without disarticulating the foot bones (Serjeantson 1989, 141). Whereas the tanner was restricted to the production of leather from cattle hides, the whittawyer or tawyer utilized the hides of sheep, goats, deer, horse and dogs. These were often casualty skins recovered from animals which had died naturally (Thomson 1981, 171). These sheep from the early post-medieval deposits at Bonnors Lane are lightly built unimproved animals of similar size to the medieval and most of the post-medieval sheep from the Shires and Causeway Lane sites (Gidney 1991b, 1999). Also, as with the aforementioned sites, the majority seem to have been horned. This is at variance with the description of the unimproved Leicester (or Midland) longwool as a large-boned, long-legged and hornless animal (Trow-Smith 1957, 165 & 206). Horned sheep may be expected to be short-wools (Ryder 1961, 1081), which suggests that both short-wools and long-wools were raised in Leicestershire and that short-wools make up the bulk of the lamb and mutton consumed in medieval and post-medieval Leicester. Certainly large flocks were maintained by the butcher-graziers, on accommodation land around the town in the 16th century, although their type is not precisely known (Trow-Smith 1957, 206). Horned sheep would also have been useful to horners as a source of raw material and the horns of sheep, along with those of cattle and goats, were characteristically removed prior to discard of the crania. It has been suggested that polled sheep may not have been desirable in urban centres if sheep horn was a marketable commodity (Gidney 1999).

Pig

The remains of pig account for 7% of hand-collected fragments if the industrial deposit of sheep feet in pit 252 is omitted from the total. In addition the largely complete skeletons of four individuals were recovered in bulk samples from pits 407 and 422 of Phase 14. These will be considered separately. A total of 9 canines or canine sockets from pits in Phases 11, 13 and 14 can be sexed. Of these 6 are male and 3 female. 50% of pig teeth are deciduous or unerupted permanent teeth, 32% slightly worn and 18% heavily worn permanent teeth. No heavily worn M3s were recovered. Seven mandibles are sufficiently preserved for mandible wear stages to be calculated. Four of these are between MWS 3-9 and represent sucking pigs and weaners, in at least some cases mortalities of locally bred animals. Two jaws have MWS 24 and may represent porkers or baconers. A sow skeleton found in pit 407 (412) has MWS 30 with M3 just coming into wear and was probably 2 years old at death. 60% of epiphyses fused by 1 year are fused, 22% fused by 2-2.5 years, and no epiphyses fusing after 2.5 years are fused. These figures omit the three piglets in pit 422. Foetal/neonatal remains were found in pits 407 (406 & 412) and 422 (392) of Phase 14. If the complete skeletons are excluded, the most numerous skeletal elements with zones recovered are proximal radius, distal humerus, calcaneus and malar bone.

Pig skeletons in pits 407 and 422 of Phase 14

The skeleton from pit 407 (412) belonged to a female approximately 2 years old on the basis of tooth eruption and wear together with the state of fusion of the epiphyses (Baxter 1998). The carcass was buried in a pit that had been dug and allowed to become waterlogged and full of frogs before being backfilled in the early spring (see below). The head of the pig had been removed from the carcass and placed at the rear end of the body (Plate 18) in order to make it fit in the pit. The left posterior distal femur diaphysis has two transverse chop marks, perhaps a half-hearted attempt to remove the lower leg. The skeleton is otherwise un-butchered. Cause of death is unknown but farrowing complications or a viral form of swinepox are possibilities. Calculations using the multiplication factors of Tiechert (1966/69) on the humerus, radius and femur give withers heights between 76-80cm. The three skeletons in pit 422 (392) belong to animals between 3-4, 4-6 and 6-8 months old. As with pit 407, pit 422 was left empty for long enough to become waterlogged and full of breeding frogs (see below). Then the three pigs were deposited along with a foal's head, a cat and two ducks. The pit was then backfilled. The differing stages of development of these three pigs suggests that they originate from different litters, born in the vicinity of the site, and that they died of unknown causes at the same time and were buried in the same pit sometime in the early spring, possibly in the same event that resulted in the burial of the sow in pit 407 at the same season of the year. Possibly what we see here is the result of an epidemic of some kind, perhaps swinepox caused by the vaccinia virus which affects pigs of any age and occasionally runs an acute febrile viraemic course with generalized eruption and fatal outcome (Jubb and Kennedy 1970, 604). Swinepox is noted as a killer of pigs in medieval accounts (Trow-Smith 1957, 129). None of these pigs had been butchered and there is no evidence that they were utilized as food. An ordinance of 1467 forbade any butcher in Leicester to sell meat from animals 'with any manner of sickness' on pain of imprisonment at the mayor's pleasure (Farmer 1991, 390). Other by-laws from elsewhere required the burial of dead animals (Thomson 1981).

Discussion

The Bonnors Lane pigs are of the same unimproved type prevalent in Britain since the Neolithic. Although there is no evidence of any outside genetic strain being introduced into the British pig population until the mid 18th century, by Tudor and Stuart times a certain amount of artificial selection and somewhat better feeding was producing larger and better fattened animals than before (Trow-Smith 1957, 232). The Bonnors Lane pigs seem to have had withers heights similar to those of modern Landrace pigs but were probably longer in the leg. Neither was as large as the Staffordshire boar measured by Plot in 1686, which was 4 foot 1 inch (1.2m) high and 7 foot 2

inches (2.1m) long (Trow-Smith 1957, 198-9). However, the pigs of Leicestershire and its adjacent clay lands were held to be the best in England, fattened on the beans and peas which formed such an important crop in the region. One of these pulse fed pigs reached a dressed weight of 140lb (56kg) at an unknown age in 1615 (Trow-Smith 1957, 251). Pulses have been found in a number of contexts of similar date to the pits containing pig skeletons at Bonnors Lane (Monckton, below). It is thought that these pulse-fed pigs of Leicestershire and the neighbouring counties formed the basis of the Tamworth breed, which despite the introduction of West Indian genes retains the long snout of its unimproved ancestors (Trow-Smith 1957, 199 & 233). The four complete skeletons of animals from 3 months to 2 years old and the scattered remains of foetal/neonatal animals and individuals a few weeks or months old strongly suggests that pigs were being kept and bred on site during Phase 14. Various pathogens are known that may cause foetal death, abortion, stillbirth and death during the first month of life. The simultaneous deaths of older animals up to 2 years old, however, would probably have been caused by a particularly virulent outbreak of viral swinepox such as that caused by the vaccinia virus (Jubb and Kennedy 1970, 7, 522-4 & 604). Unlike sheep and cattle there is little evidence for large-scale pig husbandry in England in the late medieval/early post-medieval period. Pigs were still generally kept on a domestic or very small commercial scale (Trow-Smith 1957, 250).

Cervids

The remains of deer, though infrequent, are more common than those of horses in the later medieval/early post-medieval deposits. An antler tine off-cut referable to red deer (*Cervus elaphus*) was found in pit 676 (677) of Phase 11. As this fragment is weathered and the context represents late 14th century slumping into an earlier medieval pit it may be residual. The remains of fallow deer (*Dama dama*) were recovered from four pits in Phases 13 and 14. These consist of both antler and skeletal elements from major limb bones. Antler and bone were useful raw materials up to the advent of plastics, both shed antlers and those from butchered carcasses were collected for utilization by craft workers. The introduced fallow or park deer replaced the native red deer in central England during the Middle Ages with increased woodland management and habitat restriction.

Dog

The remains of domestic dog are much less frequent than those of cat and consist of scattered, isolated elements. Only two require discussion: a left mandible fragment from 825 (824) Phase 12 and a complete left humerus from 34 (33) Phase 13. The cheek tooth row length of the Phase 12 mandible is very similar to that of a female greyhound in the osteological reference collection of the School of Archaeology at Leicester University (A.J. Gouldwell pers. comm.). The teeth of the Bonnors Lane specimen are well spaced in a similar manner to a greyhound. The humerus from the Phase 13 pit 34 came from an animal 67cm high at the shoulder according to the multiplication factor given by Harcourt (1974). The mid-shaft diameter index (msd.100/tl) is 8.6. This bone came from a large, well-built and powerful animal, probably of similar size and build to a modern bull mastif.

Cat

The remains of domestic cat are four times as common as those of dog in the later medieval/early post-medieval deposits and occur in Phases 11, 12 and 14. Scattered skeletal elements belonging to immature individuals were found in pits 772 (771) of Phase 11, 497 (520), 452 (451 & 526), 432 (431), and 422 (382) of Phase 14. The complete skeleton of an adult cat was found in pit 422 (392). No cut marks were found on any of the bones, but the right humerus has tooth puncture and crush marks on its proximal end probably caused by a dog. This individual had no right upper P1 or any sign of an alveolus.

Lagomorphs

Bones of lagomorphs only occurred in Phases 13 and 14. Remains include a premaxilla fragment and a left innominate referable to brown hare (*Lepus Beuropaeus*) and a right innominate and distal left tibia shaft of rabbit (*Oryctolagus cuniculus*). The hare innominate has cut marks on the inner surface of the foramen obturatum.

Small Mammals

A radius with unfused distal epiphysis belonging to hedgehog (*Erinaceus europaeus*) was found in pit 443 (411) of Phase 14. Three postcranial fragments referable to common shrew (*Sorex araneus*) were recovered from the fine fraction residues of pit 407 (406) also of Phase 14. Only Phase 14 at the site produced a wide range of identifiable small rodents with black rat (*Rattus rattus*), wood mouse (*Apodemus* sp.) and field vole (*Microtus agrestis*) in the fills of pit 407; house mouse (*Mus* sp.) in pit 422 (392); and wood mouse in pit 452 (464). The left femur of a mustelid was found in pit 676 (677). Both proximal and distal epiphyses are unfused but the bone probably came from a young male stoat (D.W. Yalden pers. comm.).

Birds

The remains of birds account for 5% of the identified bone recovered from the later medieval/early post-medieval deposits. Domestic fowl and goose comprise the majority of these remains, nearly 88%, and are present in all phases. Fowl and goose bones are particularly common in the series of small pits with stakeholes fronting Oxford Street in Phase 13. Together they account for nearly 33% of the bone found in these pits. Many of the fowl remains in the earlier post-medieval features belong to young birds. No young goose bones were found and all goose remains are indistinguishable from domestic goose. Carpometacarpi with cut marks were found in 772 (771) of Phase 11 and 497 (520) of Phase 14. Amongst discarded goose wing and leg bones in pit 361 (360) of Phase 14 was a radius that had been turned into a quill holder. Whereas geese could be driven to market over long distances, chickens tended to be raised locally. The most common wild bird is mallard (*Anas platyrhynchos*). The small size of the bones suggests that these are wild rather than domestic duck. Mallard occurs in Phases 13 and 14. The skeletons of two females with medullary bone in the femorae and tibiotarsi were found in 422 (392). The presence of bone deposits in the medullary cavities of bird longbones indicates females in egg laying condition (Driver 1982; Wing and Brown 1979) which helps to pinpoint the season in which this pit was filled, as mallards generally lay their eggs in March (Cramp 1980, 516; Patten 1906, 44). A distal tarsometatarsus belonging to a crow, either carrion crow (*Corvus Ecorone*) or rook (*C. frugilegus*) was found in pit 772 (771) of Phase 11. From 252 (246) came a coracoid fragment of woodcock (*Scolopax rusticola*) and the bill of a house sparrow (*Passer domesticus*). A tibiotarsus very similar to that of greenfinch (*Carduelis chloris*) and a humerus referable to great tit (*Parus major*) were found in samples from 422 (392) of Phase 14. Pit 407 (412) produced a carpometacarpus comparable to reference specimens of jack snipe (*Lymnocyptes minimus*) in the collections at Durham University (L. Gidney pers. comm.). The jack snipe is a winter visitor to Britain from September to April. The presence of jack snipe together with large numbers of frogs in pit 407, see below, helps to establish early spring as the time of the back-filling of the pit. A tarsometatarsus found in 676 (677), 14th century slump into an earlier medieval pit, is from a rock dove or domestic pigeon (D. Serjeantson pers. comm.).

Amphibians

The remains of anuran amphibians were very common in the Phase 14 pits 407 (456) and 422 (392), amounting to 239 and 651 fragments respectively. Frogs and toads can only be distinguished on the basis of pelvic characteristics and the ossification of teeth in the frog (Gasc 1969; Holman 1985). On the basis of (un-sided) ilium fragments 407 (456) contains the bones of 1 toad (*Bufo bufo*) and 10 frogs (*Rana temporaria*), and 422 (392) 2 toads and 18 frogs. Such numbers would suggest that both features were relatively empty and waterlogged at the time of

the breeding season, which in the frog is early February to the end of March (Burton 1960, 160). This strongly suggests that both pits were filled in the early spring, a conclusion supported in the case of 422 by the duck skeletons and in 407 by the presence of jack snipe (Baxter 1998).

Bone from flotation of samples

Bone from the flotation fractions (flots) of the samples was scanned but not recorded in detail or tabulated. Flots from 252 of Phase 13 contained further carpals/tarsals, sesamoids and unfused phalange proximal epiphyses of sheep, rodent postcrania and bird fragments, mostly cf. fowl phalanges (foot and wing). Flots from samples taken from the fills of pits 407 and 422 of Phase 14 contained further frog/toad bones.

The animal bones from the later Post-medieval Phases 15-17

Summary

Only a small quantity of animal bone was recovered from the later post-medieval deposits. Most of this came from the Phase 15 Civil War ditch 1315 and deposits associated with Building 3 of Phase 16. Much of the bone from the building is probably residual from earlier post-medieval phases. Cattle and sheep are present in almost equal numbers in the later post-medieval deposits. However, many of the sheep fragments may be residual. The cattle fragments are too few and too fragmented to yield much information. The sheep are unchanged from those of earlier deposits. Only one fragment was identifiable as goat. Pig remains were few and generally uninformative. No improved animals of any domestic species were identified in the assemblage. The few horse remains include a bone from an animal of 15.5 hands from the Civil War ditch 1315. One bone from a small dog was recovered from the same feature. Two rabbit fragments were found in pits of Phase 16. Isolated bones of domestic fowl occurred in Phases 15 and 16, and goose in Phases 15 and 17. A fallow deer antler fragment was found in the Phase 16 well. No identifiable small mammal bones were recovered from the later post-medieval deposits, but the bones of anuran amphibians were present at low frequency.

Introduction

Only a small amount of bone was recovered from the later post-medieval deposits on the site. The most significant localities are the Phase 15 Civil War ditch 1316, and deposits associated with Building 3 in the northern part of the site in Phase 16, although much of this may be residual from Phase 13. From the hand-collected bone 242 fragments could be identified and 31 from the samples, making a total of 273 fragments.

Species representation

Table 36. Species present in Phases 15-17

		Phase
Horse	<i>Equus caballus</i> L.	15
Cattle	<i>Bos f. domestic</i>	15,16,17
Fallow Deer	<i>Dama dama</i> L.	16
Pig	<i>Sus f. domestic</i>	15,16,17
Sheep/Goat	<i>Ovis/Capra f. domestic</i>	15,16,17
Dog	<i>Canis familiaris</i> L.	15
Rabbit	<i>Oryctolagus cuniculus</i> (L.)	16
Fowl	<i>Gallus f. domestic</i>	15,16
Goose	<i>Anser f. domestic</i>	15,17
Indeterminate Bird	<i>Aves</i> sp.	16
Frog	<i>Rana temporaria</i> L.	16
Frog/Toad	<i>Rana/Bufo</i> sp.	16

Species abundance

Sheep/goat is the most common species in the later Post-medieval deposits accounting for 32% of the identified hand-collected fragments, 47% if combined with Medium Mammal. Cattle is next with 16%, nearly 45% if combined with Large Mammal. Many presumably cattle fragments are too fragmented to be certain of species identification. Pig accounts for under 4% of the total.

Notes on the species***Horse***

Horse only occurred in the Phase 15 ditch 1316 (1315) where it was represented by a lower 3rd incisor from an animal over 12 years old and a complete metatarsal from an individual 156cm high at the withers (15.5 hands).

Cattle

It is not possible from the small number of useful fragments to say very much about the later post-medieval cattle from the site. No horn cores were recovered or any bones complete enough to give any indication of size or stature. Bones belonging to both calves and adults were found but insufficient to indicate age structure. A small group of 5 distal metapodials found in layer 568, infilling the upper part of the construction cut of well 364, part of the Phase 16 Building 3, may have a relationship to a larger deposit of sheep metapodials in the same feature (see below).

Sheep/Goat

Only one fragment could be identified as goat, a mandible fragment, with dP3-4 (Payne 1985) from pit 402 (320) of Phase 16 MWS is around 9 or 10 (note: pit 402 was reassigned to Phase 14 after this report was written). The other three sheep/goat mandibles complete enough for it to be calculated have MWS 23, 36 and 39. The latter is from pit 390 (388) the only phase 17 feature from which bone was examined. Three sheep horn cores were recovered from deposits associated with Building 3. One of these had been sawn off and two broken off the skull. A left horn core from layer 16 is swollen and has indentations ('thumb prints') that may result from malnutrition and/or stress (Albarella 1995). A total of 26 metapodial fragments were found in contexts associated with Building 3, 18 from the well. All of these seem to be from sheep on morphological grounds. A metacarpal and 2 metatarsals from (16) have cut marks, as do a metacarpal and a metatarsal from the well. These are probably skinning marks. It is highly probable that the sheep metapodials are residual from Phase 13. The height of the sheep ranges

from 52.0cm to 65.0cm (Teichert 1975) and shows no size increase over earlier sheep from this and other Leicester sites.

Fallow Deer

A left antler fragment of fallow deer with chop marks on the beam and fine cut marks on a tine was found in layer (568), infilling the upper part of the construction cut of well 364, Building 3 of Phase 16. This represents craft waste.

Pig

A right maxilla fragment of pig was found in ditch 1316 (1309) of Phase 15. From the form of the canine this came from a female. A second maxilla fragment with a female type canine was found in pit 402 (320). Scattered elements, mostly metapodials, occur in other contexts of Phases 16 and 17.

Dog

A right ulna with unfused proximal epiphysis was found in ditch 1316 (1312). This came from a small bow legged breed approximately 20cm high. The animal was under 15 months old at time of death (Amorosi 1989).

Rabbit

An upper incisor fragment of rabbit was found in a sample from pit 155 (289) and a right radius in pit 94 (62), both of Phase 16.

Small mammals

No identifiable small mammal remains were found in the later post-medieval deposits. Indeterminate mouse/vole fragments were recovered in a sample from the Phase 16 pit 155.

Birds

Isolated bones of domestic fowl were found in single contexts in Phases 15 and 16. Goose occurred in Phases 15 and 17. Wing bones from an indeterminate bird, smaller than domestic fowl, were found in a sample from the Phase 16 pit 155 (289).

Amphibians

The bones of anuran amphibians were found in samples from two Phase 16 pits 94 (62) and 155 (289). An ilium from 94 could be identified as frog (Gasc 1966; Holman 1985).

TABLES 37 & 38

TABLES 39-41

TABLES 42 & 43

TABLE 44

TABLE 45

ILLUSTRATION 40

PLATES 17 & 18

5.3 Fish Remains

Dr. Rebecca A. Nicholson

Introduction

The fish remains detailed in this report originated from deposits of Roman through to post-medieval date excavated at Bonnors Lane, a site situated outside the town walls on the south side of Leicester. Animal bone was collected by hand during the excavation, in addition to which an extensive sampling system was implemented; almost all of the fish remains were recovered after sieving, either from the residues or the flots. In common with excavations at the Shires and Causeway Lane, Leicester, where a similar environmental sampling programme was conducted, the fish remains comprised mainly very small bones and scales; almost all of the scales were recovered in the flots.

In total 2358 litres of soil was sieved, from features selected on a judgmental basis. Discrete features were sampled, including pits as well as contexts which had clearly interesting organic fills. In all, 97 contexts were sampled in 200 units of approximately 20 litres each. The sediments were wet sieved in a modified Siraf tank fitted with a 1 mm. mesh internally and a 500 micron sieve for the flot. All flots and all of the coarse (>4mm) fractions of the residues were sorted and fish remains removed. Of the fine fractions (between 1mm and 4mm) only 25% of the sample residues were sorted, and then only from those contexts considered to be of greatest archaeological potential, so avoiding deposits containing high proportions of residual Romano-British pottery.

Methods of Analysis

Major bones and scales were identified as closely as possible, to family, genus or species by comparison with the author's own comparative collection and that of the Environmental Archaeology Unit at the University of York. Full records are available with the site archive. Recording methods follow Wheeler and Jones (1989). With relatively few exceptions most of the recovered fish remains were vertebrae, scales and bone fragments, many from small individuals of under 250mm length. As bone measurements are impractical for fish of this size, total fish length was usually estimated using a subjective scale of tiny, small, medium and large individual. Occasionally fish total lengths could be established with more certainty, and details have been given. Small, non-diagnostic but numerous bones including spines, fin rays and branchial bones were generally not individually recorded; counts were included with the "unidentified" fragments. Where counts were large they have been approximately calculated. Most unidentified material comprised tiny fragments of bone, a consequence of fastidious sorting.

Results

Distribution of fish remains

The distribution of fish remains over time at Bonnors Lane follows a similar pattern to that observed at the Shires and Causeway Lane sites (Nicholson 1992a; 1999), most of the fish remains originated from deposits of post-medieval date. Many contexts included very small numbers of bones and scales, and for this reason are considered of limited analytical value. Unfortunately, very few organic remains were recovered from the Roman, Anglo-Saxon and medieval contexts, and in the last two of these periods most features contained high proportions of residual Romano-British pottery. Nevertheless, because of the early date the fish remains from these periods are considered in their entirety in this report. Discussion of the post-medieval material is dominated by fish remains recovered from pits: 252, 407 and 155, from Phases 13, 14

and 16 respectively. Each of these pits produced relatively large numbers of fish bones and scales and appeared to be largely uncontaminated by earlier material.

Volumes of sieved earth are given in Table 46, as is the number of identified and potentially identifiable bones recovered per litre of earth. At Bonnors Lane it is evident that fish remains were never more than occasional finds; even in the post-medieval pit deposits fish bone concentration was almost always less than one identified bone per litre of soil. The only deposit with a frequency greater than 1 bone per litre was from the post-medieval pit 407; even here the concentration only just exceeded the figure of 1 bone per litre. As many of the recovered fragments were very small, it is likely that slightly higher yields would have resulted had all the fine fractions been sorted; however the cost of sorting these fine residues would undoubtedly have exceeded the value of the additional recovered information.

Species identifications are presented in Table 46, where fish remains from the three pits 252, 407 and 155 have been presented separately from the findings from the less organic post-medieval deposits. As the number of identified remains was low in some phases, discussion is based on major archaeological periods. These groupings seem justified in terms of the uniformity of species composition between the phases in each major period.

Species representation

As well as having a similar overall distribution through time, the fish remains from Bonnors Lane had other features in common with those from the Shires and Causeway Lane sites. While there are some differences in the relative abundance of marine, euryhaline and freshwater taxa, as discussed below, the general representation of species and the small size of many of the fish was similar for all three sites. Consequently the reader is referred to the reports from the Shires and Causeway Lane, Leicester (Nicholson 1992a; 1999) for comparative material and for further historical references.

Taking the site as a whole, the most commonly represented fishes in most contexts were clupeids, cyprinids, perch and eel. Clupeids (the only identified species being herring *Clupea harengus*) accounted for approximately 39% of the identified recovered bones. Twenty percent of the bones were from the cyprinids (carp family), their bones were often not further identified as the scales and many skeletal elements are not readily identifiable to species. Perch *Perca fluviatilis* accounted for 13% of recovered bones, and eel *Anguilla anguilla* for 12%. In addition to herring, marine species included thornback ray *Raja clavata* (as well as indeterminate ray and elasmobranch), and fish of the cod family (Gadidae) including cod *Gadus morhua*, ling *Molva cf. molva*, and haddock *Melanogrammus aeglefinus*. Flatfish, including plaice *Pleuronectes platessa* were represented in several contexts. One tentative identification of wolfish *Anarhichas lupus* was made. Euryhaline species (which tolerate saline and fresh water) included the anadromous salmon *Salmo salar* as well as eel and possibly smelt *Osmerus eperlanus* in one context. In addition to perch, freshwater species included a range of cyprinids: roach *Rutilus rutilus*, rudd *Scardinius erythrophthalmus*, tench *Tinca tinca*, dace *Leuciscus leuciscus*, gudgeon *Gobio gobio* and in one post-medieval context, possibly carp *Cyprinus carpio*. Pike *Esox lucius* and 3-spined stickleback *Gasterosteus aculeatus* were also present. Scales from freshwater fish (mainly cyprinids and perch) were common in almost every sampled deposit. Almost all the fish remains were recovered from the sieved residues and flots. The only bones recovered by hand were two ling *Molva cf. molva* bones and six unidentified (probably gadid) bone fragments from the post-medieval (Phase 13) pit 252. For convenience, and only because the number of hand recovered bones was so low, Table 46 includes all the recovered bones, not just the sieved assemblage.

Comparison of fish exploitation through time is hampered by the uneven distribution of fish remains, which may reflect the increasing importance of fishing in the economy through time or may be a function of varying conditions for bone preservation. During the Roman phases the only fish represented were freshwater species; coastal fishing is first represented by herring in the Anglo-Saxon Phase 7, but all other taxa represented at this date are either exclusively found in freshwater or are found in freshwater for much of their life cycle and were almost certainly caught there (salmon and eel). A wider range of marine taxa was exploited during the medieval and post-medieval periods, representing the development of the marine fishing industry. Fish of the cod family were present in Phase 8 (12th/13th century) for the first time, a trend towards greater reliance on marine taxa, which has been recorded for many other towns at this period (eg. York; O'Connor 1988, 155). However, freshwater fish appear to have continued to be an important resource throughout the medieval and post-medieval periods. The evidence from Bonnors Lane would seem to indicate that larger marine fish were less important here than in other urban areas of a similar date. However, as the corpus of data at Bonnors Lane is relatively small, it is worthwhile investigating other possible explanations for the distribution of taxa.

Discussion: species representation, bone preservation and taphonomy

Considering the assemblage of recovered fish remains as a whole, it is clear that in most periods the majority originated from small individuals, many from fish of under 200mm in total length. Few bones from large fish were recovered, posing the question of whether this represents a real trend in favour of small fish or is a function of both meticulous recovery and unusual circumstances for bone preservation. Curiously, many of the larger, mainly gadid, bones were in poor condition. Although experimental evidence has shown that larger fish bones may not always survive in preference to much smaller fish bone (Nicholson 1992b; 1996), the contrast in condition between the smaller cyprinid, eel and clupeid bones when compared with the larger gadid bones requires comment. There are several possible explanations, not all of which involve direct human selection of fish for food. The differences may reflect different pre-depositional histories; many of the small fish bones may have originated from rejected fish, that is fish which were for one reason or another not eaten. The larger bones, by contrast, may have been boiled for stock or soup; boiling greatly reduces a bone's chance of survival (Nicholson 1992b, 1996). It is also possible that the small fish bones and scales originated in human faeces, and that the pits functioned in part as cess pits. Few bones showed any indication of chewing or exhibited a calcareous covering often indicative of cess, however. Alternatively, the differences may reflect rubbish disposal practices. Remains from smaller fish were perhaps more likely to have been accidentally or deliberately buried close to human habitation. Larger bones may have been disposed of further afield (for example exported with other household rubbish for manuring fields). However, the post-medieval pits, which produced the majority of fish remains, also contained quantities of large mammal remains, some possibly from the preparation of skins (Baxter 1998 & this volume). Differential disposal of fish remains according to size therefore seems unlikely in this case. The specialised nature of the mammal bone evidence would suggest that in this instance the fish remains from the post-medieval contexts may have been accidental inclusions, or at least not necessarily directly indicative of fish consumption in the immediate vicinity.

To try to resolve the question of whether small fish, particularly freshwater fish, formed a significant component of the diet of at least some of Leicester's population from the medieval period, the evidence at Bonnors Lane may be compared with that from other excavations in Leicester where similar sampling strategies were implemented. Bones from small cyprinids, perch, herring and eel were frequent at both the Shires and Causeway Lane sites; however gadids formed a much higher proportion of the recovered remains from the late medieval period at both the Shires and Causeway Lane, compared with Bonnors Lane. Bones from exclusively

freshwater fish comprised about 40% of the recovered bones in the later medieval/post-medieval phases at Bonnors Lane, compared with only about 10% at Causeway Lane and the Shires. This high proportion of small freshwater fish at Bonnors Lane is unusual for urban sites in general. Commonly, the composition of fish bone assemblages appears to reflect the increased specialisation of the coastal fishing industries from medieval times onwards, with herring and gadids dominating in terms of numbers of bones. At Bonnors Lane the large pits containing the majority of post-medieval fish remains also contained numerous bones from frogs and toads, suggesting waterlogged conditions (Baxter 1998 & this volume). The site of Bonnors Lane is situated some 400 metres from the now canalised River Soar, and there must be at least a possibility that some of the small freshwater fish remains originated by non-human agency, for example from fish dropped or regurgitated by birds. All of the small freshwater fish represented at Bonnors Lane can be found in slow to moderate-flowing rivers; tench is usually found in slow, overgrown reaches of lowland rivers as well as in small pools. These conditions are consistent with a local origin for the fish. However, the ubiquity with which the small cyprinid and perch remains have been found in deposits of all periods in Leicester makes a purely 'natural' origin unlikely. At Bonnors Lane they appear in almost every deposit that produced fish remains, often in addition to herring that could not be of immediately local origin. The balance of evidence favours the cultural explanation: real selection of small riverine fish by local human populations. In fact the selection of largely small fish may have been driven by necessity rather than choice. Hoffmann (1995) has documented evidence for the catastrophic effects of humans on freshwater fish populations. Increasing populations, particularly in towns, accelerated by cultural developments favouring fish consumption (for example the increased numbers of meat-free religious days) placed local fish populations under great stress. Documentary evidence confirms that in some areas under-sized fish were frequently taken (*ibid.*, 64). Even small freshwater fish commanded a high price in medieval England (Cutting 1962, 7).

Conclusions

To summarise, considering the volumes of sieved soil, the fish assemblage from Bonnors Lane was fairly small for all of the periods represented on the site. Meticulous sorting resulted in the recovery of numerous small fragments and scales, a factor which facilitates comparison of the fish assemblage with other recently excavated sites in Leicester and elsewhere. The Roman and Anglo-Saxon phases produced very small amounts of material, mainly from fish which could have been caught locally in rivers and streams. The only fish which can not have been locally caught is the herring, which is represented from Phase 7 (early Anglo-Saxon) onwards. Herring were probably salted at this date. During the medieval period other marine species enter the record, particularly gadids (cod family) and, less commonly, flatfish. Freshwater species still continue to form a significant proportion of the fish bone assemblage, as well as contributing the vast majority of scales (owing to their greater robustness compared with most marine fish scales). It is possible that at least some of the small riverine fish represented in the later medieval/post-medieval pits accumulated by natural rather than human action, but the body of evidence accumulating from Leicester seems to indicate that small freshwater fish made a significant contribution to the piscivorous diet of the population from the Roman through to post-medieval times. Tentatively, the small size of many of the freshwater fish, combined with changes in taxa over time, may indicate local over-fishing.

Table 46. Numbers of fish bones and scales by major Periods

	Roman	Anglo-Saxon	Early Medieval	Later Medieval	Post-med. Pits: 252, 407, 155	Post-med. Other
Phase:	4-6	7	8	11-12	13-16	13-16
Vol. Sieved (L.):	102	269	412	90	457	972
Thornback Ray			1dd			1dd
Elasmobranch					?1t	1v, 1o, 1t
Salmon		1v				1v
?Salmon		1v				
Salmonid					1v	
?Smelt					2v	
Eel		1h, 7v	2v		26v	11h, 12v
Herring		6v	14v	1v	4h, 39v	1h, 14v
Clupeid			1v		5h, 83v, 3o, 1s	2h, 2v, 4o
?Clupeid			1h, 1v			
Roach					1phb	1phb
Rudd					1phb	
Roach/Rudd					1h, 2phb	
Dace					1phb	
Gudgeon					1h	
Tench			2s			
?Carp					1h	
Cyprinid		1v	2s	1s	6h, 62v, 2phb, 1o, 14s	1h, 11v, 5s
?Cyprinid	5s		5s	6s	2h, 3v, c.350s	1h, 1v, 250s
Pike	1s	2s, 1v	1s			5s
Stickleback					2o	1o
Perch	1s	4s	2v, 1s	2s	12h, 22v, 1o, 21s	1h, 15v, 19s
?Perch					1h, 4v, 1o, 1s	1v
Cod				1v	1h	2h, 1v, 1phb
Cod/Saithe					1v	
Haddock					2v	
Ling					1h, 1v	
Gadid			1v, 1o	1h	4h, 10v, 7o	
?Wolfish						1h
Plaice					1h	
Plaice/Flounder						1h, 1v
Pleuronected			1v			
Indeterminate	1f, 11s	27f, 17s	2v, 18f, 13s	18f, 6s	4h, 56v, c.70s, c.1000f	13v, c.200f, c.450s
Total	18s, 1f	1h, 17v, 24s, 28f	1h, 24v, 1dd, 24s, 18f	1h, 1v, 18f, 9s	44h, 312v, 1?t, 5phb, 15o, c.450s, c.1000f	21h, 73v, 1t, 1dd, 6o, 2phb, c.700s, c.200f
No. id./litre soil #	0	0.07	0.05	0.03	0.8	0.1

Key: Head bones (h), vertebrae (v), tooth (t), pharyngeal bone (phb), dermal denticle (dd), other (o), scales - including fragments (s), indeterminate fragments (f). NB. where indicated by "c." these indeterminate fragments and scales are estimated counts.

For Latin names, see text.

Number of identified and potentially identifiable bones per litre of sieved soil. Excludes fragments (f), scales and dermal structures (s,dd).

5.4 Plant Macrofossils

Angela Monckton

Introduction

The excavation of this site provided the opportunity to compare the environmental evidence from a site outside the town walls with that from intramural sites, most notably the Shires (Lucas and Buckley forthcoming) and Causeway Lane (Connor and Buckley 1999) sites. Plant and animal remains provided evidence of domestic and trade activities on the site and indicated the function of some of the features found. The remains recovered included small and large animal bones, fish bones and scales, and charred and mineralised plant remains. Charcoal was also recovered providing evidence of the wood species exploited (a catalogue of the charcoal, identified by G.C. Morgan, is included in the site archive). These remains were recovered by wet sieving soil samples. In addition small samples were tested for microscopic parasites of the human gut.

Charred plant remains included charred cereal grains and chaff together with other crop plants, such as legumes, and weed seeds. Charred plant remains have been found throughout the occupation of the town usually together with animal bones and fish remains as domestic rubbish. Occasionally larger groups of charred plant remains have been found including cereal chaff used as fuel in a Roman period corn drier at Norfolk Street villa (Jones 1982) and charred hay from a Roman pit at Causeway Lane (Monckton 1999a) providing evidence of other activities within the town. In contrast few remains were found from the Roman period at this site. However, abundant grain deposits of medieval to post-medieval date were found here, quite unlike the samples from the town, which were thought to represent domestic activity. Other plant remains which have become mineralized in such conditions as those which occur in cesspits, are preserved by impregnation with calcium salts, and were found here as in the town. These included fruit stones and pips which had been eaten and deposited in the pit as sewage. These were found with chewed fish bone from food consumed, as well as fly puparia from the insects living in the cesspits. Parasite eggs of parasites of the human gut were found by testing these deposits confirming the presence of sewage. Hence these remains show the presence of cesspits and give evidence of domestic activity and diet in the past. These remains were considered together over the phases of the site from Roman to post-medieval to help to interpret the activities on the site in the past.

Sampling and processing

During the excavation samples were taken on a judgemental basis from datable features with the potential to produce plant or animal remains, with particular emphasis on the pits found. Pits rich in bone were selected for bulk sampling for consistent recovery of the smaller bones of larger animals. A total of 2358 litres from 92 contexts was processed in 200 sample units of *c.* 15 L. Samples were wet sieved in a tank obtained from York Archaeological Trust using a 1 mm sieve and flotation into a sieve with 0.5mm mesh. All the residues over 4 mm (coarse fractions) were sorted for bones and finds. Residues of 1 - 4 mm (fine fractions) were sorted if small bones or fish bones were apparent, amounting to 25% of the samples. All the flotation fractions (flots) were sorted for fish and animal remains and scanned for plant remains at x10 magnification with a stereo microscope.

Table 47. Summary of samples taken

Period	Phase	Volume	No. of Contexts	No. of Features
Roman	2 - 6	158 L	12	7
Early Anglo-Saxon	7	269 L	2	2
Medieval	8	412 L	25	18
Late medieval	12	90 L	4	3
Early post-medieval	13	495 L	16	10
	14	645 L	25	12
Civil War	15	62 L	1	1
Late post-medieval	16	217 L	6	5
Victorian and later	17	10 L	1	1

Analysis of the plant macrofossils

Samples were selected for analysis from those with abundant remains, some of these had very numerous charred plant remains so a fraction of the sample was analysed. An attempt was made to cover all the phases of the site. During scanning of the flots estimates of the quantity of grains and seeds were made, the preservation noted and abundant or unusual remains observed, results from scanned samples are discussed in the text. Plant remains from the analysed samples were identified and counted (Tables 48 and 49), the plant names are those of Stace (1991) and remains are seeds in the broad sense unless stated. Remains were charred except those marked (m) were mineralised and (u) were uncharred. For the post medieval samples the proportions of types of plant remains was calculated as the percentage of chaff, grains, useful plants (including legumes, the cultivated plants, fruit and nuts), seeds of all other plants, and other items (Table 49). The proportions of cereals in selected samples was also calculated (Table 50).

Results and Discussion

Roman (Phases 2 - 6)

The 6 features sampled were from pits 881 and 87, ditches 934 and 229 and hearths 969 and 1048. All produced a few charred plant remains but only two had contexts with sufficient plant remains for analysis: the Phase 3 ditch 934 (290) and the Phase 6 pit 87 (24). These had evidence of the cereals wheat (*Triticum* sp) and barley (*Hordeum vulgare*) with possibly wild oat (*Avena* sp) and possibly rye (cf *Secale cereale*) (Table 48). The wheat included spelt, (*Triticum spelta*) and the presence of free threshing wheat, probably bread wheat (*Triticum aestivum* s.l.) was suggested by a grain of that form but no chaff was found to confirm this. Hazel nut shell (*Corylus avellana*) and possible legume fragments were the only other evidence of food plants. The remaining plants possibly represent the weeds of cultivation brought in with the cereals and these include some damp ground plants suggesting the cultivation of damp heavy ground or fields with damp or wet margins. These seeds, however, may be from plant material brought to the site for other purposes such as animal bedding or fodder.

The small number and type of remains found compare with the majority of features sampled from this period in Leicester. Domestic occupation is suggested but without the larger groups of remains as found occasionally at other sites, other types of activities cannot be suggested.

Anglo-Saxon (Phase 7)

Bulk sampling of the SFB 1089 (1088) produced 165 cereal grains with 67 seeds present from 233L of soil. This low concentration suggests that this is residual or redeposited material rather than a rubbish deposit but may date mainly from the Anglo-Saxon period. The cereals included over twice as much barley as wheat which is a similar proportion to that found in the Roman deposits at Causeway Lane, however most of the wheat found here was free threshing or like free threshing wheat. In contrast medieval deposits at Causeway Lane produced four times as much

wheat as barley but with much of the wheat being of free threshing type. The seeds found are common to late Roman and medieval deposits including grassland plants, arable weeds with legumes present as a further crop. The proportions of these remains could be distorted by residual or intrusive material as they are at low concentration in the sample so it is difficult to draw conclusions. However these remains may be useful for comparison should others be found in the future as at present this is the only evidence of plant remains from this period from Leicester.

Medieval (Phase 8)

Scanning of 18 features sampled showed that the majority produced only a few plant remains and after elimination of those with a high percentage of residual Roman pottery three features, all pits, were selected for analysis: 285 (273) (359), 348 (328) and 351 (315) (344) see Table 48. All three were associated with the group of clay-lined pits in the west of the site.

With the exception of a few seeds mainly of elder and greater celandine all the remains were charred. Seeds of these two species are often found in deposits in Leicester and uncharred elder seeds have been shown to be archaeological (Moffett 1993). They are thought to be the partially mineralised remains of the more robust seeds of local plants. They are found in numerous types of deposits and are not confined to cesspits where other mineralised seeds and fruit stones are found. The three selected features were tested for parasite eggs with negative results, chewed fish bones were absent from the fish remains which also suggests that these were not cesspits.

The charred plant remains include wheat, barley, oats and rye; the majority of the wheat is free threshing and includes bread wheat. The free-threshing wheat of this period at both the Shires (Moffett 1993) and Causeway Lane (Monckton 1999a) included rivet or macaroni wheat (*Triticum turgidum* or *durum*) probably rivet wheat. This may be the case here but this could not be confirmed at this site in the absence of diagnostic chaff (rachis). Weeds of cultivation were also found, probably brought in with the cereals while other wild plant seeds may be from material for roofing, flooring or animal bedding. Other food plants include peas (*Pisum sativum*), possibly other legumes and hazel nuts represented by nut shell. These remains compare with the charred remains from both the Shires and Causeway Lane sites at this period, however the absence of cesspit material contrasts with the intense domestic activity found at Causeway Lane in the early medieval phases.

Late medieval (Phase 12)

Layer (367) from this phase produced sufficient remains for analysis although a high percentage of Roman pottery was found. The layer was interpreted as a cultivated soil and the abraded remains with some mineralised seeds probably represent reworked pit material as found in other garden soils in the city. Although phased in Roman Phase 3 the plant remains in this layer are more medieval in character and the presence of medieval pottery suggests the remains may also be of this date. However, the material is likely to be mixed and is of uncertain date. Two further contexts produced small assemblages from layer (824) and pit 469 (468) with remains similar to those found in the previous phase (Table 48).

TABLE 48 (1/3)

TABLE 48 (2/3)

TABLE 48 (3/3)

Early Post-medieval (Phases 13 & 14)

Phase 13

Scanning of the ten features sampled in this phase produced six contexts which had larger groups of plant remains, these were: pits 34 (32), 252 (246) and 662 (660 & 661), hearth 920 (919) and layer (936). All, with the exception of (936), were tested for parasite eggs, none were found and chewed fish bones were also absent suggesting that these were not cesspits. However pits 34 (32) and 662 (660 & 661) produced mineralised remains which may suggest an element of latrine waste in these two pits, although not solely used as cesspits.

Analysis was carried out of pit 252 (246) which was intensively sampled in order to maximise the recovery of animal bone and of the 259 litres of soil sieved one quarter was analysed for plant remains (Table 49). A large number of charred larger legume fragments were found including peas, beans (*Vicia faba*) and possible cultivated vetch (*Vicia sativa* ssp *sativa*). Charred cereals were also numerous, although only as grains, including free threshing wheat and barley, chaff not being present. The weeds included those found before with some leguminous weeds. The deposit also contained a very large amount of charcoal. It is unusual to find large groups of charred legumes as they do not require heat in their processing. One of the beans did have a round hole, possibly made by a boring insect, so possibly the legumes were spoiled and deliberately burnt for disposal.

The remaining contexts which were analysed: layer (936) and hearth 920 (919) had groups of charred plant remains including cereals and their weeds suggesting domestic use of cereals and domestic rubbish as in the previous phases (Table 49).

Phase 14

Scanning of the 12 features sampled from this phase showed that all produced abundant plant remains. Two types of deposit were found: firstly pits 395, 452, 57 and 389 produced mainly charred remains having samples with hundreds of cereal grains, some with chaff (rachis fragments) and seeds. The cereals were present in quantities not found at other medieval or post-medieval sites within the walls of Leicester despite extensive sampling particularly of post-medieval deposits at Little Lane, Shires Excavation. Secondly, deposits containing mineralised remains including fig seeds and fruit pips were found in pits 422, 497 and 471 and in feature 832 associated with the stone-lined drain in the north of the site. Both types of deposit were found in pit 407. All the features from this phase were tested for parasites with the exception of pit 395 and the following were positive: 407, 452, 832 and 422. Two features also had chewed fish bone present: 407 and 497. From the evidence taken together 832, 422 and 497 appear to have been cesspits with 407 being a cesspit at first then used as a rubbish pit with charred remains and rubbish in the upper fill. Pit 452 is a rubbish pit with some latrine waste as part of the fill while 395, 57 and 389 mentioned above were rubbish pits. Evidence of primary industrial use of the pits was not found although the use as cesspits or rubbish pits may have been secondary.

Deposits interpreted as from cesspits analysed for plant remains were 407 (456), 832 (734) which had over one thousand mineralised fig seeds, 471 (1391) and 497 (520), see Table 49. A second deposit from 407 (430) and a less productive deposit from 422 (392) were not analysed. The cesspits indicate occupation and domestic activity during this phase.

The rubbish pits while containing some rubbish which is probably domestic contain a high concentration of cereal remains. The charred deposits selected for analysis were 407 (406), 452 (464) and 57 (56), see Table 49. The following were not analysed: a second deposit from 407 (412) which appeared similar to (406); 395 (394) which had c.300 grains in an 8 litre sample; and two deposits from 389 (376) and (358) which appeared similar to each other, having around 100

grains per litre of sample together with silica skeletons of cereal culm nodes, but contained some possibly intrusive material in (376) so dating was insecure. The cereal remains are discussed below.

Civil War period (Phase 15)

Ditch 307 was bulk sampled and scanned but produced only a few charred cereal grains and seeds which appear to be residual or redeposited. One sample contained a fragment of possibly mineralised bark but the presence of roots in the feature may suggest that this was intrusive.

Late Post-medieval (Phase 16)

Pits 94, 155 and 402 (note: pit 402 was reassigned to Phase 14 after this report was written) were sampled and of these 94 (62) and 155 (289) produced mineralised remains suggesting that latrine waste was present. Both were tested for parasites but only the sample from 155 was positive. On analysis of the plant remains, mineralised fruit remains including grape and apple were found; it is therefore suggested that 155 functioned as a cesspit (Table 49).

Victorian and later (Phase 17)

The backfill of the Building 3B well 264 (257) was sampled but nothing at all was found.

The Post-medieval Cereals

The late post-medieval period produced the most cereal remains on the site and three samples were examined in detail. All three selected samples, from pits 407, 57 and 452, include bread wheat, with rivet wheat (determined by Lisa Moffett) in the deposits from pits 57 and 452. These are both types of free threshing wheat with similar grains but which can be distinguished by the form of the rachis. Rivet wheat has been found in recent years on an increasing number of sites from the 12th century onwards in the southern half of England (Moffett 1991). The find here adds to the late medieval finds of rivet wheat from the Shires excavation although there it was also found in earlier medieval deposits (Moffett 1993), at Causeway Lane it was found only in early medieval contexts (Monckton 1999a). This is a productive cereal, resistant to disease and attack from birds, with long straw useful for thatching (Moffett 1991). It is well represented in Phase 14 and shows the continued use of this cereal in Leicester. Rye is also represented by rachis material, which is more numerous than identified grains. The barley is hulled and includes two row barley (determined by Lisa Moffett), two row barley has been found at other sites from the 16th century onwards (Greig 1991). Barley appears to be the most numerous cereal here in contrast with sites within the town walls examined to date, although they have not produced any large groups of cereal remains so further confirmation of this is needed. Barley has been found to be the most numerous cereal at some medieval and post-medieval sites such as in Norwich (Murphy 1985). Cultivated oat (*Avena sativa*) was identified from spikelet remains so is present here and may be under represented as many of the grains identified as cereal or grass may also be poorly preserved oats. Free threshing wheat was a high quality cereal used for human food, the main use for rye was also for human consumption though less favoured than wheat. Barley was used in brewing and also consumed as pottage and was sometimes used as fodder, while oats were also used for both human and animal food (Greig 1988).

Considering the proportions of the cereals (Table 50) the deposits all contain a mixture of the four cereals, which would not have grown together so must have become mixed at a later stage. Wheat and rye were autumn sown crops, which may have been grown together as a mixed crop or 'maslin' while barley and oats were both spring sown and sometimes grown together as 'dredge' (Greig 1988). The weeds include the typical cornfield weeds stinking mayweed (*Anthemis cotula*), corn marigold (*Chrysanthemum segetum*), corn spurrey (*Spergula arvensis*) and cornflower (*Centaurea cyanus*) brought in with the cereals, the former indicates the cultivation of heavy clay soils while the others favour lighter soils.

TABLE 49 (1/4)

TABLE 49 (2/4)

TABLE 49 (3/4)

TABLE 49 (4/4)

Cornflower and corn cockle (*Agrostemma githago*) are often found with the autumn sown cereals while goosefoots (*Chenopodium* sp) are more typical of spring sown crops, hence waste from a mixture of crops from different places is present. A very large number of leguminous weed seeds were found in the sample from pit 57 which included possible cultivated vetch, which may suggest that that this was grown as part of rotation of crops to maintain fertility. The latter two deposits have chaff present with weed seeds suggesting that this is partly cleaned cereal or, in the case of 57 (56), a mixture of burnt grain with cleanings from cereals. Both these deposits have a higher proportion of barley present particularly represented by chaff.

Table 50. The percentages of post-medieval cereals

Feature		Wheat	Rye	Barley	Oat	Cereal/Grass	Cereal	Total
		%	%	%	%	%	%	number
407 (406)	Grains	13.3	6.7	11.8	0.5	2.4	65.3	458 gr.
57 (56)	Grains	11.3	1.7	25.1	2.4	23.4	36.1	585 gr.
57 (56)	Chaff	10.7	13.1	67.0	1.0	-	8.2	206 ch.
452 (464)	Grains	12.3	1.8	33.1	2.5	23.9	26.4	163 gr.
452 (464)	Chaff	29.8	-	61.7	-	-	8.5	47 ch.

Key: Grains (gr) as the percentage of the total number of cereal grains
Chaff (ch) as the percentage of the total chaff.

The deposits from pits 407 and 452 have a high proportion of cereal grains (78% and 61% respectively) suggesting that they include partly cleaned cereals (Table 49). The deposit from pit 57 (56) is notable in containing over 1000 items per litre in an extensive uniform deposit of charred plant remains. Although cereal grains form the greater volume of the plant remains, seeds form 63% of the deposit and chaff is abundant (Table 49). Abundant prime grains, particularly of barley, with chaff and weed seeds suggest that this may include stored grain not finally cleaned for use. However the mixture of crops and high proportion of weed seeds with chaff suggest that this is possibly waste or accidentally burnt cereal grains mixed with cleanings from grain processing burnt as rubbish, cereal cleanings were sometimes used as fuel and then disposed of in pits.

Removal of chaff from barley for human consumption is facilitated by parching (Moffett 1989), it is possible that the grain became charred accidentally during parching so was disposed of as rubbish. If this was the case the number of deposits of this type suggest that this process was being carried out on the site. An alternative explanation is that the mixture of oats and barley was animal feed, less well cleaned of weeds and chaff than human food, which was burnt either because it was spoiled or burnt accidentally. However barley chaff causes choking in some animals and the number of charred cereal deposits is more indicative of processing. Barley can be accidentally charred during malting for brewing but as germinated grains were not found this is not thought to be the case here.

Grain would normally be cleaned by fine sieving to remove weed seeds and chaff before use to make such food as potage, or before grinding for flour, which would explain the presence of this type of waste on the site. However the quantity indicates more than domestic use. Furthermore the presence of numerous whole grains and cleanings would not be expected on a domestic site. By this period and in the early medieval period grinding grain was not a domestic task but was carried out at a mill, neither was breadmaking a domestic task as bread in the towns was purchased from bakers (Dyer 1989). Whole grains may only have been used domestically for potages so may have been purchased as required and cleaned at home before use. This may explain the small numbers of grains, chaff and arable weeds found here in the earlier phases as at other sites in Leicester, however in the later phases at this site the occurrence of a number of

larger deposits of cereal remains suggest some commercial activity. This may have been the processing of grain for sale, or use of grain in baked products for sale.

Conclusions

Little evidence was found from the Roman period however occupation was suggested and the charred cereals and arable weeds compared with those from Roman Leicester. Evidence from the Anglo-Saxon period was confined to a small group of probably redeposited remains from the fill of the sunken feature building. The medieval period produced rubbish pits in Phases 8 and 12, probably for domestic rubbish showing the use of free threshing wheat and barley. Arable weed seeds were present and remains were in low numbers, similar to those found in Leicester at this time, however no evidence for cesspits was found as found within the town, suggesting less domestic activity on this site or else differing methods of waste disposal. The early post-medieval Phase 13 also had evidence of only rubbish pits although some mineralised seeds were found indicating the presence of some latrine waste. Pit 252 had a large group of legumes including peas, beans and cultivated vetch from a very large sample consisting mainly of charred wood. Peas and beans were staple foods but the presence of cultivated vetch may suggest that this was fodder as the former two legumes were also fed to animals (Greig 1988). The bulk of the evidence from the site was from the post-medieval Phase 14 where cesspits showed domestic occupation with evidence for fruits including abundant fig and blackberry with grape, apple and sloe from the cesspits. Some of the plants such as hemlock and henbane may have grown in the polluted soil conditions near the pits. The presence of at least six deposits with abundant charred plant remains including a mixture of cereals suggested some commercial activity in this phase.

As at other sites in Leicester the use of glume wheat with some bread wheat was found in the Roman period with barley as the most numerous cereal. The wheat changes to mainly bread wheat type in the sample from the Anglo-Saxon building, which is the situation found at other sites of this period but more productive samples would be necessary to confirm this in Leicester. This continues in the medieval period at this site. By the post-medieval period the free threshing wheat includes both rivet and bread wheat although two deposits were found with hulled barley, including two row barley, as the most numerous cereal. This may however reflect the activities on the site rather than the proportion of grains consumed at the time. Post-medieval cereals remains were abundant with barley, bread wheat and rivet wheat, with evidence of waste from cleaning cereals. It was suggested that this may have been for sale to the public as whole grains or for use in some commercial product. The abundance of leguminous weeds with these cereals may have resulted from crop rotation at this time.

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5.5 Parasite Ova

Peter Boyer

Introduction

In recent years a number of deposits from urban excavations in Leicester have been analysed for the presence of intestinal parasite ova, notably the 'Shires' (Boyer 1990 & 1991), Causeway Lane (Boyer 1999), St. Nicholas Circle (Mackie 1989) and Guildhall Lane undercroft (Boyer 1993) sites. This evidence has been used to partly identify waste deposition patterns across sites and has also given an indication of human parasitic infestation amongst Roman and medieval populations. Species recovered have mostly been of the genera *Trichuris* (whip worms) and *Ascaris* (maw or round worms), though ova resembling either *Fasciola hepatica* (sheep liver fluke) or some type of echinostome (intestinal flukes) have also been identified (Boyer 1999).

Given the suitability of urban archaeological deposits in Leicester, a number of samples from the excavation at Bonners Lane were selected for analysis for intestinal parasite ova. These covered a range of deposit types, from raw sediments from pits and layers, to clearly identifiable coprolites, and included examples from Roman, Anglo-Saxon, medieval and post-medieval contexts.

Method

The methods employed to prepare each sample for analysis were similar to those outlined previously (Boyer 1999), with a number of minor alterations:

2g of sample material was taken as a sub-sample and to this 10ml of dilute hydrochloric acid was added and left to break down the sample overnight. To this, 18ml of de-ionised water was added to make a total solution volume of *c.* 30ml. 0.15ml of solution was then applied to a microscope slide and mixed with two drops of glycerol to prevent drying-out of the sample. The whole slide was then scanned at x100 magnification for parasite ova, with any identified measured at x400 magnification. The total number of ova identified on each slide was then multiplied by 100 to give an equivalent number of ova per gramme of sample material.

Results and Discussion

The results for each sample are shown in Table 51 which records sample details, including type of material and equivalent numbers of parasite ova present by species. Table 51 shows that the results were quite poor for most of the deposits analysed, there being no ova at all recorded from any of the Roman, Anglo-Saxon or medieval deposits. The post-medieval material was more productive, though even here only eight out of 46 samples yielded any parasite ova.

The dimensions of all *Trichuris* and *Ascaris* ova recorded suggested they were of the human parasitizing species: *T. trichiura* and *A. lumbricoides*. It could thus be suggested that deposits containing these ova represented some level of human waste deposition.

Seven of the eight post-medieval samples containing parasite ova came from five cut features, two of which: pits 407 and 452, both Phase 14, have been described by the excavator as backfilled 'tanning' pits, and both of which yielded ova from coprolites and raw sediment, suggesting human waste deposition in these features. Parasite ova concentration levels have been discussed previously in relation to implications of deposit contamination (e.g. Boyer 1999) and the numbers of ova recovered from the two 'tanning' pits would suggest moderate contamination of deposits with parasite ova and therefore excrement from infected individuals.

A third post-medieval pit: 422, Phase 14, contained sediment (392) which yielded just one *Trichuris* egg, which can at best be described as background contamination and cannot be seen as conclusive evidence for this feature having been used as a cess-pit. On the other hand, raw sediment from a fourth pit: 832 (774), Phase 14, revealed a high concentration of *Trichuris* ova (5100 per gramme of sediment), which strongly accords with the view of Monckton (pers. comm.) using botanical evidence, that this was a cess-pit, containing abundant faecal material from infected individuals. A coprolite from layer (470), Phase 13, contained a small number of ova, though whip worm, round worm and flukes were all represented.

The final source of parasite ova came from material in pit 155 (289), Phase 16, described as mineralised wood by the excavator. When a sub-sample of this was taken, the material appeared to have an internal iron structure, but slide preparation revealed small numbers of *Trichuris* ova, sufficient to suggest some level of cess deposition. Pollen grains were also present. It is suggested that this material may have been the mineralised vestige of a deposit made in a lined pit, which retained the imprint of the wooden lining following its decay.

One other mineralised object, described as a coprolite, from pit 34 (33), Phase 13 (sample 25.2), whilst carrying no evidence of parasite ova, did contain abundant plant fibres, phytoliths and pollen and may have been the remains of some type of herbivore excrement.

Conclusion

Analysis of Roman, Anglo-Saxon, medieval and post-medieval deposits from Bonnors Lane for intestinal parasite ova has on the whole been quite disappointing. This is particularly so when compared with results from other sites in Leicester such as the Shires excavation (Boyer 1990 & 1991) and Causeway Lane (Boyer 1999), though a wider range of deposits was available from these sites.

Evidence from the Roman, Anglo-Saxon and medieval periods was not forthcoming. All of the material recovered for analysis came from post-medieval deposits. The post-medieval evidence suggests that at least one of the functions of three different pits: 407, 452 & 832 was that of human waste deposition. In addition, material from a fourth pit: 155 strongly suggests a similar use, particularly if botanical and faunal evidence are taken into account (Monckton, this volume). A fifth pit: 422 yielded minimal evidence of parasite ova, which may tentatively be used as evidence of cess deposition here. Thus there are five pits that may have been used for human waste deposition, including excrement from parasite-infested individuals.

The medical implications of intestinal parasite infection by species identified here have been previously discussed in relation to archaeological deposits (e.g. Boyer 1990 & 1999) and are described in greater detail in medical texts (e.g. Burrows 1965; Faust and Russell 1964). However, discussion of the level of infection amongst past populations of Leicester is perhaps not suitable here, given the relative paucity of evidence. The evidence here is of greater use in considering spatial patterns of refuse deposition in a small area of suburban Leicester and the implications this has for divisions of site functions.

One factor which may have determined the relative lack of evidence from this site, compared with others, was the identification of coprolites and deposits of 'cess'. Previously, the greatest concentrations of parasite ova have tended to come from mineralised remains recovered from wet sieving, which have tentatively been described by the present writer, amongst others, as cess. However, a number of the objects described as coprolites and cess from Bonnors Lane, upon visual inspection do not appear to be the same type of material as previously recorded, though a

‘coprolite’ from pit 497 (520) is clearly mineralised excrement. This point is borne out by the fact that only four out of fifteen samples described as coprolites or cess actually yielded any parasite ova.

A further point to be made is that not all excrement was necessarily contaminated with parasite ova. The coprolite from context (520), noted above, contained no parasite ova and may well have been deposited by a healthy, uninfected individual. Likewise, some deposits of ‘cess’ may have consisted of material from ‘clean’ populations. Indeed, botanical and faunal remains recovered from a number of pits have suggested cess deposition (Monckton, pers. comm.), but deposits from only a few of these yielded any parasite ova. A potential area of future research may be to somehow compare results from different areas of the city in order to assess whether any differences in levels of ova concentration are observable, and whether any changes over time can be detected.

Overall then, five cut features and one layer, all of post-medieval date, yielded deposits containing parasite ova, with a dominance of *Trichuris* species, in common with results from elsewhere in Leicester, thus suggesting some level of intestinal parasitism amongst local populations. This evidence may be used to infer human waste deposition in these contexts, but a lack of parasite evidence should not be taken as negative evidence for cess deposition, merely that any such material deposited was uncontaminated. Evidence from seeds, fly puparia and chewed fish vertebrae, for example, should also be used to make a wider spatial and temporal reconstruction of human waste deposition.

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Table 51: Parasite ova from all samples (Ova per gramme of sediment equivalent)

Period	Phase	Sample	Context	Cut	Sample Type	<i>Ascaris</i>	<i>Trichuris</i>	<i>F. hepaticol</i> <i>Echinostome</i>	Total
Roman	5	109.1	883	881	Raw	0	0	0	0
	6	8.2	24	87	Raw	0	0	0	0
Saxon	7	129.7	1088	1089	Raw	0	0	0	0
Medieval	8	113.2	986	n/a	Coprolite	0	0	0	0
	8	62	359	285	Raw	0	0	0	0
	8	22	328	348	Raw	0	0	0	0
	8	16.2	297	351	Raw	0	0	0	0
	8	55.2	352	353	Raw	0	0	0	0
	8	87	383	353	Raw	0	0	0	0
	8	1.2	273	419	Raw	0	0	0	0
	8	126	1148	1132	Raw	0	0	0	0
Later medieval	9	82.2	494	534	Raw	0	0	0	0
	12	81.2	468	469	Raw	0	0	0	0
Early post-med	13	79.2	470	n/a	Coprolite	600	200	100	900
	13	24	32	34	Raw	0	0	0	0
	13	24	32	34	Coprolite	0	0	0	0
	13	25.1	33	34	Coprolite	0	0	0	0
	13	25.2	33	34	Coprolite	0	0	0	0
	13	6.5	246	252	Raw	0	0	0	0
	13	83.1	507	508	Raw	0	0	0	0
	13	98.2	660	662	Raw	0	0	0	0
	13	99.1	661	662	Cess	0	0	0	0
	13	99.2	661	662	Raw	0	0	0	0
	13	93.2	542	755	Raw	0	0	0	0
	13	95	544	755	Raw	0	0	0	0
	13	97	595	755	Raw	0	0	0	0
	13	108.1	919	920	Raw	0	0	0	0
	13	111.1	962	972	Raw	0	0	0	0
	13	114	994	1000	Raw	0	0	0	0
	14	2.2	56	57	Raw	0	0	0	0
	14	123.2	376	389	Raw	0	0	0	0
	14	60.1	393	395	Raw	0	0	0	0
	14	61.4	394	395	Raw	0	0	0	0
	14	64.2	397	395	Raw	0	0	0	0
	14	67.2	408	395	Raw	0	0	0	0
	14	66.3	406	407	Raw	0	0	0	0
	14	68.3	412	407	Raw	0	0	0	0
	14	71.2	429	407	Raw	0	0	0	0
	14	72.1	430	407	Raw	0	0	0	0
	14	72.2	430	407	Coprolite	0	900	0	900
	14	73.2	456	407	Raw	200	100	0	300
	14	70.1	392	422	Raw	0	100	0	100
	14	74.2	451	452	Coprolite	0	0	0	0
	14	76.1	464	452	Coprolite	0	200	0	200
	14	76.2	464	452	Cess	0	0	0	0
	14	88.2	526	452	Raw	0	200	0	200
14	88.2	526	452	Cess	0	0	0	0	
14	79.2	1391	471	Raw	0	0	0	0	
14	84.2	520	497	Raw	0	0	0	0	
14	84.2	520	497	Coprolite	0	0	0	0	
14	105	774	832	Raw	0	5100	0	5100	
14	115.2	1004	1020	Raw	0	0	0	0	
14	119	1025	1020	Raw	0	0	0	0	
Later post-med	16	3.2	62	94	Raw	0	0	0	0
	16	4.1	154	155	Raw	0	0	0	0
	16	51	289	155	Raw	0	0	0	0
	16	51.2	289	155	M-wood	0	300	0	300
	17	53	358	389	Cess	0	0	0	0
17	52	368	389	Cess	0	0	0	0	

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